

**COMMISSION OF INQUIRY INTO THE CONSTRUCTION WORKS  
AT AND NEAR THE HUNG HOM STATION EXTENSION  
UNDER THE SHATIN TO CENTRAL LINK PROJECT APPOINTED  
PURSUANT TO SECTION 2 OF THE COMMISSIONS OF INQUIRY  
ORDINANCE (CHAPTER 86) ON 10 JULY 2018**

**2<sup>ND</sup> WITNESS STATEMENT OF LOK PUI FAI**

I, LOK PUI FAI, Senior Structural Engineer/Railway Development, Kowloon and Rail Section, New Buildings Division 2, Buildings Department (“BD”), 8/F, 14 Taikoo Wan Road, Taikoo Shing, Hong Kong, do say as follows:

1. I am a Senior Structural Engineer in BD and have been seconded to the Railway Development Office (“RDO”) of the Highways Department (“HyD”) for this position since 12 January 2016. I am a member of the Buildings Ordinance Team (“BO Team”) in RDO responsible for handling matters relating to the Instrument of Exemption (“IoE”) issued by the Building Authority [H7/2220-2233] and Instrument of Compliance (“IoC”) issued by HyD [H7/2416-2431] for the Shatin to Central Link (“SCL”) Project. I am the same Lok Pui Fai who gave a statement dated 13 September 2018 (“my 1<sup>st</sup> Witness Statement”) [H7/2187-2213] to the Commission of Inquiry into the Construction Works at and near the Hung Hom Station (“HUH”) Extension under the SCL Project (“the Commission”).

2. I make this 2<sup>nd</sup> Witness Statement pursuant to the request of the Commission set out in a letter from Messrs. Lo & Lo to the Department of Justice (“DoJ”) dated 4 April 2019 (“NAT Letter”) regarding the works of the North Approach Tunnels (“NAT”) which is subject to the control mechanism of IoC. As regards the 3 Issues identified by the Commission in the NAT Letter, this witness statement addresses certain questions in relation to compliance with the building safety standards under the Buildings Ordinance, Cap. 123 (“BO”) in respect of the building works of NAT which are subject to the control mechanism of IoC. I shall defer to my colleagues from HyD to address other questions in the NAT Letter that may be relevant to the 3 Issues. Save where otherwise appears, the facts referred to in this witness statement are within my personal knowledge or are derived from office files and records and sources to which I have access and are true to the best of my knowledge,

information and belief. Save as otherwise specified, this witness statement adopts the same abbreviations and nomenclature used in the NAT Letter.

3. I have also made two other witness statements (i.e. my 3<sup>rd</sup> and 4<sup>th</sup> Witness Statements) pursuant to the request of the Commission set out in two other letters from Messrs. Lo & Lo to DoJ dated 4 April 2019 regarding the works of the South Approach Tunnels (“SAT”) and Hung Hom Stabling Sidings (“HHS”) respectively which are subject to the control mechanism of IoE.

4. This witness statement addresses the following questions in the NAT Letter (“**Questions**”) and is divided into the following parts:

- (1) Part A deals with the overall control mechanism for NAT and also provides the required updates and supplemental information in relation to Issues 1 to 3 regarding NAT in response to Questions 1 to 4 and 6;
- (2) Part B explains the role and work of PYPUN-KD & Associates Limited (“**PYPUN**”) in response to Questions 7 to 9;
- (3) Part C covers the procedures and requirements in relation to approval of materials in response to Question 12 on Issues 1 and 2;
- (4) Part D deals with the lack of RISC forms, inspection and supervisory records and deviations at NAT in response to Questions 19, 21 to 24 regarding Issue 3; and
- (5) Part E covers other matters under the expanded terms of reference (“**TOR**”) relating to NAT in response to Questions 25 and 26.



