

**Select Committee to Inquire into the Background of and
Reasons for the Delay of the Construction of the
Hong Kong section of the Guangzhou-Shenzhen-Hong Kong
Express Rail Link (“XRL”)**

**Joint Written Statement of Mr. Anthony John William KING
and
Mr. William Siu Kee NG**

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We, Anthony John William KING & William Siu Kee NG, care of Jacobs China Ltd (“**Jacobs**”), Floor 15, Cornwall House, 979 King’s Road, Taikoo Place, Quarry Bay, Hong Kong state as follows:

Introduction

1. This Statement is prepared in response to an invitation by the Select Committee dated 03 August 2015 to Mr. Anthony John William KING and Mr. William Siu Kee NG to attend a hearing and to submit a Statement on matters relevant to the Select Committee, as set out in the terms of reference being Parts I to III of the Select Committee’s major areas of study.
2. Mr. KING has worked for Jacobs since 1973 in the UK and at various international locations. He is a Chartered Civil & Structural Engineer and commenced working on railway Projects in 1985.
3. He has worked on XRL in Hong Kong Since 2009, initially part time as Deputy Project Director principally responsible for the audit programme. Since April 2015 he has worked full time on XRL as the Project Director.
4. Mr. NG has worked for Jacobs since 1979 in HK. He is a Chartered Civil & Structural Engineer and commenced working on XRL since 2009 as the Project Manager of the Project.
5. Unless as stated otherwise, this statement is prepared on the basis of their own knowledge and from information and belief sourced from various documents available to them up to May 2014.

MAJOR AREA OF STUDY:

- I Background of and reasons for the delay of the construction of the Hong Kong section (“HKS”) of the Guangzhou-Shenzhen-Hong Kong Express Rail Link (“XRL”) (“the project delay”), as announced by the Government and MTR Corporation Limited (“the MTRCL”) in April 2014**

Project Description

6. XRL consists of an underground terminus at West Kowloon (the West Kowloon Terminus, or “**WKT**”), approximately 26km of long twin-track tunnels from the terminus to the boundary, tunnel ventilation shafts/adits and associated buildings and facilities, an emergency rescue station, stabling sidings and associated maintenance facilities in Shek Kong, an approach tunnel to the stabling sidings, access roads to ventilation buildings and associated infrastructure. XRL will connect at Huanggang with the Mainland section of Express Rail Link which runs north for a further 116 km to Guangzhou, with new stations at Futian, Longhua, Humen and Shibi as the Mainland stations serving the trains to and from Hong Kong. Trains running in the Hong Kong section are intended to operate at speed of up to 200 kph.
7. Having a size of over 10 hectares in area, WKT is an underground station located immediately north of the proposed West Kowloon Cultural District (“**WKCD**”) between the Airport Railway Kowloon Station to the west and Austin Station to the east. Being the southernmost terminus of the national high-speed passenger rail network, WKT is being developed as a gateway to the Mainland, with distinctive architecture, and landmark features. WKT will accommodate co-located Hong Kong and Mainland boundary crossing facilities.
8. Apart from the above, the scope of XRL includes essential public infrastructure works (“**EPIW**”), re-provisioning, remedial and improvement works (“**RRIW**”), property development enabling works at WKT and other works entrusted from other parties contracted to the Hong Kong Government.
9. In November 2008, the Government of Hong Kong and the MTRCL entered into an entrustment agreement (“**EA**”) for the design and site investigation phase of XRL (“**XRL design phase EA**”), which covers, among other things, the preliminary and detailed design of XRL, site investigation and invitation and assessment of tenders for construction contracts and contracts for procurement of goods relating to XRL. On 26 January 2010 the construction and commissioning phase entrustment agreement (“**Construction Phase EA**”) was executed between the Government and the MTRCL.
10. A monitoring and verification assignment, under Agreement No. CE 8/2010(HY) XRL for Construction, Testing and Commissioning Phase - Investigation, was required to be established to provide monitoring and verification services in relation to the work undertaken by the MTRCL and its associated consultants/agents/contractors during the construction, testing and commissioning phase of the project, including handover, so as to provide reasonable assurance that the MTRCL’s obligations stated in the Construction Phase EA had been properly fulfilled by the MTRCL, and to provide professional services in respect of the assessment of building submissions to the Highways Department (“**HyD**”).
11. XRL is the first railway project implemented under the concession approach in Hong Kong after the rail merger on 02 December 2007 between the MTRCL and the Kowloon-Canton Railway Corporation (“**KCRC**”). Under this concession approach, the Hong Kong Government will fund XRL. Design and construction of the project has been entrusted to the MTRCL.

