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<p>1 Tuesday, 28 May 2019 2 (10.03 am) 3 Opening submissions by MR CHOW 4 CHAIRMAN: Yes. 5 MR CHOW: Good morning, Chairman. Good morning, 6 Prof Hansford. 7 Before I proceed to provide an update on the 8 progress of the work under the holistic assessment, 9 I would like to pick up on a point made by my learned 10 senior, Mr Khaw, yesterday, about the type of couplers 11 approved to be used at the interface, which appears to 12 Prof Hansford to be in contradiction with what is 13 recorded in the meeting minutes of the interface 14 meeting. 15 I hope I am able to clear up some of the confusion. 16 Yesterday, Mr Khaw said: 17 "Insofar as contract 1111 is concerned only one type 18 of coupler has been accepted by BO team for the rebar 19 connections at the interface." 20 This statement is correct insofar as joint 1 and 21 joint 3 of the NSL Tunnel are concerned. What is 22 recorded in the meeting minutes, saying that approved 23 mechanical splicing system of rebar, T40 couplers is 24 BOSA, others are Lenton, is also correct. But there is 25 really no contradiction between the two.</p>	<p>1 CHAIRMAN: Yes. Thank you. 2 MR CHOW: If I may refer you to MTR's submission, at 3 bundle DD7, page 10487, please. This is a submission 4 made by the MTRC to the government on 30 November 2015, 5 to which a number of QSPs and quality assurance schemes 6 were attached. 7 Now, both BOSA's couplers and Lenton's couplers were 8 submitted by MTRC under that submission. 9 Now, the first one, if you can go to page 10488, 10 this is the first page of the quality assurance system 11 for Lenton type 2. 12 If we turn over the page, go to the following page, 13 we see at the bottom of the page: 14 "This submission only applicable to the following 15 sizes of steel reinforcement bars in diameter: 16 32mm. 17 25mm. 18 20mm." 19 Then if we go to look at the corresponding QSP, 20 starting at page 10599 -- this is the corresponding QSP. 21 On the following page, 10600, at the bottom of the 22 page -- now, this is in line with what is set out in the 23 quality assurance scheme. Again, Leighton couplers are 24 supposed to be used for diameters 32, 25 and 20. 25 If we go to another quality assurance scheme for</p>
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<p>1 If I may further explain by taking the Commission to 2 a few documents. In short, the position is this. Under 3 contract 1111, two types, both BOSA and Lenton couplers, 4 had been approved. The question is whether Lenton's or 5 BOSA's couplers are being used at the interface. 6 If we can first go to look at -- 7 CHAIRMAN: Sorry to interrupt. As I saw it at the close of 8 business yesterday, obviously it would have been better 9 if everybody had known -- if the same couplers had been 10 used, there would not have been a problem. But the 11 problem was not so much the use of different couplers. 12 The problem was that the people responsible for bar 13 fixing and supplying the rebars weren't aware of the 14 fact that there were the Lenton couplers, and therefore 15 the reinforcing bars didn't have the necessary threading 16 at the end. 17 So the core issue is a bar without the correct 18 threading; would that be right? 19 MR CHOW: That's correct. But I would like to at least 20 clarify the position in terms of design, in order to 21 identify, at a later stage, which party has committed 22 fault or not. So I would like to assist, just to 23 clarify what is included in the design and what Leighton 24 is supposed to be aware of at the time of the 25 construction.</p>	<p>1 BOSA's type II couplers, at page 10652, this is for 2 BOSA's ductility couplers. 3 If we turn over the page to 10653, at the bottom it 4 is stated: 5 "This BD submission shall only refer to SCL contract 6 1111 Hung Hom North Approach Tunnels related works. 7 This submission only applicable to the following 8 sizes of steel reinforcement bars in diameter: 9 40mm." 10 So, according to these various submissions, it is 11 clear that the position is that, as far as the approval 12 is concerned, two types of couplers have been approved 13 to be used under contract 1111. Now, as to which type 14 of couplers that has to be employed at a certain 15 location, it all depends on the diameter of the 16 reinforcing bar at that particular location, as shown in 17 the design drawings. 18 If you go back to the interface, we have looked at 19 joint 1 and joint 3. Joint 1 and joint 3 are two of the 20 three stitch joints -- 21 CHAIRMAN: Sorry, if you go back to where? 22 MR CHOW: Yesterday, we talked about issue 1. Issue 1 23 concerns three stitch joints. 24 CHAIRMAN: Yes. 25 MR CHOW: Joint 1 is the joint at the interface at the NSL</p>

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<p>1 Tunnel between contract 1111 and 1112. Joint 3 again is</p> <p>2 at the interface. However, joint 2, the one in between,</p> <p>3 is actually an internal stitch joint --</p> <p>4 CHAIRMAN: Internal, yes.</p> <p>5 MR CHOW: -- of NSL, where we should not have the problem of</p> <p>6 different types of couplers, because they are all BOSA.</p> <p>7 So for joint 1 and joint 3, we need to look at the</p> <p>8 drawings, what size diameter of the rebar were being</p> <p>9 used under the accepted design.</p> <p>10 In this connection, I would like to first of all</p> <p>11 establish the exact location of the interface first.</p> <p>12 I would like to refer the Commission to the drawing at</p> <p>13 bundle BB1/484.</p> <p>14 Sir, this is a drawing that shows the profile along</p> <p>15 the NSL Tunnel. If we move a little bit to the centre</p> <p>16 of the drawings -- now, the lower part of the drawing</p> <p>17 shows the alignment, the elevation, which is</p> <p>18 a cross-sectional elevation of the tunnel, and in the</p> <p>19 middle of the drawing we see a vertical dotted line</p> <p>20 which shows the location of the interface, the interface</p> <p>21 between contract 1111 and 1112.</p> <p>22 If we follow the dotted line down to the bottom, we</p> <p>23 see a figure. This is a chainage. Now, the chainage,</p> <p>24 for the present purposes, we can take it as --</p> <p>25 a chainage is a reference point along the alignment of</p>	<p>1 underneath that section is, "Reinforcement details of</p> <p>2 double track tunnel expanded section due to stitch joint</p> <p>3 at NSL uptrack chainage 100+463.789 to chainage</p> <p>4 100+465.289".</p> <p>5 So this is a location very close to the interface.</p> <p>6 It's about 1 metre. So it shows the details of the</p> <p>7 reinforcement to be provided at that location, and it</p> <p>8 also shows exactly the reinforcing details that we say</p> <p>9 are defective.</p> <p>10 If you look at the cross-section, we see a lot of</p> <p>11 lines. First of all, we have the darker black line</p> <p>12 going around the perimeter of the cross-section. The</p> <p>13 dark black lines show the reinforcement. As you may be</p> <p>14 aware, the reinforcement runs in two directions. Under</p> <p>15 the dark black line, we see a lot of dots, the black</p> <p>16 dots. Now, the black dots represents reinforcement,</p> <p>17 another layer of reinforcement, running parallel with</p> <p>18 the alignment of the tunnel. So those black dots are</p> <p>19 the reinforcement that needs to be connected by</p> <p>20 couplers.</p> <p>21 Those reinforcement which run around the perimeter</p> <p>22 of the box structure are self-contained; they don't need</p> <p>23 to be connected with the reinforcement from</p> <p>24 contract 1112. So what we should be focusing on is</p> <p>25 those black dots.</p>
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<p>1 the tunnel.</p> <p>2 CHAIRMAN: That's what a chainage is, is it?</p> <p>3 MR CHOW: Yes.</p> <p>4 CHAIRMAN: I didn't know, sorry.</p> <p>5 MR CHOW: It's somewhere along the line of the tunnel, we</p> <p>6 fix a reference point.</p> <p>7 The relevant reference point here is chainage 100.</p> <p>8 So, at a certain location from this reference point, we</p> <p>9 will refer to that at chainage 100 plus a certain length</p> <p>10 away from this reference point.</p> <p>11 So if we see the dotted line where the location of</p> <p>12 the interface is, it shows that the location is at</p> <p>13 chainage 100+466.289. It's about that point. That is</p> <p>14 the location of the interface. Then, having determined</p> <p>15 the location of the interface, we can go and look at the</p> <p>16 corresponding reinforcement details under the two</p> <p>17 contracts, to see what sort of diameter of reinforcing</p> <p>18 bars are being used at that location.</p> <p>19 If I can then refer you to another drawing, in the</p> <p>20 same bundle, at page 481. Sir, you will see on this</p> <p>21 drawing, there are two cross-sections on the upper part</p> <p>22 of the drawing.</p> <p>23 Now, the one on the right-hand side, you will see</p> <p>24 a box structure. This is a cross-section showing the</p> <p>25 box structure of the NSL Tunnel. The description</p>	<p>1 If you look at -- on this section we see a lot of</p> <p>2 arrows and a lot of figures. Can I just pick one as</p> <p>3 an example to explain what they are about? For example,</p> <p>4 if you look at the one right at the top corner, you will</p> <p>5 see "T16-150-300 links"; do you see that?</p> <p>6 MR PENNICOTT: Yes.</p> <p>7 MR CHOW: Right below that, you see there is another</p> <p>8 description, "T40-150 T1". For that description, the</p> <p>9 T40, the first T denotes a high-yield reinforcing bar,</p> <p>10 and the 40 represents the diameter of the bar. The 150</p> <p>11 actually is the spacing between the bars, and the T1</p> <p>12 shows the first layer of the top mat.</p> <p>13 So this is how we represent reinforcement, and this</p> <p>14 is the way we show to the steel fixers, as to how they</p> <p>15 should fix the reinforcement.</p> <p>16 We see T40 -- if we go around the perimeter, we see</p> <p>17 a number of descriptions "T40" at the spacing of 150.</p> <p>18 The next one is the one in the middle, on the top, you</p> <p>19 will see we have another "T40", at the spacing of 150,</p> <p>20 and then the third one will be at the other end of the</p> <p>21 corner, on the left-hand corner, "T40". And the arrow</p> <p>22 that the description points to shows the relevant</p> <p>23 reinforcement. So you will see all these arrows which</p> <p>24 show T40 bars refers to the transverse reinforcement</p> <p>25 going alongside the perimeter of the box structure, and</p>

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<p>1 this reinforcement does not have to be connected by 2 couplers. 3 What have to be connected are those black dots. If 4 you look at those black dots, they are T20 -- T32, for 5 example -- if you go back to the top part of the 6 right-hand side, we see, in the middle, "T32-150 EF". 7 The line refers to a cross, and the cross actually 8 refers to the four reinforcements, two on the top and 9 two on the bottom. This is the way we represent 10 reinforcement, reinforcing detail, which basically means 11 that for all the black dots we see, they are T25 bars at 12 150 spacing. 13 COMMISSIONER HANSFORD: T32. 14 MR CHOW: Sorry, T32. We have similar description along the 15 side and the inner wall of the cross-section. 16 What it means is, at the stitch joint, the bar, that 17 needs to be connected by couplers, they are all T32. 18 COMMISSIONER HANSFORD: So what you are telling us, Mr Chow 19 is all the longitudinal bars are T32s? 20 MR CHOW: That's correct. 21 COMMISSIONER HANSFORD: And you've checked that in joints 2 22 and 3? Sorry, joints 1 and 3. 23 MR CHOW: Joints 1 and 3, that's correct. 24 COMMISSIONER HANSFORD: And they are all T32s? 25 MR CHOW: T32, yes.</p>	<p>1 that -- 2 COMMISSIONER HANSFORD: No. I don't think that's quite 3 correct. I think what we are hearing is that, at the 4 interface, 1111 will provide Lenton couplers for T32 and 5 below. 6 MR CHOW: Yes. 7 COMMISSIONER HANSFORD: And BOSA couplers for T40, but 1112 8 will provide BOSA for all diameters, and that's not 9 inconsistent, because if you look at the detail, BB91 is 10 the best reference because it shows the stitch joint 11 details; the 1112 reinforcement doesn't actually join 12 the 1111 reinforcement, except through the pink part 13 which is the stitch joint. 14 So it's quite consistent that you would have BOSA 15 couplers in the left-hand side, which is the Leighton 16 contract, and provided they are T32 or below diameter 17 the couplers in the yellow part would be Lentons, and 18 then the interface is made across the pink stitch joint. 19 That would be my reading of this drawing. 20 MR CHOW: Yes. This is also consistent with my reading as 21 well, Prof Hansford. 22 COMMISSIONER HANSFORD: Good. 23 MR CHOW: But on that reading, my understanding is the pink 24 part was to be constructed by Leighton. 25 COMMISSIONER HANSFORD: Correct.</p>
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<p>1 COMMISSIONER HANSFORD: So, therefore, all of the couplers 2 inserted at the interface, at the stitch joint 3 interface, by contract 1111 will be 32s? 4 MR CHOW: That's correct. 5 COMMISSIONER HANSFORD: And therefore they will be Lentons? 6 MR CHOW: That's correct. This is one of the drawings for 7 contract 1112. In other words, Leighton ought to be 8 aware of that. 9 MR PENNICOTT: 1111. 10 COMMISSIONER HANSFORD: This is 1111, is it not? 11 MR CHOW: No, this is 1112. 12 COMMISSIONER HANSFORD: So how do we know the details are 13 the same the other side of the interface? 14 MR CHOW: We can go to check the corresponding drawings 15 under contract 1111, but as far as Leightons are 16 concerned, to them, this is the kind of diameter that 17 they need to provide. 18 COMMISSIONER HANSFORD: Yes, but if this is the Leighton 19 one, then this is the BOSA -- even though they are the 20 32s, they would be BOSA? 21 MR CHOW: Well, the record that we see set out in the 22 meeting minute of the interface meeting says that for 23 T40, it is BOSA, but for the other bar diameters, it 24 would be Lenton. 25 So, as far as Leightons are concerned, they knew</p>	<p>1 MR CHOW: So, in order to connect to the couplers on the 2 right part, Leighton has to prepare appropriately 3 threaded bar, which is a cone-shaped threaded bar -- 4 COMMISSIONER HANSFORD: Yes. 5 MR CHOW: -- in order to connect into the Lenton couplers. 6 Now, given that under Leighton's drawing -- 7 COMMISSIONER HANSFORD: We agree. 8 MR CHOW: Under Leighton's drawings, it clearly shows 9 a diameter of the bar to be used, and together with what 10 they have heard from the interface meeting, saying that 11 for diameter 32 and below it would be Lenton, then 12 Leighton, as far as the government is concerned, ought 13 to be aware that the cone-shaped threaded bar has to be 14 prepared. 15 COMMISSIONER HANSFORD: Yes. The only question I had, 16 Mr Chow, was the long sections you took us to, which 17 showed us the reinforcement, just now, related to the 18 blue part, and what we haven't seen -- sorry, can we go 19 back to BB91 -- is a long section with reinforcement for 20 the yellow part. 21 MR CHOW: That's correct. The section that I have just 22 shown to the Commission actually covers a chainage from 23 100+463 to 100+465. This covers a range of -- a width 24 of 2 metres. So that is the range, as far as I see, 25 within the pink section.</p>

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1 COMMISSIONER HANSFORD: I see. 2 MR CHOW: My instructions are that this cross-section shows 3 the reinforcement layout at the stitch joints. In other 4 words, that is what Leighton has to fix -- 5 COMMISSIONER HANSFORD: Okay. 6 MR CHOW: -- to do the stitch joint, and if we check the 7 chainage, it is about right in terms of location. 8 COMMISSIONER HANSFORD: So therefore that would be the same 9 reinforcement in 1112 and 1111? 10 MR CHOW: That's correct. This is my interpretation, 11 Prof Hansford. 12 COMMISSIONER HANSFORD: Right. Subject to checking, that 13 makes sense. 14 MR CHOW: If we then go back to the same drawing, 481, on 15 the left-top corner we see another section. This is 16 joint 3, the cross-section showing a location very close 17 to the interface and this shows a trough structure of 18 the EWL slab. 19 If we look at the details of the reinforcement, they 20 are all T32. So, again, for joint 3, only -- there was 21 no T40 bar being used, and what follows is that the 22 Lenton couplers would have been cast in by the 23 contractor of contract 1111. 24 COMMISSIONER HANSFORD: Yes. 25 MR CHOW: Now, the position is slightly different in the	1 that all the longitudinal bars are T25, except there is 2 a layer of longitudinal bar on the slab; the top of the 3 slab, the T2, is T40. The middle part is the slab, 4 shows the cross-section of the slab. At the top 5 reinforcement for the slab, we have two layers. First 6 of all, we have the T1 layer, which is the top one, 7 which is transverse reinforcement, T32; but the lower 8 layer, T2, shows the diameter of the bar to be T40. 9 In other words, in the shunt neck joint, the 10 longitudinal bar needs to be connected, a T40 bar. 11 If you then now go to look at the corresponding 12 drawings, under contract 1112, at bundle BB1/538, the 13 cross-section at the bottom of the page, again to the 14 right. This is a cross-section shown almost at the same 15 location. This one is for the length from chainage 16 0+312 to chainage 0+323. The other one that we have 17 just looked at is from +323 to further down the 18 alignment. 19 We see that the top reinforcement, the second layer 20 of the top reinforcement, is T25. 21 Both cross-sections, in a way, stop at chainage 22 0+323 -- no, 312 as the dividing line. If we recall 23 that just now we looked at the layout plan, we know that 24 the location of the interface is somewhere around 25 0+31-something. So the location of the interface should
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1 case of the shunt neck joint. We only realised it last 2 night when we went through some of the relevant 3 drawings. 4 If I may then refer you to a drawing showing the 5 alignment of the shunt neck joint, at bundle DD7/10381, 6 please. Sorry, perhaps before that, 10374, please. 7 10374 is a similar layout drawing, showing the 8 location of the interface, and we see that -- now, in 9 the middle of the drawing, we see again a dotted line 10 showing the location of the interface, and if we just 11 follow the line going down and check the corresponding 12 chainage, although we don't have the exact location, but 13 we can tell that it is around chainage 0+31-something. 14 This is the rough location of the interface of the shunt 15 neck joint. 16 Then we can go to look at the corresponding 17 reinforcement detail. The first one, under 18 contract 1111, bundle DD7, page 10381. Sir, you will 19 see there are a number of cross-sections on the 20 drawings. The relevant one is the one at the middle but 21 to the right, which says, "Reinforcement of shunt neck 22 trough HHS chainage 0+291 to chainage 0+312 23 approximately". Do you see that, the one in the middle 24 of the page but to the right? 25 So if we blow up that particular section, we see	1 be very likely to be around 0+312. 2 Now, if this is the case, then we see that there is, 3 in a way, mismatch between the reinforcement details 4 under the two different contracts. Under contract 1111, 5 the top layer of the longitudinal bar should be T40, 6 whereas under contract 1112, it shows that it is 25. 7 Sir, you will recall that under the contract, 8 originally, this joint is supposed to be a stitch joint. 9 In other words, Leighton has to first of all connect to 10 the couplers cast in under contract 1111 first, and then 11 at the same time Leighton needs to provide another set 12 of threaded bar connected to its own part of the 13 structure. So that would be BOSA. 14 Even if we have different diameter sizes under two 15 different contracts, that can still be achieved, because 16 on 1112 side Leighton can provide T25 bars, and then 17 these T25 bars can be lapped with the T40 bars from the 18 other side. But subsequently this stitch joint was 19 changed to a construction joint. Again, it is a matter 20 for the technical people to advise the Commission as to 21 how they should go about it, but as far as I'm concerned 22 that can still be achieved. The 40mm diameter bars 23 sticking out from the interface can still be left with 24 T25 bars. 25 I think that is as far as I can go. The purpose of

