

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

SIXTH WITNESS STATEMENT OF KARL SPEED

I, **KARL SPEED** of 39/F Sun Hung Kai Centre, 30 Harbour Road, Hong Kong, say as follows:

1. I refer to my fifth witness statement dated 2 May 2019 (“**Fifth Witness Statement**”). Unless otherwise stated or the context otherwise requires, any abbreviations shall bear the same meaning as in my Fifth Witness Statement.
2. I am authorised to make this statement in response to the Letters of 26 March 2019 in my capacity as a director of Leighton.
3. I set out below a response to Issue 3 (as defined in the Letters of 26 March 2019). Leighton has also arranged for witness statements to be adduced by employees and (to the extent possible) former employees of Leighton with direct knowledge of the relevant issues.
4. Unless otherwise stated, the facts stated herein are within my personal knowledge and are true. Where the facts and matters stated herein are not within my own knowledge, they are based on the stated sources and are true to the best of my knowledge, information and belief.

The NAT

NAT – General

5. As explained in paragraph 5 of my Fifth Witness Statement, the major construction works at the NAT involved building the NSL tunnel box and EWL rail track trough.
6. The approved sequence and timeline for the construction works at the NAT is set out in paragraphs 8 to 9 of my Fifth Witness Statement.
7. The documents that set out the standards and requirements for the rebar fixing and concreting works in the construction of the NAT are the same as those listed in paragraph 15 of my Fifth Witness Statement.

8. Please refer to the second witness statement of Mr. William Holden regarding the steps and procedures involved in the rebar fixing works and concreting works in the construction of the NAT.
9. A summary of the relevant testing and approval procedures for rebar and couplers has been disclosed to the Commission [CC1/869].

NAT – Supervision, Inspection and Records

10. Leighton has disclosed to the Commission the Organisational Charts for Leighton's staff (C7/5531-5539 and CC2/526-535).
11. Leighton has also disclosed to the Commission a list identifying the members of Leighton's construction engineering team who were involved in supervising the construction of the NAT (numbered **LCAL.SCL.1.01** to **LCAL.SCL.1.02** in the Index).
12. Leighton has arranged for a second witness statement to be filed by Mr. Henry Lai in response to the Letters dated 26 March 2019 regarding the NAT.
13. At paragraphs 40 to 43 of my Fifth Witness Statement, I explain the role and responsibilities of the construction engineering team, including with respect to the supervision and inspection of the rebar fixing and concreting works (i.e. conducting routine and formal inspections and the system of hold points).

NAT – RISC Forms

14. Please refer to the second witness statement of Mr. Henry Lai. This statement refers to the NAT Summary Table (numbered **LCAL.NAT.10.01** in the Index), which summarises the RISC forms and other requested information in relation to the construction of the NAT.
15. Please refer to paragraphs 41 to 43 of my Fifth Witness Statement regarding the system of hold points and formal inspections for rebar fixing and pre-pour checks. A RISC

form should have been generated by Leighton and provided to MTRCL to counter-sign in order to document these formal inspections.

16. In relation to the outstanding RISC forms at the NAT, Leighton confirms that:¹
 - a. formal inspections took place for the rebar fixing and pre-pour checks for all concrete pours in the NAT;
 - b. Leighton and MTRCL approved the rebar fixing and pre-pour works at each formal inspection in the NAT and authorised all concrete pours for the NAT; and
 - c. other documentary records (at number **LCAL.NAT.10.02** of the Index) evidence that Leighton and MTRCL supervised the rebar fixing and pre-pour works at the NAT. For example, site diary entries record all of the rebar fixing, pre-pour work and the concrete pours for the NAT. These are consistent with, and support, the conclusion that all formal inspections took place and that Leighton and MTRCL supervised and approved the works and authorised the pouring of concrete.
17. Please refer to the second witness statement of Mr. Henry Lai for more details regarding the inspection and approval process for the construction works at the NAT and the reasons why relevant RISC forms for the NAT are outstanding.
18. Leighton² was not aware at or around the time of the concrete pours that RISC forms had not been completed for all formal inspections for the rebar fixing and pre-pour check at the NAT. As explained in paragraph 45 of my Fifth Witness Statement, Leighton's record management system tracked the status of all RISC forms that had been generated as a draft, however the system was not able to track RISC forms which had not been generated and were still outstanding.
19. Leighton has disclosed an email dated 24 March 2017 from MTRCL to Leighton reminding Leighton that RISC forms were outstanding (numbered **LCAL.SCL.3.01** in the Index). Please refer to the second witness statement of Mr. Joe Tam for details of Leighton's response at that time.