**A. Overall control mechanism of NAT and updates and supplemental information (answer to Questions 1 to 4 and 6)**

***Building control mechanism for works covered by IoC***

5. Like IoE, various conditions and requirements imposed under IoC are also specified in the acceptance letters issued by RDO. A control mechanism is therefore in place to ensure that the works are properly executed to meet the standards required by BO and its subsidiary legislation even though BO Team is not directly involved in the supervision of the construction works, which is one of the main responsibilities of respective parties named in the IoC (as detailed in paragraph 7 below).

6. Under the administrative procedures and requirements stipulated in IoC, MTRCL is required to submit to RDO such drawings, plans, calculations and other details as may be necessary through the consultation process and to comply with any reasonable request made by BO Team of RDO. All the related design submissions are considered by BO Team with the assistance of the Building Submission Review & Compliance Team (“**BSRC Team**”) of PYPUN, the Monitoring and Verification Consultant engaged by HyD. The summary table provided in my 1<sup>st</sup> Witness Statement [**H7/2189-2191**] described in general the control mechanism at different stages of the works performed at the HUH Extension under the SCL Project. Similar control mechanism is adopted for the works governed by IoC, such as the works of NAT.

7. At the same time, BO Team would also specify in the acceptance letters relevant requirements in BO and Building (Administration) Regulations, Cap. 123A (“**B(A)R**”), Code of Practice for Site Supervision (“**Supervision Code**”) [**H8/2664-2783**] and Technical Memorandum for Supervision Plans [**H8/2784-2817**] requiring the Competent Person (“**CP**”) and the Authorized Signatory (“**AS**”) of the Registered Contractor (“**RC**”) to ensure that measures in respect of the quality assurance and control of such works are in place for proper execution of the works on site. For example:

- (1) CP and AS are required to provide qualified supervision for the works. Under the Entrustment Agreement between the Government and MTRCL, CP of MTRCL, who is required to take up the usual

responsibilities and duties of an Authorized Person and a Registered Structural Engineer under BO, should give periodic supervision of the works in accordance with regulation 37(1) of B(A)R and paragraph 6.3 of the Supervision Code [H8/2692].

- (2) RC, represented by AS, should give continuous supervision in accordance with sections 9(5) and 9(6) of BO, regulation 41(1) of B(A)R and paragraph 6.5 of the Supervision Code [H8/2692]. For the purpose of meeting the supervision requirements, RC has to allocate sufficient manpower to supervise the construction works on site depending on the type and scale of the works.
- (3) Under the Supervision Code and the Site Supervision Plan (“SSP”), CP and AS should have their own supervision team on site comprising Technically Competent Persons with the required qualifications and experiences.

8. In respect of the works of NAT, the structural design consultation submissions under IoC included Foundation (Rafts), Foundation (Socketed Steel H-pile), Pile Cap and Structure of NAT and Shunt Neck Tunnel. The structural works of NAT comprise an open-trough structure rested on compacted soil for EWL and an underground box-section tunnel for NSL partly constructed on compacted soil and partly supported by socketed H-piles, both of which extend from the junction between Contract 1111 and Contract 1112 up to HUH area and the northern limit of the HHS structures. Copy of the acceptance letter of NAT issued by BO Team on 6 December 2013 under Contract 1111 is contained in **Annex LPF-18**. Copies of all the relevant acceptance letters under Contract 1112 are contained in **Annex LPF-19**. Copies of the relevant latest accepted drawings relating to structures at NAT under Contract 1111 and Contract 1112 are contained in **Annex LPF-20 and Annex LPF-21** respectively.

9. It was specified in the latest accepted drawings for NAT and Shunt Neck Tunnel that couplers were to be used at the connections of the 3 stitch joints at NAT and the Shunt Neck Joint, i.e. the subject matters of Issue 1 and Issue 2.

