

**COMMISSION OF INQUIRY INTO THE DIAPHRAGM WALL AND PLATFORM  
SLAB CONSTRUCTION WORKS AT THE HUNG HOM STATION EXTENSION  
UNDER THE SHATIN TO CENTRAL LINK PROJECT**

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**WITNESS STATEMENT OF YEUNG CHI KIN  
FOR  
MTR CORPORATION LIMITED**

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I, **Yeung Chi Kin**, of MTR Corporation Limited ("**MTRCL**"), MTR Headquarters Building, Telford Plaza, 33 Wai Yip Street, Kowloon Bay, Hong Kong, **WILL SAY AS FOLLOWS**:

1. I am providing this witness statement in response to various matters raised in a letter dated 27 July 2018 from Messrs Lo & Lo ("**Letter**"), who I understand are the solicitors acting for 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 ("**Commission of Inquiry**"). In this statement, I shall address the matters listed as Item No. 7 of the Letter.
2. While I am aware of the matters raised in Item No. 7 of the Letter based on my first-hand observations and I confirm that the contents of this statement are true to the best of my knowledge and belief, there are occasions when I can only speak to matters by reference to MTRCL's documents due to the lapse of time, in which case I believe the contents of those documents are true and correct.
3. I first joined MTRCL in 1994 as a Quality Assurance Engineer II in the Quality Assurance team ("**QA team**"). I left MTRCL briefly in 2005, then re-joined in the same year. Since January 2011, my title has been Senior Quality Assurance Engineer.
4. I obtained a Bachelor (Civil Engineering) degree from the University of Wales Institute of Science and Technology in 1982. Prior to joining MTRCL, I worked as a design and estimating engineer in a geotechnical engineering firm.

5. My current title is Senior Quality Assurance Engineer ("SQAE"). As of 1 January 2017 the position of Project Quality Manager ("PQM") became vacant. Therefore, from that time I also handled the responsibilities that are usually those of the PQM.
6. Currently, my main duties are the development and implementation of the Project Integrated Management System ("PIMS") and carrying out quality audits on the records provided by project staff and the contractors. I attend monthly progress meetings of MTRCL railway projects, including SCL, and the meetings of the Project Integrated Management System Steering Group ("PIMSSG"). I also sign off on the audit reports prepared by the QA team.
7. I do not have any direct involvement in the steel fixing works and the construction of the diaphragm walls and platform slabs. My involvement in Contract 1112 is limited to performing internal quality and contractor quality audits of this contract. I shall give evidence in this aspect under Item No.7.

**Item No. 7: Describe and explain Your Company's system and measures in place at the material time to ensure that the steel bars in the diaphragm walls and platform slabs were properly installed and connected in compliance with Requirements, Standards and Practice and that any irregularities, non-compliances and defects will be reported and addressed by the appropriate parties and/or persons.**

#### **Quality Assurance and Quality Control**

8. The QA team consists of five engineers (namely one SQAE, one Offshore Inspection and Testing Engineer I, one QAE I, and two QAE II) and two Administrative Assistants. We also have a sub-team stationed in Shenzhen (Project Quality Compliance Unit) to assist with offshore inspections of railway products when requested by the Construction Management team. Our main roles and responsibilities include the management of the PIMS and the provision of support to Projects Division on QA and QC as outlined below.
9. The team managing new railway projects is the Projects team. Construction Management team is one of the sub-teams under the Projects team.
10. The QA team falls under the Projects Management Office of the Projects Division and is independent to the Project team.

11. Quality Audits: The QA team conducts various quality assurance audits in accordance with PIMS Practice Note PIMS/PN/01-3 "*PIMS Management System Audits*". These audits are Internal Quality Audits and Contractor Quality Audits. The QA team also engages a third party (Bureau Veritas) to conduct ISO 9001 Audits of the PIMS for the Projects Division.
12. The Project team conducts Self Quality Audits in accordance with PIMS Practice Note PIMS/PN/01-4 "*Self Quality Audit*".
13. Quality Control: The QA team, at the request of the Construction Management team, also conducts inspections of offshore railway products. The Construction Management team conducts quality control of the on-site construction and prefabrication works.
14. I shall now explain in further detail the processes of (a) Internal Quality Audits (b) Contractor Quality Audits, (c) Self Quality Audits, (d) the ISO 9001 Audit, and (e) quality control.