12. The key roles of HyD in the implementation of XRL are:
 - To oversee overall implementation of the project and enhance the prudent use of public funds allocated for this project.
 - To monitor and verify that the MTRCL fulfills its obligations in accordance with the EA entered into with the Government for the design, procurement, construction and testing and commissioning of XRL.
 - To facilitate the implementation of XRL by liaising and coordinating with the MTRCL and other government departments, in order to resolve interfacing issues and seek necessary approvals associated with the implementation, commissioning and operation of XRL.
13. HyD employed Jacobs as the Monitoring and Verification (“M&V”) Consultant to assist with the monitoring and verification work (“**the Jacobs consultancy**”).
14. Jacobs was employed during the Design Phase and the Construction Phase of the Project under separate agreements.
15. The agreement between HyD and Jacobs for the Construction Phase is dated 16 August 2010. This statement refers to the Construction Phase of the Project.
16. The monitoring and verification work of the M&V Consultant focuses on monitoring and verifying cost, programme, safety and quality aspects of XRL. The M&V consultant performs its role on a selective risk based basis including being guided by the Strategic Risk Assessment (“SRA”) Register described in paragraph 29. The main areas of monitoring work include:
 - Reviewing the MTRCL’s project and contract documents, and carrying out monthly site visits (accompanied by HyD staff);
 - Conducting regular audits to verify whether the MTRCL has implemented the entrusted works in accordance with its EA and the required project management systems for delivery of XRL;
 - Reporting on a monthly basis and having monthly progress meetings with HyD to discuss major areas of concern; and
 - Reporting progress of various works contracts, potential risks and concerns, as well as programme slippage, and commenting on the reasonableness of proposed mitigation measures.

Review of Jacobs Assignment

17. Jacobs’ programme of work commenced in August 2010 and was scheduled to end in January 2016.
18. The major civil works contracts for tunnels, including trackwork and overhead line, and for WKT were awarded between January 2010 and October 2011, the last two

awards being for WKT contracts 810B and 810A in January and October 2011 respectively.

19. The major Electrical & Mechanical (“**E&M**”) works contracts were awarded between February 2011 and February 2014.
20. The Jacobs Project Team is led by the Project Director with two Deputy Project Directors, a Project Manager and a Deputy Project Manager.

The core work teams are:

Monitoring Team	-	Site visits and works monitoring
Review Team	-	Document review
Verification Team	-	Audits on works contracts
Financial Monitoring	-	Cost monitoring and payment review

21. To support these teams there is a co-ordination team, a project support team and an ‘on-call’ group of expert advisors on specialist subjects.
22. In addition to the core work teams there is a Buildings Submission Review & Compliance (“**BSRC**”) comprising a team of professional building surveyors, , engineers and technical staff team co-located with the Government’s Buildings Department (“**BD**”).
23. Jacobs formally interfaces with HyD’s Railways Development Office (“**RDO**”) through the Project Co-Coordinator and at the monthly progress meetings, monthly site visits, ad-hoc meetings, monthly contract review meetings and audits.
24. The team has no formal direct interface with the MTRCL except at audit sessions, at ad-hoc presentations, monthly contract review meetings and monthly site visits. At all of these interfaces, Jacobs was generally accompanied by RDO engineers.
25. Mr. KING’s role in the Project Team was as a Deputy Project Director with responsibility for guiding the Jacobs consultancy work with his fellow Deputy Project Director; he was also Verification Team leader.
26. In his role as Verification Team Leader he prepared the audit plan, coordinated the audit questions and led most of the audit sessions.
27. He was based at Jacobs’ offices in the UK and undertook monthly visits to Hong Kong.
28. Mr. NG’s role in the Project Team was the Project Manager and he is the key contact person with the HyD responsible for the day-to-day project management, co-ordination and progress of the output from the various teams. He also ensures

sufficient and appropriate resources are deployed on the Jacobs consultancy work at the appropriate time to ensure timely reporting and quality of the deliverables to be submitted to the HyD.