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<p>1 my submission is just to show to the Commission what are 2 the requirements in the contract drawings, and if there 3 is any mismatch, this is the way that we can say there 4 is some kind of mismatch, but technically perhaps it is 5 not a problem at all. It all depends on how the 6 contractor went on to execute the work. 7 Unless the Commission has any question for me on 8 this particular question, then I will move on to provide 9 an update. 10 (Discussion off the record) 11 If you have no questions on this aspect, I will move 12 on -- 13 CHAIRMAN: I was just being assured by my professional 14 co-Commissioner that some of my indications that I was 15 lagging behind on the technicalities will be made clear 16 to me over coffee break. 17 MR CHOW: Thank you. 18 CHAIRMAN: That's one of the good things about having two of 19 us sitting. We can enlighten each other in our own 20 respective areas. 21 COMMISSIONER HANSFORD: That seems to be part of my role 22 here. 23 MR CHOW: Thank you. Having said that, at any time, 24 Mr Chairman, if you have any questions, I will try my 25 best to assist.</p>	<p>1 29 April, last month. As the position stands, my 2 instruction is that there were altogether 225 samples of 3 coupler connections exposed for examination, and the 4 result of the examination has already been uploaded on 5 to the website of the Highways Department, and 6 I understand that MTRC has also helpfully summarised it 7 and updated it on a continuous basis in its report. 8 Just to give an overall account of the result, out 9 of the 225 samples opened up, 152 of them show 10 an engagement length of 37 millimetres or more, which 11 are measured by our ultrasonic test, and 39 of them show 12 an engagement of less than 37mm. There remain 13 34 samples. They were either -- after they were 14 exposed, they were found to be not connected at all, 15 therefore no measurement can be made. My understanding 16 is it accounts for seven to eight number of them are not 17 connected. As to the remaining 25 or 26 samples, the 18 technicians were not able to measure or to produce 19 a valid reading. 20 What happened is, during this measurement process, 21 the measurements were done by two separate technicians, 22 doing exactly the same thing, and the reading would only 23 be accepted as valid if both of them came up with a very 24 similar measurement. Now, if the two technicians came 25 up with different measurements with a deviation larger</p>
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<p>1 CHAIRMAN: I appreciate that. Thank you. 2 MR CHOW: In that case I will move on to provide an update 3 on progress of the works under the holistic assessment. 4 Sir, you will recall that under the holistic assessment, 5 the works are to be carried out in three stages. 6 CHAIRMAN: Yes. 7 MR CHOW: At the time when we concluded our evidence of the 8 first part of the Inquiry, we were at stage 2, when 9 opening work was being carried out at various locations 10 of the platform slab. These locations were sampled on 11 a statistical basis, and what we knew at that stage was 12 we would have to expose at the minimum 168 coupler 13 assemblies for verification and for measurement for the 14 purpose of statistical analysis. 15 After those had been opened up, we would measure by 16 a non-destructive method the engagement length, and that 17 has been done. At the time when we concluded the first 18 part of the evidence, there was some problem as to the 19 accuracy of the measurements taken up to that stage, and 20 subsequently, upon further effort being put in by the 21 technical personnel, they have revised the method and it 22 has been improved, checked, and we are now satisfied 23 that the final method of measurement used was reliable 24 and all the exposed couplers have been re-measured. 25 The stage 2 investigation was largely completed on</p>	<p>1 than a certain range, then we consider those readings as 2 invalid, and my understanding is, out of these 3 34 samples, a number of them are of that type; two 4 different technicians came up with different figures and 5 we therefore ignore those readings. So this is the 6 position. 7 Going back to the stage 3 structural assessment, the 8 stage 3 structural assessment, according to the agreed 9 holistic proposal, is to be made on the basis of the 10 verification findings in stage 1 and stage 2. So the 11 result of the opening-up and the measurement we have 12 taken would be taken into account. 13 At the moment, the target date for the submission of 14 a final report of stage 3 structural assessment is set 15 on 30 June, ie the end of next month. 16 The government is as keen as MTR, if not more, to 17 resolve the present problem and have the Shatin to 18 Central Link commissioned and put in operation, and for 19 this purpose, to avoid any unnecessary delay in stage 3 20 structural assessment, the government has set up 21 a special taskforce in mid-April. Now, this taskforce 22 is a different one, different than the one that Mr Khaw 23 mentioned yesterday. Mr Khaw mentioned a taskforce set 24 up to deal with the verification proposal, but a further 25 taskforce has been set up in mid-April this year, just</p>

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<p>1 to handle the stage 3 structural assessment, and this 2 special taskforce actually comprises the technical staff 3 from the Buildings Department, from the Highways 4 Department, and also from the expert adviser team. 5 This special taskforce holds almost daily meetings 6 with the corresponding technical staff from MTRC, to 7 discuss various matters relevant to the stage 3 8 assessment, in particular the design assumptions, the 9 design parameters. The purpose is to avoid getting into 10 a situation when the final report is produced by MTRC 11 and then the government has to get into a big argument 12 with MTRC on the validity of certain design parameters 13 adopted in the assessment. So what the government did 14 is to set up a taskforce, have continuous dialogue with 15 the technical staff of MTRC, and also the consultants of 16 MTRC, to agree on various design parameters and 17 assumptions. 18 At the moment, almost all the design parameters and 19 assumptions have been agreed, except one, and the one 20 that remains outstanding actually relates to the 21 question of whether, and if so how, the ground support 22 provided by the existing ground to the NSL slab are to 23 be taken into account, because, sir, you will recall 24 from the evidence of the first part of the Inquiry, we 25 were told that actually NSL slab was cast on the ground.</p>	<p>1 Inquiry, we have been exploring two different design 2 changes. My learned friend Mr Cheuk labelled it as 3 a first change and a second change. The first change 4 relates to the omission of a U-bar on top of the 5 diaphragm wall and the second change is the change from 6 a coupler connection to through-bar. But to implement 7 the second change, Leighton actually hacked off part of 8 the top of the diaphragm wall and then put in 9 through-bar and then recast the remaining concrete as 10 the second phase. 11 CHAIRMAN: Described occasionally as a monolithic pour. 12 MR CHOW: Exactly. This is what the discussion is about. 13 But you will recall that one of the concerns of Prof Au 14 is because of this operation, we have actually created 15 an additional horizontal joint inside the connection, 16 and Prof Au expressed concern about the adequacy of the 17 joint because of that. 18 At the conclusion of the evidence, upon the 19 invitation of the Commission and upon receipt of the 20 base data from Atkins, Prof Au has carried out a quick 21 check, structural design check, on the basis of the data 22 provided by Atkins, and he has produced a report on 23 1 March 2019. 24 In short, Prof Au opines that there may be potential 25 problems of excessive horizontal shear stress at the</p>
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<p>1 Although in terms of design, they were designed to be 2 self-supported, in other words to be supported by the 3 diaphragm wall, but in actual fact, when they were cast, 4 there was ground underneath. So there is some 5 discussion at the moment between the government's 6 technical department and MTRC as to whether one can take 7 into account the support from the ground during this 8 construction stage, in the stage 3 assessment, and 9 hopefully this can be agreed very quickly. 10 Regarding the structural assessment itself, this has 11 been going on in parallel with the discussion between 12 MTRC and the government. According to the agreed 13 timetable between the government and MTRC, MTRC will 14 produce a draft final report by the end of this month. 15 In other words, in a few days' time. There are, 16 however, two matters I would like to spend some time on, 17 which I think would be of particular interest to the 18 Commission. The first one relates to the adequacy of 19 the connection between the east diaphragm wall and the 20 EWL slab. I recall that Mr Chairman at the preliminary 21 meeting actually mentioned it, because Mr Chairman 22 recalled the concern of Prof Au. In the first part of 23 our Inquiry, Prof Au carried out a quick check and 24 expressed concern as to the adequacy of the connection. 25 Sir, you will recall that in the first part of the</p>	<p>1 additional construction joint we have just mentioned, 2 and also there may be excessive shear stress at some of 3 the vertical critical shear plane close to the exterior 4 surface of the diaphragm wall. 5 So Prof Au maintains the same concern, and in the 6 report he recommended that a more sophisticated analysis 7 or assessment has to be carried out. Now, this more 8 sophisticated assessment has now been taken on board by 9 MTR's consultants. 10 COMMISSIONER HANSFORD: Is this a finite element analysis? 11 MR CHOW: I am not 100 per cent sure, because I was not 12 involved in the discussion. 13 COMMISSIONER HANSFORD: I'm just wondering what a more 14 sophisticated assessment is. 15 MR CHOW: Probably yes, because -- 16 COMMISSIONER HANSFORD: I believe it's a finite element 17 analysis. 18 MR CHOW: Because as far as I understand, all these 19 sophisticated computer programs are based on finite 20 element, so inevitably I think the finite element 21 analysis will be involved. 22 The important point is that now Prof Au's concern 23 has been passed on to MTRC's consultants. As far as 24 I understand, there are three consultants involved: 25 Atkins, Arup and AECOM. Prof Au's concern was explained</p>

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<p>1 in detail to the consultants, and I understand that the 2 more sophisticated analysis will be done by the 3 consultant and will form part of the stage 3 structural 4 assessment. In other words, by the time when the 5 Commission receives the stage 3 structural assessment 6 final report, then the concerns of Prof Au should have 7 been addressed. We are not in a position to foresee 8 what is the result or whether any remedial work will be 9 required, but what is important that we have to take 10 note is Prof Au's concern has now been taken on board by 11 the consultant and this more sophisticated analysis is 12 being carried out.</p> <p>13 The second matter, Mr Chairman, you have mentioned 14 at the preliminary meeting, is the test to be performed 15 on partially engaged couplers. There is always 16 a question as to whether there is any contribution from 17 the partially engaged couplers to the strength of the 18 structure, and that was really the main disagreement 19 during the first part of the evidence between the 20 government and MTRC.</p> <p>21 What happened is -- we have put down in our written 22 opening, saying there is not much progress on this 23 aspect of the disagreement. The government -- as 24 I mentioned earlier, a special taskforce has been set up 25 since mid-April, so the government was aware that MTRC</p>	<p>1 Last Saturday --</p> <p>2 CHAIRMAN: When you say "partially engaged couplers", you 3 mean less than 35?</p> <p>4 MR CHOW: Less than 37mm engagement length.</p> <p>5 So this is what the consultant has been working on 6 during the month of May or before May.</p> <p>7 But last Saturday night we received, the government 8 received, from MTRC, by email, copies of the test 9 reports, about tests MTRC had performed back in April on 10 couplers with various degrees of partial engagement. 11 The government immediately wrote back to MTRC, seeking 12 their clarification as to their intention with that test 13 report. Meanwhile, the government observed from the 14 test result of this second batch of tests, coupler 15 tests, that the overwhelming majority of the test 16 samples actually failed again the requirement, the code 17 requirement, in relation to permanent elongation, which 18 is not to be in excess of 0.1 millimetre.</p> <p>19 While the government observed that the new test 20 report shows that most of the samples still failed to 21 comply with the code requirement, but we don't know why 22 MTRC chose to pass on these further tests that had been 23 done almost a month ago to the government, at this 24 stage, two days before we commenced the substantive 25 hearing. So we are yet to hear from MTRC as to what</p>
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<p>1 was going to carry out further tests on partially 2 engaged couplers by the end of April, so last month. 3 And the government has received a draft test plan for 4 the partial engagement couplers from MTRC, also in 5 mid-April.</p> <p>6 In response to that, the government has provided its 7 comments on the draft test plan, and since then, during 8 the almost daily coordination meetings of the special 9 taskforce, between the government and MTRC, the 10 government asked for details of the test results that 11 MTRC apparently has performed at the end of April, and 12 the government expressed to MTRC that if MTRC intended 13 to make use of the test results for the purpose of 14 stage 3 structural assessment, those results have to be 15 disclosed to the government, have to be tabled for 16 discussion, and the requirement for test can be 17 discussed and agreed.</p> <p>18 My instruction is that until last Saturday, 19 government received nothing from MTRC about that, and 20 meanwhile, the consultant of MTRC has been proceeding 21 with the stage 3 structural assessment on the basis that 22 the partially engaged couplers were not giving any 23 contribution. In other words, the partially engaged 24 couplers were ignored in their structural assessment, up 25 to last Saturday, two days ago.</p>	<p>1 MTRC intends to do. Because, as far as government is 2 concerned, the consultants of MTRC have been proceeding 3 with the stage 3 structural assessment on the assumption 4 that the partially engaged couplers were to be ignored. 5 So perhaps MTRC has a new plan, then this is something 6 that we have to hear from MTRC.</p> <p>7 COMMISSIONER HANSFORD: Because it must be the case, 8 Mr Chow, mustn't it, that ignoring partially engaged 9 couplers, with engagement less than 37 millimetres, is 10 a very conservative approach?</p> <p>11 MR CHOW: Prof Hansford, I am not actually in a position to 12 give any opinion, but possibly, yes, if the partially 13 engaged couplers are ignored. But again, from the 14 evidence, there are concerns in relation to cracks, the 15 development of cracks, the deformation, and that is 16 something the experts have no doubt considered as well, 17 which I am not in a position to advise or form any view 18 on.</p> <p>19 COMMISSIONER HANSFORD: Okay.</p> <p>20 MR CHOW: So this is something that the MTRC -- if MTRC 21 intends to make use of this test report for the purposes 22 of stage 3, this is something that MTRC has to discuss 23 with the government. Of course the government is open 24 to different ideas, but we are concerned with timing 25 because, according to the agreed timetable, the final</p>