#### **Internal Quality Audits**

15. The QA team conducts Internal Quality Audits which audit the Projects Division's implementation of the PIMS, covering specific areas such as interface management, drawings management, risk management, stakeholder engagement, the inspection and testing process, the control of defects and non-conformance works. The relevant Practice Note under the PIMS is PIMS/PN/01-3 "*PIMS Management System Audits*".
16. Internal Quality Audits are conducted annually. The QA team prepares, reviews, updates and maintains an audit programme. Each year, a few ongoing contracts amongst railway projects being constructed by MTRCL in Hong Kong are selected for Internal Quality Audit. The selection is dependent upon the stage of the construction works at the time of the audit. This process is described in paragraph 5 of PIMS/PN/01-3 "*PIMS Management System Audits*". For example, if the contract works under a particular contract have just commenced, the QA team may not select that contract for audit purpose as there would not be much for the audit team to check. On the other hand, if, for example, the construction works of a particular contract are progressing actively, the QA team may select that contract and select some of the relevant aspects of the construction processes to audit, for example, as-built records, drawings management and the inspection and test process.

17. The proposed audit topics are reviewed and endorsed by the PIMS Steering Group. I understand that the composition and functions of the PIMSSG will be addressed in the witness statement of Mr. Carl Wu, which is consistent with my understanding. New audit topics may be added pursuant to the PIMSSG's recommendations.
18. For each Internal Quality Audit, the QA team meets with the auditees to explain and confirm the scope of the audit and the detailed arrangements for the audit, as per paragraph 5.3.1 of PIMS/PN/01-3 "*PIMS Management System Audits*". For audits conducted on a Construction Management team, the QA team will also give the team a daily activity plan. The Construction Manager then appoints his staff there to answer the QA team's questions. The QA team selects a few active work items randomly to review, to see if the relevant PIMS Procedures and Practice Notes are followed. For example, if the QA team is reviewing the Request for Inspection and Survey Check forms ("**RISC forms**"), the team will look at the selected samples from the different stages of the work and examine whether such forms were completed properly. The objective of the process is to review recent activities to the time of the Internal Quality Audits.
19. After each Internal Quality Audit, the QA team prepares an audit report with recommendations, which are shared and agreed with the auditees. The QA team also follows up with the relevant auditees to close out recommended actions and the auditees then send evidence to the QA team showing that a particular recommended item has been closed. Recommended items have to be closed by the agreed completion date, which is determined based on the corrective measures needed and the impact on project progress. If the Internal Quality Audit reveals major findings, the QA team highlights such findings at the PIMSSG meetings. If any improvement actions identified by the Internal Quality Audit relate to necessary revisions to the relevant PIMS Procedures or Practice Notes, the next version of the Procedures or Practice Notes will be revised as appropriate.
20. An Internal Quality Audit was performed on the Contract 1112 Construction Management team on 4 November 2014. The report containing the audit result was issued on 12 February 2015. I was the lead auditor for this report. The scope of the audit (as selected by the QA team and endorsed by PIMSSG) was the implementation status of project risk management, which is the procedure adopted to identify and mitigate project risks. The result of the audit was that the project risk registers were maintained up to date, mitigation measures were communicated and implemented, and relevant records of

mitigation measures were maintained in a logical and readily retrievable manner. The QA team did not have any recommendations for the Construction Management team of Contract 1112 in this audit.

