

**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 APPOINTED PURSUANT TO
SECTION 2 OF THE COMMISSION OF INQUIRY ORDINANCE
(CAP 86) ON 10 JULY 2018**

WITNESS STATEMENT OF LI TSZ WAI, RALPH

I, LI Tsz Wai, Ralph, the Chief Engineer/Railway Development 1-1 of 1st Floor, Homantin Government Offices, 88 Chung Hau Street, Homantin, Kowloon, do say as follows:

1. I am the Chief Engineer/Railway Development 1-1 ("CE/RD1-1") and have held this position since 21 February 2017. The CE/RD1-1 is the divisional head of Railway Development Division 1-1 of the Railway Development Office ("RDO") of the Highways Department ("HyD") which is mainly responsible for the implementation of the Hung Hom Station ("HUH") Extension under Shatin to Central Link ("SCL") Project as well as the SCL portion in the Admiralty Station Extension and Homantin Station, the vesting arrangement of SCL, finalisation of the Kwun Tung Line Extension ("KTE") project and implementation of two new railway projects, namely the Northern Link (including Kwu Tung Station) and Tuen Mun South Extension.

2. Before I took up the present position, I was seconded from HyD to the Transport and Housing Bureau ("THB") and took the post of Assistant Secretary (Transport) 7A between 20 February 2013 and 20 February 2017. My main duties then were to monitor the progress of the SCL Project for the section between Sung Wong Toi Station and Hung Hom Station, and to handle the landholding arrangement of SCL. Besides, I took care of matters of the KTE project that required policy support or advice, and assisted in the administration of the Railways Ordinance Unit.

3. I make this statement pursuant to the request of the 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 ("**the Commission**") set out in a letter from Messrs Lo & Lo to THB and HyD dated 1 August 2018 ("**the 1 August Letter**"). Save where otherwise appears, the facts deposed hereto 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 statement adopts the same abbreviations and nomenclature as in the 1 August Letter.

4. I will respond in this statement to Questions 2, 4, 5, 7, 10, 11, 13, 14 and 15 at pages 6 to 18 ("**Questions**") of the 1 August Letter. In summary:

- (1) Part I explains the mechanisms for monitoring the SCL Project, in answer to Question 2.
- (2) Part II deals with the construction of diaphragm walls and platform slabs of the HUH Extension, in answer to Question 4.
- (3) Part III explains the requirements for reinforcement fixing in diaphragm walls and platform slabs, in answer to Question 5.
- (4) Part IV sets out HyD's response to the suspected Defective Steel Works in diaphragm walls and platform slabs, in answer to Question 7.
- (5) Part V addresses the allegations in the press and media reports, in answer to Question 10.
- (6) Part VI deals with the allegations of Mr Poon Chuk-hung of China Technology Corporation Limited, in answer to Question 11.
- (7) Part VII is about HyD's statements to the Police, in answer to Question 13.
- (8) Part VIII is concerned with the load test, in answer to Question 14.

- (9) Part IX sets out HyD's response to whether there are any other works which raise concerns about public safety, in answer to Question 15.

5. By way of background, I should mention that the Government funds the construction of the railway and its ancillary infrastructure for the SCL Project. The MTR Corporation Limited ("**MTRCL**") is entrusted with the design, construction, testing and commissioning of the proposed SCL under the Entrustment Agreements ("**EAs**")¹ (a copy of which is at **Annex RL-1**). The EAs were signed between THB (for and on behalf of the Government) and MTRCL. RDO of HyD is the representative of THB in the execution of the EAs. Upon completion of the proposed SCL, MTRCL would be granted a service concession for the operation.

Part I – Mechanisms for Monitoring the SCL Project

(My response to Question 2 of the 1 August Letter)

6. Under the EAs, MTRCL is responsible for the overall management of the SCL Project. The Government closely monitors the work of MTRCL through a **Project Supervision Committee ("PSC")**, the monthly **Project Coordination Meetings ("PCMs")** and monthly **Project Progress Meetings ("PPMs")**. HyD has appointed a monitoring and verification ("**M&V**") Consultant, Pypun-KD & Associates Limited, to assist in the appraisal, monitoring and audit of the activities/processes of MTRCL. The M&V Consultant verifies that these activities/processes are carried out in accordance with MTRCL's management and control procedures, in compliance with the 3 EAs for the SCL design and site investigation, advance works or construction phases, and that value for money is achieved through procedures that are complied with. The M&V Consultant also recommends improvement measures whenever appropriate. For the details of PSC and PCMs, they will be provided in the statement of Mr. Leung Man-ho to the Commission.

