

**Commission of Inquiry into the Diaphragm Wall and Platform Slab Construction  
Works at the Hung Hom Station Extension under the Shatin to Central Link  
Project**

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**WITNESS STATEMENT OF JUSTIN TAYLOR**

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I, JUSTIN TAYLOR, of 39/F Sun Hung Kai Centre, 30 Harbour Road, Hong Kong, say as follows:

1. I am a Risk and Revenue Recovery Manager of Leighton Contractors (Asia) Limited (“**Leighton**”), the main contractor for the Hung Hom Station Extension contract (Contract SCL 1112) (the “**Project**”) under the Shatin-Central rail link project. The project manager for the Project is MTR Corporation Limited (“**MTRCL**”).
2. I make this statement in response to Lo & Lo’s letter dated 10<sup>th</sup> August 2018 (“**Letter of 10<sup>th</sup> August 2018**”).
3. Unless otherwise stated, the facts stated herein are within my personal knowledge and are true. Where the facts and matters stated herein are not within my own knowledge, they are based on the stated sources and are true to the best of my knowledge, information and belief.

**My experience and role on the Project**

4. I am a registered chartered engineer under the Engineering Council of the United Kingdom and a member of The Institute of Materials, Minerals and Mining. I have over 24 years of experience in engineering and construction. I joined Leighton in April 2009.

5. I commenced working on the Project in May 2015 until February 2017. When I first joined the Project, my title was Risk Manager – Hong Kong & Macau. Over the course of the Project, I became the Revenue Recovery Manager where I was responsible for ensuring that Leighton was being paid for any additional work that it was required to do on the Project by MTRCL.
6. I worked with the design engineering team on the Project in relation to the design for the connection between the East West Line platform slab (“EWL Slab”), the eastern diaphragm wall and the slab for the Over Track Exhaust duct (“OTE Slab”) and other design issues. My role involved:
  - (a) preparing and finalising the Existing Building and Structure Impact Reports (which were critical for the next stage of the works);
  - (b) facilitating communication between MTRCL and Leighton’s design engineering team; and
  - (c) initiating and implementing the process of technical queries (“TQ”)<sup>1</sup> under which Leighton would seek advice or input from Atkins<sup>2</sup> on design and constructability questions.<sup>3</sup>
7. While I joined the Project in May 2015, I took sick leave from 24 June 2015 to 14 July 2015. Although I had access to emails during this period, the design engineering team was handling my task while I was on leave.

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<sup>1</sup> Technical Queries are documents which raise requests for clarification from Atkins. They are the primary means by which Leighton seeks Atkins input before making a submission to MTRCL regarding a design change.

<sup>2</sup> Leighton engaged Atkins in 2013 perform temporary works design analysis and prepare submissions to be sent to MTRCL. Typically, the same group of people at Atkins acted as MTRCL’s Detailed Design Consultant and also for Leighton.

<sup>3</sup> Technical Queries are documents which raise requests for clarification from Atkins. They are the primary means by which Leighton seeks Atkins input before making a submission to MTRCL regarding a design change.

## Response to Request of Letter of 10<sup>th</sup> August 2018

8. The relevant text from the Letter of 10<sup>th</sup> August 2018 is as follows:

*“The Commission requires your client, as the main contractor responsible for the construction of the diaphragm walls, to explain and confirm whether your client has carried out the alleged deviation of the as-built conditions from the BD’s approval plans and caused the top of the completed diaphragm walls to be demolished. If so, please explain the reasons for the deviation and why approval of such deviation had not been sought from the BD. Your client should explain how such deviation may affect the structure, integrity and safety of the diaphragm walls and platform slabs. Please also comment on the allegations and matters raised in the Government Press Conference and the MTRCL Press Conference in relation to the diaphragm walls. Authorities relied on by your client should be provided.”*

9. I understand that the Letter of 10<sup>th</sup> August 2018 refers to the use of continuous reinforcement bars (i.e. not connected by couplers) to connect the EWL Slab, the eastern diaphragm wall and the OTE Slab (the “**Change**”).

