

COMMISSION OF INQUIRY
INTO THE CONSTRUCTION WORKS
AT AND NEAR THE HUNG HOM STATION EXTENSION
UNDER THE SHATIN TO CENTRAL LINK PROJECT
(“the SCL Project”)
(“THE COMMISSION”)

(formerly 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)

OPENING ADDRESS FOR THE EXTENDED INQUIRY
BY COUNSEL FOR THE COMMISSION
(for Substantive Hearing commencing on 27 May 2019)

References below to, for example, [BB1/1] are references to the bundle number and page number of the documents prepared for the Substantive Hearing.

A. The Commission

1. On 10 July 2018, the Commission was appointed by the Chief Executive in Council of the Hong Kong SAR under section 2 of the Commissions of Inquiry Ordinance (Cap. 86) (“**the Ordinance**”) [AA1/2-13]. The appointed Chairman and Commissioner was Mr. Michael Hartmann, with Professor Peter Hansford as Commissioner. Pursuant to its original Terms

of Reference, the Commission submitted an Interim Report to the Chief Executive on 25 February 2019 (“**the Commission’s Interim Report**”).

2. On 19 February 2019, in exercise of the powers conferred by section 3 of the Ordinance, the Chief Executive in Council expanded the original Terms of Reference by adding paragraph (a)(2) thereto. The Expanded Terms of Reference (“**Expanded ToR**”) of the Commission will be found at **AA1/1**.
3. The matters set out in the Expanded ToR will be addressed as and are referred to herein as the “**Extended Inquiry**”. The part of the Inquiry covered by the original Terms of Reference is referred to as the “**Original Inquiry**”.

B. Some basic geography

4. The Extended Inquiry has extended the geographical areas with which the Commission is concerned. The Original Inquiry was focused on the track and platform slabs at Hung Hom Station Extension. The Extended Inquiry is concerned with the North Approach Tunnels (“**NAT**”) area which includes the Shunt Neck, the South Approach Tunnels (“**SAT**”) area and the Hung Hom Sidings (“**HHS**”) area. Diagram 3 on page 16 of the Commission’s Interim Report gives an overview of the general location of all relevant areas. For present purposes, however, it is necessary to look at the newly introduced areas in a little more detail.
5. So far as the NAT is concerned, amongst the numerous layout plans and drawings available in the hearing bundles, the Commission’s legal team

makes reference to the Appendices to the witness statement of Fu Yin Chit, Michael, MTRCL's Construction Manager-SCL Civil of the SCL Project [BB1/85-91]. Thus, Appendix A [BB1/85] shows the NSL Tunnel (in green) coming from the direction of Ho Man Tin Station; the EWL Tunnel (in pink) and the Shunt Neck (in blue). Importantly, on the left hand side of Appendix A, is a black-dotted line which delineates the Contract 1112 works (with which the Commission is concerned) and the Contract 1111 works (with which the Commission is not directly concerned). Work to the right of the black-dotted line was carried out by Gammon-Kaden SCL 1111 Joint Venture ("GKJV") and work to the left by Leighton. MTRCL was, of course, the project manager under both Contract 1111 and Contract 1112.

6. As the Commission is aware, **Issue 1** (see further below) is concerned with three stitch joints in the NAT (collectively referred to as "**the Stitch Joints**") and **Issue 2** is concerned with a construction joint (originally designed as a stitch joint) in the Shunt Neck. Appendix C to Mr. Fu's witness statement [BB1/89] shows two of the stitch joints at the NSL Track Level. The first stitch joint is at the interface of Contract 1112 and Contract 1111 and is called "**the 1111/1112 NSL Stitch Joint**". The second stitch joint is 'internal' to Contract 1112 and is called "**the 1112/1112 NSL Stitch Joint**". Appendix C [BB1/90] shows the third stitch joint at the EWL Track Level at the interface of Contract 1112 and Contract 1111 which is called "**the 1111/1112 EWL Stitch Joint**". The same drawing also shows the location of **the 1111/1112 Shunt Neck Joint** at the interface of Bay 3 (constructed by Leighton under Contract 1112) and the Contract 1111 works.

7. In broad terms, the Stitch Joints were required because either the two concrete structures to be connected were built on different foundations (the 1112/1112 NSL Stitch Joint) or the two structures were constructed at materially different times (the 1111/1112 NSL Stitch Joint and the 1111/1112 EWL Stitch Joint). Further, it is not in dispute that, pursuant to Appendix Z2 (Interfacing Requirements Specification with Civil Contracts) to Contract 1112 between MTRCL and Leighton **[BB1/420-432]**, all of the stitch joints and the construction joint referred to above were required to be constructed by Leighton under Contract 1112. It is also common ground that Drawing No. 1112/B/000/ATK/011/101A at Note 2 **[BB1/463]**, which sets out typical tunnel stitch joint details at the NAT Tunnels, provided the following contractual requirement namely:

“The stitch joint shall be cast as late as possible in the construction sequence, and preferably (sic) after groundwater recharge, to minimise the amount of differential movement after casting. Casting of the stitch joint shall not be carried out until after completion of backfilling.”

The Commission’s legal team observes, however, that it remains unclear as to by whom, and upon what precise basis or criteria, a decision is taken that the ground conditions are such that the Stitch Joints can go ahead and be constructed.