¹Three Entrustment Agreements of SCL, namely "EA1", "EA2" and "EA3" were signed on 24 November 2008, 17 May 2011 and 29 May 2012 respectively.

7. Officers at Chief Engineer level of RDO, with the attendance of the M&V Consultant, join the monthly PPMs which are chaired by a General Manager of MTRCL responsible for the whole SCL Project. Under the current establishment of RDO, there are two more Chief Engineers overseeing the SCL Project, namely Chief Engineer/Railway Development 1-2 (“CE/RD1-2”) and Chief Engineer/Railway Development 1-3 (“CE/RD1-3”), who are mainly responsible for the implementation of North-South Line (“NSL”) and East-West Line (“EWL”) of SCL respectively. Their duties do not overlap with mine (as CE/RD1-1) under SCL as referred to in paragraph 1 above. Prior to May 2018, CE/RD1-2 and CE/RD1-3 attended the PPMs on behalf of HyD. I have been joining the PPMs since May 2018 as a result of the recent media reports on quality issues in the HUH Extension.

8. At the PPMs, MTRCL’s respective teams report the progress of works for the major civil and Electrical & Mechanical (“E&M”) contracts and issues which may affect the progress for discussion. Monthly project progress reports will be submitted by MTRCL for discussion at the PPMs. The monthly project progress reports cover the following:

- (1) Project Overview;
- (2) Construction safety;
- (3) Design management issues of civil and E&M works;
- (4) Project management of civil and E&M contracts;
- (5) Stakeholder management – Government;
- (6) Stakeholder management – Community;
- (7) Programming;
- (8) Land Administration;
- (9) Procurement of civil and E&M contracts;
- (10) Project system assurance;
- (11) Architectural and Environmental issues;
- (12) Quality assurance; and
- (13) Operation and maintenance planning.

9. Up till July 2018, a total of 124 PPMs were held. Copies of relevant pages of the minutes and reports of the PPMs are at **Annex RL-2**.

Part II - Construction of diaphragm walls and platform slabs of HUH Extension

(My response to Question 4 of the 1 August Letter)

10. As MTRCL and its contractor are responsible for the actual steps, procedures and timeline in the construction of diaphragm walls and platform slabs, which largely depend on the site conditions, availability of construction plant and expertise of the contractors, HyD is not in a position to describe and explain precisely the steps, procedures and timeline in the construction and completion of the steel fixing works in the diaphragm walls and platform slabs for this specific case at the HUH Extension. It would be more appropriate for MTRCL and its contractor to provide a detailed description of the construction method and timeline of the diaphragm walls and platform slabs of the HUH Extension. If it is considered that HyD should provide further information in this regard, HyD will consider appointing an expert in this field to assist the Commission.

11. Apart from the reports produced by the M&V Consultant (which will be addressed in the statement of Mr. Leung Man-ho), HyD does not have site diaries or supervision records in relation to the steel fixing works in the diaphragm walls and platform slabs under Contract 1112.

Part III - Requirements for reinforcement fixing in diaphragm walls and platform slabs

(My response to Question 5 of the 1 August Letter)

12. The Requirements, Standards and Practice (as defined in Question 5 of the 1 August Letter) for the steel bars works are stipulated in the contract documents of Contract 1112 provided by MTRCL to HyD, including the General Specification (“GS”), Particular Specification (“PS”), and Material and Workmanship Specification for Civil Engineering Works (“M&W Specification”). I have extracted the relevant requirements from the contract documents in the ensuing paragraphs for illustration purposes. Copies of relevant extracts are at

Annex RL-3.

13. Clause P2.4 of the PS requires the contractor to prepare and submit to MTRCL method statements, construction sequences and Temporary Works designs for the works to be constructed. According to Clause G9.2.3 of the GS, the contractor shall submit an associated Inspection and Test Plan prior to the commencement of platform slab construction for MTRCL's approval, which includes and identifies "Hold Points"² for certain essential activities.

14. Moreover, pursuant to Clause 10.36 of the M&W Specification, the contractor shall allow MTRCL to inspect the completed reinforcement before carrying out any further work, including erecting formwork adjacent to reinforcement, which will make access to the reinforcement difficult.

15. Section 10 of the M&W Specification stipulates the specification on materials and workmanship for steel reinforcement. The specification as well as the sampling and testing requirements for couplers are also included in this section of the M&W Specification.

16. I understand that MTRCL had submitted the "Quality Supervision Plan Submission of the Proposed Ductility Coupler for Diaphragm Wall Reinforcement Cage and Slab Construction at Hung Hom Station" to the Buildings Department ("BD") and copied the same to HyD. Details of the submissions regarding couplers are handled by BD.