10. As explained below, the Commission should appreciate the following key points:

- (a) The Change amounts to an improved construction detail, not a change of design;
- (b) Leighton proposed the Change to MTRCL in design submissions;
- (c) MTRCL was fully aware of the Change and supervised the works undertaken to implement the Change;
- (d) Only MTRCL was required to deal with the Buildings Department (“**BD**”) in relation to changes of the permanent works;

- (e) MTRCL took the view that the Change did not require BD's prior consultation or acceptance; and
  - (f) In any event, the Change was notified to, and accepted by, BD.
11. I set out below:
- (a) an explanation of the responsibilities of MTRCL and Leighton in relation to design changes;
  - (b) a chronology of events leading to the implementation of the Change and how Leighton discharged its duties in relation to the Change; and
  - (c) my views on why the works undertaken to implement the Change are safe.

#### **Responsibilities in Relation to Design Changes**

12. I have read the witness statement of Brett Buckland and agree with this contents. I confirm that paragraphs 11 to 20 are an accurate summary of the responsibilities of Leighton, Atkins, and MTRCL in relation any change in the design of the permanent works. I would add to Brett's summary that Leighton was wholly reliant on Atkins to explain BD's views on any design submissions.
13. I agree that the works for the Project are exempt from the usual requirements of the Building Ordinance under the Instrument of Exemption (the "IoE") (numbered LCAL.R1.145 in the Index of Documents disclosed to the Commission (the "Index").<sup>4</sup> In any event, even if there was an obligation to obtain BD's approval for any change in the works (which there is not because of the IoE), I agree that under Practice Note for Authorised Persons PNAP ADM-19 (numbered

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<sup>4</sup> Please refer to Section P2 of Particular Specification which states that the IoE applies to the Project.

LCAL.R6.06 in the Index) there is no obligation to seek BD's prior approval or consent to a change in detail that does not affect the overall stability of a structure.

14. In summary, the key responsibilities of the parties regarding design changes are as follows:

- (a) The design of the permanent works for the Project was performed by Atkins as MTRCL's DDC. Atkins was responsible for updating the drawings relating to the design of the permanent works. Leighton was not responsible for, and could not, update the drawings for the permanent works.
- (b) MTRCL was responsible for determining whether any change to the works required consultation with BD. If consultation was necessary, MTRCL was responsible for consulting with BD in relation to any such change.
- (c) Leighton would assist MTRCL in discharging its obligation (if any were to arise) to consult with BD by providing relevant submissions to MTRCL. As part of this process, Leighton engaged Atkins to perform temporary works design analysis and prepare submissions to be sent to MTRCL. Leighton was wholly reliant on Atkins to explain BD's response to any submissions.

### **Chronology of the Change**

- 15. Leighton has prepared a detailed chronology of the key events that relate to the Change (produced and marked **Exhibit "JT-1"**). I confirm that this chronology is accurate.
- 16. In order to assist the Commission to understand the relevance of the events set out in the chronology, I have prepared a timeline in relation to the Change (produced and marked **Exhibit "JT-2"**).