8. With regard to the construction of the Stitch Joints, it appears from the rebar fixing and concrete pour dates information provided **[BB9/6363 & CC1/280]** that the sequence of construction is the base slab, followed by the walls and then the roof (although the 1111/1112 EWL Stitch Joint

does not have a roof). As explained further below, the Commission's legal team is currently unclear as to how many 'hold points' are (or are supposed to be) involved in the construction sequence of the Stitch Joints.

C. Factual background to the Extended Inquiry

9. Shunt Neck Bay 3 at the interface between Contracts 1111 and 1112 was constructed between 4 January 2017 and 22 March 2017 [**BB1/66/§7(d) and CC1/280**].
10. The original 1111/1112 EWL Stitch Joint commenced construction on 22 January 2017 and the concrete pour of the base slab took place on 24 January 2017. The commencement and completion of the walls is currently unclear, and the subject matter of further verification [**BB1/66/§7(c) and CC1/280**]. It is not clear to the Commission's legal team whether the dates on **BB9/6363** are accurate.
11. The original Contract 1112/1112 NSL Stitch Joint was constructed between 29 May 2017 to 9 September 2017 [**BB1/65/§7(b) and CC1/280**].
12. The original 1111/1112 NSL Stitch Joint was constructed between 5 July 2017 to 2 August 2017 [**BB1/65/§7(a) and CC1/280**].
13. MTRCL observed water seepage at the newly completed 1111/1112 NSL Stitch Joint during a routine inspection in August 2017 [**BB1/168/§2.1**]. (The plan and photos showing the location of this water seepage can be found at Appendix B to MTRCL's '*Report of Defective Works identified*

at Tunnel Stitch Joints at Contract 1112, Shatin to Central Link' dated 26 March 2018 [BB1/182-183].)

14. In October 2017, Leighton was required to carry out grouting work to seal up the water seepage. The process was repeated but the outcome was not effective [BB1/168/§2.2]. A photo showing the grouting work can be found at [BB1/185].
15. On 22 December 2017, MTRCL issued to Leighton NCR 066 in respect of the water leakage and cracks identified at the 1111/1112 NSL Stitch Joint [CC3/1310].
16. Further, minor separation gaps were observed at the water seepage location [BB1/168/§2.3 & 184]. On 9 January 2018, MTRCL instructed Leighton to install settlement markers and tell-tales to monitor the movement of the tunnel structure and the gap width respectively.
17. HyD/RDO was first alerted to the water seepage problem at the 1111/1112 NSL Stitch Joint by MTRCL by way of SCL Project Report for the period 1 to 28 January 2018 submitted on 31 January 2018 (Item 2.9.2) [DD1/38.112].
18. On 5 February 2018, by reference to the tell-tale installed, obvious separation of a few millimetres gap was observed at the 1111/1112 NSL Stitch Joint. An investigation was carried out between 6 and 8 February 2018 [BB1/168/§2.4] or between 7 and 14 February 2018 [CC1/75/§21] by chipping off 3 locations of concrete surface at the tunnel wall and roof, exposing the rebar at the stitch joint. It revealed that a significant number

of rebar were not properly connected, or were not connected at all, into the couplers [**BB1/168/§2.4 & CC1/75/§21**].

19. On 9 February 2018, MTRCL issued to Leighton NCR 095 in respect of (again) the 1111/1112 NSL Stitch Joint and the 1111/1112 EWL Stitch Joint. [**CC3/1322**]
20. Between 9 and 14 February 2018, with the consent of MTRCL, Leighton broke holes in the concrete and exposed rebar at the 1112/1112 NSL Stitch Joint and the 1111/1112 EWL Stitch Joint to carry out an investigation into the other stitch joints. It was observed again that a significant number of rebar were not properly connected, or were not connected at all, into the couplers at both stitch joints [**BB1/168/§2.5 & CC1/75/§23**].
21. Enabling works for the 1111/1112 NSL Stitch Joint and the 1112/1112 Stitch Joint commenced on 9 February 2018, and demolition works were done between 15 February 2018 and 6 March 2018 [**CC1/77/§§37&39**].
22. Enabling works for the 1111/1112 EWL Stitch Joint commenced on 27 February 2018, and demolition works were done between 5 March 2018 and 10 March 2018 [**CC1/77/§§33&35**].
23. Meanwhile, on 15 February 2018, Leighton presented a proposal to MTRCL to demolish and reconstruct the NSL Stitch Joints and, on 5 March 2018, Leighton presented a proposal to MTRCL for demolishing and reconstructing the 1111/1112 EWL Stitch Joint [**CC1/76/§§25 & 29 & CC3/1806-1833 & CC3/1883-1890**].