10. A consolidated chronology of events setting out the involvement of



the relevant government departments, including that of BO Team in Issue 1 to Issue 3, has been provided in response to the letter from Messrs. Lo & Lo to the Government dated 6 March 2019. An updated chronology of events (up to 8 May 2019) was provided by the Government (“**Chronology**”) on 10 May 2019. For the purpose of this witness statement, I rely on the Chronology. Besides, insofar as BO Team is concerned, a brief account of the development of Issues 1, 2 and 3 is given below:

***BO Team’s key involvement in Issue 1***

11. As defined by the Commission in the NAT Letter, Issue 1 concerns 3 stitch joints in the works of NAT, they are (a) the NSL stitch joint between Contract 1111 and Contract 1112 (“**Joint 1**”), (b) the NSL stitch joint within Contract 1112 (“**Joint 2**”), and (c) the EWL stitch joint between Contract 1111 and Contract 1112 (“**Joint 3**”) (collectively referred to as “**Stitch Joints**”).

12. On 13 March 2018, BO Team first came across the issue of problematic Stitch Joints at NAT via email from BSRC Team which included a media enquiry of 12 March 2018 [DD1/38.124-38.128]. On 16 March 2018, BO Team received a draft incident report (i.e. connection joints report to RDO) from MTRCL via email on the defective reinforced concrete Stitch Joints [DD1/59]. According to the draft incident report [DD1/43-57], water seepage was found as early as in August 2017, and subsequent grouting works were found ineffective in January 2018. In this context, the draft incident report also referred to lack of proper rebar connection at the Stitch Joints due to defective workmanship. BO Team subsequently provided comments on the draft incident report to MTRCL via email on 20 March 2018 [DD1/58-60]. MTRCL was requested to (i) formally submit incident report to RDO and provide mitigation measures to prevent reoccurrence of the incident; (ii) investigate the extent and details of defective workmanship and other construction works with possible defective workmanship under Contract 1112; and (iii) submit remedial proposal and corresponding structural amendment submission, etc.

13. MTRCL submitted to BO Team a remedial proposal for stitch joint at EWL trough, i.e. Joint 3 [DD1/69-74], a revised SSP on 22 March 2018 [DD1/61-68] and an updated Quality Supervision Plan for installation of couplers on 26 March 2018 [DD1/75-108], which include enhanced site

supervision and quality control by deploying an independent quality control team to ensure all the remedial works are carried out satisfactorily. BO Team and BSRC Team vetted the remedial proposal and discussed with MTRCL on 23 March 2018. MTRCL then submitted to BO Team a revised remedial proposal for Joint 3 on 26 March 2018 [DD1/109-110] and BO Team issued an acceptance letter with imposed requirements to MTRCL on the remedial proposal for Joint 3 on 27 March 2018 [DD1/150-153].

14. In further response to the email issued by BO Team on 20 March 2018, MTRCL submitted to RDO a formal incident report (i.e. Report of Defective Works Identified at Tunnel Stitch Joints at Contract 1112) on 27 March 2018 [DD1/113-149]. The report shows that upon investigation it was revealed that *“the several exposed re-bars were not coupling to the couplers reserved by SCL1111 Contractor within the adjacent tunnel structures”* and remedial works for the Stitch Joints were being carried out. However, MTRCL provided no photo records showing the original improperly connected rebars and couplers at the Stitch Joints and did not identify the cause of water seepage observed at the Stitch Joints in the report. On the other hand, BO Team carried out site inspection with BSRC Team on 27 March 2018 to inspect the irregularities and discovered that the remedial works for the Stitch Joints at NAT were already in progress (see inspection report at **Item 15 of Chronology**).

15. MTRCL submitted to BO Team a remedial proposal for Joint 1 and Joint 2 at NSL tunnel on 29 March 2018 [DD1/157-163], which was followed by a revised remedial proposal on 12 April 2018 [DD1/166-172]. BO Team issued an acceptance letter to MTRCL on the remedial proposal for Joint 1 and Joint 2 on 13 April 2018 [DD1/173-177]. Another site inspection was carried out by BO Team and BSRC Team on 17 May 2018 to check the progress of the remedial works for the Stitch Joints (see inspection report at **Item 31 of Chronology**).