¹ Please refer to the second witness statement of Mr. Henry Lai.

² This refers to the knowledge of Leighton's management on the Project and Leighton's senior management generally.

NAT – Non-conformance Reports

20. Leighton has disclosed to the Commission a summary table of the NCRs issued by MTRCL to Leighton in connection with outstanding RISC forms at the NAT (referred to in paragraph 3.2 of the NAT letter) (numbered **LCAL.NAT.12.01** in the Index) and copies of those NCRs (numbered **LCAL.12.02** in the Index).
21. Upon receipt of the NCRs, Leighton met with MTRCL to discuss options to submit justification for the compliance of concerned works for MTRCL’s approval, and to prove that the works were safe. The actions that were considered and taken were as follows:
 - a. a non-destructive testing regime was developed involving a scan of certain locations. However, it was ultimately determined that the testing did not provide conclusive results because of the density of rebar in the concrete; and
 - b. an exercise was undertaken in conjunction with MTRCL to compile documents, including site diaries and other contemporaneous records, to demonstrate the required supervision of the relevant areas.
22. Leighton confirms that no subcontractors have been involved in this matter. There is no correspondence between Leighton and any subcontractors in relation to the NCRs.

The SAT

SAT – General

23. Leighton has disclosed to the Commission plan view and simplified sectional drawings of the SAT (numbered **LCAL.SAT.1.01** in the Index).
24. Leighton has disclosed to the Commission a table summarising the information requested at paragraph 1.1.2 of the SAT Letter of 26 March 2019 in relation to the construction of the SAT (the “**SAT Summary Table**”) (numbered **LCAL.SAT.2.01** in the Index).
25. Please refer to the second witness statement of Mr. William Holden for the approved sequence and timeline for the construction works at the SAT.

26. Please refer to the second witness statement of Mr. William Holden regarding the standards and requirements, and the steps and procedures involved in, the rebar fixing works and concreting works in the construction of the SAT.
27. A summary of the relevant sampling, testing and approval procedures for rebar and coupler assemblies has been disclosed to the Commission [CC1/869].

SAT – Supervision, Inspection and Records

28. Leighton has disclosed to the Commission the Organisational Charts for Leighton's staff (C7/5531-5539 and CC2/526-535).
29. Leighton has also disclosed to the Commission a list identifying the members of Leighton's construction engineering team who were involved in supervising the construction of the SAT (numbered **LCAL.SCL.1.01** to **LCAL.SCL.1.02** in the Index).
30. Leighton has arranged for witness statements to be filed by Mr. Raymond Tsoi, Mr. Alan Yeung, Mr. Saky Chan and Mr. Sean Wong in response to the Letters dated 26 March 2019 regarding the SAT.
31. At paragraphs 40 to 43 of my Fifth Witness Statement, I explain the role and responsibilities of the construction engineering team, including with respect to the supervision and inspection of the rebar fixing and concreting works (i.e. conducting routine and formal inspections and the system of hold points).

SAT – RISC Forms

32. Please refer to the witness statements of Mr. Raymond Tsoi, Mr. Alan Yeung, Mr. Saky Chan and Mr. Sean Wong. These statements refer to the SAT Summary Table (numbered **LCAL.SAT.2.01** in the Index), which summarises the RISC forms and other requested information in relation to the construction of the SAT.
33. Please refer to paragraphs 41 to 43 of my Fifth Witness Statement regarding the system of hold points and formal inspections for rebar fixing and pre-pour checks. A RISC

form should have been generated by Leighton and provided to MTRCL to counter-sign in order to document these formal inspections.