24. On 14 March 2018, MTRCL issued to Leighton NCR 096 in respect of the defects at the 1112/1112 NSL Stitch Joint [**CC3/1373**].
25. On 16 March 2018, MTRCL submitted to HyD/RDO and PyPun a draft stitch joint report [**BB1/150-161 & DD1/39-57**].
26. On 20 March 2018, MTRCL issued a press release on the stitch joints incident [**DD1/60.1-60.4**].
27. On 22 March 2018, MTRCL submitted to HyD/RDO (i) an updated SSP for the NSL and EWL tunnels at the NAT [**DD1/61-68**] and (ii) the design submission for the revised details of the 1111/1112 EWL Stitch Joint which Leighton had submitted to MTRCL on 21 March 2018 [**DD1/69-74 & CC5/2510-2595**].
28. On 26 March 2018, MTRCL submitted to HyD/RDO (i) the updated QSP for couplers at NAT (both for BOSA and Lenton couplers) [**DD1/75-108**] and (ii) design amendment submission for the revised details of the 1111/1112 EWL Stitch Joint [**DD1/109-110**].
29. Thereafter, on 27 March 2018, MTRCL submitted to the Government the formal report dated 26 March 2018, referred to in paragraph 13 above [**BB1/162-201 & DD1/38.24 – 38.60**].
30. The actual reconstruction works in respect of the 1111/1112 EWL Stitch Joint took place between about mid-March 2018 and 10 April 2018 [**BB1/102/§27, CC1/77/§36 & CC1/280**].

31. On 4 April 2018, Leighton submitted to MTRCL its “*Task Method Statement for NSL Stitch Joints Reconstruction*” [CC3/1914-1972]. This document had had a couple of predecessors, but appears to be the last version.
32. The actual reconstruction works i.e. rebar fixing and concreting, in respect of the 1111/1112 NSL Stitch Joint, was carried out between 12 April 2018 to 19 May 2018 [BB1/101/§27 & CC1/280].
33. On 16 April 2018, MTRCL issued to Leighton NCRs 097 to 196 in respect of missing RISC forms [BB12/8389-8446].
34. The actual reconstruction works i.e. rebar fixing and concreting, in respect of the 1112/1112 NSL Stitch Joint was carried out between 8 May 2018 to 18 July 2018 [BB1/102/§27 and CC1/280].
35. On 14 May 2018, MTRCL submitted a remedial proposal in respect of the 1111/1112 Shunt Neck Joint [DD1/191-194].
36. On 28 June 2018, NCR 095 was closed out [CC3/1736].
37. On 6 July 2018, MTRCL issued to Leighton NCRs 202 to 248 in respect of further missing RISC forms [BB12/8447-8493].
38. On 19 July 2018, MTRCL issued a letter to HyD/RDO to withdraw the remedial proposal for the 1111/1112 Shunt Neck Joint as submitted on 14 May 2018 [DD1/400].

39. On 27 July 2018, MTRCL submitted to HyD/RDO a Quality Assurance Scheme in respect of the couplers (both BOSA and Lenton types) **[BB7/4460]**.
40. On 5 September 2018, NCRs 066 and 096 were closed out **[CC3/1754 and CC3/1795]**.
41. On 14 September 2018, HyD/RDO replied to MTRCL's letter dated 19 July 2018 regarding the withdrawal of the submission of "*Remedial Proposal for Shunt Neck Connection at 1111/1112 Interface for North Approach Tunnel structure*" **[DD2/466]**, reminding MTRCL that a design review/justification for the non-conformity should be submitted to HyD/RDO if no remedial works are involved.
42. On 30 October 2018, MTRCL submitted to HyD/RDO the "*Remedial Proposal for Shunt Neck Connection at 1111/1112 Interface for NAT Structure*" **[DD2/717-866]**. On the same day, MTRCL issued to Leighton NCR 267 in respect of the 1111/1112 Shunt Neck Joint **[CC3/1805, DD2/1104]**. (There has been subsequent correspondence between HyD/RDO and MTRCL regarding the remedial works proposal but, to date, the remedial works to the 1111/1112 Shunt Neck Joint have not been carried out and, consequently, NCR 267 has not yet been closed out.)
43. On 20 December 2018, MTRCL wrote to HyD/RDO informing them that, in addition to RISC forms, the missing or insufficient construction records for NAT included specific information about a change of design of some connections during construction from lapping of re-bars to coupler connections; extent of the change; and materials testing records.

MTRCL indicated that it would propose a holistic study to RDO/BD for proving the NAT as-constructed conditions and workmanship quality. MTRCL also expected that there were similar, but lesser, issues at the SAT. There was no mention of issues at the HHS at this stage. **[DD3/1115-1117]**

44. Apparently, on 23 January 2019, a meeting was held between BD/RDO and MTRCL to discuss the preparation for the application for the Certificate of Completion of building works at the NAT, but at which MTRCL (a) repeated the various matters mentioned in its letter dated 20 December 2018 and (b) advised, for the first time, that similar issues might also arise at the HHS (see HyD/RDO's letter of 24 January 2019 discussed immediately below **[DD3/1128 @ 1129]**). Neither the Government nor MTRCL have any minutes of this meeting.
45. By letter dated 24 January 2019 to MTRCL, HyD/RDO expressed its disappointment that the problems reported in MTRCL's letter dated 20 December 2018 were allowed to occur **[DD3/1128-1130]**. MTRCL was required to:
 - (i) Provide detailed account of problem of insufficient records in NAT, HHS and SAT with full explanations, and including scale and extent of the problem;
 - (ii) Advise any similar problems in other parts of Contract 1112 apart from platform slabs, NAT, HHS and SAT;

- (iii) Provide scope and implementation details of the holistic study on NAT;
- (iv) Confirm whether the holistic study will be extended to HHS and SAT and other parts of Contract 1112; and
- (v) Critically assess the programme implications of the matter to the full/partial opening of the Tuen Ma Line.