16. The remedial proposal involved the use of new couplers together with drill-in bars and epoxy grout or replacement of damaged couplers with new couplers. MTRCL advised that the remedial works for the Stitch Joints were completed in July 2018 [DD2/403-410].

17. As mentioned in the acceptance letters issued to MTRCL on



27 March 2018 [DD1/150-153] and 13 April 2018 respectively for the Stitch Joints [DD1/173-177], MTRCL should incorporate details of the remedial works carried out in accordance with the remedial proposals into the related design amendment submissions for tunnel structures of Contract 1111 and Contract 1112 for consultation. However, the required design submissions were only made by MTRCL to RDO on 15 February 2019 [DD3/1213.1-1213.17]. After vetting the submissions, BO Team accepted the submissions on 4 April 2019 [Item 187 of the Chronology].

18. BO Team instructed BSRC Team to carry out site inspection to NAT, SAT and HHS twice a week since 5 March 2019. Inspections focusing on structural safety were only carried out to the structures at NAT, SAT and HHS which are accessible. So far, no obvious structural safety issue at NAT was observed.

19. From a structural assessment report received from MTRCL on 28 February 2019 [DD3/1227-1249], it was noted that water seepage was observed at Joint 2 within the NSL tunnel at NAT. Water seepage was also noted by BSRC Team during site inspections on 26 March 2019, 28 March 2019 and 2 April 2019 respectively. In an attempt to stop the seepage, grouting works were carried out on site. Another inspection carried out by BSRC Team on 30 April 2019 revealed that water seepage at Joint 2 had ceased. According to the reports produced by PYPUN in respect of the above site inspections, no obvious structural defect / irregularity was found at Joint 2 [Items 171, 176, 184 and 230 of the Chronology]. BO Team has no knowledge of the cause of the water seepage at Joint 2 which was discovered recently.

### ***BO Team's key involvement in Issue 2***

20. On 14 May 2018, MTRCL all of a sudden submitted to RDO a remedial proposal for shunt neck connection at 1111/1112 Interface for NAT Structure (“Shunt Neck Joint”) [DD1/191-194]. BO Team noted that this issue related to structural defect and sent an email on 15 May 2018 to MTRCL requesting information on the extents / locations / details of the structural defects found [DD1/371.1-371.2]. On 13 July 2018, by way of email, MTRCL provided BO Team “The Shunt Neck Connection Report” [DD1/371.1-371.7]). MTRCL sent a letter to BO Team on 19 July 2018

withdrawing the above remedial proposal [DD1/400]. BO Team provided comments on the remedial proposal and “The Shunt Neck Connection Report” via email on 23 July 2018 [DD2/410.1-410.3] and requested MTRCL to submit the latest remedial proposal to RDO for comment. BO Team issued a letter to MTRCL on 14 September 2018 [DD2/466] reminding MTRCL to provide design review / justification for the corresponding non-conformities even if no physical remedial works were involved and to provide a copy of the incident report dated 13 July 2018 as mentioned in its withdrawal letter of 19 July 2018.

21. MTRCL formally submitted an incident report dated 26 October 2018 and another remedial proposal to RDO on 30 October 2018 [DD2/717-1089]. In response to MTRCL’s submissions, BO Team issued a letter with comments to MTRCL on 21 December 2018 [DD3/1118-1120]. A fax copy of the responses to comments from MTRCL was received on 23 April 2019 [Item 212 of Chronology] and another letter dated 29 April 2019 regarding re-submission of remedial proposal together with the responses to comments was received [Item 222 of Chronology].