34. In relation to the outstanding RISC forms at the SAT, Leighton confirms that:³
- a. formal inspections took place for the rebar fixing and pre-pour checks for all concrete pours in the SAT;
 - b. Leighton and MTRCL approved the rebar fixing and pre-pour works at each formal inspection in the SAT and authorised all concrete pours for the SAT; and
 - c. other documentary records (at number **LCAL.SAT.2.02** in the Index) evidence that Leighton and MTRCL supervised the rebar fixing and pre-pour works at the SAT. For example, site diary entries record all of the rebar fixing, pre-pour work and the concrete pours for the SAT. These are consistent with, and support, the conclusion that all formal inspections took place and that Leighton and MTRCL supervised and approved the works and authorised the pouring of concrete.
35. Please refer to the witnesses statements filed by Mr. Raymond Tsoi, Mr. Alan Yeung, Mr. Saky Chan and Mr. Sean Wong for more details regarding the inspection and approval process for the construction works at the SAT and the reasons why the relevant RISC forms for the SAT are outstanding.
36. Leighton⁴ was not aware at or around the time of the concrete pours that RISC forms had not been completed for all formal inspections for the rebar fixing and pre-pour check at the SAT. As explained in paragraph 45 of my Fifth Witness Statement, Leighton's record management system tracked the status of all RISC forms that had been generated as a draft, however the system was not able to track RISC forms which had not been generated and were still outstanding.
37. As referred to above, Leighton has disclosed an email dated 24 March 2017 from MTRCL to Leighton reminding Leighton that RISC forms were outstanding (numbered

³ Please refer to the witness statement of Mr. Raymond Tsoi, Mr. Alan Yeung, Mr. Saky Chan and Mr. Sean Wong.

⁴ This refers to the knowledge of Leighton's management on the Project and Leighton's senior management generally.

LCAL.SCL.3.01 in the Index). Please refer to the second witness statement of Mr. Joe Tam for details of Leighton's response at that time.

SAT – Non-conformance Reports

38. Leighton has disclosed to the Commission a summary table of the NCRs issued by MTRCL to Leighton in connection with outstanding RISC forms at the SAT (referred to in paragraph 2.2 of the SAT letter) (numbered **LCAL.SAT.4.01** in the Index) and copies of those NCRs (numbered **LCAL.SAT.4.02** in the Index).
39. Upon receipt of the NCRs, Leighton met with MTRCL to discuss options to submit justification for the compliance of concerned works for the Registered Engineer's approval, and to prove that the works were safe. Actions that were considered and taken were as follows:
 - a. a non-destructive testing regime was developed involving a scan of certain locations. However, it was ultimately determined that the testing did not provide conclusive results because of the density of rebar in the concrete; and
 - b. an exercise was undertaken in conjunction with MTRCL to compile documents, including site diaries and other contemporaneous records, to demonstrate the required supervision of the relevant areas.
40. Leighton confirms that no subcontractors have been involved in this matter. There is no correspondence between Leighton and any subcontractors in relation to the NCRs.

The HHS

HHS – General

41. Leighton has disclosed to the Commission general layout plans and sectional drawings of the HHS area (numbered **LCAL.HHS.1.01** in the Index).
42. Leighton has disclosed to the Commission a table summarising the information requested at paragraph 1.1.2 of the HHS Letter of 26 March 2019 in relation to the construction of the HHS (the "**HHS Summary Table**") (numbered **LCAL.HHS.2.01** in the Index).