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<p>1 report has to be issued by the end of next month, and 2 the draft report is supposed to be ready by the end of 3 this week. So if we start looking into new things, then 4 we have to think about the timetable as well. 5 That is all I can say at the moment. The government 6 is open to discuss, but we have to hear from MTRC on 7 that. 8 CHAIRMAN: All right. Sorry, this is not a criticism. I'm 9 just trying to understand. I appreciate that all tests 10 must have parameters. I would imagine the more 11 sophisticated tests tend to have more sophisticated 12 parameters, but I may be wrong; I'm not an engineer. 13 But would it be then on the basis that a length less 14 than 37 millimetres would be ignored, so that if you've 15 got 37 millimetres, that would be accepted, but 16 36 millimetres -- 17 COMMISSIONER HANSFORD: Or 36.9. 18 CHAIRMAN: -- or 36.9 millimetres -- means it's not helping 19 the structural integrity of the structure one bit. 20 I'm not querying it. I accept there must be 21 parameters. It just seems to me, as a complete 22 layperson, that's a very small difference. Is there no 23 gradation, or does it all suddenly stop at 24 37 millimetres and thereafter of no benefit whatsoever 25 to the structural integrity?</p>	<p>1 unit, you may have to be able to swim a mile underwater, 2 but if in fact, having shown that ability, you then have 3 to carry out a raid in the middle of a desert, the 4 swimming a mile underwater is not really of great 5 relevance. Perhaps the ability to run up rocky 6 hillsides is. Do you see the point? 7 MR CHOW: Yes. 8 CHAIRMAN: So one wonders, to some degree, about the 9 appropriateness of particular tests for the particular 10 circumstances. Again, I just mention that. That's all. 11 I don't query it. I just remember that being raised. 12 MR CHOW: Yes. We take note of that. As I mentioned 13 earlier, the government actually welcomes further 14 discussion. That's why, during the taskforce meetings, 15 we have been asking MTRC about the test result and 16 whether MTRC intends to make use of the test results, 17 and at the moment we are concerned with the timing only. 18 But, having said that, my instructions are that the 19 latest test plan that we received yesterday is now being 20 considered by the government. 21 I also mentioned that an earlier version of the test 22 plan has been commented by the government, and we are 23 now looking at the revised test plan to see whether our 24 comments have been fully addressed. 25 These new documents only came in on Saturday night</p>
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<p>1 MR CHOW: Sir, as a layperson, of course the answer is no, 2 there must be some contribution, but at the same time 3 I appreciate that a line has to be drawn somewhere. 4 It's a matter of where to draw that line. And if 5 someone has -- 6 CHAIRMAN: Or perhaps several lines can be drawn. 7 MR CHOW: Or several lines. 8 CHAIRMAN: You get decreasing percentages, for example. But 9 again, I keep my ground. 10 MR CHOW: I fully appreciate that. 11 COMMISSIONER HANSFORD: I'm just observing this appears 12 rather conservative. 13 MR CHOW: But this is something that the technical people 14 from the two parties have to put their heads together to 15 work out. 16 CHAIRMAN: And the other thing you mentioned is the 17 elongation tests. Again, I'm not querying it, because 18 no doubt it's going to be discussed, and it's absolutely 19 for government and MTR to decide on what basis they wish 20 to proceed. It's an independent exercise. But there 21 was quite a bit of evidence saying that this particular 22 type of test was actually not relevant, in the 23 circumstances of the building of the structures. 24 I can remember, in my rather primitive way, talking 25 about, in order to get into a government elite commando</p>	<p>1 and I would expect that the government will act 2 immediately and look at the details, then we will go 3 back to MTRC. 4 But first of all we need to have an indication from 5 MTRC as to what is their intention with the test results 6 and what they plan to do. Dialogue is very important 7 and that's the reason why a taskforce is set up and 8 that's the reason why daily meetings were held, to 9 facilitate and to speed up the stage 3 structural 10 analysis. 11 The fact is that we are a few days away from a draft 12 report, having to produce, and a little bit more than 13 a month before the final report has to be submitted to 14 the Commission, and of course the government is willing 15 to work closely with the MTRC to achieve that target, 16 but it takes two to cooperate. 17 CHAIRMAN: Yes. Thank you very much. 18 MR CHOW: Sir, I think that is all I intended to say by way 19 of an update. Unless, sir, you have any questions for 20 me on that, this is my submission. 21 MR PENNICOTT: Sir, before we go on -- I think it's Mr Shieh 22 next -- can I just make a couple of observations? 23 As we all know, we are here for this hearing to 24 listen to the opening submissions and then the evidence 25 in relation to the extended part of the Inquiry. Whilst</p>



<p style="text-align: right;">Page 33</p> <p>1 I have no problem with Mr Chow giving the Commission 2 an update, as he has done over the last half an hour or 3 so, on what's happening in relation to the holistic 4 proposal, Mr Chow having done so and raised the sorts of 5 points that he has, no doubt the MTRC are going to want 6 to respond in some fashion, which of course they are 7 perfectly entitled to do. 8 My concern is that we are working under a pretty 9 tight timetable, with a lot of witnesses coming, with 10 a lot of growing issues about availability of witnesses, 11 and it does, with respect, seem to me that if the 12 government and the MTRC wish to discuss with the 13 Commission matters not directly connected with the 14 extended part of the Inquiry, then an indication should 15 be given to the Commission, either through me or through 16 those instructing me, and we can perhaps find time, half 17 an hour or an hour, at the end of the day, between 5 and 18 6 o'clock, or whatever it might be, to listen to that 19 material. 20 But we cannot, in my respectful submission, have too 21 much time taken away from us in relation to what we are 22 supposed to be dealing with. It's not a criticism of 23 Mr Chow, because I accept entirely that the Commission 24 does need to be updated, but I just think we need to 25 bear that in mind, if I may say so.</p>	<p style="text-align: right;">Page 35</p> <p>1 Leighton, where personnel who attended interface 2 meetings were aware of the possible use of Lenton 3 couplers but had not communicated that to the 4 engineering staff. We have squarely acknowledged that. 5 And during the inspection process, opportunities of 6 spotting any issues of connection had been missed, 7 during routine inspection and hold-point inspection. 8 So that is the shape of the evidence broadly in 9 relation to that aspect of the issues concerning the 10 interface. 11 There are other possible causes or reasons 12 identified in the evidence for difficulty or 13 impossibility of fixing rebars into couplers. I name, 14 by way of example, some couplers are said to have been 15 not completely hacked off from concrete, so that the 16 couplers were not fully exposed. That's one cause which 17 has been mentioned in the evidence. Another cause of 18 the difficulty or impossibility of fixing the rebar was 19 what has been called the size mismatch, because apart 20 from the shape mismatch we have seen some evidence in 21 relation to a size mismatch, in the sense that the bars 22 were too thin or too narrow for the couplers. I believe 23 that related to the shunt neck joint. 24 There are also suggestions that there might have 25 been couplers which were damaged, which therefore made</p>
<p style="text-align: right;">Page 34</p> <p>1 CHAIRMAN: All right. Thank you. 2 Good. 3 MR PENNICOTT: So it's Mr Shieh, I think. 4 MR SHIEH: Yes, I am next in line. I hope I can be forgiven 5 for still being seated when I address the Commission. 6 I can start now or I can start after the mid-morning 7 break, if the Commission -- 8 CHAIRMAN: Again, these are your submissions and we're happy 9 to go with how you would best like to proceed. 10 MR SHIEH: I would wish to proceed, if it suits the 11 Commission. 12 CHAIRMAN: Good. Thank you. 13 Opening submissions by MR SHIEH 14 MR SHIEH: The Commission will have read our written 15 opening. I don't propose to go through them. I propose 16 to make five points on five topics. 17 First, issues of connection have been identified or 18 discovered in the stitch joints and at the shunt neck 19 joint. One of the issues or one contributing factor to 20 the issues of connection was what has been called the 21 material mismatch or the shape mismatch between BOSA 22 rebars and Lenton couplers on the interface of 1111 and 23 1112. 24 As Leighton's witness statement acknowledged, there 25 had been issues of communication internally, within</p>	<p style="text-align: right;">Page 36</p> <p>1 connection difficult or impossible. 2 Now, evidence on those aspects is, I would 3 acknowledge, a little bit murky. From Leighton's 4 perspective, Leighton witnesses have explained and 5 testified in their witness statements, as far as they 6 are concerned, they are not aware of any issues or 7 difficulties over connection during the construction 8 process. But of course, as the matter goes on, we would 9 continue to explore that with our witnesses, and no 10 doubt these would be explored with them when they are in 11 the box for cross-examination. 12 But if we were to stand back, these difficulties or 13 impossibility of fixing the rebar, whether it is because 14 of the shape mismatch or size mismatch, in our 15 submission, were not the reason for the actual 16 inadequate connection or non-connection. The reason for 17 the actual non-connection or inadequate connection, in 18 our submission, was the act or omission of the rebar 19 fixers, that is Wing &amp; Kwong, in actually doing the 20 physical work. That, in our submission, was the cause 21 for the issue. 22 Now, Wing &amp; Kwong obviously has its own version of 23 events which we have heard from Mr Tsoi, and the 24 Commission will know that we have a classic case of 25 a collision in the witnesses' oral testimony, on which</p>

<p style="text-align: right;">Page 37</p> <p>1 I prefer to say little because these are obviously 2 matters which will be tested rather severely in 3 cross-examination, but suffice it to say, in terms of 4 what was actually said or not said, or instructed or 5 reported during the actual fixing process, it really is 6 a matter of clash of oral testimony. 7 The reasons, the different reasons, as to why there 8 were these impossibilities, were useful by way of 9 background, and if one were to attribute any earlier 10 responsibility, the Commission may well wish to look at 11 that, but the immediate reason for non-connection or 12 inadequate connection was Wing &amp; Kwong's act or omission 13 in not fixing. 14 That is my observation on the first point, namely 15 the issues concerning non-connection or inadequate 16 connection. 17 The next big topic I address is what's been called 18 issue 3, issues concerning RISC forms. It has been 19 loosely called, in some quarters, "missing RISC forms". 20 I prefer to call that "outstanding RISC forms" because 21 of a subtle difference: because if one calls someone 22 missing, a missing person, you presuppose a person 23 existed in the first place before he can be made 24 missing, with a rather sinister connotation that he has 25 been somehow destructed. On Leighton's evidence, the</p>	<p style="text-align: right;">Page 39</p> <p>1 checks on the rebars delivered to site. 2 What happens is that additional testing in Hong Kong 3 was supposed to be done by sample on the rebars 4 delivered on site by a HOKLAS accredited laboratory. On 5 Leighton's calculation or reckoning, about 7 per cent of 6 the rebars delivered to site were not so tested by 7 sample. In our submission, it has no bearing on safety 8 because, first of all, as I said, this is not to say 9 that the rebars have not already been tested by the 10 manufacturers, as evidenced by their relevant test 11 certificates. Secondly, Leighton will be putting 12 forward evidence of an expert which hopefully should 13 assist the Commission in viewing the significance or the 14 lack of significance of the testing of this 7 per cent 15 of rebars in the overall scheme of things. But, as 16 directed by the Commission when the time comes, when the 17 report is ready, we will put forward the report in the 18 usual way to seek leave, but all I need to say now is, 19 yes, Leighton has in mind adducing expert evidence on 20 that. 21 So that is my address on the third big topic, 22 material testing. 23 On the fourth topic, that is the alleged design 24 change, the Commission is aware that there is this 25 question about couplers versus lapping. The Commission</p>
<p style="text-align: right;">Page 38</p> <p>1 RISC forms which cannot be found were not missing, they 2 were outstanding, for the simple reason, as frankly 3 acknowledged by Leighton's witness testimony, the 4 relevant engineering staff were too overwhelmed and busy 5 with their workload. 6 One can make submissions as to whether that's good 7 enough or not good enough as a matter of management, but 8 in our submission the absence of RISC forms does not 9 mean that, as a matter of primary fact, the requisite 10 inspection has not taken place, or that the requisite 11 inspection and permission has not in fact been given 12 before the pouring took place. There is evidence both 13 from Leighton and from MTRC as to, as a matter of fact, 14 the inspection and permission-seeking process that had 15 been gone through when the relevant hold points were 16 reached. Again, that would be a matter of primary 17 witness testimony that the Commission would have to 18 consider. 19 So that is what I have to say in respect of the 20 second big point, the question about outstanding RISC 21 forms. 22 The third big point relates to material testing. 23 The Commission will be aware that all the rebars used 24 on site would have had test certificates issued by their 25 manufacturers. So it's not as if there were no quality</p>	<p style="text-align: right;">Page 40</p> <p>1 will remember, or it might have been so long ago that 2 one might have forgotten, the evidence, there is 3 technical evidence, that in the present context couplers 4 and lappings are interchangeable. Certainly there is no 5 suggestion, in terms of the evidence that we have been 6 able to see for the purpose of part 2 of the Inquiry, 7 that somehow, as a matter of principle, one is superior 8 to the other. And the approved drawings and the 9 approved designs, they did not stipulate precisely 10 whether or not couplers or lappings are to be used. 11 So it is Leighton's submission that it really boils 12 down to a matter of judgment whether to use one or the 13 other, so to have used couplers instead of lap is really 14 a matter of detail, a matter of judgment, which in our 15 submission would not have impacted on safety and would 16 not have required consultation or approval by the 17 Buildings Department. So that is our position on the 18 fourth big point. 19 On the fifth point, that is the applicability of 20 QSP, the Commission would have read our submission, and 21 the government classified our stance as being a re-run 22 of the points that we had put forward before the 23 Commission during part 1. 24 Now, I have a few observations to make in that 25 regard. First, as we read it, the Commission had not</p>

<p style="text-align: right;">Page 41</p> <p>1 rejected, as a matter of principle, the submission that 2 we had made in part 1, namely the requirement for QSP 3 depended upon whether or not there is a requirement for 4 ductility. Secondly, the Commission, in part 1, 5 attached some weight on the fact that Leighton seem to 6 have thought or acknowledged within itself that QSP is 7 applicable. 8 Now, we would wish to urge upon the Commission, at 9 this part 2 hearing, that there is a difference between, 10 on the one hand, a party thinking to itself that it was 11 subject to a higher or more onerous requirement, which 12 may be more than is necessary under the regulatory 13 regime. There's a difference between this, on the one 14 hand, and, two, a party really being under a regulatory 15 requirement to adhere to a higher threshold. If it is 16 merely the former, then the fact that a party has failed 17 to meet its internally imposed higher threshold -- it 18 may be a matter of failing to meet that party's own high 19 standard, but it does not mean that it had not acted 20 within the regulatory framework, according to the 21 rule -- but if, as a matter of regulatory regime, there 22 is indeed a requirement, then of course that party had 23 to act in accordance with it. 24 It is a matter, in our submission, of some 25 fundamental importance in public administration as to</p>	<p style="text-align: right;">Page 43</p> <p>1 if not then we hope to be able to develop that by way of 2 closing submissions. 3 We will be obviously looking at the plans again to 4 see whether or not, as a matter of proper reading, they 5 impose a requirement of ductile couplers. The 6 Commission will recall that there is a difference 7 between being subject to a requirement to use ductile 8 couplers on the one hand and on the other hand not 9 subject to such a requirement but it so happened that 10 a party had, as a matter of fact, used ductile couplers. 11 These are matters of detailed submission. But since the 12 Commission has asked for assistance, I would simply wish 13 to outline the stance taken by Leighton in this part 2. 14 If it appears to be a re-run, so be it. We are seeking 15 to persuade the Commission to consider our submissions 16 in greater detail. 17 CHAIRMAN: It's an interim report that exists, it's not 18 a final report, so obviously we are open to submissions 19 of that kind. How we accept the submissions is another 20 matter, but we are open to these submissions. 21 MR SHIEH: We are very grateful. 22 So these are the five big topics that I wish to 23 address the Commission on by way of opening address. 24 CHAIRMAN: Good. Thank you. 25 Then who is going to be next?</p>
<p style="text-align: right;">Page 42</p> <p>1 the applicability of a certain regime that if it is 2 regarded as a re-run, then in our submission so be it. 3 The Commission's view taken at the interim report is, in 4 our submission, only an interim one, and we hope, at 5 this stage too, we would be able to persuade the 6 Commission to come to a firmer view as to the 7 in-principle applicability of the higher threshold QSP 8 to the facts of this case. 9 We note from the government's submission, and to 10 a certain extent the Commission's submission, that they 11 do not seem to be taking the position that simply 12 because a party had somehow thought that it needed to 13 adhere to a QSP or it had prepared a QSP, then 14 therefore, as a matter of regulatory regime, it had to 15 be subject to a QSP. 16 For example, the government seems to be taking the 17 view that the line may be drawn at whether or not 18 ductile couplers were in fact used. We take issue with 19 that. We say the question turns on whether there is 20 a ductility requirement. But the point I make is that 21 even the government seem to accept that the requirement 22 of QSP hinges upon satisfaction of some prerequisite, as 23 a matter of regulatory regime, rather than whether or 24 not a party itself, for whatever reason, had prepared 25 a QSP. I hope the distinction is adequately drawn, but</p>	<p style="text-align: right;">Page 44</p> <p>1 MR BOULDING: I am next, sir. 2 CHAIRMAN: Mr Boulding, good. How long for coffee? 3 MR PENNICOTT: 15 minutes. 4 CHAIRMAN: 15 minutes. Thank you. 5 (11.20 am) 6 (A short adjournment) 7 (11.40 am) 8 Opening submissions by MR BOULDING 9 MR BOULDING: Good morning, Chairman, good morning, 10 Professor, may it please you. 11 This is the MTR opening, and you will not be 12 surprised to hear that I do not intend to repeat my 13 written opening. What I want to do is to emphasise what 14 I regard as certain important points in that opening, 15 and of course to deal with one or two points arising 16 from my learned friend's opening. 17 I ought to say immediately that, having listened to 18 Mr Chow's opening this morning and his update, I am not 19 in a position to say whether or not that is correct, but 20 you will not be surprised to hear that those instructing 21 me are considering the transcript now with a view to 22 giving me instructions on that. 23 The one thing I do agree is that we shouldn't lose 24 any time dealing with that matter in the ordinary 25 sitting hours, and as Mr Pennicott suggests, to the</p>