Jacobs Methodology

i) Strategic Risk Assessment (“SRA”)

29. Jacobs’ approach to the monitoring and verification of construction, testing and commissioning of XRL is guided by a SRA Register to assist identify the high level issues which could impact the successful delivery of the project.
30. Following the first risk workshop in November 2010, Jacobs has held regular workshops, generally 6-monthly, with key members of the Jacobs team, to identify, review and assess the potential risks and to quantify their importance in terms of their consequences and chances of occurrence.
31. The risk workshops are based on Hong Kong industry practice and recognized international risk definition processes modified for the particular circumstances of this M&V role. These workshops are attended by representatives of HyD, so that their inputs are included. The SRA is updated after each workshop and serves as a guide to Jacobs’ M&V activities.

ii) Monitoring

32. Jacobs carries out high-level monitoring with a focus on the following activities:

(a) Monitoring by Review of Documents

Project Integrated Management Systems (“PIMS”)

33. Jacobs reviews the MTRCL’s new and updated PIMS and submits reviews to HyD together with comments. Jacobs uses those reviews and the PIMS documents, as updated by the MTRCL, for process verification and as a reference point for monitoring activities.

Contract Documents

34. Civil Works - Once the civil works contracts had been awarded Jacobs reviewed and submitted review reports to HyD on Contract Working Documents and used this information as the basis for monitoring the ongoing civil works construction contracts.
35. Building Services (“BS”) - Jacobs reviewed and submitted review reports to HyD on the Contract Working Documents of six BS contracts.
36. Systemwide E&M Contracts - Jacobs reviewed and submitted review reports to HyD on the Contract Working Documents for 12 Systemwide E&M contracts.

37. Rolling Stock and Signalling - Jacobs reviewed and submitted review reports to HyD on the Contract Working Documents for nine rolling stock and rolling stock maintenance equipment contracts, including contract 840 for XRL train sets, plus two signalling contracts for trainborne and trackside signalling systems and a contract for the Point Monitoring System.

Review of Ongoing Contract Records

38. Based on available information and guided by the ongoing review of the SRA, Jacobs requests key published contract documentation for more detailed review using the MTRCL's SharePoint system for document tracking and follow up; these include:
- Contractors Designs and Alternative Designs
 - Employer's Designs (by its Detailed Design Consultants (“DDCs”))
 - Construction Methodologies.
 - Temporary Works Designs.
 - Special Installation and Erection Proposals.
 - Contract Interface Plans.
 - Master Programmes and Updated Programmes.

Documents for review are requested from the MTRCL through HyD.

Categories of Review

39. Upon receiving any requested documents from the MTRCL, Jacobs distributes them to appropriate Jacobs' personnel for initial review and categorization on a risk basis into three categories:

Category I – No review required.

Category II – Detailed review required and observations noted in monthly progress report.

Category III – Detailed review required with identification of critical issues.

40. For each of the documents selected for a Category II and III review, Jacobs prepares a review document for submission to HyD in a format which has been agreed with HyD, to indicate:
- Document reviewed.

- Date reviewed and reviewers' names.
- Summary of review findings by reference to document paragraphs.
- Classification of our observations into those:
 - (A) For information of HyD.
 - (B) For noting for future review.
 - (C) For immediate information of the MTRCL.
- Summary with Class (C) Observations is forwarded to the MTRCL by HyD for response and follow up.

41. Jacobs monitors types (B) and (C) observations until such time that they are satisfactorily addressed or when subsequent events have rendered them to be no longer an issue.

(b) Financial Monitoring

42. Under the Jacobs consultancy, in order to assist HyD to properly monitor and control XRL expenditure, under 56 major construction / procurement contracts. Jacobs has established a dedicated Financial Monitoring and Verification Team.

43. The detailed arrangement for the financial monitoring process and the verification audit process have been established and tested to be functioning properly.

44. HyD considers the following issues as critical to performance of Construction Phase Financial Monitoring:

- Keep track of the project cost development of XRL in respect of the two project votes - (a) Railway work – 53TR and (b) Non-Railway work – 57TR;
- Reconcile the project cost commitment against the Government's Approved Project Estimate (“APE”);
- Keep track of the Project Contingency Level as well as remaining contingency for Government Cost (i.e. expenditure outside EA2);
- Review of Project Control Group (“PCG”) papers and Form Cs; and
- Monitor the cash flow of the project over the development period.