Apart from the above, MTRCL was requested to urgently resolve the above matters that were affecting the partial and full opening of Tuen Ma Line, as well as review and improve the reporting mechanism from MTRCL to the Government.

- 46. On 30 January 2019, the Government held a press conference announcing that there were problems of, *inter alia*, missing RISC Forms, unauthorised design changes and incomplete testing records of materials under Contract 1112 in relation to construction works at the NAT, SAT and HHS [DD3/1177.1-1177.18].
- 47. On 31 January 2019, the Government announced that the Chief Executive in Council would consider expanding the scope of the Commission's investigation to cover the various construction issues at the NAT, SAT and HHS.
- 48. By letter dated 15 February 2019 [BB6/3678-4214], MTRCL submitted to HyD/RDO a 'Report on 8th Design Amendment for NAT Tunnel Structures (NSL Tunnel, EWL Tunnel Stitch Joint Remedial Details)'.

This apparently contains details of the as-built records of the drill-in holes/rebar and the reused couplers.

49. On 19 February 2019, the Chief Executive in Council approved the Expanded ToR as stated above, which was subsequently gazetted in the Gazette Notice No. 1539 dated 22 February 2019 [**AA1/1**].
50. At the PSC meeting on 4 April 2019, HyD/RDO reiterated its request to MTRCL to provide a full explanation as to why non-conformance of stitch joints could happen at three locations without being noticed by the site supervisory staff for a long period. MTRCL reported that the draft holistic proposal for investigation and verification of the works at NAT, HHS and SAT including a programme had been submitted to HyD on 4 April 2019 [**DD6/6802-6815**].
51. By HyD's/RDO's letter dated 4 April 2019 the design amendments referred to in the Report of 15 February 2019 were accepted [**BB6/4275**].
52. On 26 April 2019, MTRCL sent an email to HyD/RDO submitting a draft Verification Proposal of As-Constructed Conditions for NAT, SAT and HHS [**DD6/7116-7135**].
53. On 27 April 2019, the Commission was jointly informed by MTRCL and the Government, *inter alia*, that (a) the agreed Verification Proposal would be submitted to the Commission by 15 May 2019; (b) completion of Part 1 (Verification of as-constructed condition and workmanship) would be accomplished by 15 June 2019; (c) completion of Part 2 (Structural review and checking) would be accomplished by 30 June 2019 and (d) the Final Report would be completed and submitted to the

Commission on the milestone date of 30 June 2019, all subject to the accompanying notes **[BB1/58-59]**.

54. On 29 April 2019, further to MTRCL's email dated 26 April 2019 and in response to HyD/RDO's letters dated 9 and 17 April 2019, MTRCL issued a letter to HyD/RDO submitting a further revised draft Verification Proposal of As-Constructed Conditions for NAT, SAT and HHS **[DD6/7212-7233]**.
55. On 7 May 2019, further to the Task Force meetings held on 2, 3, 6 and 7 May 2019 amongst HyD, BD and EAT, MTRCL issued a letter to HyD/RDO submitting the finalised Verification Proposal of As-Constructed Conditions for NAT, SAT and HHS **[DD7/10200-10220]**.
56. On 15 May 2019, MTRCL submitted to HyD/RDO the revised final Verification Proposal of As-Constructed Conditions of the NAT, SAT and HHS (Rev. E) for agreement **[DD9/11786-11806]**. By HyD/RDO's letter to MTRCL dated 15 May 2019 the Government accepted the Verification Proposal **[DD9/11807]** and, on 16 May 2019, the Commission was informed of the agreement reached accordingly **[BB8/5122]**.

D. The involved parties and Fang Sheung

57. To date, the Commission has, for the purposes of the Extended Inquiry, issued (a) letters requesting documentation and witness statements and (b) "Salmon letters" dated 23 April 2019 (that is letters giving advance notice to entities who might be the subject of criticism) to the parties identified

below (“**the involved parties**”). Those parties have been asked to consider participating in, and having separate legal representation at, the Substantive Hearing. The Commission’s current understanding of the role of each involved party in the SCL Project is briefly described below.

58. There are four Government bureaux or departments involved namely the (1) Transport and Housing Bureau (“**THB**”), (2) Highways Department (“**HyD**”) including the Railways Development Office (“**RDO**”), (3) Development Bureau (“**DevB**”) and (4) Buildings Department (“**BD**”). THB and HyD/RDO performed a monitoring role in the SCL Project and DevB and BD carried out their statutory duties and functions. As at the Original Inquiry, the four entities are represented by the Department of Justice (“**DoJ**”).
59. By an agreement dated 20 August 2012 [**G9/7638**], PYPUN-KD & Associates Limited (“**PyPun**”) was engaged by RDO on behalf of the Government as a Monitoring & Verification Consultant to, *inter alia*, monitor the performance of Mass Transit Railway Corporation Limited (“**MTRCL**”) under the Entrustment Agreement referred to below. For clarity, this engagement related to the entirety of the SCL Project.
60. MTRCL was appointed by THB on behalf of the Government under an Entrustment Agreement dated 24 November 2008 [**G7/5466**] to design and carry out site investigation works for the SCL Project; by a further Entrustment Agreement dated 17 May 2011 [**G7/5521**] to carry out certain advance works as defined therein and by a further Entrustment Agreement dated 29 May 2012 (“**the Entrustment Agreement**”)

[G7/5595] to project manage the construction and commissioning of the SCL Project. The Government is the majority shareholder of MTRCL.