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<p>1 extent we need to trouble you on that, it ought to be 2 outside the sitting hours, providing that's convenient 3 to you. 4 CHAIRMAN: Yes, certainly. 5 MR PENNICOTT: Sir, can I just say on that point, there was 6 an additional point I should have made earlier. 7 Of course there are three involved parties who are not 8 here, who may have an interest in that aspect of the 9 discussion. Of course we can, as we will, as a matter 10 of courtesy, inform those three involved parties who are 11 not here that there has been some discussion and they 12 may wish to read the transcript, but I also bear in mind 13 the fact that we don't have everybody here who may be 14 interested in the discussion. 15 CHAIRMAN: Thank you. 16 MR BOULDING: That's an important observation. 17 Notwithstanding what I've said already, I'm going to 18 concentrate on the following three issues, in respect of 19 the North Approach Tunnel, the South Approach Tunnel, 20 and the Hung Hom Stabling Sidings. First of all, we 21 have issue 1, and that of course involves the three 22 defective stitch joints at the North Approach Tunnel. 23 Two of these joints are located at the North South Line 24 Tunnel level, and one is located at the East West Line 25 Tunnel level. The latter stitch joint is known as</p>	<p>1 inspection and supervisory records, ie the RISC forms, 2 that's the first element of issue 3; and the second one 3 is the alleged deviations at the North Approach Tunnel, 4 the South Approach Tunnel and the Hung Hom Stabling 5 Sidings. 6 The Commission of Inquiry has already been educated 7 as to the sort of organisation MTR is, its roles and 8 responsibilities under the entrustment agreement, and 9 the various project management systems it has in place. 10 That all occurred in part 1 of the Commission of 11 Inquiry, and you will not be surprised to hear that I'm 12 not going to go back over old ground there. 13 What I do want to do, though, is to concentrate on 14 new factual matters which are relevant to issues 1 to 3 15 inclusive in this extended Commission of Inquiry. In 16 doing so, some points have already been covered in 17 varying degrees of detail by my learned friends, but 18 where they are important points they do bear repetition. 19 First of all, I would like to deal with the 20 construction of the North Approach Tunnel. The North 21 Approach Tunnel consists of three parts. Firstly, the 22 North South Line Tunnel, and that we've heard is 23 a twin-boxed underground tunnel. Secondly, the East 24 West Line Tunnel, and that by contrast is an open 25 trough, aboveground tunnel. And finally, the third</p>
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<p>1 joint 3, that was Mr Pennicott's references, and the two 2 other joints, located at the North South Line Tunnel 3 level, are joints 1 and 2. 4 Turning to the location of joint 3, its specific 5 location is at the interface between the East West Line 6 bay 5 under contract 1112 and the East West Line Tunnel 7 structures under contract 1111. 8 What about the two stitch joints in the North South 9 Line Tunnel? Well, joint 1 is located at the interface 10 between North South Line bay 6/7 under contract 1112 and 11 the North South Line Tunnel structures under 12 contract 1111, and joint 2 -- again using Mr Pennicott's 13 numbers -- is located at the interface between 14 contract 1112 between the North South Line bay 5 and 15 North South Line bay 6/7. 16 Now, it's not disputed that these three stitch 17 joints were all constructed by Leighton and its 18 following sub-contractors: firstly, Wing &amp; Kwong Steel 19 Engineering, they carried out the rebar cutting, the 20 bending and fixing; and secondly, Hills Construction 21 Ltd, who carried out the formwork and concreting. 22 That's issue 1. 23 Issue 2, in summary, concerns non-compliance issues 24 at the North Approach Tunnel shunt neck, and then 25 issue 3, two matters essentially, the alleged lack of</p>	<p>1 element, the shunt neck, and we know that that connects 2 the East West Line to the Hung Hom Stabling Sidings. 3 Not surprisingly -- and you've heard this already -- 4 the construction of these structures required 5 collaboration between Leighton, under contract 1112, and 6 the Gammon-Kaden joint venture under contract 1111. 7 Now, as touched upon already, you will know that the 8 purpose of a stitch joint is to minimise the potential 9 for stress or pressure at a joint where there is 10 a possibility of different degrees of settlement or 11 movement. 12 For example, that could occur where concrete 13 structures which are on either side of a joint and which 14 are connected were built on different foundations, as in 15 the case of joint 2. Alternatively, where one of the 16 two concrete structures which are to be joined was 17 constructed well in advance of the other, as was the 18 case in joint 3 and joint 1. 19 Now, it bears emphasis in this context, that the 20 North South Line bay 5 tunnel structures were supported 21 by socket H-piles, whereas the North South Line bay 6/7 22 structures were at grade. Now, as for joint 3 and 23 joint 1, the interfacing tunnel structures were all 24 built at grade, but the tunnel structures under 25 contract 1111 were constructed well ahead of the tunnel</p>

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<p>1 structures under contract 1112.</p> <p>2 What about the connection details and the interface</p> <p>3 requirements for these stitch joints? These are set</p> <p>4 out, conveniently, in appendix Z2 to the Particular</p> <p>5 Specification for contract 1112. For the reference,</p> <p>6 that's BB1/420 to 432. But there are also a number of</p> <p>7 relevant working drawings. I don't intend you to go to</p> <p>8 those, but I can tell you that the matter is spoken to</p> <p>9 in some detail by MTR's Mr Michael Fu, in particular in</p> <p>10 paragraph 14 of his statement. That's page BB/70.</p> <p>11 In terms of understanding the defects in the three</p> <p>12 stitch joints, it is important, in our submission, to</p> <p>13 note various points. First of all, for the</p> <p>14 contract 1111 tunnel structures, the GKJV used Lenton</p> <p>15 couplers which, as we've heard, was based on</p> <p>16 a taper-threaded splicing system, requiring, not</p> <p>17 surprisingly, taper-threaded rebars.</p> <p>18 For the contract 1112 tunnel structures, Leighton</p> <p>19 used BOSA couplers, as in the construction of the</p> <p>20 Hung Hom Station box structure, which required the use</p> <p>21 of cylindrically threaded rebars. Now, the practical</p> <p>22 consequence of this was at the 1111/1112 stitch joints,</p> <p>23 which of course are Mr Pennicott's joints 1 and 2. That</p> <p>24 consisted of an interface between the Lenton couplers</p> <p>25 and the threaded rebars which were required for such</p>	<p>1 structures to ensure the necessary waterproofing</p> <p>2 qualities.</p> <p>3 As you've heard, to construct the stitch joint,</p> <p>4 Leighton had to expose the Lenton couplers fixed at the</p> <p>5 end of the contract 1111 North South Line Tunnel</p> <p>6 structures for its sub-contractor, Wing &amp; Kwong, to</p> <p>7 install starter bars. What happened then is that</p> <p>8 Leighton would expose the BOSA couplers fixed at the end</p> <p>9 of the contract 1112 North South Line Tunnel structures,</p> <p>10 again for Wing &amp; Kwong to install the starter bars.</p> <p>11 Then, finally, the contract 1111 rebars would be lapped</p> <p>12 with the contract 1112 rebars.</p> <p>13 A question arose, I think yesterday, as to the</p> <p>14 diameter of the rebars used at the interface, and on our</p> <p>15 reading of the evidence, for joints 1 and 3, T40 rebars</p> <p>16 were used for the BOSA couplers, whereas the Lenton</p> <p>17 couplers were used for rebars under 40 millimetres</p> <p>18 nominal bar diameter.</p> <p>19 In that regard, I am quoting, in the first instance,</p> <p>20 from paragraph 29 of the fifth statement of Leighton's</p> <p>21 Mr Karl Speed. That's CC1/59. I also have in mind</p> <p>22 paragraph 27 of the second statement of BD's Mr Lok</p> <p>23 Pui Fai. That's DD/10279. He actually refers to T20</p> <p>24 and T32 rebars.</p> <p>25 I was a little bit surprised this morning to hear</p>
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<p>1 couplers and the BOSA couplers, and of course the</p> <p>2 threaded rebars which were required to fit into those</p> <p>3 couplers.</p> <p>4 What about the construction sequence? I think this</p> <p>5 was something touched upon by Mr Pennicott yesterday.</p> <p>6 Using the 1111/1112 North South Line, that's joint 1, as</p> <p>7 an example, the construction sequence was as follows.</p> <p>8 First of all, GKJV constructed the contract 1111 North</p> <p>9 South Line Tunnel structures with Lenton couplers fixed</p> <p>10 at the end of a structure. Then Leighton constructed</p> <p>11 the contract 1112 North South Line Tunnel structures</p> <p>12 with BOSA couplers fixed at the end of a structure.</p> <p>13 Both structures required a collar on the exterior</p> <p>14 with an external waterproof membrane and, in addition,</p> <p>15 a waterstop. Moreover, what's termed an Omega seal had</p> <p>16 to be installed at the inner intersection of the two</p> <p>17 collars, and this was also intended to prevent leakage.</p> <p>18 What happened then is that the stitch joint would be</p> <p>19 constructed by Leighton and its sub-contractors after</p> <p>20 the differential movements of the two connecting</p> <p>21 structures had stabilised. There's a note to that</p> <p>22 effect on working drawing 1112/W/000/ATK/C11/101A,</p> <p>23 conveniently found in the bundle at BB/433.</p> <p>24 I point out that hydrophilic strips had to be</p> <p>25 installed on the internal surface of the connecting</p>	<p>1 what Mr Chow had to say, because it appeared to us that</p> <p>2 he was seeking to depart from that evidence. We will</p> <p>3 simply have to see how that develops in due course. But</p> <p>4 in any event, this rebar lapping had to be done for the</p> <p>5 connection of the base slabs, the roof slabs, the</p> <p>6 external walls and finally the dividing walls, and</p> <p>7 of course after all that the concrete would be poured by</p> <p>8 Leighton's relevant sub-contractor, Hills Construction</p> <p>9 Ltd.</p> <p>10 Now, this construction sequence, which I have given</p> <p>11 you as an example, similarly applied to joint 3. That's</p> <p>12 the contract 1111/1112 East West Line stitch joint.</p> <p>13 Now, the only difference is that there were no roof</p> <p>14 slabs or dividing walls to connect. This of course was</p> <p>15 due to the fact that it was indeed an open-trough tunnel</p> <p>16 structure.</p> <p>17 As for joint 2, again, the construction sequence,</p> <p>18 which I've described in a little bit of detail, applied</p> <p>19 to joint 2, except in this case Leightons were</p> <p>20 responsible for constructing both sides of the joint</p> <p>21 under contract 1112 using, as I've told you already,</p> <p>22 BOSA couplers.</p> <p>23 That's the three stitch joints, but we also know</p> <p>24 that there was a construction joint located at the shunt</p> <p>25 neck, at the interface between shunt neck bay 3 under</p>

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<p>1 contract 1112 and the shunt neck structures under 2 contract 1111. 3 Now, there are two or three points to note on this. 4 This joint was originally designed to be a stitch joint, 5 and we can look at the working drawings in due course at 6 pages BB/435 and BB/436. No need to turn them up at the 7 moment. But in the event, this stitch joint, the 8 original design, was unnecessary, because the 9 interfacing structures under contract 1111 and 10 contract 1112 were all founded on piles, and the 11 consequence of this was that they were not subject to 12 any soil overburden pressure. This meant that 13 a construction joint was sufficient. 14 Now, as a result of this, and as one would expect, 15 MTR confirmed to GKJV that the joint would be 16 constructed as a construction joint. If you want 17 a reference for that, it's paragraph 3.6 of the report 18 entitled, "Shunt neck connection report at 1111/1112 19 interface of NAT structure contract 1112". That was 20 dated 26 October 2018 and can be found at 21 pages DD1/38.64 to 38.65. 22 But that wasn't the end of the matter, because such 23 fact was also confirmed to Leightons when an email from 24 MTR's Mr Louis Lam, who was a senior design management 25 engineer, sent an email dated 25 November 2015; that's</p>	<p>1 1111/1112 shunt neck construction joint also consisted 2 of an interface, and at this interface Leighton was 3 required to screw Lenton threaded rebars into the Lenton 4 couplers fixed by GKJV at the contract 1111 shunt neck 5 structures. That's a matter you have heard something 6 about already. 7 Now, what about the timing of the construction? 8 This is helpfully dealt with at paragraph 1.7 of 9 a report entitled, "Report on defective works identified 10 at tunnel stitch joints", dated 26 March 2018. That's 11 page AA1/57. First of all, the joint 3, that's the 12 shunt neck construction joint and the contracts 13 1111/1112 East West Line stitch joint, was constructed 14 from around January to March 2017. 15 The contracts 1112/1112 North South Line stitch 16 joint -- that's joint 1 -- was constructed from around 17 May to September 2017. 18 Finally, the contracts 1111/1112 North South Line 19 stitch joint -- Mr Pennicott's joint 1 -- was 20 constructed from around July to August 2017. 21 In this context, it should be pointed out that 22 a more detailed North Approach Tunnel pour summary has 23 indeed been provided to the Commission of Inquiry. 24 That's BB9/6363. 25 So what about the South Approach Tunnel then? Well,</p>
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<p>1 CC6/3355-3356. That was in fact forwarded, as we can 2 see if we looked it up, to the GKJV, who sent it on to 3 Leightons. 4 In addition, that a construction joint was not 5 a stitch joint -- that a construction joint and not 6 a stitch joint was required was reiterated in the 7 response to Leighton's RFI, request for information, 8 number 1112-RFI-LCA-CS-001510 -- that's CC6/3333-3341 -- 9 which was raised in May 2016 and concerned a working 10 drawing which showed the contracts 1111/1112 East West 11 Line stitch joint -- that's joint 3 -- and the shunt 12 neck, and in that response the MTR made it palpably 13 obvious that there would be no stitch joint at the shunt 14 neck except at the interface with 1111. 15 So what they were saying, in response to that RFI, 16 is that a stitch joint was still required for contracts 17 1111/1112 East West Line stitch joint -- that's 18 joint 3 -- but not for the shunt neck. If that wasn't 19 clear enough already, this is helpfully acknowledged by 20 Leighton's Mr Karl Speed in paragraphs 61 to 62 of his 21 fifth witness statement. That's CC1/66. 22 Now, as with the contracts 1111/1112 stitch joints, 23 that's joints 1 and 3, GKJV used Lenton couplers for the 24 contract 1111 shunt neck structures. This had the 25 following consequences. Firstly, the contracts</p>	<p>1 the South Approach Tunnel was also constructed by 2 Leighton and its sub-contractors, but in this instance 3 the sub-contractors were Fang Sheung Construction 4 Company; they carried out rebar cutting, bending and 5 fixing -- I understand we are going to hear from their 6 relevant witness later today -- and China Technology 7 Corporation Ltd, formwork and concreting; they are well 8 known to you because they played a large part in part 1 9 of the Commission of Inquiry. 10 Now, these construction works were carried out from 11 around November 2015 to February 2017, quite a long 12 period, and these dates, these construction dates, are 13 evidenced by the South Approach Tunnel pour summary 14 which has also been provided to the Commission of 15 Inquiry. That's BB13/8816. 16 Now, what did the South Approach Tunnel consist of? 17 There were essentially three elements. Firstly, the 18 East West Line -- which as I've said is an open-trough 19 structure -- secondly, what are referred to as the 20 launching and retrieval tracks, and these connect the 21 East West Line with the Hung Hom Stabling Sidings; and 22 finally, the North South Line which, as I've said, is 23 a box-section structure. 24 I ought to emphasise that certainly at this time MTR 25 is not aware of any structural safety issues concerning</p>

<p style="text-align: right;">Page 57</p> <p>1 the South Approach Tunnel.</p> <p>2 Finally, I move on to the construction of the</p> <p>3 Hung Hom Stabling Sidings. These works were carried out</p> <p>4 by Leightons and its various sub-contractors from around</p> <p>5 December 2014 to May 2017. As you will have noted on</p> <p>6 your view, the stabling sidings cover a large</p> <p>7 geographical area, and not least because of that fact,</p> <p>8 MTR is still in the process of preparing the Hung Hom</p> <p>9 Stabling Sidings pour summary, but you will get that as</p> <p>10 soon as it's been prepared.</p> <p>11 As you probably saw, this stabling sidings consists</p> <p>12 of essentially seven elements of work. Firstly, the</p> <p>13 underpinning works; secondly, stabling siding tracks;</p> <p>14 thirdly, what's referred to as the North Fan Area, which</p> <p>15 connects the siding tracks with the East West Line</p> <p>16 mainline in the North Approach Tunnel; fourthly, two</p> <p>17 launching and retrieval tracks -- I've just told you</p> <p>18 what they are for; fifthly, eight accommodation blocks,</p> <p>19 I'm sure you were shown those if you had the same site</p> <p>20 view as I had; two underpasses between the stabling</p> <p>21 sidings; and lastly what's referred to as the emergency</p> <p>22 vehicular access.</p> <p>23 Now, MTR's Kit Chan's witness statement -- see in</p> <p>24 particular paragraph 16; reference, that's BB8/5190 to</p> <p>25 5191 -- he helpfully explains that the steps and</p>	<p style="text-align: right;">Page 59</p> <p>1 construction works at the North Approach Tunnel, the</p> <p>2 South Approach Tunnel, and of course the Hung Hom</p> <p>3 Stabling Sidings, and there are indeed lists of current</p> <p>4 and former MTR officers involved in the checking,</p> <p>5 inspecting and testing of rebars and couplers for each</p> <p>6 of those structures. That's at BB3/1796. I shan't</p> <p>7 trouble you with that at the moment.</p> <p>8 I would like to say just a little bit more about</p> <p>9 both elements of this. Firstly, routine site</p> <p>10 surveillance. This was the primary responsibility of</p> <p>11 the MTR inspectors of works team, and the daily</p> <p>12 surveillance involved monitoring the day-to-day site</p> <p>13 work of both Leightons and its sub-contractors.</p> <p>14 Against, Mr Kit Chan's evidence is in point, as indeed,</p> <p>15 in this instance, is the evidence of MTR's Mr Fu Yin</p> <p>16 Chit. The references respectively to those witness</p> <p>17 statements are BB8/5191 and 5194, and BB8/5218-5219.</p> <p>18 They both explain that the daily site surveillance</p> <p>19 typically covered, firstly, the general works being</p> <p>20 constructed/installed; secondly, the general progress of</p> <p>21 site works; thirdly, general site management; and</p> <p>22 finally and importantly, as you've heard from a number</p> <p>23 of MTR witnesses in the past, safety. And the relevant</p> <p>24 inspector of works -- he's a gentleman called Tony Tang,</p> <p>25 and you will hear from him in due course -- explains</p>
<p style="text-align: right;">Page 58</p> <p>1 procedures for the construction of these key structures</p> <p>2 within the stabling sidings areas are set out, as one</p> <p>3 might expect, firstly in the method statements and</p> <p>4 secondly in what are referred to as inspection and test</p> <p>5 plans, which Mr Kit Chan helpfully summarises.</p> <p>6 At this time, I'm happy to tell you that there is no</p> <p>7 issue concerning the structural safety of the Hung Hom</p> <p>8 Stabling Sidings, certainly that MTR is aware of anyway.</p> <p>9 Now I'd like to tell you a little bit about MTR's</p> <p>10 site surveillance and inspection process, and of course</p> <p>11 in due course there will be detailed evidence on this,</p> <p>12 but for the time being I'd like to point out that MTR's</p> <p>13 construction engineers and inspectors of works carried</p> <p>14 out, firstly, routine site surveillance. That's what is</p> <p>15 referred to, and that's in accordance with</p> <p>16 paragraph 5.7.1 of both versions A5 and A6 of PIMS,</p> <p>17 a document which I'm sure you are still familiar with as</p> <p>18 a result of the abundance of evidence we had on it</p> <p>19 during the part 1 hearing.</p> <p>20 Secondly, there are what is called hold-point</p> <p>21 inspections, in accordance with the inspection and test</p> <p>22 plans that I've already referred to. This is something</p> <p>23 that Kit Chan speaks to.</p> <p>24 Now, this site surveillance and the hold-point</p> <p>25 inspections were carried out in respect of the</p>	<p style="text-align: right;">Page 60</p> <p>1 that if during the surveillance he observed any issue</p> <p>2 relating to the spacing or the size of the rebars being</p> <p>3 fixed, or the coupler splicing assemblies, he would</p> <p>4 immediately raise it with the workers on site and,</p> <p>5 moreover, report the matter to MTR's senior inspector of</p> <p>6 works and/or the MTR construction engineers.</p> <p>7 It bears emphasis that the MTR construction</p> <p>8 engineering team also conducted site surveillance by</p> <p>9 means of what I'll refer to as regular site walks.</p> <p>10 Again, that evidence comes in the form of Mr Kit Chan's</p> <p>11 statement and Mr Fu Yin Kit's statement, BB8/5191 and</p> <p>12 BB8/5218-5219 again. They also say, you will not be</p> <p>13 surprised to hear, I'm sure, that they would raise the</p> <p>14 matter with Leighton if they observed any issues; for</p> <p>15 example, with the installation of couplers.</p> <p>16 In this regard, Mr Chris Chan of MTR's evidence is</p> <p>17 in point -- that's BB1/116 -- as is a Mr Sebastian Kong</p> <p>18 who you'll hear from in due course; he was a graduate</p> <p>19 engineer, a very bright chap -- BB8/5244-5246.</p> <p>20 But it didn't stop there because, in addition, MTR</p> <p>21 staff also made ad hoc visits at Leighton's request to</p> <p>22 resolve specific site issues. Examples would be safety,</p> <p>23 utilities or operations. And they also made site visits</p> <p>24 for a specific purpose and at a specific location, again</p> <p>25 at Leighton's request. And MTR's Chris Chan deals with</p>