Part IV - Suspected Defective Steel Works in diaphragm walls and platform slabs

(My response to Question 7 of the 1 August Letter)

17. As far as I know, HyD is not aware of the suspected Defective Steel Works as set out in the 1 August Letter until the media enquiry on 29 May 2018. For the key actions taken by HyD after 29 May 2018 and

² According to paragraph 5.3.1 of the MTRCL's incident report submitted on 15 June 2018, *Hold Point is a point in time when a notice of permission, consent or no objection by an MTRCL engineer and/or inspector is required or an approval or consent by a Relevant Authority or Utility Undertaker is required before Leighton can commence, proceed with or terminate an activity.*

up to 30 August 2018, please refer to the Summary of Key Events attached to this statement (“**Summary**”). Copies of the relevant documents referred to in the Summary are at **Annex RL-4**). The Summary may need to be updated as and when necessary.

18. Pursuant to the request in the letter from Messrs Lo & Lo to HyD dated 8 August 2018 (“**the 8 August Letter**”), HyD will separately produce copies of all correspondence exchanged between HyD and MTRCL from 30 May 2018 to the Commission.

Part V - Allegations in the press and media reports

(My response to Question 10 of the 1 August Letter)

19. The Government’s comments on the allegation that appeared in the two articles of Apple Daily on 30 May 2018 are contained in the Government’s press release issued on 31 May 2018. In view of the significance of the allegation regarding the suspected Defective Steel Works in the media reports on 30 May 2018, HyD has taken a series of follow up actions as set out in the Summary. Apart from the initial focus of the investigation on the EWL slab, HyD has also asked MTRCL to examine whether there are other irregularities in diaphragm walls and platform slabs. HyD does not agree that MTRCL is allowed to confine its investigation to the EWL platform slab only.

20. In response to the 8 August Letter, HyD has separately provided the Commission with the Additional Technical Documents (“**ATD**”) and Schedules 1 and 2 to MTRCL’s letter to HyD dated 15 June 2018 (“**15 June Letter**”), as referred to in item 6 of the Summary.

21. After the media reports on 30 May 2018, HyD and the M&V Consultant carried out an on-site inspection at the HUH Extension on the same day, which included checking of the inspection records of MTRCL. No serious crack or serious water leakage in the concrete structures was observed during the site inspection. HyD has requested MTRCL to provide bi-weekly reports detailing the defects of cracks and water seepage found, starting from 20 August 2018 until further notice, and asked the M&V Consultant to carry out *ad-hoc* site visit to monitor the

condition of the structures. HyD is still in the process of ascertaining the exact cause and extent of the matter and is not yet in a position to form a concluded view at this stage

22. No report had been made to HyD about any difficulties or issues relating to the suspected Defective Steel Works until the meeting of 1 August 2018 between HyD and MTRCL (see item 29 of the Summary). That said, if it were the case that MTRCL had wanted to follow a different design, it should have followed the pre-set procedures for design change and obtained BD's prior approval (or acceptance) before execution of the works concerned. HyD was not aware of any instructions given by MTRCL's contractor, Leighton Contractors (Asia) Limited ("**Leighton**"), for the suspected Defective Steel Works in order to overcome any difficulties or issues.

23. At the moment, HyD does not yet have sufficient information to determine the existence or otherwise of the suspected Defective Steel Works, or their locations and extent (if they do exist). As such, it is not possible for HyD to comment at this stage on whether "*it is common in the construction of diaphragm walls and platform slabs for steel bars to be shortened and cut*" in the SCL project", or to assess whether the suspected Defective Steel Works would compromise the quality, safety and/or integrity of the diaphragm walls and platform slabs. However, given that further evidence will be adduced by all relevant parties for the purpose of the present Inquiry, HyD will continue to look into all safety issues in order to alleviate public concern.

24. I should also make clear that, if the suspected Defective Steel Works do exist and were caused by the shortening and/or cutting of steel bars as alleged in the media reports, then in HyD's view they are unacceptable and in contravention of the Requirements, Standards and Practice.

25. As to whether the suspected Defective Steel Works are apparent on visual inspection, that again depends on their nature and extent. As such, it is difficult for HyD to provide a definite answer at this stage. What I can say is that it is likely that such Defective Steel Works could be detected if every step in the course of the steel fixing works was closely

supervised and monitored by MTRCL and Leighton. The degree of such likelihood would also depend on the scale and extent of the Defective Steel Works carried out by workers.