43. Please refer to the second witness statement of Mr. William Holden regarding the approved sequence and timeline for the construction works at the HHS.
44. Please refer to the second witness statement of Mr. William Holden regarding the standards and requirements, and the steps and procedures involved in, the rebar fixing works and concreting works in the construction of the HHS.
45. A summary of the relevant sampling, testing and approval procedures for rebar and coupler assemblies has been disclosed to the Commission [CC1/869].

HHS – Supervision, Inspection and Records

46. Leighton has disclosed to the Commission the Organisational Charts for Leighton's staff (C7/5531-5539 and and CC2/526-535).
47. Leighton has also disclosed to the Commission a list identifying the members of Leighton's construction engineering team who were involved in supervising the construction of the HHS (numbered **LCAL.SCL.1.01** to **LCAL.SCL.1.02** in the Index).
48. Leighton has arranged for witness statements to be filed by Mr. Jeff Lii, Mr. Alan Yeung and Mr. Ronald Leung in response to the Letters dated 26 March 2019 regarding the HHS.
49. At paragraphs 40 to 43 of my Fifth Witness Statement, I explain the role and responsibilities of the construction engineering team, including with respect to the supervision and inspection of the rebar fixing and concreting works (i.e. conducting routine and formal inspections and the system of hold points).

HHS – RISC Forms

50. Please refer to the witness statements of Mr. Jeff Lii, Mr. Alan Yeung and Mr. Ronald Leung. These statements refer to the HHS Summary Table (numbered **LCAL.HHS.2.01** in the Index), which summarises the RISC forms and other requested information in relation to the construction of the SAT.
51. Please refer to paragraphs 41 to 43 of my Fifth Witness Statement regarding the system of hold points and formal inspections for rebar fixing and pre-pour checks. A RISC

form should have been generated by Leighton and provided to MTRCL to counter-sign in order to document these formal inspections.

52. In relation to the outstanding RISC forms at the HHS, Leighton confirms that:⁵
- a. formal inspections took place for the rebar fixing and pre-pour checks for all concrete pours in the HHS;
 - b. Leighton and MTRCL approved the rebar fixing and pre-pour works at each formal inspection in the HHS and authorised all concrete pours for the HHS; and
 - c. other documentary records (at number **LCAL.HHS.2.02** in the Index) evidence that Leighton and MTRCL supervised the rebar fixing and pre-pour works at the HHS. For example, site diary entries record all of the rebar fixing, pre-pour work and the concrete pours for the HHS. These are consistent with, and support, the conclusion that all formal inspections took place and that Leighton and MTRCL supervised and approved the works and authorised the pouring of concrete.
53. Please refer to the witness statements filed by Mr. Jeff Lii, Mr. Alan Yeung and Mr. Ronald Leung for more details regarding the inspection and approval process for the construction works at the HHS and the reasons why the relevant RISC forms for the HHS are outstanding.
54. Leighton⁶ was not aware at or around the time of the concrete pours that RISC forms had not been completed for all formal inspections for the rebar fixing and pre-pour check at the HHS. As explained in paragraph 45 of my Fifth Witness Statement, Leighton's record management system tracked the status of all RISC forms that had been generated as a draft, however the system was not able to track RISC forms which had not been generated and were still outstanding.
55. As referred to above, Leighton has disclosed an email dated 24 March 2017 from MTRCL to Leighton reminding Leighton that RISC forms were outstanding (numbered

⁵ Please refer to the witness statements of Mr. Jeff Lii, Mr. Alan Yeung and Mr. Ronald Leung.

⁶ This refers to the knowledge of Leighton's management on the Project and Leighton's senior management generally.

LCAL.SCL.3.01 in the Index). Please refer to the second witness statement of Mr. Joe Tam for details of Leighton's response at that time.