(c) Programme and Progress Monitoring

45. Jacobs requested and reviewed contractors' master programmes after they had been accepted by the MTRCL and assessed actual progress against those programmes on a

monthly basis, comparing our assessments of progress with the MTRCL's monthly reported assessments. We reported on:

- i) assessments of individual contract delays;
- ii) accruing slippage being recorded against individual contract programmes and against the overall XRL project programme and the potential impact of those slippages on the Project Completion Date;
- iii) the MTRCL's methodology for measuring the overall status of the overall project programme.

(d) BSRC Monitoring

46. The Jacobs BSRC team is integrated with the BD team working on XRL and their work is to provide assessments on the building submissions submitted by the MTRCL and/or its consultants/agents, and provide input on compliance with the building safety standards in respect of the XRL to the HyD under the direction of the BD.
47. The BSRC team liaises with the monitoring team to exchange information.
48. The BSRC team also works closely with the BD and other relevant Government department such as the Geotechnical Engineering Office on their day-to-day submissions reviewing works.

(e) Site Monitoring

General

49. Jacobs carries out site visits to each of the major civil construction contract sites on a monthly basis with occasional ad-hoc visits to sites where important activities are happening or issues are emerging. The purpose of these site visits is to monitor activities related to construction, testing and commissioning of the works by contractors under the supervision of the MTRCL. During the site visits, Jacobs records its observations related to safety, quality of materials, workmanship and equipment, construction methodology, and compliance with environmental requirements. Jacobs also discusses related matters with the relevant MTRCL construction site supervision staff.
50. Off-site activities undertaken by Jacobs, relevant to site monitoring, include monitoring of progress against programme and the review of method statements for major works activities, including major temporary works.
51. Site visits complement Jacobs' desk top monitoring of contract documents. Prior to a visit Jacobs:
 - Requests assistance from the MTRCL for each visit;

- Advises any particular part of the works or activity that it wishes to observe; and
 - Nominates particular site records it wishes to see, including safety and quality control inspections and construction records.
52. Site visits and associated reports by Jacobs' Site Monitoring Team complement but do not duplicate site visits and audits by the BSRC Team.

Site Visits

53. Jacobs has conducted monthly site visits to all major civil construction sites, by prior arrangement with HyD and the MTRCL, since the early months of its assignment.
54. Site works for Contract 830, Trackwork and Overhead Line Systems, commenced in June 2013 and, as work built up under Contract 830, Jacobs increased the frequency of site visits. For the E&M Systems contracts, including Building Services, Jacobs commenced monthly site visits in December 2013.
55. Jacobs prepares advance schedules for planned site visits; a direct communication between the site monitoring team and the MTRCL's site teams has been established to enhance effectiveness in arranging these site visits.
56. Jacobs prepares and submits site visit reports to HyD setting out the purpose of the visits and providing observations and recommendations together with progress photographs. Any critical observations or comments are drawn to the immediate attention of HyD and the MTRCL.

(f) E&M Monitoring

57. Jacobs holds bi-monthly coordination meetings with RDO's E&M team.
58. The Jacobs Monitoring Team Leader calls on Jacobs' global E&M systems specialists for review of E&M construction documents if necessary. Jacobs also employs support from specialist local sub-consultants who are deployed for site visits, meetings and audits as required.

(g) Public Opinion Monitoring

59. We have agreed a Public Opinion Monitoring Programme with HyD to provide information for its own use.
60. For the monitoring of public opinion on XRL, survey of views expressed in major websites on the internet, including social networking websites, microblogs, blogs and forums is undertaken. The websites to be monitored are updated abreast with the development and progress of XRL.

iii) Verification

(a) Objective

61. The objective of this verification exercise is to assure that MTRCL is compliant with its obligations under the Construction Phase EA. In order to discharge its role, Jacobs uses a risk based sampling approach to verify, by audit, that the MTRCL is implementing the project to required standards and specifications and in accordance with its own internal management systems and procedures.
62. For issues relating to Technical, Procurement and Financial obligations, the verification process acts as the formal process to:
 - assess compliance with safety, programme, quality and cost management procedures; and
 - audit technical and financial elements which are identified or emerging as being of high risk.
63. Jacobs' approach is designed to advise the Government that XRL is, or is not, being delivered in line with appropriate levels of safety and quality and within the cost and programme parameters required.