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<p>1 this in a little bit of detail at BB1/116.</p> <p>2 MTR takes this opportunity to emphasise, as indeed</p> <p>3 it did at the last hearing, that it was not its</p> <p>4 responsibility to conduct any man-marking or, moreover,</p> <p>5 continuous supervision over the rebar fixers when they</p> <p>6 were conducting their works. I submit that the project</p> <p>7 manager's expert opinion, that MTR was not expected to</p> <p>8 conduct any man-marking during the East West Line/North</p> <p>9 South Line slab works -- that's paragraphs 26 to 27 of</p> <p>10 their joint statement; ER1/9/T-4 -- is equally</p> <p>11 applicable to the North Approach Tunnel, the South</p> <p>12 Approach Tunnel, and the Hung Hom stabling siding works.</p> <p>13 Now, that's site surveyors, but what about</p> <p>14 hold-point inspections? The most relevant hold-point</p> <p>15 inspections for the three stitch joints and the shunt</p> <p>16 neck construction joint were, firstly, the rebar fixing</p> <p>17 inspections and, secondly, the pre-pour checks.</p> <p>18 I think you would probably like to be told what the</p> <p>19 relevant procedure was, so I'm going to tell you. What</p> <p>20 happened was that when Leighton's works reached a hold</p> <p>21 point, Leighton should have submitted a request for</p> <p>22 inspection/survey check form, which you will now know is</p> <p>23 abbreviated to "a RISC form", and this should have done</p> <p>24 to MTR's administrative assistants, and indeed when they</p> <p>25 were produced, they went to MTR's administrative</p>	<p>1 form, and they then returned the pink and yellow carbon</p> <p>2 copies to MTR. You've probably read somewhere that</p> <p>3 there were four copies, all in different colours, but</p> <p>4 anyway, the pink and the yellow carbon copies went back</p> <p>5 to MTR.</p> <p>6 The MTR construction engineers, and they will tell</p> <p>7 you this, were typically responsible for inspecting the</p> <p>8 rebar fixing works, and the reason for this is that they</p> <p>9 had the most up-to-date working drawings and the</p> <p>10 relevant design amendment sheets and the RFI responses.</p> <p>11 This was important because all of these documents, in</p> <p>12 particular the amendment sheets and the RFI responses,</p> <p>13 were used to check the diameter, spacing, layering and</p> <p>14 lap length of the rebars, and the arrangement of starter</p> <p>15 bars, if indeed there were any, and again the shear</p> <p>16 links, if there were any. These inspections were -- and</p> <p>17 they will tell you this -- in relative terms a simple</p> <p>18 and straightforward matter.</p> <p>19 The MTR inspectors of works would assist with the</p> <p>20 rebar fixing inspections when requested to do so by the</p> <p>21 construction engineers, but these inspectors of works</p> <p>22 routinely carried out other hold-point inspections at</p> <p>23 a number of stages. These inspections included the</p> <p>24 following matters: concrete blinding, waterproofing,</p> <p>25 cathodic protection, formwork, and finally pre-pour</p>
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<p>1 assistants. Leighton candidly accepts, as you have</p> <p>2 probably read in their statements already, that due to</p> <p>3 staff shortages it was constantly late in submitting</p> <p>4 RISC forms, and indeed, in many instances, it didn't</p> <p>5 submit them at all.</p> <p>6 Notwithstanding this, if and when Leighton submitted</p> <p>7 the RISC form, it would then be passed on by the</p> <p>8 administrative assistants to MTR's senior inspector of</p> <p>9 works for him to distribute the form to the relevant</p> <p>10 inspector of works or the construction engineers to</p> <p>11 conduct an inspection for their respective areas</p> <p>12 because, as you probably recall from the last hearing,</p> <p>13 certain different inspectors, certain different</p> <p>14 engineers, covered different areas. This was indeed</p> <p>15 a big site.</p> <p>16 Now, once MTR's inspector of works or the</p> <p>17 construction engineer had completed the inspection, he</p> <p>18 would fill in his part of the form, and that happened to</p> <p>19 be parts B and C. In due course, I'm sure we will look</p> <p>20 at these in a little bit of detail.</p> <p>21 The senior inspector of works would then endorse the</p> <p>22 RISC form and return it to Leightons. Leightons then</p> <p>23 took the process over, and they signed off what was</p> <p>24 called, and I quote, the "contractor's confirmation of</p> <p>25 receipt", and this was located at the bottom of the RISC</p>	<p>1 checks, which focus particularly on checking for</p> <p>2 cleanliness and debris. In addition, they will tell you</p> <p>3 that they took and kept photographs of their</p> <p>4 inspections.</p> <p>5 Now, what about the situation, you are probably</p> <p>6 saying to yourself, when a RISC form was not submitted</p> <p>7 by Leighton or it was late? What happened so far as the</p> <p>8 relevant hold-point inspections are concerned?</p> <p>9 Well, the evidence is that MTR's inspectorate staff</p> <p>10 performed the necessary hold-point inspections based on</p> <p>11 Leighton's verbal notifications. You have probably read</p> <p>12 that Leighton would often pick up the phone, phone up</p> <p>13 their opposite number and say, "We are ready for</p> <p>14 an inspection, please come along and inspect." This</p> <p>15 evidence is corroborated by many, many of Leighton's</p> <p>16 witnesses who give evidence in virtually identical</p> <p>17 terms, and having inspected, the MTR witnesses say, the</p> <p>18 permission to proceed was mostly given verbally by MTR</p> <p>19 to Leightons.</p> <p>20 Now, what about the quality supervision plan? This</p> <p>21 was a matter raised by Mr Pennicott yesterday, and</p> <p>22 Mr Chow also raised it I think this morning. Of course,</p> <p>23 you have invited the involved parties to clarify the</p> <p>24 position in relation to the QSPs for the relevant areas</p> <p>25 of works that we are talking about, and Mr Pennicott</p>



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<p>1 pointed out yesterday that we touched upon it in our 2 opening and at that stage we were checking the position. 3 I am now in a position to firm up on where we are. 4 In relation to the Hung Hom Stabling Sidings, I point 5 out that the relevant acceptance letters for the 6 Hung Hom Stabling Sidings can be found at exhibits 7 LPF-32 to LPF-36. That's DD8/DD11433-11646, and these 8 are referred to in paragraph 11 of the fourth witness 9 statement of BD's Mr Lok Pui Fai. That's 10 DD7/DD10294-10295. 11 CHAIRMAN: Sorry, "relevant acceptance letters", meaning? 12 MR BOULDING: The acceptance letters from the Buildings 13 Department. 14 CHAIRMAN: Thank you. 15 MR BOULDING: And the position under these letters, we say, 16 is straightforward. None of these letters imposed any 17 requirements for couplers, let alone any requirement for 18 a QSP, a quality supervision plan. In this context, we 19 say, as confirmed by paragraph 51 of Leighton's opening 20 statement and paragraph 26 of government's opening 21 statement, which perhaps I can be forgiven for 22 reading -- the government says, in paragraph 26: 23 "According to the accepted drawings, no ductility 24 couplers were used at NAT and no couplers were used at 25 HHS. Thus, QSP does not apply to coupler installation</p>	<p>1 contract 1112 side of the works. Once again, we go to 2 Mr Lok Pui Fai's statement for that. That letter can be 3 found in exhibit LPF-19, that's DD7/DD10327-10344, and 4 that's referred to in paragraph 8, this time of the 5 second witness statement of Mr Lok. That's DD7/DD10273. 6 Now, this letter only contained requirements for 7 couplers without ductility requirements, and that's set 8 out in appendix V, entitled, "Mechanical couplers for 9 steel reinforcing bars without ductility requirements", 10 at DD7/DD10339-10341. This did not, thus, require any 11 QSP for the works. 12 Now, what about the contract 1111 side of the works? 13 Here, the acceptance letter was dated 11 July 2013, and 14 this letter only required a QSP for couplers with 15 ductility requirements, and this was set out in 16 paragraph 3 of appendix XI, entitled, "Mechanical 17 couplers for steel reinforcing bars for ductility 18 requirements". The reference for that letter is GG230 19 and paragraph 3 that I just quoted in terms of its title 20 is at GG256. 21 Now, importantly, as confirmed by paragraphs 38 to 22 43 of Leighton's written opening statement, and 23 paragraph 26 of government's written opening statement, 24 which I quote again: 25 "According to the accepted drawings, no ductility</p>
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<p>1 works at NAT and HHS." 2 So, in those circumstances, we say we agree, no QSP 3 applied to the Hung Hom Stabling Sidings. 4 What about the South Approach Tunnel? The 5 acceptance letter here is dated 25 February 2013 and can 6 be found at exhibit LPF-26. That's DD8/DD10905-10996. 7 This is referred to in paragraph 13 of the third witness 8 statement of Buildings Department's Mr Lok Pui Fai. 9 That's DD7/DD10289. 10 Now, in paragraph 3 of appendix IX to the acceptance 11 letter, which is entitled, "Mechanical couplers for 12 steel reinforcing bars for ductility requirement" -- 13 that's DD8/DD10936 and 10938 -- this required a QSP for 14 type II couplers for rebar with ductility requirements. 15 Appendix X of the acceptance letter, entitled, 16 "Mechanical couplers for steel reinforcing bars without 17 ductility requirements" -- that's DD8/10940-10942 -- did 18 not require a QSP for type I couplers for rebars without 19 ductility requirements. But, having regard to the terms 20 of the letter I've just referred you to, MTR accepts 21 that the QSP applied to the ductility requirements in 22 the diaphragm walls, as shown in the accepted drawings. 23 So that's two of the structures. What about the 24 third one, the North Approach Tunnel? Here, the 25 acceptance letter dated 5 November 2014 applied to the</p>	<p>1 couplers were used at NAT and no couplers were used at 2 HHS. Thus, QSP does not apply to coupler installation 3 works at NAT and HHS." 4 Now, the situation is that Atkins did not specify 5 any couplers with ductility requirements in the accepted 6 design for the North Approach Tunnel, and as such no 7 quality supervision applied to those works. 8 But, having said that, when the stitch joints were 9 reconstructed, heightened supervision requirements were 10 in fact applied in the light of the nature and extent of 11 the defective workmanship identified by MTR. But that, 12 I emphasise, should not be conflated with the position 13 regarding the original works, which of course was 14 governed strictly by the acceptance letters that I have 15 just referred you to. 16 Moving on to another topic that I would like to say 17 just a little about -- you have heard something about it 18 already -- but it's MTR's material submission and 19 sampling process. You will not be surprised to hear, 20 and you have probably read about it already, that MTR 21 implemented a contractual material submission and 22 sampling process in order to control the quality of 23 materials used in the SCL project. This process 24 covered, amongst other things, the rebars and couplers 25 which were used for the construction of the NAT, the SAT</p>

<p style="text-align: right;">Page 69</p> <p>1 and the stabling sidings. 2 What did it involve? Well, in summary, it was as 3 follows. Clause 15.3.1 of the General Specification for 4 Civil Engineering Works required contractors to submit 5 a materials submission form in respect of the types of 6 rebars and the couplers that they proposed to use. For 7 example, if you were to look at the materials submission 8 forms for the couplers and rebars used in the North 9 Approach Tunnel -- that's BB2/1214 to BB3/1659 -- you 10 would see that. 11 What would happen then was that MTR would review the 12 contractor's material submissions by reference to, 13 amongst other things, the acceptance letter issued by 14 the RDO and the BD, and in addition the Materials and 15 Workmanship Specification for Civil Engineering Works. 16 Now, if MTR approved a material submission, what 17 happened next was that the contractor would place the 18 orders with the approved suppliers, and when the rebars 19 and couplers were delivered to site they would then be 20 sampled and tested in accordance with two documents, the 21 provisions of two documents: firstly, section X of the 22 Materials and Workmanship Specification for Civil 23 Engineering Works; and, secondly, the Construction 24 Standard on Carbon Steel Bars for Reinforcement of 25 Concrete. The reference there is BB2/1178-1213.</p>	<p style="text-align: right;">Page 71</p> <p>1 moreover, the results of all the steel bar tests entered 2 into the material testing system were recorded as 3 a "pass". That's BB2/543-1040. 4 Against that background, I'd like to say a little 5 bit more about the issues which form the subject of this 6 part of the reference, so I turn to issues 1 and 2, 7 defective stitch joints and the shunt neck construction 8 joint at the North Approach Tunnel. 9 First of all, I want to say a little bit about the 10 investigation and remedying of the defective stitch 11 joints in 2018. Here, it bears emphasis that as set out 12 in section II of the report on defective works 13 identified at the tunnel stitch joints -- now, that was 14 dated 26 March 2018; it's located in the bundle at 15 AA1/57, in particular at page 58 -- what happened was 16 that MTR observed water seepage at the newly completed 17 North South Line stitch joint during routine site 18 surveillance. 19 Consequently, and after the leak was found, from 20 October 2017 Leighton carried out cement and what's 21 referred to as PU grouting works -- and I understand 22 that that's a specialised grouting technique that 23 involves the injection of expanding polyurethane to stop 24 any water flowing down or through cracks, to fill voids 25 under slabs, concrete joints, or behind concrete walls</p>
<p style="text-align: right;">Page 70</p> <p>1 It's important to note that MTR's team of inspectors 2 of works and work supervisors as well as Leighton's 3 construction engineering team were involved in the 4 material sampling process. As far as this testing and 5 sampling is concerned, even though it has to be accepted 6 that there are gaps in the RISC form records, the sample 7 details were nevertheless recorded in what's referred to 8 as steel test requests. These were submitted by 9 Leighton on MTR's material testing system to MTR, and 10 based on each steel test request Leighton would attach 11 an orange tag, with a unique steel test request tie 12 number, to each specimen. Then what happened next was 13 that the inspectors of works would then verify and 14 confirm the steel test request form on the material 15 testing system, in order to enable Leighton to deliver 16 the specimens to MTR's designated laboratory for 17 testing. 18 Now, we've got evidence on this, and importantly the 19 evidence of MTR's inspectorate staff, in particular Tony 20 Tang -- that's BB1/137 -- and a Mr Tung Hiu Yeung -- 21 BB8/5260 -- as well, I emphasise, as Leighton's 22 construction team, is that so far as they are aware, 23 firstly, the rebars used under contract 1112, including 24 the three stitch joints and the shunt neck construction 25 joint, were both acceptable and compliant. And,</p>	<p style="text-align: right;">Page 72</p> <p>1 and joints. 2 Now, unfortunately, these grouting works did not 3 effectively resolve the water seepage, and as a result, 4 from 6 to 8 February 2018, MTR instructed Leighton to 5 chip off the concrete at three locations, to expose the 6 rebars at Mr Pennicott's joint 1 for further 7 investigation. 8 This chipping off revealed that some of the rebars 9 at the stitch joints were not properly spliced and, 10 moreover, were only slotted into the couplers. 11 Then further investigations from 9 to 12 February at 12 joints 2 and 3 revealed similar defects in the coupler 13 splicing assemblies. Not surprisingly, you might think, 14 as a result of these investigations, MTR issued three 15 non-conformance reports to Leighton to record Leighton's 16 defective workmanship, and these were as follows: NCR066 17 dated 22 December 2017 was issued in respect of joint 1, 18 that was BB7/5087-5098; NCR095 dated 9 February 2018 was 19 issued in respect of both joints 1 and joint 3, that's 20 BB7/5099-5111; and last but not least, NCR096, dated 21 14 March 2018, was issued in respect of joint 2, and 22 that's BB7/5112-5115. 23 Now, Leightons carried out the necessary remedial 24 works from March to July 2018, as to which these 25 remedial works, you will not be surprised to hear, were</p>