### ***BO Team’s key involvement in Issue 3***

22. In response to the lack of RISC forms<sup>1</sup> mentioned in MTRCL’s letter of 28 February 2019 [DD3/1227-1230], between 10 April 2019 and 16 April 2019, BO Team joined PYPUN and other staff members of RDO for the purpose of on-site checking of the status of the RISC forms for NAT, SAT and HHS [Items 194, 197, 200, 202 and 203 of Chronology].

23. In view of MTRCL’s delay in ascertaining details of the works as-constructed and deviations, BO Team issued another letter on 24 April 2019 [Item 214 of Chronology] urging MTRCL to provide the relevant information in relation to the works of NAT. Up to the present, no response has been received from MTRCL.

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<sup>1</sup> RISC form is a quality control document under the Project Integrated Management System of MTRCL. It is neither a requirement under BO nor a required document specified in the acceptance letters issued by BO Team.



**B. Role and work of BSRC Team of PYPUN (answer to Questions 7-9)**

24. In vetting the submissions from MTRCL, BO Team is assisted by BSRC Team to ensure the standards set out in BO and other relevant ordinances and subsidiary legislation are complied with. In support of BO Team, BSRC Team provides professional services on assessment of building submissions to ensure compliance with BO and other relevant ordinances, regulations and standards. During the course of construction, BSRC Team would carry out site witnessing according to the specific requirements stated in the acceptance letters and perform site audit / inspection if necessary. BSRC Team has adopted a risk-based approach in determining whether, and if so when, site inspections / audits are required depending on the type, scale and complexity of the construction works. A summary of BSRC Team's site inspection / audit / witnessing records is at **Annex LPF-22**. It must be borne in mind that CP, AS and RC must comply with the requirements set out in paragraph 7 above. My colleagues from HyD would address the Commission on the other aspects of PYPUN's role in relation to the 3 Issues.

25. Meanwhile, in relation to the works of NAT, as mentioned above, it has always been incumbent upon MTRCL and Leighton Contractors (Asia) Limited ("**Leighton**") to ensure that the works are carried out in accordance with the accepted design and the measures in respect of the quality assurance and control of such works would be in place and complied with for proper execution of the works on site. As part of PYPUN, BSRC Team has delivered professional work for the purpose of assisting BO Team with a view to ensuring compliance with the relevant building safety standards and requirements. Since BSRC Team was not involved in the day-to-day inspection or supervision of the construction work on site, non-conformities in the execution of rebar fixing work or installation of coupler assemblies would not necessarily be spotted by PYPUN in the discharge of its duties. Whilst the present non-conformities were not discovered by PYPUN, it may not be appropriate to form a definitive assessment of the quality of its work in this regard purely based on this fact without fully ascertaining all the circumstances relating to such non-conformities. However, BO Team will provide input to HyD in reviewing the role and work of BSRC Team in order to ensure the effectiveness and efficiency of the same in discharging its duties.

26. Insofar as BSRC Team's work in investigating the above non-conformities is concerned, the relevant work carried out by the BSRC Team since the discovery of the issues has so far been considered acceptable.

**C. Approval of materials at NAT (Issue 1 and Issue 2) (answer to Question 12)**

27. The connection details accepted by RDO and to be adopted by the contractors concerned for Joint 1, Joint 3 and Shunt Neck Joint at the interface between Contract 1111 and Contract 1112 were originally proposed by MTRCL under a design package for Contract 1111, details are summarised as follows:

<b>Joint 1, Joint 3 and Shunt Neck Joint</b>	<b>Contract 1111</b>
CP of MTRCL in 2016-2017	Mr. Jason Wong
Contractor	Gammon – Kaden JV
Acceptance Letter	RDO's letter dated 6 December 2013 (at <b>Annex LPF-18</b> ) (Appendix VII of the letter is the imposed conditions for the couplers)
Type of material proposed and <b><u>accepted</u></b> at Joint 1, Joint 3 and Shunt Neck Joint	Coupler assembly with T20 threaded rebar (for Shunt Neck Joint) or T32 threaded rebar (for Joint 1 and Joint 3)
Brand of coupler assembly proposed by MTRCL and <b><u>used</u></b> at Joint 1, Joint 3 and Shunt Neck Joint	"Lenton" coupler as mentioned in MTRCL's letter dated 2 August 2018 to HyD [ <b>DD2/415-416</b> ]
Quality Assurance Scheme ("QAS")	MTRCL's Letter dated 30 November 2015 for "Lenton" Type 2A (at <b>Annex LPF-23</b> ) submitted by CP and accepted by BO Team on 11 December 2015 (at <b>Annex</b>