(b) Process Compliance Audit

64. For process compliance audits, Jacobs has previously reviewed the Hong Kong Government' contract management process and compared it with the MTRCL PIMS.
65. Jacobs commenced this work by reviewing the existing MTRCL project audit processes already in place. Jacobs validated this against the MTRCL's established procedures, available as part of the MTRCL PIMS. Jacobs also reviewed the MTRCL's internal audit works.
66. The process compliance audits are carried out against Project Division as well as individual contracts. They also focus on whether the established procedures dealing with financial matters are being followed.
67. Projects Division is audited against the PIMS procedures for internal audits and management review, environmental management, programme management and safety management while the individual contracts are audited against the construction management procedures.

(c) Technical and Financial Compliance Audit

68. A major component of the verification audit works is 'contract based'. For each verification audit, Jacobs' concentrates on the safety, programme, quality, cost management and design & construction aspects.
69. Jacobs' verification focuses on whether:

- Each construction package will meet the overall objectives set out in the MTRCL's EA.
- Compliance processes are being followed by the MTRCL.
- Evidence that costs are being monitored in accordance with contractual procedures and variations are processed in accordance with the EA.
- Individual contracts Works programmes are suffering delay and how delays are being addressed in accordance with contractual requirements.
- The MTRCL's deliverables meet the required quality requirements set out in the EA and in accordance with industry standards.
- Risk assessments have been included by the MTRCL in the formulation of the construction packages and works.

70. The financial verification audit is one of the key tasks under this assignment, with a view to assisting HyD to properly monitor and control the expenditures of the XRL Project, implemented under 56 major construction and procurement contracts in accordance with what Jacobs considers is an extremely tight overall project programme. To overcome this challenge Jacobs set up a Financial Verification Team which is working closely together with HyD in carrying out financial verification audits on various financial related processes, from both process compliance and technical compliance points of view. The financial audit is carried out using a risk based approach, similar to technical audits, so that the most critical items are identified and verified.

(d) Programme

71. A rolling programme of audits has been set up to monitor process compliance and technical compliance by the MTRCL. Six months Verification Audit Plans are proposed for the audits to be carried out from January to June or from July to December.

iv) Meetings

72. During the course of M&V services performed by Jacobs up to April 2014, the following major meetings were attended:

Monthly Progress Meeting

73. This is a meeting between HyD and Jacobs, chaired by HyD/RDO's Chief Engineer, to discuss progress on the project and issues relating to the Jacobs consultancy assignment.

74. Prior to the meeting Jacobs' Monthly Progress Report ("MPR") is issued and at the

meeting Jacobs briefs HyD on the progress of XRL and its constituent contracts, highlighting issues and concerns, as well as potential future issues and risks.

Contract Review Meeting

75. This meeting is chaired by HyD/RDO's Chief Engineer and provides a platform for the MTRCL's Construction Managers to brief RDO and Jacobs, contract by contract, on current progress, key issues, upcoming activities and potential risks.
76. The meeting is in two parts – WKT and Tunnels. In general each contract team presents overheads and photographs showing site progress, work planned during the coming period, and any risks arising.

v) Reporting

77. The key reports prepared by Jacobs and issued to HyD are:

Monthly Progress Report (“MPR”)

78. As noted at paragraphs 74 above, this is a comprehensive report prepared and issued on a monthly basis prior to the progress meeting with HyD; it comprises three volumes:

Volume 1 - Monthly Progress Report

Volume 2 - Appendices

Volume 3 - Project Cost Monitoring with Appendices

79. Volume 1 reports on progress summary, progress summary of deliverables, monitoring works, verification works and building submission reviews. It also includes sections on the progress and financial position of the Jacobs consultancy.

Six Monthly Report

80. Every six months, ending June and December, Jacobs prepares a summary report of its activities in the preceding six months.
81. This consists of an overview of XRL works; overview and details of monitoring and verification works, key issues and areas of concern on the key contracts.
82. It provides a high level summary of the ongoing issues that have arisen and continued in the six month period.