17. As a starting point, it is helpful to clarify that the reinforcement at the top of the diaphragm wall was changed twice from the detail set out in the original design. The first change was done as part of the construction of the eastern diaphragm wall. It involved the rearrangement of the reinforcement detail at the top of the eastern diaphragm wall. While I was not working on the Project at that time, I understand that it was necessary because the original design did not allow enough space between the reinforcement bars to allow for a 300 millimetre diameter tremie pipe (along with sonic test and interface coring reservation pipes) to be inserted down into the diaphragm walls to pour the concrete. This rearrangement of the reinforcement is shown in diagrams 1 and 2 that are produced and marked **Exhibit “JT-3”**.
18. I understand that Leighton worked with MTRCL and Atkins in relation to this change in detail. Both parties were fully aware of these issues and the solutions that were adopted.<sup>5</sup> MTRCL submitted this change to BD for consultation and it was accepted by BD.<sup>6</sup> In addition, MTRCL supervised the construction of these works (as it did for all works on the Project).
19. In mid 2015, Leighton was considering the construction method and sequence for the EWL Slab. This included giving consideration to the construction of the interface between the EWL Slab, the diaphragm wall and the OTE Slab. As part of this process, Leighton became aware of the issues which were addressed in TQs 33 and 34 (produced and marked **Exhibit “JT-4”**). These TQs were sent to Atkins in late July 2015. A key part of the advice received from Atkins was that the interface between the EWL Slab, the diaphragm wall and the OTE Slab should be cast monolithically.

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<sup>5</sup> Please refer to items #004-16, #004-11, #006-1, #004-9, #013-01 to #013-24 in the chronology set out in Exhibit “JT-1”.

<sup>6</sup> Please refer to items #013-27 and #013-28 in the chronology set out in Exhibit “JT-1”.

20. In this context, Leighton proposed to MTRCL that the Change be made in Areas C1 and C2 by way of the submission numbered "1112 CSF LCA DEM 000147" (numbered LCAL.17.02 in the Index) (the "First Submission").<sup>7</sup> The construction sequence for the Change is explained at Section 6.2 of the First Submission.<sup>8</sup> The Change is shown in diagrams 3 and 4 of Exhibit "JT-3".
21. As early as May 2015, Atkins and MTRCL were aware of the proposal to use continuous rebars to connect the EWL Slab, diaphragm wall and OTE Slab and to pour the connection concurrently (i.e. the "Change"). In particular, this proposal is set out in Section 1.3.5 and Figure 1.4 of the design report numbered TWD-004B2 (produced and marked **Exhibit "JT-5"**).<sup>9</sup> At that time, Atkins and MTRCL agreed to remove the details at Section 1.3.5 and Figure 1.4 of the design report numbered TWD-004B2 and raise it with BD later.<sup>10</sup>
22. The First Submission was sent to MTRCL on 20 July 2015. I recall that MTRCL was fully aware of the Change at that time and supported it. For example, Andy Leung of MTRCL sent me an email on 25<sup>th</sup> July 2015 (produced and marked Exhibit "**JT-6**") stating that a "portion of the wall should be cast together with the OTE slab as good practice. Otherwise, one more CJ [i.e. a construction joint] is introduced between them."
23. At that time, it was not clear to Leighton whether MTRCL considered that it was necessary to consult with BD in relation to, and obtain its acceptance of, the Change.<sup>11</sup> Ultimately, it was up to MTRCL to decide whether consultation with BD was required.

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<sup>7</sup> Please refer to item #-010-9 in the chronology set out in Exhibit "JT-1".

<sup>8</sup> This was how the relevant works were constructed. The only exception is that for Bay C1-1, the EWL Slab and diaphragm wall were poured together and then a separate concrete pour was completed for the OTE Slab. This approach was approved by the MTRCL's Registered Structural Engineer (as nominated under the IoE). Please refer to item #005-14 in the chronology set out in Exhibit "JT-1".

<sup>9</sup> Exhibit "JT-5" only includes the relevant part of design report numbered TWD-004B2.

<sup>10</sup> Please refer to items #005-6, #005-2 and #004-14 in the chronology set out in Exhibit "JT-1".