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<p>1 governed by various method statements. These can be                  2 found at BB7/4717 through to 4737; CC3/1914 through to                  3 1972; and, finally, BB7/4778-4843. They make rather                  4 turgid reading. I don't intend to take you there at the                  5 moment.                  6 But what I can tell you is that where the existing                  7 couplers were damaged or could not be reused, post-drill                  8 rebars or couplers were installed, using what is                  9 referred to as Hilti 200 injectable mortar. But if the                  10 existing couplers could be reused, appropriate lapping                  11 rebars were screwed into the couplers.                  12 And MTR, having found these defects, implemented                  13 a quality assurance and control system for the remedial                  14 works. The remedial works were subject firstly to                  15 hold-point inspections by MTR's inspectorate staff, and                  16 these inspections were recorded in both the RISC forms                  17 and record photographs. That's a matter spoken to by                  18 MTR's Mr Jacky Lee, see in particular paragraph 30 of                  19 his statement. That's BB102-103.                  20 The finally updated versions of the QSP for the BOSA                  21 type II couplers and the Lenton couplers were submitted                  22 by MTR to RDO by a letter dated 26 March 2018. That's                  23 BB7/4424-4459. And the quality assurance scheme was                  24 submitted to RDO by letter dated 27 July 2018. That's                  25 BB7/4460-4716.</p>	<p>1 On this basis, NCRs 066 and 096 and 095 were all                  2 closed out, the first two on 5 September 2018 and the                  3 last one, 095, on 28 June 2018.                  4 Given the importance of the quality and structural                  5 safety of the remedial works to MTR, I point out that in                  6 the period 22 March to 1 June 2018, Mr Aidan Rooney, the                  7 general manager for the SCL project, who gave evidence                  8 before you last time, deployed an independent quality                  9 control team on site.                  10 This team consisted of a senior construction                  11 engineer, a senior inspector of works, and two                  12 construction engineers. None of these engineers, none                  13 of these persons, had had any prior involvement with                  14 either contract 1111 or contract 1112. They wanted                  15 a clean slate.                  16 Now, these people oversaw the remedial works for the                  17 defective stitch joints every day, and they witnessed                  18 the hold-point inspections for the rectification works                  19 which were recorded in RISC forms, including, for                  20 example, the remedial works to the top slab. And as                  21 a reference to that, I'd invite your attention in due                  22 course to paragraph 30 of MTR Jacky Lee's statement.                  23 That's BB102-103. And as to the remedial works to the                  24 top slab, that's RISC form 12832, BB400.                  25 My learned junior has pointed out that perhaps</p>
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<p>1 Now, I emphasise that in accordance with the BOSA                  2 and the Lenton QSPs, firstly the technically competent                  3 persons -- a term you've heard before -- identified in                  4 the site supervision plans were also responsible for the                  5 quality control of the remedial works. Specifically,                  6 MTR was responsible for inspecting 20 per cent of the                  7 splicing assemblies, whereby Leightons were responsible                  8 for providing full-time and continuous supervision.                  9 Now, whilst this was going on, previously, by                  10 a letter dated 22 March 2018, MTR had submitted the                  11 updated site supervision plans to RDO -- that's                  12 BB7/4844-4874 -- and they had also identified the                  13 relevant technically competent persons for the                  14 supervision and inspection of the remedial works.                  15 It didn't stop there though, because these site                  16 supervision plans were further updated by MTR's letters                  17 dated 14 June 2018 -- that's BB7/4875-4899 -- and                  18 a letter dated 21 August 2018; that's BB7/4900-4916.                  19 And Leighton has duly signed and MTR has kept and                  20 countersigned both the BOSA and the Lenton coupler                  21 checklists -- they can be seen at BB7/4278 through to                  22 4389 -- and, it bears emphasis, the BOSA and the Lenton                  23 thread preparation records; that's BB7/4917 through to                  24 4956. That's to ensure compliance with the BOSA and the                  25 Lenton quality supervision plans.</p>	<p>1 I ought to say that the RISC form 12832 responds                  2 specifically I think to Prof Hansford's point about                  3 a missing RISC form. In fact, that is the relevant RISC                  4 form for it. We could turn it up but I don't think                  5 there's any need to do that at the moment unless you                  6 would have me do so.                  7 This inspectorate team worked very closely with the                  8 MTR inspectorate staff on site and they also provided                  9 daily reports containing observations and                  10 recommendations that Aidan Rooney considered and                  11 followed up on, where appropriate, in the light of                  12 actual site conditions.                  13 What about submitting a report on all of this?                  14 Well, MTR submitted a report on the eighth design                  15 amendment for the NAT tunnel structures, NSL Tunnel,                  16 East West Line Tunnel, stitch joint remedial details,                  17 and it was referred to as "deliverable no. 3 13B" by                  18 a letter dated 15 February 2019 to the RDO. That's                  19 BB6/3678 through to 4214. And the purpose of this was                  20 to keep the RDO appraised of the nature and locations of                  21 the remedial works carried out by Leighton, but also to                  22 provide the RDO with the as-built records of the                  23 drill-in holes and the reused couplers.                  24 I'm happy to say that the RDO's letter of 4 April                  25 2019 -- that's BB6/4275 through to 4277 -- formally</p>

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<p>1 accepted the design amendments. The current position is 2 that MTR has requested Leighton to provide all details, 3 records and information relating to these defective 4 stitch joints, and the purpose of this is twofold: so 5 that it can, firstly, fully investigate the safety and 6 quality of Leighton's works; and, secondly, the causes 7 of the defective stitch joints to which Leighton 8 responded.</p> <p>9 Now, that was not the end of the matter, because in 10 or around mid-February 2019, MTR's inspectors identified 11 further water seepage at the stitch joints. This, as 12 you might expect, was recorded in a snag list as well as 13 in a number of RISC forms, which also contained 14 photographic records; bundle reference BB7/4959 through 15 to 5066. Unfortunately, thereafter, further water 16 seepage was observed in the period March through to 17 April 2019 and various grouting injection works were 18 carried out with a view to rectifying the same.</p> <p>19 As at 18 April 2019, just over a month ago, there 20 was still one location with, I emphasise, minor water 21 leakage. The current situation, to respond specifically 22 to a point made by my learned friend Mr Pennicott in 23 paragraph 73 of the Commission of Inquiry written 24 opening, is that there are no other technical 25 investigations on this matter, apart from the two North</p>	<p>1 pending Leighton's remedial works.</p> <p>2 The current situation is that the resubmission of 3 the remedial proposal was made to RDO on 29 April 2019, 4 and RDO's acceptance or otherwise of that remedial 5 proposal is still awaited.</p> <p>6 I now, having identified the defect and the remedial 7 work, would like to say just a little bit about MTR's 8 position on the defective coupler splicing assemblies in 9 the three stitch joints. I should say immediately that 10 MTR does not accept that there are any design issues 11 involved in respect of the three stitch joints, 12 certainly so far as the defects are concerned, and you 13 may well recall, sirs, that MTR's position on this, ie 14 on no design issue, was set out in some detail in 15 Mayer Brown's letter to the Commission of Inquiry, dated 16 3 May 2019, when it served its first-round witness 17 statements. That's paragraph 6 of the letter, and the 18 letter can be found in the bundle at BB1/62. Quite 19 frankly, I have nothing further to say than what's set 20 out in the letter.</p> <p>21 Now, MTR contends that in the light of the existing 22 evidence, effective coupler splicing assemblies at the 23 three stitch joints, and indeed at the shunt neck 24 construction joint, are attributable to the defective 25 workmanship of Leighton and/or its sub-contractor, Wing</p>
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<p>1 Approach Tunnel reports. MTR is carrying out ongoing 2 investigations and follow-up works in respect of water 3 seepage at the stitch joints, and, as you would expect, 4 will provide the Commission of Inquiry with further 5 information as and when it becomes available.</p> <p>6 So that's the stitch joints. What about the shunt 7 neck? As set out in section III of a report entitled, 8 "Shunt neck connection report at 1111/1112 interface of 9 NAT structure contract 1112" dated 26 October 2018, at 10 DD1/3864 through to 3865, what it says is, in summary: 11 the shunt neck structure was completed in May 2017. 12 During the site inspections for the energisation of the 13 overhead line at or about the end of 2017, MTR observed 14 minor cracks in the shunt neck structure. On 6 March 15 2018, MTR instructed Leighton to chip off the concrete 16 at the three locations to expose the rebars at the shunt 17 neck construction joint for investigation, and these 18 investigations revealed that some of the rebars at the 19 construction joint were, unfortunately, just like the 20 stitch joints, not properly spliced and only slotted 21 into the couplers.</p> <p>22 Again, MTR raised a non-conformance report, in this 23 case number 267, and issued that to Leighton on 24 30 October 2018. That's DD2/1103 through to 1105. And 25 that non-conformance report remains open to this day,</p>	<p>1 &amp; Kwong. We would say that if it be the case that the 2 defective coupler assemblies were due to any mismatch 3 between the rebars used by Leighton and the Lenton 4 couplers at the contracts 1111/1112 interfaces at the 5 stitch joint and the shunt neck construction joint, it 6 was incumbent on Leighton to address the issue.</p> <p>7 Why do I say that? I say that for a number of 8 reasons. Firstly, Leighton were well aware of the fact 9 that Lenton couplers and not BOSA couplers were used, 10 were going to be used, by GKJV at the contract 1111 side 11 of the 1111/1112 interfaces; and, moreover, the fact 12 that BOSA T40 rebars, which we have heard were not 13 taper-threaded and in fact the exhibits have turned up, 14 we've got the exhibits to show you later today if 15 necessary, could not be screwed into the Lenton 16 couplers.</p> <p>17 What's the evidence here? Both Leighton's Mr Karl 18 Speed and Mr Joe Tam accept that certain members of 19 Leighton's construction and engineering team were aware 20 of this, because it was specifically and extensively 21 discussed at numerous contract 1111/1112 interface 22 meetings between 2014 and 2017. That was a point that 23 I think Mr Tsoi referred to yesterday.</p> <p>24 In that regard, in due course, I'm sure we will go 25 back to the minutes of these meetings, that's at</p>

<p style="text-align: right;">Page 81</p> <p>1 BB3/1678 through to 1795, which record that the material 2 related submission form for Lenton couplers was tabled 3 by GKJV, and Leighton said it would check with their 4 supplier regarding compatibility at a later stage. 5 It was discovered in July 2017 that perhaps, not 6 surprisingly, the parallel threaded BOSA T40 rebars 7 could not be fully screwed into the Lenton couplers 8 which required tapered threads. But, according to Wing 9 &amp; Kwong's evidence -- and we heard some of this 10 yesterday -- Leightons instructed Wing &amp; Kwong to carry 11 on with the parallel threaded rebars, as there was not 12 enough time to rethread the rebar. I think we saw both 13 of these letters yesterday but a couple of Wing &amp; Kwong 14 letters which are to that effect can be found at 15 CC3/1358 and CC3/1363. 16 What ought to have happened, we say, is that any 17 incompatibility issues between the rebars procured by 18 Leightons and the couplers exposed at the stitch joint 19 interfaces -- first of all, the matter ought to have 20 been raised with MTR promptly, and then resolved, 21 resolved at the time, for example by Leightons ordering 22 the correct Lenton threaded rebars for the 23 contract 1111/1112 interfaces. But, in the event, 24 Leighton gave no such complaint or notification, at the 25 time when the stitch joints were constructed.</p>	<p style="text-align: right;">Page 83</p> <p>1 three stitch joints and the shunt neck construction 2 joint activities in the course of his day-to-day site 3 surveillance activities. He had also carried out the 4 pre-pour checks. His statement is at BB/129-130. It's 5 essentially paragraphs 33 to 36. 6 Not surprisingly, you might think, he says that he 7 would raise objections with Leightons if couplers were 8 not properly installed, but in fact none were identified 9 at the time. 10 You will also hear from a Mr Chris Chan in due 11 course. His statement, the relevant part thereof, are 12 paragraphs 22 to 25. That's BB116-117. He tells the 13 Commission of Inquiry that his regular site surveillance 14 also covered the three stitch joints and the shunt neck 15 construction joint, but he was never asked by anyone at 16 Leighton to conduct formal inspections of such areas. 17 As I've said, we will hear from those witnesses in 18 due course, and no doubt their evidence will be tested 19 as appropriate. 20 I now want to move on to issue 3(a), and essentially 21 there are two elements in issue 3, and the first 22 I describe as 3(a), and that's the alleged lack of 23 inspection and supervisory records. 24 First of all, MTR accepts that there are gaps in the 25 RISC form records in respect of the hold-point</p>
<p style="text-align: right;">Page 82</p> <p>1 Now, defective coupler splicing assemblies were also 2 identified at the contract 1112/1112 North Line stitch 3 joint, that's Mr Pennicott's joint 2; and the 4 contract 1112 side of the contracts 1111/1112 5 interfaces, that's Mr Pennicott's joints 1 and 3. But 6 there was no issue of mismatch given that only BOSA 7 couplers and rebars were adopted on contract 1112. So 8 we would say, again, that this problem was obviously 9 attributable to Leighton's defective workmanship. 10 Now, the necessary remedial works have already been 11 carried out in respect of the defective coupler 12 assemblies in the stitch joints, and on the current 13 evidence there are no concerns with the overall 14 structural safety or indeed the integrity of NAT, SAT or 15 the Hung Hom Stabling Sidings. I also point out in this 16 regard that they show no signs of discretion, and 17 there's no signs of distress in other structures either. 18 That's confirmed by Pypun's recent site inspections. 19 I now come to quite an important matter, and that is 20 what was MTR's involvement in the construction of the 21 stitch joints and the shunt neck construction joint? 22 Here -- and we will hear about this in due course, so 23 I'm not going to spend too long on it -- MTR's relevant 24 evidence is to the effect that, firstly, MTR's Tony 25 Tang, he would inspect the rebar fixing works at the</p>	<p style="text-align: right;">Page 84</p> <p>1 inspections carried out at NAT, other than in the North 2 Fan Area where the RISC forms are generally in order. 3 There are also gaps at SAT and also at the Hung Hom 4 Stabling Sidings. 5 So what's the current situation? MTR has conducted 6 a number of searches to identify the RISC forms which 7 appear to be missing. At the moment, there are 138 8 outstanding NCRs in relation to the missing RISC forms 9 for these three structures. As you can imagine, the 10 position is constantly being reviewed. 11 Of these NCRs, numbers 204 through to 217, and 246 12 through to 247 specifically related to missing RISC 13 forms for the three stitch joints, although it's 14 expected that these NCRs will be closed out upon the 15 completion of all the remedial works. 16 In this context, what does the evidence tell us? 17 The evidence at the moment tells us that the gaps in the 18 RISC forms were occasioned by Leighton's omissions 19 during the construction works, and this unfortunately 20 was the case despite MTR's repeated complaints to 21 Leighton, through its construction management team, in 22 the period 2014 to 2017. You will read evidence about 23 that in due course. 24 As I touched upon already, and you have heard from 25 one or two of my learned friends, the reality of the</p>