Document Review Report

83. These reports are issued following the review of XRL documents and are generally a list of high level comments which are classified as:

- A: For information of HyD only
- B: For noting for future review by Jacobs
- C: For immediate information of the MTRCL

These reports are sent to HyD who forward the appropriate comments to the MTRCL.

Site Visit Monitoring Reports

84. These reports, for each monthly site visit, summarised in tabular form the works in progress at the time of the visit and commented on matters related to quality and workmanship, safety, environment, programme, potential claims and particular concerns.

Audit Reports

85. After each audit Jacobs prepares a short summary outlining the key issues for the audit for HyD's immediate information.
86. Following this Jacobs prepares the formal audit reports. These follow the main audit headings:
- Safety and quality
 - Programme and progress
 - Design, Engineering, Testing and Commissioning
 - Financial
87. Audit findings for key issues that have been raised in the audit questionnaire, agreed with HyD, and sent to the MTRCL prior to the audits are reported. The reports are based on documents tabled at audit sessions and information provided by the MTRCL's auditees. The reports were submitted to HyD and HyD passed these to the MTRCL for review and comment.

Briefing Notes for Project Supervision Committee ("PSC")

88. This meeting is chaired by the Director of HyD. Jacobs was not invited to attend PSC Meetings until February 2015.
89. This is a monthly high level meeting between HyD and the MTRCL, with the representative of the Transport and Housing Bureau ("**THB**") in attendance. At this meeting the MTRCL presents its report on safety, progress, emerging costs, claims and other matters. HyD raises issues of concern with the MTRCL and these are discussed at the meeting or sometimes deferred for the MTRCL to prepare a more complete response.

90. For each PSC meeting Jacobs produces briefing notes for the Director of HyD. These briefing notes are based on Jacobs’ understanding of the high level project issues and are prepared from site, desk top and monitoring activities. Financial monitoring notes are based on facts emerging from a review of key financial information.

Issue List

91. Each month Jacobs prepares an ‘Issue List’ which details issues identified during document reviews and issues arising during audits and during site monitoring, which Jacobs reasonably considers merit written responses from the MTRCL. The Issue List is issued to HyD for forwarding to the MTRCL for comment and response. Jacobs ultimately reviews the responses from the MTRCL and, depending on their nature, the issues are either classified as ‘closed’, ‘keep in view’ or remain ‘open’ if Jacobs considers the responses to be incomplete. The Issue List is tracked and updated monthly to add new ‘open’ issues, and to close issues which are no longer valid.

Progress Reporting

92. Jacobs progress reporting was generally based on information provided by MTRCL who reported against approved project and contract programmes. As well as these approved programmes it is worth noting that contracts that were delayed also had working programmes and delay recovery programmes which were generated by the contract teams to mitigate the ongoing delays. The following timeline, extracts representative advice and recommendations provided to HyD in Jacobs’ MPR and PSC briefing notes, regarding accruing delays and risks to the Completion Date.

Date	Report
MPR May, June and July 2011	The date for the award of Contract 810A has been further deferred by about two more months to 19 October 2011 whilst the completion date will remain unchanged. This further compression of the already very tight construction programme together with the continuing issues related to the soft toe problems in 803A and 803D could impact the completion date for the WKT.
MPR August 2011	Our efforts to monitor the overall Project programme as works are being re-sequenced and designs being reworked have been somewhat hampered as the MTRCL’s overall coordinated and integrated programme is not yet available.
MPR October 2011	Each month the MTRCL is reporting accruing slippage to the overall Project Programme and this has worsened over the last few months at the rate of about 1.5 weeks per reporting period, the Project is now reported to be 10