61. Leighton Contractors (Asia) Limited (“**Leighton**”) was the main contractor engaged by MTRCL to construct, amongst many other things, the relevant NAT, SAT and HHS works under Contract 1112 dated 7 March 2013 [C1/437 to C5/4353]. Contract 1112 was a target cost contract.
62. Pursuant to a sub-contract dated May 2013 [EE1/99-178][CC2/870-1062]¹, Wing & Kwong Steel Engineering Co., Limited (“**Wing & Kwong**”) was Leighton’s sub-contractor responsible for carrying out the reinforcement bar cutting, bending and fixing works for the HHS and, by way of a variation or amendment it appears, the NAT. Wing & Kwong was not an involved in the Original Inquiry.
63. The Commission has also issued letters requesting documentation and witness statements but not a “Salmon letter” to Fang Sheung Construction Company (“**Fang Sheung**”), which was, pursuant to a sub-contract dated 28 August 2015 [E1/30], Leighton’s sub-contractor responsible for carrying out the reinforcement bar cutting, bending and fixing works for the SAT. Fang Sheung has indicated its inability, for financial reasons, to engage legal representation.

¹ According to Wing & Kwong [EE1/61-66/§§10-24], the sub-contract has two versions. On or about 28 April 2015, Wing & Kwong signed the first version [EE1/99-178] and returned it to Leighton for the latter’s signature. On or about 13 March 2017, Leighton told Wing & Kwong that the first version was lost and requested Wing & Kwong to re-sign the sub-contract. Wing & Kwong did so assuming the sub-contract it signed [CC2/870-1062] was the same as the first version. That the two versions are not the same does not appear to have been discovered until given consideration for the purpose of these proceedings. A third version of the sub-contract has been disclosed by MTRCL [BB3/2044-2236].

E. Rules of Procedure and Practice and Opening Address

64. The Rules of Procedure and Practice for the Extended Inquiry were made at the Preliminary Hearing and have remained the same.
65. Pursuant to paragraph 15 thereof, all involved parties have provided written opening addresses (which have all been put in a dedicated bundle “OA”) and made applications to make oral opening addresses, which applications the Commission has granted on the basis that (a) the sequence of such oral addresses (following the Commission’s Opening Address) will be Wing & Kwong, Leighton, the Government, MTRCL and PyPun and (b) each party will have the time that each has requested. On this basis it is anticipated that the oral opening addresses will finish sometime in the morning of Tuesday, 28 May 2019, and the hearing of the evidence will commence thereafter as directed by the Commission.

F. Documentation

66. Since the Preliminary Hearing the number of hearing bundles has continued to grow. There is a “**Consolidated Index of Documents**” for the Extended Inquiry, which has been and will continue to be updated on a regular basis. A summary of the current position is as follows:

Bundle(s) AA: the Commission [AA1]

Bundle(s) BB: MTRCL [BB1 – BB14]

Bundle(s) CC: Leighton [CC1– CC10]

Bundle(s) DD: Government [DD1– DD9]

Bundle(s) EE: Wing & Kwong [EE1]

Bundle(s) FF: Fang Sheung [FF1]

Bundle(s) GG: PyPun [GG1– GG2]

Bundle(s) WW: Witness Statements [WW1]

Bundle(s) OA: Opening Address [OA1]

67. Messrs. Lo & Lo have also prepared a “**Index of Documents of the Original Inquiry to be referred in the Extended Inquiry**” which sets out the documents compiled during the Original Inquiry that may be relevant to the Extended Inquiry. The involved party, who was not an involved party in the original party, has also been given access to the documents contained in the said Index.

G. Witnesses

68. A separate Index of “Bundle of Witness Statements (without exhibits) (Extended Inquiry)” (**Bundle WW1**) has been prepared and is attached hereto at **Annex 1**.

69. As indicated to the parties by a letter from Lo & Lo dated 22 May 2019, after perusing the parties’ witness statements, the Commission now intends to call the factual evidence in an order different from that indicated at the Preliminary Hearing. More specifically, it is the Commission’s intention to call the factual evidence of the parties in the order set out below namely:

- (1) Fang Sheung
- (2) Wing & Kwong

- (3) Leighton
- (4) MTRCL
- (5) Government (THB, HyD, DevB & BD)
- (6) PyPun

70. A provisional timetable for the first week of the hearing was published on 22 May 2019, and this will be updated from time to time as the hearing progresses.

H. Primary topics of inquiry

71. As indicated at the Preliminary Hearing, the Commission’s legal team takes the view that the following primary matters are relevant to the Expanded ToR:

- (i) Three defective stitch joints at the NAT (“**Issue 1**”);
- (ii) Non-compliance issues at the NAT Shunt Neck (“**Issue 2**”); and
- (iii) Lack of inspection and supervisory records, including RISC Forms, unauthorised design changes and incomplete testing records of materials at the NAT, SAT and HHS areas (“**Issue 3**”).

72. As emphasised at the Preliminary Hearing, however, the Commission’s inquisitorial process is entirely flexible. The Issues set out above should not be regarded as some form of straight jacket for the evidence. On that basis, the Commission’s legal team highlights some of the sub-issues that appear to emerge from the evidence received to date below.