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<p>1 situation is that Leighton's paperwork was persistently 2 behind the actual progress of the works, and that meant 3 that RISC forms, if served at all, were very late. 4 We've heard that this was due to a lack of resources, 5 and where the RISC forms were only received after the 6 relevant hold-point inspections, the MTR construction 7 engineers and inspectors of works tell you that they 8 often marked the RISC forms as late submissions -- if 9 you look at them, you can see that written on some of 10 them -- and indeed record the date and time of the 11 inspections by reference to record photos they had 12 taken. 13 But it didn't stop there because, in addition, the 14 MTR inspectors of works created WhatsApp groups, and 15 these WhatsApp groups served to illustrate and record 16 the issues with the RISC forms, including the modus 17 operandi of the hold-point inspection process. 18 What happened in the field? Well, the reality was 19 that MTR say that had it insisted on receiving all of 20 the RISC forms before the works were allowed to proceed, 21 there would have been significant and unacceptable 22 delays to all of the works. So what should they do? 23 Well, MTR's construction engineers and inspectors of 24 works tell you that they adopted a collaborative 25 approach and acceded to Leighton's verbal requests for</p>	<p>1 kept in the form of daily photographs by the inspector 2 of works. 3 Sir, I see the time. I've got a little bit more to 4 do. That would be a convenient moment because I'm 5 moving on to a slightly different topic, if that's 6 convenient for you. 7 CHAIRMAN: That sounds excellent. Thank you very much 8 indeed. 9 MR BOULDING: Thank you very much. 10 CHAIRMAN: So you will be, it looks like, about quarter of 11 an hour or so, 20 minutes maybe? 12 MR BOULDING: Yes. 13 CHAIRMAN: Mr Clayton, then you will follow. 14 MR CLAYTON: I think I will be about ten minutes, subject to 15 any questions from the tribunal. 16 CHAIRMAN: Good. Thank you. 17 Then, Mr Pennicott? 18 MR PENNICOTT: We've got Mr Pun from Fang Sheung standing by 19 to give evidence later this afternoon. 20 CHAIRMAN: Good. Thank you very much indeed. 21 What time should we start? I'm happy to start 22 that little bit earlier. 23 MR PENNICOTT: I think, given the indication that both 24 Mr Boulding and Mr Clayton have given, we are okay to 25 start at 2.30.</p>
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<p>1 hold-point inspections. But having adopted that 2 approach, they relied, in good faith, on Leighton's 3 assurance that the requisite paperwork had been 4 submitted or would be made good subsequently, which 5 unfortunately often turned out not to be the case. 6 But did this lack of a RISC form mean no inspection? 7 Fortunately, that question is answered in the negative. 8 That's answered in the negative because MTR's evidence 9 is that their construction engineers and inspectors of 10 works carried out the necessary hold-point inspections 11 and gave permission to Leightons before the work 12 proceeded to the next stage; and, moreover, 13 specifically, pre-pour checks were only carried out 14 after the rebar fixing inspections had been carried out, 15 and they say it would have been very difficult, if not 16 impossible, for any of the works to proceed beyond the 17 rebar fixing and the pre-pour check hold points without 18 any prior permission from MTR being sought and obtained. 19 And MTR, in this regard, they are not a voice in the 20 wilderness, because MTR's evidence is entirely 21 consistent with the evidence of Leighton and indeed Wing 22 &amp; Kwong's sub-sub-contractor, Loyal Ease Engineering 23 Ltd, and of course they are not the only records, 24 because contemporaneous records of the construction 25 works and the inspection works carried out by MTR were</p>	<p>1 CHAIRMAN: Good. 2.30. 2 (1.03 pm) 3 (The luncheon adjournment) 4 (2.32 pm) 5 MR BOULDING: Good afternoon, sir. Good afternoon, 6 Professor. There are just two or three further matters 7 I would like to address you on. Before the luncheon 8 adjournment I was telling you that notwithstanding the 9 absence of RISC forms, the necessary inspections still 10 took place. 11 In this respect, I anticipate the evidence of 12 Dr Peter Ewen, MTR's engineering director, who is coming 13 along to give evidence in due course. He tells you, and 14 will explain in further detail when he takes the witness 15 stand, that the well-known consultancy firm of WSP has 16 been engaged as an independent audit consultant to 17 verify that the works in the NAT, the SAT and the HHS 18 were indeed properly inspected in terms of hold points, 19 even though there's an absence of full RISC forms. 20 In terms of what it involved, the audit was as 21 follows. It involved WSP reviewing the RISC forms 22 provided by MTR for any inconsistencies or 23 irregularities. But even where there were no RISC forms 24 available for audit, WSP carried out various further 25 investigations with a view to establishing whether or</p>

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<p>1 not the necessary inspections had been made, and this 2 involved evaluating supplementary documentation such as 3 photographs and site diaries, to determine whether or 4 not there was sufficient evidence of hold-point 5 inspections having taken place.</p> <p>6 Against that background and utilising that 7 information, they adopted a colour coding to record the 8 results of their audit: red, no supporting materials; 9 yellow, insufficient supporting materials; green, 10 sufficient supporting materials to confirm that the 11 necessary inspections had in fact been made. This 12 resulted in WSP preparing a report for both the NAT and 13 the SAT. They were both dated 15 May. The NAT report 14 is at BB11/7625 through to 7646, and that for SAT is at 15 BB13/9199 through to 9218.</p> <p>16 Consistent, I emphasise, with MTR's factual 17 evidence, and of course the evidence from Leighton, 18 WSP's reports demonstrate that it has assigned green 19 audit results for most -- I emphasise "most" -- of the 20 essential hold-point inspections on key structural 21 elements of the North Approach Tunnel and for all of the 22 essential hold-point inspections for the South Approach 23 Tunnel.</p> <p>24 At the moment, not least because of its size, the 25 report for the Hung Hom Stabling Sidings is still being</p>	<p>1 So what are they? First of all, there's the 2 digitalisation of the site inspection process and the 3 adoption of a building information modelling scheme, 4 otherwise known as BIM. That's going to be introduced 5 and it's being overseen by the project digitalisation 6 taskforce. It involves the introduction of various 7 measures, firstly iComm -- this, I'm told, is an instant 8 messaging tool; iSuper, that's an intelligent 9 supervision tool for the digitalisation of, amongst 10 other things, the RISC form process, non-conformance 11 reports and site diaries; and, last but not least, 12 something called iRISC -- this is underpinned by iSuper 13 and keeps track of the number of RISC forms that have to 14 be submitted.</p> <p>15 What's the effect of all this? It's confidently 16 predicted that these measures will enable the frontline 17 staff to complete the record-keeping process digitally 18 and reduce the risk of records being missed.</p> <p>19 In addition, there is going to be better training. 20 MTR's frontline staff are receiving enhanced training 21 for better PIMS implementation, and all of this is going 22 to be overseen by MTR's newly established project 23 division quality working group. This training, overseen 24 by this group, has involved all of MTR's frontline 25 project staff attending a PIMS training module between</p>
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<p>1 prepared, but obviously it will be furnished to you and 2 of course the other interested parties as soon as it is 3 available.</p> <p>4 You heard last time that MTR are always seeking to 5 improve themselves, and you will probably recall that it 6 was common ground between the project management experts 7 last time that there is no project management system 8 that could avoid any and all mistakes during the 9 construction process. I don't want to sound like 10 a cracked record but notwithstanding that fact, MTR is 11 constantly seeking to develop and improve its project 12 management system. The recommendations canvassed by 13 Turner &amp; Townsend and Mr Steve Huyghe and your own 14 Mr Steve Rowsell, which you heard so much about last 15 time, are continuously being implemented by MTR's 16 cross-disciplinary special taskforce; again, a matter to 17 which Dr Peter Ewen speaks.</p> <p>18 An interim health check by Turner &amp; Townsend is 19 scheduled for about now, and in addition I can tell you 20 that the following measures are either in place or to be 21 put in place with a view to addressing the project 22 management issues which are relevant to this extended 23 Commission of Inquiry, and MTR and its advisers are 24 confident that they will satisfactorily address any 25 failings.</p>	<p>1 the end of 2018 and the first quarter of 2019. But it 2 doesn't stop there because that's been followed by more 3 specific job training.</p> <p>4 You heard about the three lines of defence policy 5 last time. I'm not going to go into that in detail, but 6 I can tell you that that's been re-formulated and 7 enhanced, and it's going to be introduced, rolled out, 8 through 2019.</p> <p>9 Last but not least, a PIMS review panel has been 10 established, and in or around the second half of 2019, 11 about June, I'm told, an external consultant will be 12 appointed to oversee the complete overhaul of the PIMS 13 in line with Turner &amp; Townsend's recommendations. You 14 will hear, as I've said, more about that from Dr Peter 15 Ewen in due course.</p> <p>16 I told you that there were two parts to issue 3. 17 I've dealt with the first part, that was RISC forms. 18 The second point is the alleged deviation to the change 19 or the change from lapped bars to coupler connections at 20 the construction joints, and that was in the North 21 Approach Tunnel, the South Approach Tunnel, and the 22 Hung Hom Stabling Sidings.</p> <p>23 Now, what happened here, according to the evidence 24 of both Leighton and indeed MTR, is that during the 25 construction of these elements of the structure, and to</p>

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<p>1 firstly suit site conditions, and secondly accommodate 2 the coordination and programme sequence of the works, 3 coupler connections were introduced instead of lapped 4 bars at a number of slab-to-slab wall construction 5 joints. 6 How and why did this occur? The relevant evidence 7 comes in particular from Mr Kit Chan -- you have heard 8 from him before -- MTR's former construction manager, 9 and he says that at the design stage of the works, and 10 in accordance with convention and common practice within 11 the construction industry, no consideration was given to 12 coordination, programming or sequencing issues, for 13 either the North Approach Tunnel, South Approach Tunnel 14 or the stabling sidings. He tells us that such 15 coordination, programming and sequencing would typically 16 arise for consideration during the construction phase of 17 the works, when the structure is being progressively 18 built and the work areas become increasingly congested. 19 Why is that? He says it's at this stage that the 20 clashes and other coordination sequencing issues which 21 arise on a site -- it's at that stage that they arise, 22 and not only do they arise but they have to be resolved, 23 and they have to be resolved to take account of or suit 24 site conditions. 25 Certainly one reason for the change to coupler</p>	<p>1 paragraph 8.7.1 of the Code of Practice for Structural 2 Use of Concrete, 2004, second edition. That's H8/2946. 3 MTR contends that this is equally applicable to the 4 change from lapped rebars to couplers in the NAT, the 5 SAT and the HHSS; and, moreover, we point out that such 6 fact is expressly acknowledged in government's evidence. 7 In this regard, we have in mind paragraph 40 of the 8 second witness statement of Mr Lok Pui Fai. In summary, 9 he says, and to quote: 10 "Couplers is an alternative splicing method as 11 stipulated ..." 12 And then he refers to the 2004 Code of Practice that 13 I just identified for you. 14 This is where appendix 7 to the project management 15 plan is relevant. It is, I think, the only document 16 that I'm going to flash up on the screen, just to show 17 you what I'm talking about. Appendix 7 of the PMP dated 18 June 2016, which was submitted to the Buildings 19 Department and the Railway Development Office on 20 June 20 2016, can be found at B4/2475. 21 Let's just see what it says at the top: "Flow chart 22 for design management and assurance procedure". Then if 23 we scroll down, please, and we can see it's a flow 24 chart. What the evidence is going to tell you in due 25 course, Commissioners, is that this change falls within</p>
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<p>1 connections was, as you have possibly read, to form 2 an opening and a permanent structure for the provision 3 of a temporary site access for a short period of time. 4 This could not have been achieved if the structure 5 was built with lapped bars and concreted all at the same 6 time. I'm told, and Mr Kit Chan tells you, that this is 7 a very common practice in construction and engineering 8 projects like the SCL project, and not only does he tell 9 you that but I repeat it because it's important, this 10 reason for the change and the way in fact the change was 11 implemented on site is entirely consistent with the 12 evidence of both Leighton and its sub-sub-contractor, 13 Loyal Ease Engineering Ltd. 14 Now, in the context of this change -- and I'm sure 15 you will remember this -- you have received expert 16 evidence from Prof Don McQuillan. See, for example, 17 paragraph 53 of his expert report. That's ER1/3/28. 18 His evidence was given in the context of the change 19 which was under consideration in part 1 of the 20 Commission of Inquiry. That of course related to the 21 change in connection details in the east diaphragm wall 22 of the East West Line slab. I'm sure you will recall 23 that he confirmed that couplers or welding can indeed be 24 used in lieu of lapped rebars and vice versa; and, 25 moreover, that such a use was contemplated by</p>	<p>1 the rhombus entitled, "Amendments necessary to suit site 2 condition?" Not only that, but it's a minor change, and 3 MTR and indeed Leighton contend it need not be the 4 subject of design and consultation submissions; unless 5 it be the case, and this is clear from the flow chart, 6 that the amendment does not conform to MTR's design 7 standards, manuals or specifications, and we say that 8 they do. 9 COMMISSIONER HANSFORD: Sorry, Mr Boulding, is that the 10 "Yes" and "No" on this diagram? 11 MR BOULDING: Yes, absolutely rights. 12 COMMISSIONER HANSFORD: So what does "Yes" mean? 13 MR BOULDING: If amendments are necessary to suit site 14 conditions, you then -- if the answer to that is "Yes", 15 which we would say it is, you then get shunted back to 16 "Conform to DSM/specification?", and we would say that 17 they do. So then you go down through the lines again 18 and you go straight through the "Amendments necessary to 19 suit site condition?", because obviously there are no 20 further amendments required. "Construction in 21 accordance with working drawings?" -- we certainly say 22 they are not in contravention of the working drawings, 23 and in those circumstances the only obligation is to 24 record the change in the as-built records, as to which 25 we will have more evidence later.</p>



<p style="text-align: right;">Page 97</p> <p>1 That's really anticipated, that question -- thank 2 you very much indeed -- where I was going next, but 3 I will say that the change had no structural 4 ramifications and, as such, did not have to be recorded 5 as deviations or non-conformances in any non-conformance 6 report, and nor, we would submit, in a RISC form, 7 certainly so long as the couplers used were properly 8 tested and there was no change to the rebar diameter or 9 spacing, which in fact was the case. 10 What government say here is that, "No, no, no, no, 11 appendix 9 of the project management plan applies", as 12 to which we say, with the greatest of respect, that that 13 is misconceived. But we will elaborate upon that in due 14 course in the evidence, and again I suspect in closing 15 submissions. But so far as the current position is 16 concerned, MTR has made a number of requests to Leighton 17 to provide the details and locations of the change from 18 lapped rebars to coupler connections, and Leighton is in 19 the course of preparing the as-constructed drawings. 20 We confirm that the as-constructed conditions of 21 NAT, SAT and HHSS will all fall under the verification 22 proposal of which we have heard so much over the course 23 of the last few weeks and even during the last day or so 24 in this hearing. 25 Paragraph 5.1 of that verification proposal</p>	<p style="text-align: right;">Page 99</p> <p>1 written opening. 2 COMMISSIONER HANSFORD: Some of it you have, actually. But 3 in paragraph 49 on page 17, where you acknowledge there 4 are gaps in the RISC form records, but you say: 5 "This is an administrative/procedural issue, given 6 that RISC forms do not constitute a statutory or 7 regulatory requirement." 8 MR BOULDING: Correct. 9 COMMISSIONER HANSFORD: But they do, of course, constitute 10 part of the quality assurance records, and are you 11 saying, as such, they are an administrative/procedural 12 issue? Are you saying quality assurance records are 13 an administrative/procedural issue? 14 MR BOULDING: In effect, yes, sir, and you will see that the 15 witness statements of government are their reference 16 144, and that statement, certainly as we understand 17 their evidence, is consistent with the evidence of 18 Mr Lok Pui Fai, and he makes two statements to that 19 effect. So there we are. 20 COMMISSIONER HANSFORD: But they are of course part of the 21 quality assurance? 22 MR BOULDING: That's right. 23 COMMISSIONER HANSFORD: Thank you. 24 MR BOULDING: Thank you very much, sir. 25 CHAIRMAN: Good. Thank you, Mr Boulding.</p>
<p style="text-align: right;">Page 98</p> <p>1 describes the proposed approach which is as follows. It 2 can be found at AA/146 through to 147. Part 1a provides 3 for the consolidation and verification of all available 4 construction records to identify the gaps in the 5 records. Part b refers to the formulation and 6 implementation of a proposal for reviewing and 7 ascertaining as-constructed conditions. And part 2 8 provides for a structural review to be conducted and for 9 schematic remedial works and a monitoring scheme to be 10 devised as and where necessary. 11 As always, sir, we undertake to provide you with 12 further relevant information as soon as it becomes 13 available. 14 That's all I wanted to say to you at the moment, 15 sir. I hope you found it helpful. If I can answer any 16 questions, I will endeavour to do so, and of course I'm 17 in the process of taking instructions as to Mr Chow's 18 update that he gave this morning and we will revert as 19 soon as possible. 20 Thank you very much. 21 COMMISSIONER HANSFORD: Mr Boulding, I have one question. 22 In your paragraph 49, on page 17 of your written 23 submission, which you didn't take us to, I don't 24 think -- 25 MR BOULDING: No, I haven't really taken you to any of the</p>	<p style="text-align: right;">Page 100</p> <p>1 Yes, Mr Clayton. 2 Opening submissions by MR CLAYTON 3 MR CLAYTON: I'm most obliged. It now falls for me, the 4 last man on the block, to make the opening. May it 5 please the commission, I, along with those instructing 6 me, MinterEllison, appear for Pypun, the government's 7 consultant. 8 I don't intend to repeat the written opening in oral 9 opening. I would just like to highlight a few matters 10 and obviously answer any matters the Commission might 11 wish to raise with me. 12 Pypun's function was to assist the Highways 13 Department in accordance with the M&amp;V agreement with 14 regard to the construction, testing and commissioning 15 phase of the project. A consideration of Pypun's 16 involvement in respect of the issues raised, it is 17 respectfully submitted, can only be made in the context 18 of its obligations under the M&amp;V agreement. 19 And paragraphs 5 to 12 of Pypun's opening, 20 I believe, set out Pypun's role by reference to the 21 provisions from that agreement. These paragraphs also 22 address one aspect of Pypun's work, site visits and 23 audits, by reference to the relevant entrustment 24 agreement within which Pypun, being the government's 25 consultant, will be operating, as well as by reference</p>