HHS – Non-conformance Reports

56. Leighton is not aware of any NCRs being issued by MTRCL in connection with outstanding RISC forms at the HHS.

Testing records for the Project

Testing of rebar

57. The rebar ordered for the Project was tested by the manufacturers before it was delivered to site, and these results were provided in the form of Mill Test Certificates.
58. In addition, Leighton arranged with MTRCL for the testing of the rebar (by samples) as the batches were delivered to site. This testing is conducted independently by a Hong Kong Laboratory Accreditation Scheme (HOKLAS) certified laboratory.
59. Leighton confirms that all of the rebar ordered for the Project was accompanied by Mill Test Certificates confirming that the rebar had been tested by the manufacturers and passed those tests. Leighton has a copy of all of the Mill Test Certificates provided by the suppliers and can produce them upon request by the Commission.
60. Leighton has reviewed its records and found that a small percentage (approximately 7 percent) of rebar delivered to site was not tested by a HOKLAS certified laboratory. Specifically:
- a. Leighton ordered approximately 57,000 tonnes of rebar for the Project;
 - b. Leighton arranged for the sampling and testing representing approximately 53,000 tonnes of rebar for the Project after each batch was delivered to site. All of the batches of rebar tested passed these tests; and
 - c. Leighton did not arrange for the sampling and testing representing approximately 4,000 tonnes of rebar for the Project after it was delivered to site.
61. Witness statements have been filed by the engineers (or their supervisors) who were responsible for the majority of the rebar that was not tested. Please refer to the witness

statements of Mr. Henry Lai, Mr. Alan Yeung and Mr. Ronald Leung for more details and an explanation as to why the tests were not completed.

62. Leighton has disclosed to the Commission samples of the HOKLAS certified laboratory test results and Mill Test Certificates for rebar used on the Project (numbered **LCAL.SCL.2.01** in the Index). There are over 14,000 test results, which can be produced upon request by the Commission.
63. Leighton believes that the testing performed on the rebar for the Project is sufficient to establish that the materials used are safe and fit for purpose. Further, the requirement for on site testing of materials such as rebar and coupler assemblies, where tests have already been performed by the manufacturer, is well above the standards applied in other countries. Leighton intends to adduce evidence from an expert with experience of the ISO standards for the testing of materials to demonstrate that the tests performed on the rebar by the manufacturers and by the HOKLAS certified laboratory are sufficient to assure the Commission that there should be no concerns regarding the rebar used in the Project.

Testing of couplers

64. Leighton also arranged for the testing of coupler assemblies to be performed. All couplers supplied and used on the Project were tested in accordance with Contract SCL1112 and the requirements of the Code of Practice for the Structural Use of Concrete 2013 [C13/8348-8554]. The couplers for the Project were progressively delivered in 19 batches during the Project. All batches of couplers for the Project passed the relevant tests.
65. Leighton has disclosed to the Commission a sample of the coupler assembly test results (numbered **LCAL.SCL.2.02** in the Index). There are over 1,950 individual test results. These test results can be produced upon request by the Commission.

Other matters

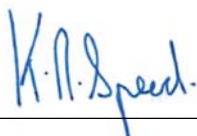
66. Leighton does not know of any other problems and issues relating to rebar fixing or concreting works at the NAT, SAT and HHS.

67. Leighton does not know of any other works or matters which would raise concerns about public safety or the quality of the works at the NAT, SAT and HHS.
68. Leighton is continually seeking to improve and is taking measures to enhance its quality systems. Please refer to paragraph 57 of my Fifth Witness Statement.

Structural safety and integrity of the NAT, SAT and HHS

69. Leighton has prepared and disclosed to the Commission draft as-built drawings that were requested for the NAT, SAT and HHS (numbered **LCAL.NAT.11.01**, **LCAL.SAT.3.01** and **LCAL.HHS.3.01** respectively in the Index). Leighton confirms that to the best of its knowledge and information these draft as-built drawings are accurate. Please refer to the second witness statement of Mr. William Holden regarding the as-built drawings.
70. Subject to the proposed rectification of the SNJ (as referred to in my Fifth Witness Statement), Leighton can confirm that the reinforcement and concrete works in the NAT, SAT and HHS were constructed in accordance with the approved method statements and drawings.

Dated the 17 day of May 2019.

Signed: 

Karl Speed