H1. Issues 1 and 2

What were the defects/non-compliances?

73. So far as **Issue 1** is concerned, as explained in Section C above, the defects at the Stitch Joints manifested themselves in cracks (in the concrete) and water seepage. The cause of these problems is inferred to have been the failure to connect the longitudinal threaded rebar to the cast-in couplers (on either side of the bay) either properly or at all, although there does not appear to have been any technical investigation by either MTRCL or Leighton which reaches such conclusion.
74. As regards **Issue 2**, the non-compliances at the Shunt Neck Joint manifested themselves in cracks (in the concrete), although it appears that no water seepage was observed [DD2/721/§3.2]. The cause of these problems appears to have been similar to that in relation to the Stitch Joints, namely there has been a failure to connect the longitudinal threaded rebar to the cast-in couplers either properly or at all.
75. As presently advised, the Commission's legal team has limited perception from the evidence reviewed to date whether (i) all or just some of the rebar was not properly connected and, if the latter, what proportion was involved and (ii) any of the reasons summarized below was more predominant or prevalent than the others. On the GKJV side of the interface Stitch Joints, and given the non-ordering of tapered rebar by Leighton (as will be explained in the next paragraph), it appears to follow that "incompatibility" or "mis-match" must have occurred without

exception at the interface connections. Conversely, on the Leighton side of the interface Stitch Joints where BOSA couplers were installed this reason cannot apply.

The reasons for such defects/non-compliances

76. There appear to be (at least) four reasons or explanations as to why the rebar was not properly connected, as put forward by Wing & Kwong's witnesses, Leung Chi Wah and Ng Man Chun **[EE1/57.3-57.5/§§16-19 and EE1/371.27/§§68-70]**.

(i) Firstly, incompatibility. GKJV, under Contract 1111, used Lenton couplers, whereas Leighton, under Contract 1112, used BOSA couplers. Lenton couplers are tapered and require tapered threaded rebar to form a proper connection. BOSA couplers, as the Commission is aware, are not tapered and require parallel threaded rebar to form a proper connection. Leighton accepts that its records show that only BOSA parallel threaded rebar was ordered for the original NAT stitch joints **[CC1/59/§30]** and the original 1111/1112 Shunt Neck Joint **[CC1/68/§73]**. As mentioned above, it would seem to follow that on the GKJV side of the stitch joint/construction joint, the rebar was never going to be connected, properly or at all. (However, on the face of it, incompatibility cannot be a reason why proper connections could not be formed on Leighton's side of the 1111/1112 NSL Stitch Joint or the 1111/1112 EWL Stitch Joint, or at the 1112/1112 NSL Stitch Joint, where BOSA couplers were used and parallel threaded rebar was ordered.)

- (ii) Secondly, failure to chip away and properly expose the cast-in couplers. It is not yet entirely clear to the Commission's legal team precisely what process Leighton used to expose the couplers and why, according to Wing & Kwong, there was a failure to properly or fully expose them. Again, it would seem to follow that if the cast-in couplers (either Lenton or BOSA) were not sufficiently exposed then the lack of a proper connection was an inevitable consequence.
- (iii) Thirdly, damaged couplers. Presumably, this must also be related to the process used to expose the couplers. How, why, by whom, to what extent the damage was caused and the nature of the damage is unclear.
- (iv) Fourthly, it is suggested that GKJV did not install couplers at the locations where couplers should have been installed. Details in relation to this explanation are currently lacking.

77. The minutes of the Interface Meetings [**BB3/1678-1795 and CC2/739-865**] suggest that (i) Leighton personnel were well aware that GKJV were using Lenton couplers and (ii) its representatives at the meetings at least appreciated that compatibility had to be checked. It appears to follow that there must have been a lack of or breakdown in communication somewhere along the line, a point which appears to be accepted by Leighton [**Karl Speed, CC1/62-63/§46**].

78. Further, the thrust of the witness statements and other documents from Wing & Kwong appears to suggest that whatever the nature of the

problem encountered with the cast-in couplers, Wing & Kwong were simply instructed by Leighton to “*get on with it*” by reason of time pressures on the Project. The recently received witness statement from Jonathan Kitching (Project Director of Leighton) appears to dispute Wing & Kwong’s evidence, but the key Leighton witness on this topic is Henry Lai. No doubt, the whole topic of the construction of the original Stitch Joints will need to be explored in some detail in the evidence.

79. The other aspect, however, of the lack of any or any proper connections is the competence/diligence of MTRCL’s and Leighton’s inspectors and engineers, both in respect of routine inspections and formal/hold point inspections. If there was a complete mis-match, if there was a failure to expose the embedded couplers (properly or at all) and if the couplers were either damaged or in the wrong place such that the rebar was not screwed into the couplers properly or at all, how was it missed? It is Wing & Kwong’s evidence that any lack of connections or proper connections should have been obvious on visual inspection [**Cheung Yick Ming EE1/83-85, §§73-78**][**Ng Man Chun EE1/371.25/§§59-60, 371.27/§65, 371.33/§87**].

Whether steps for rectification have been taken for such defects/non-compliances?