	<b>LPF-24)</b>
Drawing number of relevant accepted drawings (Contract 1111 and Contract 1112)	1111/B/000/ATK/C11/246 to 249 (at <b>Annex LPF-20</b> ) and 1112/B/000/ATK/C11/247 to 249 (at <b>Annex LPF-21</b> ) for Joint 1 and Joint 3 at NAT and Shunt Neck Joint

28. The structural design submissions of NAT for consultation under the IoC included the “North Approach Tunnels – Tunnel & Shunt Track, Foundation, Pile Cap & Tunnel Base Slab and Retaining Structure” under Contract 1111 and “Foundation (Rafts & Socketed Steel H-pile), Pile Cap & Structure for NAT and Shunt Neck Tunnel” under Contract 1112.

29. In respect of the interfacing works between Contract 1111 and Contract 1112, BO requirements were imposed in the acceptance letters for coupler assemblies at Appendix VII of the letter dated 6 December 2013 (at **Annex LPF-18**). In respect of the requirements for coupler assemblies to be used at the Stitch Joints between Contract 1111 and Contract 1112, CP is required to submit a QAS of the proposed coupler’s manufacturer to BO Team prior to the commencement of the coupler works.

30. According to the accepted drawings of Contract 1111 and Contract 1112, there is a typical section showing details of Joint 1 and Joint 3 to be constructed under Contract 1111 and Contract 1112 respectively while the specific brand of the couplers to be used by the contractors are not specified by MTRCL’s designer therein (see drawings of Contract 1111 nos. 1111/B/000/ATK/C11/247(B), 1111/B/000/ATK/C11/248(B), and 1111/B/000/ATK/C11/249(B) at **Annex LPF-20** and drawings of Contract 1112 nos. 1112/B/000/ATK/C11/247(B), 1112/B/000/ATK/C11/248(B), and 1112/B/000/ATK/C11/249(B) at **Annex LPF-21**).

31. Under Contract 1111, the CP (who is also the CP of Contract 1112 at the material time) has submitted to BO Team a QAS for “Lenton Type A2” coupler assembly on 30 November 2015 which covered the couplers to be used at Joint 1 and Joint 3 at the interface between Contract 1111 and Contract 1112. In addition, after delivery of each batch of Lenton Type A2 couplers to the site

under Contract 1111, strength tests of a representative number (sampling rate provided in paragraph 4(b) of Appendix VII of acceptance letter dated 6 December 2013 of **Annex LPF-18**) of the coupler assemblies (i.e. couplers installed with threaded rebars) were carried out by a testing laboratory prior to the actual installation works on site. The test results revealed that the tested coupler assemblies were in compliance with the technical requirements set out in the acceptance letter and the corresponding technical specification of the coupler manufacturer. Under normal circumstances, MTRCL and the registered general building contractors of Contract 1111 (i.e. Gammon-Kaden JV) and Contract 1112 (i.e. Leighton) would have knowledge of the technical specification of the coupler assembly prior to construction of Joint 1 and Joint 3. MTRCL would definitely have such knowledge as the material submission for Lenton Type A2 coupler was made by it. In this incident, Leighton, as the registered general building contractor of Contract 1112, in building Joint 1 and Joint 3 should pay particular attention to the type and brand of couplers used by Gammon-Kaden JV under Contract 1111 and to ensure that compatible threaded rebars are being used to effect a proper connection at Joint 1 and Joint 3. A copy of the relevant QAS is provided at **Annex LPF-23**. This QAS was acknowledged by BO Team in the letter dated 11 December 2015 (see **Annex LPF-24**).