<sup>11</sup> For example, MTRCL told Leighton in a meeting on 26 May 2015 that the change in the reinforcement

24. In my view, the Change represent a minor change in “detail” because it replaced rebars connected by couplers with continuous rebars. There is no structural difference between using rebars that are connected by couplers or a continuous rebar.<sup>12</sup> As such, the Change did not affect the overall stability of the structure (as per the accepted drawings). It follows that under Practice Note for Authorised Persons PNAP ADM-19 the Change did not require BD’s prior approval or consultation.
25. In any event, on 29 July 2015, MTRCL submitted a copy of the First Submission to BD.<sup>13</sup> BD replied to the First Submission on 8 December 2015 without making any objection to the Change.<sup>14</sup>
26. On 21 March 2016, Leighton proposed to MTRCL that the Change be made in Area C3 by issuing a submission numbered “1112 CSF LCA DEM 000302” (numbered LCAL.R17.02 in the Index) (the “**Second Submission**”).<sup>15</sup> On 23 March 2016, MTRCL submitted a copy of the Second Submission to BD.<sup>16</sup> Once again, BD responded to the Second Submission without making any objection to the Change.<sup>17</sup>
27. Leighton constructed the works to implement the Change under the supervision of MTRCL’s staff (who supervised all works on the Project). In summary, the relevant works were as follows:

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detail did not need to be submitted to BD. Please refer to item #012-02 in the chronology set out in Exhibit “JT-2”.

<sup>12</sup> Please refer to Section 8.7 of the Code of Practice for Structural Use of Concrete 2013 (numbered LCAL.R6.05 in the Index). This Code (which is prepared by BD) acknowledges that rebars connected by couplers can be used as a substitute for continuous rebars.

<sup>13</sup> Please refer to item #010-11 in the chronology set out in Exhibit “JT-1”.

<sup>14</sup> Please refer to item #010-11 in the chronology set out in Exhibit “JT-1”.

<sup>15</sup> Please refer to item #010-12 in the chronology set out in Exhibit “JT-1”.

<sup>16</sup> Please refer to item #010-13 in the chronology set out in Exhibit “JT-1”.

<sup>17</sup> Please refer to item #010-14 in the chronology set out in Exhibit “JT-1”.



- (a) For Bays C1-1 and C1-2, the top row of reinforcement bars connected by couplers were replaced with continuous reinforcement bars; and
  - (b) For the other bays in Area C1, C2 and C3, all relevant reinforcement bars connected by couplers were replaced with continuous reinforcement bars.
28. I recall that the Change was not controversial and there was general agreement between Leighton, Atkins and MTRCL as to the fact that it was necessary and beneficial.<sup>18</sup> There is no doubt that MTRCL was fully aware of the Change. Indeed, MTRCL's staff supervised the works in relation to the Change (as they did for all works on the Project).
29. Despite the Change proceeding smoothly, MTRCL unfairly sought to pass blame on to Leighton in relation to the fact that the drawings for the permanent works were not updated to reflect the Change. For example, on 19 October 2015, I received an email from Andy Leung which states: "I have not received proposals from you to incorporate the changed initiated by your team (e.g. those resulting from your TQs to Atkins) since the design coordination meeting last week. I cannot allow this malpractice on drawing management to continue."<sup>19</sup>
30. I was very disappointed with Andy Leung's email dated 19 October 2015 and sent an email later that day to explain why I could not agree with Andy's complaint and why it was factually incorrect.<sup>20</sup> MTRCL and Atkins were ultimately responsible for updating the drawings in relation to the permanent works. However, during my first few months on the Project, I noticed that MTRCL had approved or issued various changes to the permanent works by way of TQs or Design Amendments ("DAMs") but these were not incorporated into the drawings. I recall raising the

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<sup>18</sup> This is because it allowed for the connection between the EWL Slab and OTE Slab to be cast monolithically (subject to footnote 7) thereby removing the construction joints under the previous accepted drawings.

<sup>19</sup> Please refer to item #003 in the chronology set out in Exhibit "JT-1".

<sup>20</sup> Please refer to item #003 in the chronology set out in Exhibit "JT-1".

need for MTRCL and Atkins to update the drawings at meetings with MTRCL from July 2015 onwards.