80. As explained in Section C above, the rectification works for the NAT stitch joints were completed on 18 July 2018 [**BB1/102/§27 and CC1/280**]. There is extensive documentation disclosed in relation to the rectification works, some of which is referenced in the chronology section above. There is, in particular, a series of RISC forms referable to

the rectification works [BB1/339-417 and CC2/2078-2161] but it is unclear whether these are complete.²

81. As regards the 1111/1112 Shunt Neck Joint, the remedial proposal is still pending the approval or acceptance of HyD/RDO (MTRCL's Opening Statement at §42 and the Government's Opening Address at §54(1) refer).

H2. Issue 3

82. According to the evidence gathered by the Commission to date, in particular the briefing given by MTRCL to HyD/RDO/BD on 30 January 2019 (“**the Briefing**”) [DD3/1178-1197], Issue 3 contains at least the following sub-issues in respect of the construction works at the NAT, SAT and HHS areas:

- (i) Lack of inspection and supervisory records, including the RISC Forms generally and, in particular, in respect of the original stitch joints/construction joint in the NAT;
- (ii) Unauthorised design changes; and
- (iii) Incomplete testing records of material.

Lack of inspection and supervisory records, including the RISC Forms

83. It appears that pursuant to the Inspection and Testing Plan (“**I**T**P**”) submitted by Leighton to MTRCL [CC1/339@430], for each pour of

² For example, the Commission's legal team is currently unable to locate a RISC form in respect of the inspection of the rebar to the top slab/roof of the 1111/1112 NSL Stitch Joint.

concrete for the construction works at the NAT, SAT and HHS areas, there were, for present purposes and in general terms, two relevant hold points, namely [CC1/56/§16, 61-62/§§40-43]:

- (i) after the fixing of rebar; and
- (ii) after the erection of formwork and falsework and before the concrete being poured (the pre-pour inspection).³

84. Each hold point would require a formal inspection by MTRCL and Leighton, and would generate one RISC Form [CC1/56/§16, 61-62/§§40-43]. However, the Commission's legal team remains unclear how the general requirement above applies or is transposed to the construction of a stitch joint and, therefore, as to precisely how many hold points (and RISC forms) there were, or ought to have been, when the (original) Stitch Joints were constructed. The number of RISC forms generated when the remedial works to the Stitch Joints were carried out in 2018 shed some light on this issue but, as stated above, even these do not appear to be complete [BB1/339-417 and CC4/2078-2174].

85. According to the Briefing:

- (i) Only 16 rebar RISC Forms (27%) and 13 concrete RISC Forms (22%) out of 59 pours were prepared for the NAT area [DD3/1187];⁴

³ When the remedial works to the Stitch Joints were carried out there was also a post-concrete inspection the subject matter of a RISC form.

⁴ Without further explanation, the numbers and percentages stated appear to be somewhat misleading since they include, it is thought, the RISC forms referable to the Stitch Joint remedial works.

- (ii) Only 25 rebar RISC Forms (64%) and 25 concrete RISC Forms (64%) out of 39 pours were prepared for the SAT area **[DD3/1195]**; and
 - (iii) Only 174 rebar RISC Forms (37%) and 209 concrete RISC Forms (44%) out of 474 pours were prepared for the HHS area **[DD3/1192]**.
86. The exact extent of the problem, however, will need to be investigated further, possibly in conjunction with the WSP Audits **[BB11/7625 and BB13/9199]** in respect of the NAT and the SAT respectively⁵, and the PyPun Report which was submitted on 24 May 2019 **[GG3/1011-1856]**.⁶
87. Leighton's evidence is that the relevant site staff did carry out the necessary hold point inspections, but were too busy and therefore did not submit the RISC Forms afterwards **[Karl Speed, CC6/3752 at §§ 16, 34, 52 and Henry Lai, CC1/93/§29]**. In other words, this is a question of form rather than substance. Although it was dissatisfied with Leighton's late or non-submission of the RISC Forms, MTRCL appears to adopt a similar stance **[Kit Chan, BB8/5187 at §§ 36-45]**.
88. Whether the above stance is sustainable will obviously need to be explored. In this regard, it is noted that:
- (i) MTRCL has collated site evidence and will continue to do so to show that hold point inspections were in fact carried out **[Kit Chan,**

⁵ The equivalent report in respect of the HHS is not yet available.

⁶ The Commission's legal team has not yet had an opportunity to analyse this report.

BB8/5187 at §§44-45]; and

(ii) Leighton also refers to similar site evidence [**Karl Speed, CC6/3752 at §§ 16, 34, 52**].

89. In addition to compliance with the RISC Form procedure, it appears to the Commission's legal team that there is a separate issue of compliance with the procedure of the Quality Supervision Plan ("QSP").

90. The Government, MTRCL and Leighton were asked to deal with the applicability (or otherwise) of the QSP to the NAT, SAT and HHS in their written Opening Addresses. Each has duly done so, although MTRCL says that it "*is in the process of clarifying the position*" (Opening Statement at §23). It appears to be common ground that the relevant acceptance letters in respect of the HHS did not contain any specific requirements for couplers [**DD8/11433-11646**] and therefore did not require any QSP. However, it is now known that a significant quantity of couplers were in fact utilised in the HHS. It is not clear whether, in particular, the Government asserts that this alters the position. As to the NAT and the SAT, so far as the Government and MTRCL are concerned, the issue of applicability appears to turn on whether the couplers were ductile (QSP required) or non-ductile (QSP not required). Re-running its argument presented in the Original Inquiry, Leighton contends that the drawings do not show any requirements for ductile couplers (in 'ductile zones') and the QSP does not apply to the NAT, SAT or HHS. It is noted that, as recorded above (§28), in the context of the Stitch Joints remedial works, MTRCL submitted to Hyd/RDO an updated QSP in respect of the NAT for both BOSA and Lenton couplers [**DD1/75-108**].