32. As to the suggestion that the defects identified at the interface connections between Contract 1111 and 1112 appeared to be the result of a mismatch of materials used for the two contracts, I wish to highlight the following points:-

- (1) According to the accepted drawings (see **Annex LPF-21**) for the works at the interface between Contract 1111 and Contract 1112, the rebars for the area Contract 1112 are to be connected to the couplers left in place under Contract 1111.
- (2) For the purpose of Contract 1111, the specifications and requirements for Lenton Type A2 coupler assembly were provided in the QAS submitted by MTRCL and accepted by BO Team. Insofar as Contract 1111 is concerned, only one type of coupler has been accepted by BO Team for the rebar connections at the interface. Hence, in order to achieve proper connection to the Lenton couplers installed at the interface by the contractor of Contract 1111, all that



Leighton has to do is to ensure that appropriately threaded rebars are used such that they can be fitted into the Lenton couplers.

- (3) On the other hand, the BOSA couplers submitted by MTRCL and accepted by BO Team for the purpose of Contract 1112 have nothing to do with the coupler installations at the interface. Hence, MTRCL and Leighton knew and must have known what materials should be used for coupling works at the interface.

33. According to Section 4.3 of Project Management Plan (“PMP”) version E [H7/2380], CP appointed in respect of the specific area of works is responsible for coordinating with other CPs for works at interfaces. The notice of appointment of CP dated 25 March 2013 [B10/7037], 2 September 2013 [B10/7068], 4 February 2015 [B10/7132], and 8 August 2018 [B10/7171] from MTRCL also revealed that the same CP was responsible to supervise the works of both Contract 1111 and Contract 1112 at the material time. It is further noted that, according to a letter dated 2 August 2018 from MTRCL to RDO, several meetings regarding the interfacing work between Contract 1111 / Contract 1112 took place in February, June and August 2015. In those meetings, Leighton was informed of the details of the accepted Lenton couplers that the contractor of Contract 1111 would be using at the connecting face of Joint 1 and Joint 3 to be built by Leighton [DD2/416].

34. The alleged defects in the rebar fixing works at the Stitch Joints and the Shunt Neck Joint were reported to RDO by MTRCL in the following 4 reports, viz. “Connection Joints Report” [DD1/43-57], “Report of Defective Works identified at Tunnel Stitch Joints at Contract 1112” [DD1/113-149], “Shunt Neck Connection Report” [DD1/371.1-371.7] and “Shunt Neck Incident Report at 1111/1112 Interface of NAT Structure Contract 1112” [DD2/719-734]. When BO Team first inspected Issue 1 on 27 March 2018, the defective work at the interface had already been removed by the contractor. Hence, BO Team did not have the opportunity to examine the alleged defects of the rebar fixing works.

**D. Lack of RISC forms, inspection and supervisory records and deviations at NAT (Issue 3) (answer to Questions 19, 21-24)**

35. BO Team received a copy of MTRCL’s letter to RDO on

20 December 2018 [DD3/1115-1117] informing that, in addition to RISC forms, the missing construction records for the works of NAT also included specific information about change of design of some connections during construction from lapping of rebars to coupler connections, extent of the change, and materials testing records. In the letter, MTRCL anticipated that there were similar problems in relation to the works of SAT. There was no mention of the works of HHS at that stage. Subsequently, on 23 January 2019, at a meeting among MTRCL, HyD, BD and Fire Services Department to discuss the proposed arrangement for possible partial commissioning of SCL, MTRCL reported that the preparation for submitting Certificate of Completion (“CoC”) of the building works at NAT was likely to be seriously affected by the lack of sufficient inspection records and material testing records, and the fact that some of the lapped rebars were changed to coupler connections without prior consultation with the Government. MTRCL further advised at the meeting for the first time that similar to NAT, the submission of CoC for the building works of SAT and HHS might also be affected due to lack of sufficient records. Prior to the receipt of the aforesaid letter and the meeting on 23 January 2019, BO Team had no knowledge of the said deviations in the splicing method of rebars.