### **Contractor Quality Audits**

21. Contractor Quality Audits are also prescribed by PIMS/PN/01-3 "*PIMS Management System Audits*" and are conducted according to the audit programme prepared by the QA team. These audits review whether the contractor's quality performance complies with its own quality plan reviewed and accepted by MTRCL under its relevant contract.
22. The process for conducting an on-site review is similar to the Internal Quality Audits and is prescribed under paragraph 5.3 of PIMS/PN/01-3 "*PIMS Management System Audits*". After each Contractor Quality Audit, the QA team prepares a report setting out its audit findings and communicates such findings to the contractor. The QA team then follows up with the contractor until the findings have been closed out. Findings have to be closed out by the agreed completion date, same as for Internal Quality Audits. The QA team also highlights any major findings it has made at the monthly project progress meetings.
23. In respect of Contract 1112, General Specification 9.3.2 provides that the Engineer of MTRCL shall conduct compliance audits of the Contractor's quality management system during the Contract. Two Contractor Quality Audits of Contract 1112 were carried out by the QA team on Leighton on 14 November 2016 and 18 December 2017 respectively. On both occasions, the QA team found that Leighton had "*acceptable performance in implementing the Quality Plan for Contract 1112*".
24. For the audit carried out on 14 November 2016, I reviewed the audit report as Senior Quality Assurance Engineer. The audit report was issued on 29 November 2016. The scope of this audit was Leighton's commitments made in the Quality Plan for the construction of the new stabling sidings at the former Hung Hom Freight Yard and the installation of acoustic panels and modification works in the existing HUH station. The scope of the audit was determined by the QA team, who randomly selected a few of the Contract 1112 work processes that were active at the time. The conclusion of the audit was that Leighton had implemented good quality management system on the site works and had reasonable document control and traceability of records for the design and construction process. However, further improvements were recommended to resolve

Leighton's outstanding submissions and works non-conformances, in particular when approaching the final stage of Contract 1112. It was also recommended that Leighton should review and update the design change register. In December of the same year, Leighton submitted to the QA team evidence of the measures taken in respect of the audit findings, including a table showing subsequent contractor's submissions and screen capture of the updated design change register. The QA team found the evidence acceptable and considered the audit findings to be closed out.

25. A second Contractor Quality Audit on Leighton was conducted on 18 December 2017. The report was issued on 16 January 2018. I approved this audit report as SQAE. This audit confirmed that Leighton's commitments made in the Quality Plan had delivered the intended results in terms of the completion of the Architectural Builders' Works and Finishes in the new HUH station, the preparation for the Fire Services Department inspection and the submissions of as-built drawing. It was also found that Leighton had implemented good document control and site management for the final stage of the contract and that the performance of the quality management system was at an acceptable level, albeit that further improvements were needed to close out the outstanding works Non-Conformance Report("NCR") and Contractor Submission Forms. On 7 February 2018, Leighton submitted to the QA team evidence of the measures taken in respect of the audit findings, including records showing rectification of non-conformance items and subsequent contractor's submissions. The QA team found the evidence acceptable and considered the audit findings to be closed out.

### **Self Quality Audits**

26. Self Quality Audits are prescribed by PIMS/PN/01-4 "*Self Quality Audit*". Project team staff for different contracts cross-audit each other in these audits. Self Quality Auditors are trained in the auditing process and are independent from the area of work for which they have direct responsibilities.
27. In general, Self Quality Audits are conducted at half-yearly intervals. The number of audits in each round is about 10% of the active contracts for railway projects. The Self Quality Audit Coordinator (currently a Senior Construction Engineer) formulates the Self Quality Audit programmes and selects the relevant PIMS Procedures and Practice Notes to be audited for compliance purposes according to their relative importance to the

projects. The relevant requirements are specified under PIMS/PN/01-4 "Self Quality Audit" paragraph 5.

28. After the Self Quality Auditors have conducted on-site reviews, they also prepare audit reports and, for any audit findings identified, they will liaise with the auditees as to the corrective and preventive actions to be implemented. The results of these Self Quality Audits are included in the reports submitted to the PIMSSG meetings. Two such audits were performed on Contract 1112 on 29 June 2016 (albeit that the date appearing on the audit report is 29 June 2015, which I believe is a typographical error and should be 29 June 2016) and 13 March 2018 respectively.
29. In the 2016 audit, Contract 1112 was found to be compliant with relevant PIMS requirements, including site meetings, the implementation of ePMS, the submission of the Inspection and Test Plan and the processes adopted in relation to RISC forms and NCRs.
30. In the 2018 audit, Contract 1112 was found again to be compliant for relevant PIMS requirements, including the NCR processes which had been adopted.