Unauthorised design changes

91. The relevant changes, if indeed that is what they are⁷, include:
- (i) The use of Type 1 coupler instead of lapped bar at some of the construction joints at the NAT, SAT and HHS areas [**DD3/1187, 1192, 1195**];
 - (ii) The use of standard “drill-in bars” to replace damaged/misaligned couplers at the diaphragm walls of the NSL at the SAT area [**DD3/1195**]; and
 - (iii) No coupler was used for certain standalone rooms at the HHS area [**DD3/1192**].
92. The extent of the relevant changes appears to be still unclear and will need to be investigated [**Kit Chan, BB8/5187 at §§ 49-53**]. The understanding of Commission’s legal team is that this matter will ultimately be dealt with in the Verification Report to be submitted to the Commission (see Section I below).
93. According to MTRCL [**Kit Chan, BB6/5187 at §§ 46-48**] and Leighton [**William Holden, CC6/3764 at §§ 27, 36-37**], the reasons for the relevant changes, if they are such, are construction need and/or convenience (for example, to more easily facilitate vehicular access).

⁷ Leighton suggests that the approved design did not indicate whether coupler or lapped bar should be used and therefore does not accept that there is any change in that respect [**William Holden, CC6/3764 at §§ 27, 36-37**].

Incomplete testing records of material

94. According to Leighton [**Karl Speed, CC6/3752 at § 60**], approximately 7% of the rebars delivered to the site were not tested by a Hong Kong Laboratory Accreditation Scheme (“**HOKLAS**”) certified laboratory. According to Henry Lai [**CC6/3789 at §16**], in relation to the rebar that he ordered specifically for the NAT, 56 batches of rebar out of a total of 159 batches were not HOKLAS tested. It is not clear to the Commission’s legal team how Mr. Speed’s percentage and Mr. Lai’s numbers have been calculated and/or whether there is any correlation between the 56 batches and the 7%.
95. The reason provided by Leighton’s staff for the non-testing is that they were too busy [**Alan Yeung CC6/3818 at § 28**] [**Henry Lai, CC6/3786 at § 16**][[**Ronald Leung, CC6/3828 at § 26**].
96. Leighton has indicated that it intends to adduce expert evidence to demonstrate that the extent of tests performed by the manufacturers and the HOKLAS certified laboratory in the present case is nevertheless sufficient and there is no safety concern regarding the rebar used at the NAT, SAT and HHS areas [**Karl Speed, CC6/3752 at § 63**].
97. The Government has also indicated [**DD9/11815**] that it has received all the test reports for the materials originally used at the Stitch Joints and the 1111/1112 Shunt Neck Joint (although it is still waiting for those for the remedial works). It has also confirmed no deficiencies have been found so far and there is nothing to suggest that there is any missing test or test report for the materials originally used.

H3. The Expanded ToR

98. From the investigation above, the questions that the Commission will ultimately address in accordance with the Expanded ToR are, similar to the Original Inquiry⁸, as follows:

- (i) Whether the works at the NAT, SAT and HHS areas are structurally safe;
- (ii) Whether the works at the NAT, SAT and HHS areas were executed in accordance with Contract 1112. If not, the reasons therefor and whether steps for rectification have been taken; and
- (iii) Whether the project management and monitoring and control systems of both the MTRCL and the Government were adequate and what recommendations should be made to them to promote public safety and assurance on quality of works.

99. As previously indicated to the parties and at the Preliminary Hearing, the Substantive Hearing of the Extended Inquiry from 27 May to 19 June 2019 will deal with factual evidence only. Any structural engineering or project management expert evidence, particularly in relation to questions (ii) and (iii) above, will not be dealt with during this period.

⁸ See the Commission's Interim Report, §13.

I. The Commission's further directions for the Original Inquiry and the Extended Inquiry

100. As stated at the Preliminary Hearing, MTRCL is in the process of implementing a Holistic Proposal and a Verification Proposal for the Original Inquiry and Extended Inquiry respectively. The Commission has been informed by MTRCL and the Government that the Milestone Date for the completion and submission of the Final Reports to the Commission in respect of the aforesaid Proposals is 30 June 2019. The achievement of this date is likely to be critical to the further directions to be issued by the Commission in relation to the Original Inquiry and the Extended Inquiry. The involved parties both in the Original Inquiry and the Extended Inquiry, have been canvassed, through their respective Counsel, about further dates for the taking of the final tranches of evidence by the Commission.

101. The Commission has kept and will keep the matter under constant review, and will inform all the original involved parties and the involved parties precisely when the outstanding expert issues and evidence in relation to both the Original Inquiry and the Extended Inquiry will be dealt, and will make appropriate directions in respect of expert reports and experts' meetings in due course.

Dated 25 May 2019

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