36. On 30 January 2019, MTRCL gave a presentation to BD and RDO on Issue 3 for the works of NAT, SAT and HHS [DD3/1182-1197]. MTRCL advised that the scale and extent of the problem were yet to be ascertained.

37. On 28 February 2019, BO Team received a copy of a letter from MTRCL [DD3/1227-1230] in which MTRCL undertook to provide Stage 1 assessment (also known as Part 1 of Verification Proposal) of SAT and HHS by end March 2019. However, MTRCL wrote to RDO on 27 March 2019 [Item 173 of Chronology] requesting more time to verify the as-constructed works at NAT, SAT and HHS. The exact extent and details of the deviations are not yet available to date from MTRCL and therefore the locations of the deviations are still unknown to the Government.

38. On 4 April 2019, MTRCL submitted to RDO a draft “Holistic Proposal for Verification & Assurance of As-constructed Conditions of the Hung Hom Stabling Sidings, North Approach Tunnels & South Approach Tunnels” [Item 185 of Chronology]. BO Team provided initial comments on the proposal to RDO for consolidation. RDO issued a consolidated reply



subsequently on 9 April 2019 [Item 192 of Chronology]. On 26 April 2019, MTRCL submitted a proposal renamed as “Verification Proposal of As-Constructed Conditions of the HHS, NAT & SAT” [Item 215 of Chronology]. On 7 May 2019, MTRCL submitted a revised proposal (revision D) to the Government [Item 232 of Chronology].

*Deviations at NAT*

39. According to the splicing method specified in the accepted drawings for NAT, the continuity of rebar is to be provided by physical lapping of the two rebars concerned. As informed by MTRCL during the presentation on 30 January 2019, the splicing method was changed from lapping of rebars to coupler connection. Two examples of such deviations at NAT are shown in the photos entitled “change on use of Type 1 coupler instead of lapped bar at some of the construction joints” at [DD3/1188] and [DD3/1189].

40. Coupler is an alternative splicing method to the lapping of rebars, and both methods are stipulated in the Code of Practice for Structural Use of Concrete 2004 as acceptable methods subject to their respective requirements. Although lapping of rebars and couplers are both accepted methods of splicing, the use of coupler is subject to additional quality assurance, quality control and testing requirements, which have been explained in detail in paragraphs 10 to 15, 24 & 25 of my 1<sup>st</sup> Witness Statement [H7/2192-2196].

41. Therefore, prior to the commencement of the splicing works concerned, a consultation submission should be made for acceptance by BO Team to effect any change of splicing method in accordance with the procedures set out Appendix 9 of the PMP [H7/2498]. According to BO Team’s records, no consultation for such changes at the NAT was ever made by MTRCL.

**E. Other matters under the expanded TOR (answer to Questions 25 and 26)**

42. I shall defer to my colleagues from HyD to address Questions 25 and 26 in detail.

43. BO Team will continue to review its work in order to ensure public safety and quality of works in future by, amongst others, taking into account the findings of the Commission in the present inquiry under the expanded TOR. BO Team will continue to take part, in aspects relating to the building safety standards under BO, in HyD's enhancement measures that have been implemented since the discovery of the issues at HUH Extension as well as any follow up actions that HyD may have in light of the recommendations set out in the Commission's Interim Report and in response to further recommendations as may be made by the Commission at the conclusion of the present inquiry.

44. I confirm that the contents of this witness statement are true to the best of my knowledge, information and belief.

Dated this 14<sup>th</sup> day of May 2019



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LOK PUI FAI