31. It was therefore very surprising to me that Andy Leung complained to me that Leighton was at fault for not issuing “proposals” to update the drawings. In fact, Leighton had issued the First Submission well before that date. My email in reply to Andy Leung made the following key points:
- (a) Leighton had submitted proposals to MTRCL (specifically, CSF 1112-CSF-LCA-DEM-000176, which included TQ33 and DAmS 294);
  - (b) MTRCL knew that certain DAmS were not reflected in the drawings for the permanent works. For example, in an email dated 11<sup>th</sup> August 2015, MTRCL had reminded Leighton that DAmS 292 was not incorporated into the drawings and asked that Leighton’s site staff take note of the DAmS;
  - (c) Atkins recognised in an email dated 16<sup>th</sup> September 2015 that it had failed to update the drawings, including those relating to temporary works;
  - (d) Leighton had identified that certain TQs and DAmS had not been incorporated into the drawings and should have been incorporated much earlier;
  - (e) Leighton had issued all necessary TQs to MTRCL but was still waiting on a response; and
  - (f) MTRCL had been sending its changes to the permanent works by email but had not formally issued these changes.
32. On 20 October 2018, Andy Leung replied to my email but did not have any rebuttal to the points that I made earlier.<sup>21</sup> He noted my comments regarding the missing

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<sup>21</sup> Please refer to item #012-4 in the chronology set out in Exhibit “JT-1”.

DAMs and said that MTRCL was working with Atkins to rectify them. He also confirmed at the bottom of the email that MTRCL was ultimately responsible for updating the working drawings and Atkins should not update the drawings unless instructed by MTRCL.

33. In addition, Andy's email dated 20 October 2015 stated that "there is a big difference between us, Atkins (C1106) and Atkins (LCAL)". Whilst contractually correct, Andy's statement is ambiguous and inaccurate. Typically, the same people at Atkins were handling the work for MTRCL (i.e. as MTRCL's DDC) and for Leighton. This should have actually assisted Atkins to update the drawings more quickly. It does not justify why the drawings had not been updated by MTRCL and Atkins.
34. On 28 October 2015, I sent an email to James Ho of MTRCL to clarify that the drawings for the EWL slab with associated changes identified under TQ's up to and including TQ-0033, and TQ's from TQ-033 to TQ-0148 have been submitted, whilst also noting the various MTRCL share point references (produced and marked **Exhibit "JT-7"**).
35. I do not accept that Leighton or the design engineering team were to blame for the fact that the drawings for the permanent works were not updated promptly (including to reflect the Change). MTRCL and Atkins had been notified, and were fully aware, of the Change. It was up to MTRCL and Atkins to handle this task.

**The relevant works are safe**

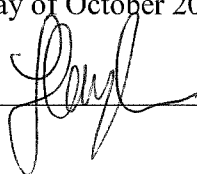
36. I am of the view that the Change does not give rise any safety concerns and is not a matter that is worthy of the Commission's attention. As noted, the key aspect of the Change was the replacement of rebars connected by couplers with continuous rebars. This is unremarkable from an engineering and construction perspective. It did not affect the overall stability of the structures. Further, the Change was an improvement on the previous accepted design because it removed most of the

construction joints between the EWL Slab, the eastern diaphragm wall and the OTE Slab (which are potential points of weaknesses in a concrete structure).

37. In my personal opinion, the works undertaken to implement the Change are safe and structurally sound because:
- (a) The works satisfy all relevant requirements of the reinforcement under the accepted drawings;
  - (b) There is no adverse change to the reinforcement details under the accepted design;
  - (c) There is no adverse change in the load path of the reinforcement;
  - (d) There is no adverse change in the size, number, spacing or anchorage of the reinforcement bars;
  - (e) The EWL Slab and the OTE Slab were cast monolithically;<sup>22</sup> and
  - (f) The as-constructed details do not affect the stability of the structure.

Dated the 9<sup>th</sup> day of October 2018.

Signed: \_\_\_\_\_



Justin Taylor

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<sup>22</sup> Subject to footnote 7.