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<p>1 to the M&amp;V agreement. Again, Pypun's performance can 2 only, it is respectfully submitted, be considered in the 3 light of those provisions.</p> <p>4 Obviously -- and this is borne out by the witness 5 statements, both Pypun's and the governments -- Pypun's 6 role assisting the Highways Department was performed in 7 the light of ongoing and frequent discussions at 8 meetings and elsewhere and email and other exchanges 9 between Pypun, Highways Department and the 10 representatives of the Buildings Department who had been 11 seconded to the Highways Department. This would 12 inevitably be a two-way process, with suggestions and 13 input coming from Pypun, the Highways Department, and no 14 doubt the seconded Buildings Department representatives.</p> <p>15 Paragraphs 13 to 16 of Pypun's opening deal with the 16 scale of the SCL project. It is, on any view, 17 extensive. Pypun's involvement was across the whole 18 project, and the Commission is here considering matters 19 arising in respect of one contract.</p> <p>20 Mention has been made of Pypun's obligation to act 21 proactively, and I would like to consider that just 22 briefly in oral opening. Being proactive or not would 23 have to be considered in context, ie in relation to 24 a particular activity or set of activities. There were 25 many different aspects of Pypun's involvement, and</p>	<p>1 Mr Yueng from Pypun, at paragraphs 64 to 66 of his 2 second witness statement -- and that's GG1, pages 38 to 3 39 -- deals with the difference, as he understands it, 4 between the M&amp;V consultant's role for government under 5 the separate MTRCL project, the XRL project, and under 6 this SCL project.</p> <p>7 There was a quality monitoring role under the XRL 8 project for the M&amp;V consultant. That's his evidence. 9 As part of its obligations under its agreement, Mr Yueng 10 also mentions that on the XRL project, he understands 11 a separate team was set up by the M&amp;V consultant there, 12 because of this obligation to monitor quality. Pypun, 13 as additional work, has now undertaken two exercises, in 14 June, July and September 2018, with a final report in 15 December 2018, and there is then the latest report 16 produced a few days ago in relation to the RISC forms. 17 Those are at GG2, pages 442 to 883, and in GG3, in the 18 bundles.</p> <p>19 In those exercises, it's been looking at the RISC 20 forms in relation to some inspections for which they 21 should have been produced only, and under only one 22 contract. One can see how long that took and the 23 products of those exercises.</p> <p>24 It seems to me, and I make this submission, 25 inevitable, in the light of what we can see was involved</p>
<p>Page 102</p> <p>1 different considerations would likely apply in this 2 regard to these different activities.</p> <p>3 Further, it might have, but I'm not suggesting it 4 did happen, Pypun might, on a particular aspect or 5 issue, have put forward proposals that were not then 6 taken up by the Highways Department or the Buildings 7 Department representative on its behalf. Were one 8 considering the question of Pypun being proactive on 9 a particular matter, that would need to be investigated. 10 The point I am trying to make, probably not very well, 11 is that in my respectful submission an investigation 12 would need to be made in the evidence in the context of 13 a particular activity before a view could be formed in 14 relation to Pypun's involvement or indeed I could really 15 address the point in relation to it being proactive.</p> <p>16 Then I move from that to one other point I would 17 like to make. I'd like briefly to look at one other 18 matter in opening, the RISC forms, forming part of 19 MTRCL's quality control documents. Under the M&amp;V 20 agreement, Pypun did not have a quality-checking role. 21 RISC forms were under the MTRCL's scheme of supervision 22 to arise for three matters: inspections, testing and 23 survey checks. The relevant sample form from the PIMS 24 is identified at paragraph 21(2) of Pypun's opening, 25 showing those three matters.</p>	<p>Page 104</p> <p>1 in those exercises, that a quality check, even for RISC 2 forms alone, would require a separate full-time 3 consultant team, to audit the RISC forms alone for the 4 relevant contracts in the SCL project. This was not 5 envisaged by or allowed for, in my respectful 6 submission, in the M&amp;V agreement at all, and indeed, 7 until this problem arose and was identified in 2018, 8 nobody suggested that Pypun should have been looking at 9 RISC forms at all.</p> <p>10 Now, those are the only points I wish to make in 11 opening. Unless the Commission has some questions of 12 me, that's my opening.</p> <p>13 CHAIRMAN: Thank you very much indeed, Mr Clayton. 14 MR CLAYTON: I'm most obliged. 15 MR PENNICOTT: Thank you. Sir, can I thank all my learned 16 friends for their openings. With that, we now move to 17 the evidence.</p> <p>18 Sir, as you are aware, Fang Sheung, although not 19 an involved party, have played a part in the issues, or 20 at least some of the issues, with which the Extended 21 Inquiry is concerned. They do not have their own legal 22 representation, for primarily financial reasons, as they 23 have explained to the Commission.</p> <p>24 In those circumstances, the Commission's legal team 25 felt it appropriate to approach Fang Sheung to obtain</p>

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<p>1 a witness statement or witness statements from relevant 2 personnel. 3 The upshot is that we just have one witness 4 statement from Mr Pun, the sole proprietor of 5 Fang Sheung, and in order not to inconvenience him, as 6 it were, we have taken the view that we should call him 7 first, now. I anticipate he will not be that long, and 8 I would respectfully suggest we just get on with it now, 9 if that is all right with everybody else. 10 CHAIRMAN: Certainly. We have only been sitting for half 11 an hour. 12 MR PENNICOTT: Quite. So somebody, I hope, will fetch 13 Mr Pun. 14 He will be giving his evidence in Cantonese, so 15 I think we need the headphones, or at least those of us 16 who don't speak Cantonese. 17 MR PUN WAI SHAN (affirmed in Cantonese) 18 (All answers given via simultaneous interpreter 19 except where otherwise specified) 20 Examination by MR PENNICOTT 21 MR PENNICOTT: Mr Pun, please sit down. 22 Mr Pun, thank you very much for coming along to give 23 evidence to the Commission this afternoon. I'm sorry if 24 we have been holding you up for most of today. 25 Mr Pun, you have helpfully prepared for us a witness</p>	<p>1 A. Should be start of 2017. 2 Q. Right, so mid-2015 to early 2017? 3 A. Yes. 4 Q. Now, as you have told us before and indeed repeated in 5 this statement, Mr Pun, you are the sole proprietor of 6 Fang Sheung Construction Company? 7 A. Yes. 8 Q. And, so far as this part of the Inquiry is concerned, 9 Fang Sheung was originally engaged by Leighton to do the 10 rebar fixing work in the NAT, that's the North Approach 11 Tunnels, but Leighton switched it around so that you 12 ended up doing the rebar fixing in the South Approach 13 Tunnels; is that correct? 14 A. Correct. 15 Q. The reason you give for that, Mr Pun, in your statement 16 is that it was "due to the constraint posed by the 17 location of rebar yard". I'm reading from paragraph 3. 18 Could you just explain to us a bit more what you 19 mean by "the constraint posed by the location of rebar 20 yard", why that was the reason for the switch? 21 A. Because, our yard was in the south, so it's underground 22 the Hong Kong Coliseum, and if we transport the 23 materials to the north, it would be quite difficult. 24 There was no access at all. So we swapped the 25 positions.</p>
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<p>1 statement, which is in bundle FF at page 9, in the 2 Chinese version, and FF13 in the English version. 3 Do you have the Chinese version in front of you, 4 Mr Pun? 5 A. I do. 6 Q. Can you confirm that that is the witness statement that 7 you have recently prepared for the Commission? 8 A. Yes. 9 Q. If you could go, please, to page FF12, is the signature 10 that we see there yours? 11 A. Yes. 12 Q. Mr Pun, do you confirm that this is the evidence 13 contained in this statement that you wish to give to the 14 Commission? 15 A. Yes. 16 Q. Mr Pun, I understand that there may be one error, slight 17 error, in the witness statement, at paragraph 6. 18 I think it's just a question of dates. 19 Could you look at paragraph 6, please. You say 20 there: 21 "Fang Sheung staff worked at the site for 22 approximately 10 months (excluding the minor piecemeal 23 works at the beginning and at the end) from about 24 mid-2015 to early 2016." 25 Did you want to change those dates, Mr Pun?</p>	<p>1 Q. Okay. Understood. So it was essentially a matter of 2 convenience and it made sense? 3 A. Yes. 4 Q. Mr Pun, previously you told the Commission that you had 5 had little involvement with the platform slab work, and 6 I think we all recall that you left that work largely in 7 the hands of Mr Joe Cheung. Do you remember all of 8 that? 9 A. Yes. 10 Q. But you tell us that so far as the SAT is concerned, you 11 were much more hands-on; is that right? 12 A. Yes. 13 Q. Indeed, you say, in paragraph 5 of your statement, that 14 you were personally responsible for supervising the 15 Fang Sheung workers in the SAT area; is that right? 16 A. Yes. 17 Q. And indeed, further, you attended, you tell us, 18 bi-weekly meetings with Leighton and other 19 sub-contractors. As I understand it, that is 20 specifically in relation to the SAT area; is that right, 21 Mr Pun? 22 A. Progress meetings, yes, about SAT. 23 Q. Could I ask you, please, to look at paragraph 8 of your 24 witness statement. You say there: 25 "During the process of rebar fixing, after</p>

<p style="text-align: right;">Page 109</p> <p>1 Fang Sheung has completed fixing one layer of rebar, MTR 2 and Leighton would have to inspect this layer of rebar 3 and confirm that the work quality of such layer of rebar 4 is up to standard." 5 Do you see that? 6 A. Yes. 7 Q. I don't know whether you will recall but in the first 8 part of the Inquiry, we made a distinction between what 9 was described as one layer of rebar and a mat of rebar 10 which comprised a number of different layers. Do you 11 recall that? 12 A. Yes. 13 Q. Now, when you say here, in this sentence, "fixing one 14 layer of rebar", are you referring literally to one 15 layer, or are you referring to a mat of rebar which may 16 comprise a number of different individual, single 17 layers? 18 A. For SAT, there were fewer rebars, so the layer was the 19 bottom layer of rebars. Because for EW check, even for 20 the bottom there were many layers, and here there was 21 only B1 and B2. There were much less rebars. So, after 22 B1 and B2, the supervisors would come and along. 23 Q. Right. So the inspection would take place after you had 24 done B1 and B2, then the inspection would take place; is 25 that right?</p>	<p style="text-align: right;">Page 111</p> <p>1 be inspecting both the couplers and the rebar? 2 A. Definitely. 3 Q. Do you have any recollection, from your attendance at 4 a typical inspection, as to how long that inspection 5 might take? 6 A. It depends on the situation, whether it is complicated. 7 If it is relatively simple, it would take a very short 8 time. They count the rebars, they look at the couplers, 9 whether the rebars were put in the wrong place, and that 10 would complete the first, initial step. 11 Q. All right. Would, typically, the MTR inspectors or 12 Leighton inspectors have with them any documents, any 13 drawings? 14 A. Yes, they have the drawings. Definitely, they have to 15 have the drawings, when they are looking at the rebars, 16 otherwise they can't check whether the job was done 17 right. They must have the drawings. 18 Q. Right. So let me just press you a little bit further. 19 I appreciate your point that how long it takes rather 20 depends on the exact circumstances, but are we talking 21 somewhere between 15 minutes and an hour, or what are we 22 talking about? 23 A. Normally, it would take half an hour to an hour, that's 24 the minimum, and not a couple of minutes. 25 Q. That's the minimum, half an hour minimum?</p>
<p style="text-align: right;">Page 110</p> <p>1 A. Yes. 2 Q. You go on to tell us, in paragraph 8 of your witness 3 statement, that when those inspections took place by MTR 4 and Leighton, either you personally or one of your 5 colleagues would be in attendance at that inspection. 6 Is that correct? 7 A. Usually, we were present when they inspected the rebars. 8 Q. Right. Would they invite you, would they request you, 9 would they instruct you to be present when the 10 inspection took place? 11 A. We should be there. We should be there. Usually, they 12 invited us. Whether you call it "invited" or "asked us 13 to be there". 14 Q. All right. They requested you to be there? 15 A. In fact, that was our responsibility. There was no need 16 for them to request us. We should be there. 17 Q. Right. The reason that you were there was what? What 18 was the logic of you being present at these inspections? 19 A. The inspection might find something wrong and we had to 20 know immediately and take follow-up action at once. If 21 we did not do it properly, because there were engineers, 22 and if the work was not up to MTR's requirements, it had 23 to be improved at once. 24 Q. Right. Mr Pun, when the MTR and Leighton were doing the 25 inspection, if there were couplers involved, would they</p>	<p style="text-align: right;">Page 112</p> <p>1 A. Minimum, yes. 2 Q. All right. 3 In paragraph 14 of your witness statement, Mr Pun, 4 you describe the process by which the batches of rebar, 5 or rebar within the batches, came to be tested. Do you 6 see that? 7 A. Yes. 8 Q. You say that: 9 "Leighton would notify Fang Sheung whether the test 10 results of the ... samples were satisfactory. If the 11 samples from a batch of rebars could not pass quality 12 testing, the whole batch of rebars could not be used and 13 had to be scrapped." 14 Mr Pun, did it happen very often that the batches 15 would fail the testing procedure? 16 A. Rarely. Rarely were they not passed. 17 Q. Did it happen at all? 18 A. My recollection is that for the rebars that we ordered, 19 none -- in some cases the rebars are rusty on the 20 surface, and Leighton would reject them -- on the 21 surface the rebars are rusty and they have to be 22 rejected. 23 For those that are tested, my recollection is hardly 24 ever did we have them rejected. As to how many, I don't 25 remember. But hardly ever.</p>

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<p>1 Q. All right. Then finally from me, Mr Pun, in the last 2 section of your witness statement -- sorry, the 3 penultimate section of your witness statement, starting 4 at paragraph 16, you refer to the rectification work at 5 the NAT stitch joint; do you see that? 6 A. Yes. 7 Q. And you say that you did not personally have any direct 8 involvement in that work; is that correct? 9 A. That's correct. 10 Q. But what happened, as I understand it, is that you, 11 Fang Sheung, were asked by Leighton to do the remedial 12 work to the stitch joints, and you put Joe Cheung in 13 charge of that; is that correct? 14 A. Yes. In this remedial work, he is an experienced worker 15 leading some of the other workers. 16 Q. Yes. Mr Pun, is it your understanding that when you 17 were asked to do that remedial work, the demolition work 18 which you refer to in your witness statement had already 19 been done and completed by others? 20 A. Yes, correct. Yes, it was clean. 21 MR PENNICOTT: It was clean. Thank you very much. 22 Sir, I have no further questions. I don't know 23 whether anybody else has. 24 CHAIRMAN: Perhaps we can take it -- 25 MR PENNICOTT: It's up to you which order.</p>	<p>1 Anything? 2 COMMISSIONER HANSFORD: No. 3 MR PENNICOTT: Sir, I was right. 4 CHAIRMAN: Yes. 5 MR PENNICOTT: Mr Pun, unless -- you have no further 6 questions? 7 CHAIRMAN: No, no further questions. 8 Mr Pun, thank you very much for your attendance 9 today. It seems your evidence is completed. Our 10 apologies if we kept you waiting. 11 WITNESS: No problem, sir. 12 (The witness was released) 13 MR PENNICOTT: Sir, I think that completes the substantive 14 business for today. 15 However, can I just say this, because I'm not quite 16 sure whether it's gone fully public in the sense that 17 the next timetable has been produced. We've had to have 18 a bit of a rethink on the timetable and the order of the 19 next three to four witnesses. Can I just tell everybody 20 what is going to happen? I have had a brief word with 21 Ms Lau who this directly affects. 22 Sir, we take the view that one of the Leighton 23 witnesses, that is Mr Henry Lai, who is unable to give 24 evidence during the course of next week, although he has 25 kindly indicated that he is available on Saturday, of</p>
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<p>1 CHAIRMAN: We will go from closest to you. 2 Mr Shieh? 3 MR SHIEH: No questions from us. 4 MS LAU: No questions. 5 MR CHOW: One or two questions for Mr Pun. 6 CHAIRMAN: Yes. 7 Cross-examination by MR CHOW 8 MR CHOW: Mr Pun, I appreciate that you mentioned you were 9 more involved in the steel fixing work in the SAT than 10 the platform slab, but we now know that in SAT, we do 11 have similar couplers connection to be done between the 12 slab and the diaphragm wall. Do you recall that? 13 A. Yes. 14 Q. My question is this. From your recollection, insofar as 15 the level of supervision from Leighton's site staff on 16 your coupler connection work, for your work in SAT, is 17 it similar to the level of supervision provided by 18 Leighton in the platform slab? 19 A. Yes, it should be similar. 20 MR CHOW: Thank you very much. 21 Sir, I have no more questions. 22 CHAIRMAN: Mr Boulding? 23 MR BOULDING: No questions, sir. No, thank you. 24 MR CLAYTON: No questions from me, sir. 25 CHAIRMAN: Thank you.</p>	<p>1 which more in a moment, he must give his evidence this 2 week. That is the view that I have taken. 3 As a consequence of that, what is proposed is that 4 Mr Ng Man Chun, or known as Ah Chun, that is the site 5 supervisor from Loyal Ease Engineering, the 6 sub-sub-contractors of Wing &amp; Kwong, will give evidence 7 first, and he will give that starting tomorrow morning 8 at 10 o'clock. 9 He will be followed by Mr Leung, one of his 10 co-workers from Loyal Ease. 11 We are hopeful that the evidence of those two 12 witnesses can be completed during the course of 13 Wednesday and Thursday, and we expect Mr Ng to be much 14 longer than Mr Leung, at which point we will switch to 15 Mr Henry Lai of Leighton, and the remaining Wing &amp; Kwong 16 witness, Mr Ben Cheung, will come after Mr Henry Lai. 17 So, as I say, we do think it very important that the 18 evidence of Mr Leung, Mr Ng and Mr Henry Lai, as best as 19 possible, be kept together in one reasonable package of 20 time. So that's the logic of that. 21 Just a word of warning that Mr Lai is not available 22 beyond Saturday, and if we don't finish him on Friday we 23 are going to be sitting Saturday. That, I'm afraid, is 24 that. 25 CHAIRMAN: There is no echo of a warning there.</p>

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1 Thank you very much. That finishes the business for  
2 today?  
3 MR PENNICOTT: It does, sir. Thank you very much.  
4 CHAIRMAN: And tomorrow morning at 10 am, is that the time  
5 we will have the witnesses?  
6 MR PENNICOTT: Yes.  
7 CHAIRMAN: Thank you all very much. Until 10 am tomorrow.  
8 (3.27 pm)  
9 (The hearing adjourned until 10.00 am the following day)

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