#### **The ISO 9001 Audits**

31. The PIMS is compliant with the ISO 9001 international standards. Since January 1995, the Projects Division has been audited annually by an independent certification body, namely Bureau Veritas, to confirm compliance with ISO 9001. The QA team is responsible for liaising with Bureau Veritas and other teams within the Projects Division to enable Bureau Veritas to carry out the certification and surveillance audits.
32. The ISO 9001 certificate is valid for three years. Audits are conducted on the PIMS by Bureau Veritas annually. In the first year, a certification audit is conducted. In the second and third years, surveillance audits are conducted. This process is repeated every three years for the renewal of the certificate. The most recent certification audit was conducted in 2016. In 2017 and 2018, surveillance audits were also carried out by Bureau Veritas.
33. Bureau Veritas conducts its audits based on a sampling process of different teams and contracts within the Projects Division. In the 2017 surveillance audit, Bureau Veritas

selected Contract 1112 as part of its audit. In the section entitled "3.1 Auditor Notes/ Significant Audit Trails" in the 2017 Certification Audit Report, the auditor noted that he had reviewed design submission and temporary work design and method statements, including the method statement for diaphragm wall construction. Out of all the different aspects reviewed, no adverse comment was found. (p. 14)

34. Furthermore, Bureau Veritas found that Contract 1112 was compliant in terms of all the aspects they audited, including "Control of Documents", "Control of Records", "Competence, Awareness and Training", "Design and Development", "Control of Production and Service", "Monitoring and Measurement of Product" and "Control of non-conforming product", as can be seen in section 3.3 "Audit Summary Report per Standard ISO 9001:2008" (p. 26). (For clarity, it should be noted that the categories left blank are those which were not subjected to audit) For the 2018 report, Bureau Veritas audited the programming management aspect of Contract 1112 along with that of other SCL contracts (p. 22). There were no adverse results for this audit.

### **Quality Control**

35. MTRCL's site quality control (inspection and testing) of the works and railway products is carried out by the Construction Management team.
36. At the request of the Construction Management team, the Project Quality Control Unit ("PQCU") within the QA team will assist with the inspection of railway products fabricated in factories outside Hong Kong (e.g. precast tunnel concrete segments). When requested to do so, the PQCU would inspect the set-up and production lines of the offshore factories and assess whether the factories have the capability to produce the railway products to the requisite standard. Once the factory is approved and production starts, the Construction Management team and / or the PQCU may visit again to inspect the railway products during the manufacturing process and /or prior to product despatch. The frequency of their visit is subject to the coordination between the contractor and Construction Management team and is based on the production schedule and quantity of the products.
37. In respect of the current issues considered by the Commission of Inquiry, the inspection and testing of steel reinforcement bars, wet concrete, and couplers is not within the remit

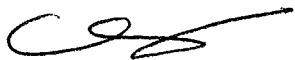


of PQCU. Consequently, PQCU did not carry out any quality control inspection at the manufacturers' premises for these products.

38. Finally, I would like to mention the following:-

- (a) The events in question and which form the subject matter of the Commission of Inquiry took place several years ago and my recollection of every detail is not therefore perfect.
- (b) Accordingly, in preparing this witness statement I have reminded myself of the events in question by reference to various hard copy and electronic documents and materials, including reports and other records.
- (c) I would like to add, therefore, that there may be matters referred to or stated in other documents which have not been recently placed before me. To that extent, I would be happy to comment on any such other materials at a later date if and when identified and placed before the Commission of Inquiry.

**Dated 13<sup>th</sup> September 2018**



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**YEUNG CHI KIN**