Part VI - The allegations of Mr POON Chuk-hung ("Mr Poon")

(My response to Question 11 of the 1 August Letter)

26. According to my understanding, HyD was not aware of the allegations of Mr. Poon that some steel reinforcement bars were shortened or cut by "hydraulic cutters" on site prior to the relevant media reports/interviews. Since the media enquiry on 29 May 2018, HyD has taken a series of actions as set out in the Summary. As HyD is still ascertaining the nature and cause of the suspected Defective Steel Works, it is not presently in a position to verify or comment on Mr. Poon's allegation.

27. In general, when a 'hydraulic cutter' referred to in Question 11 of the 1 August Letter is used as a device for cutting rebars, its function is to cut rebars to the designed length for subsequent rebar fixing in the diaphragm wall and slab. On the other hand, if 'hydraulic cutter' is used by a contractor to cut short the thread of a rebar with a view to creating a false impression that sufficiently long threaded rebars have been properly screwed into the coupler, such practice is certainly unacceptable and could amount to an illegal act. Nonetheless, I am not aware that such an unacceptable practice is common within the industry.

28. My response to the other parts of Question 11 of the 1 August Letter is covered in the Summary.

Part VII – HyD's Statements to the Police

(My response to Question 13 of the 1 August Letter)

29. HyD received the incident report dated 15 June 2018 from MTRCL ("**15 June Report**") at around 5pm on 15 June 2018 and referred the matter to the Police. Since 29 June 2018, the Police have approached me for taking statements. As far as I know, I am the only

officer of HyD who has provided statements to the Police. All the statements and information that I have produced to Police to facilitate their investigation in this regard are attached at **Annex RL-5**.

Part VIII - Load Test

(My response to Question 14 of the 1 August Letter)

30. MTRCL submitted the Structural Safety Test Outline Proposal to HyD and BD on 22 June 2018, in respect of which HyD provided its comments on 11 July 2018. On 20 July 2018, MTRCL provided HyD with comments from its independent expert in response to HyD's earlier comments. The related correspondences are at **Annex RL-4**.

31. As stated in the paper submitted by THB and HyD to the Legislative Council ("**LegCo**") Panel on Transport for a meeting on 31 August 2018, depending on the views of BD's expert on building structural safety and the Expert Adviser Team established by THB, and whether MTRCL could provide sufficient and reliable information and evidence, the Government would not rule out the option of opening up part of the connection between platform slab and diaphragm walls for examination.

Part IX - Any other works which raise concerns about public safety

(My response to Question 15 of the 1 August Letter)

32. As set out in item 21 of the Summary, there might be public safety concerns arising from the (1) allegation of misconnected steel reinforcement bars in the diaphragm walls and (2) allegation of Mr. Poon regarding the refusal of China Technology Corporation Limited ("**CT**") to pour light weight mass concrete into a void or voids at HUH Extension. As to the alleged misconnected reinforcement bars in diaphragm wall, HyD has urged MTRCL to provide information. As to Mr. Poon's allegation, MTRCL stated on 1 August 2018 that Mr. Poon's allegation was without any basis or substantiation. After MTRCL submitted on 2 August 2018 a "Form C" regarding "Cost Reduction for Using Broken Concrete in lieu of Part of the Mass Concrete to Fill Voids in Hung Hom

Station", HyD wrote to MTRCL on 8 August 2018 seeking MTRCL's clarification on the following: (i) whether CT had refused to pour concrete due to substandard site preparation; (ii) whether Leighton had poured concrete for CT on that occasion; (iii) whether the Form C is related to the alleged incident; and (iv) whether MTRCL had made submission to BD for a change in materials by replacing light weight mass concrete with broken concrete or any other materials.

33. In addition to the above concerns, I understand the Director of Highways ("DHy") will set out in his statement to the Commission the concerns raised by HyD in the press conference on 7 August 2018.

34. More recently, on 28 August 2018, MTRCL reported at the meeting of the PSC about the discovery of what appeared to be "honey comb" structures in the concrete at the soffit of EWL slab. BD conducted site inspection on 29 August 2018. MTRCL provided HyD on 29 August 2018 with copies of three Non-conformance Reports issued to Leighton between 17 and 22 August 2018. HyD and its M&V Consultant conducted site inspection and requested MTRCL by letter dated 30 August 2018 to, among other things, take immediate measures to eliminate safety hazard, conduct thorough investigation of concrete quality at the platform slabs, and provide an investigation report and remedial proposal to BD.

35. I confirm that the contents of this Witness Statement are true to the best of my knowledge, information and belief.

Dated this 7th day of September 2018.



LI Tsz Wai, Ralph