Date	Report
	weeks in delay. This trend is a matter of significant concern and places the Completion Date at risk.
MPR December 2011	During the last six months the overall physical progress has dropped from 9.6% against 11.2% planned to 12.9% against 17.5% planned. This is a matter of significant concern as the Project Completion Date is seriously under threat.
MPR March 2012	There is no sign yet that the situation will improve, nor that Delay Recovery Measures instructed and Supplemental Agreements implemented to date have started to have any meaningful impact. We would strongly recommend that the MTRCL now undertakes a complete appraisal of the overall Project Programme and the current delay situation throughout the whole of the Project, including the impacts on the numerous inter-contract, and external, interfaces, in order to determine a realistic critical path to completion that all XRL contractors will have to buy into. This would require the MTRCL to negotiate and enter into Supplemental Agreements with contractors for revised and realistic contractual dates leading to a readjustment of the Project Completion Date.
PSC Briefing Note March 2012	Each month the MTRCL is reporting accruing slippage to the overall Project Programme and this continues to worsen. The reported physical progress has dropped during the latest reporting period from 14.7% actual against 20.8% planned to 16.8% actual against 22.7% planned; this equates to about 4 months delay (average) accrued in 25 months; some contracts are already in excess of six months in delay. If this trend continues then the Completion Date could slip into 2016.
PSC Briefing Note April 2012	The Project Construction, Testing and Commissioning phase is now more than two years into its five-year delivery period and achievement of the planned Completion Date of May 2015 may be at risk. There is no sign yet that the situation will improve, nor that Delay Recovery Measures instructed and Supplemental Agreements implemented to date have started to have any meaningful impact, save for in Contracts 820 and

Date	Report
	802. Does the MTRCL intend to undertake a complete appraisal of the overall Project Programme and the current delay situation throughout the whole of the Project, including the impacts on inter-contract and external, interfaces, in order to identify the current critical path to completion?
MPR July 2012	<p>We would strongly recommend that the MTRCL now undertakes a complete appraisal of the overall Project Programme and the current delay situation, including the impacts on the numerous inter-contract, and external, interfaces, in order to determine a realistic critical path to completion.</p> <p>and</p> <p>We would strongly recommend that the MTRCL prepares a combined WKT and approaches programme (Contracts 810A, 810B, 811A and 811B) for the civil works to show the overall impact of the current delays on the station handover dates for P-way and E&M.</p>
PSC Briefing Note July 2012	<p>The XRL Project Construction, Testing and Commissioning phase is now two and a half years into its five-year delivery period and the overall progress delay equates to about four and a half months. Unless effective mitigation measures are implemented in the civil works contracts and special measures instructed in some of the follow-on E&M contracts, achievement of the XRL Completion Date of May 2015 will remain at risk. Five of the ongoing civil contracts, 822, 824, 810A, 810B and 811B, incurred more than two weeks additional delay during June.</p>
PSC Briefing Note September 2012	<p>The XRL Project Construction, Testing and Commissioning phase is now more than two and a half years into its five-year delivery period and the reported overall progress delay equates to about five months.</p> <p>A number of delay recovery initiatives have been implemented or are under discussion with the civil works contractors. The MTRCL has requested the 830 P-way contractor to assess the impact of known delays on his trackwork and OHL contract works and internal</p>

Date	Report
	discussions are being held within the MTRCL and its construction teams to assess impacts on and identify potential measures to mitigate against the accrued delays to the follow-on E&M systemwide and WKT E&M contracts.
PSC Briefing Note January 2013	HyD may wish to ask the MTRCL if the overall WKT integrated programme, taking account of all agreed Delay Recovery Measures (“ DRMs ”) is now available.
MPR March 2013	<p>The MTRCL has reported forecast delays of about 12 months in the two Mainland contractor driven TBMs reaching the Boundary.</p> <p>The MTRCL has advised that it will not allow any compression of the period allowed in the Project Master Programme (“PMP”) for testing and commissioning (“T&C”), and since the only access to the Contract 826 tunnels for the P-way and E&M contractors will be from Mai Po then the track and overhead line installation and the Track Related Installation Programme (“TRIP”) works could be delayed by up to 19 months which could defer the current scheduled XRL completion date for running through trains by a similar amount.</p>
MPR July 2013	Using the MTRCL S-curve as a guide indicates that the overall Project progress is now about eight months late overall against the original baseline and about six months behind the revised baseline. Whilst this means of recording provides a guide to overall progress trends, it does not take account of the criticality of individual contracts and the impact of any delays therein on interfacing follow-on contracts. Furthermore, when comparing the percentage delay of 21.11% against the original 54 months construction, testing and commissioning period for the XRL Project, a potential delay of almost 11 months to the Completion Date is indicated.
MPR September, October, November, December 2013	The real delay to opening for full revenue service of the XRL project could be the impacts of the dominant delays being recorded against its constituent individual civil contracts on the P-way, systemwide E&M and T&C

Date	Report
	activities.
PSC Briefing Note March 2014	The XRL Project Construction, Testing and Commissioning phase is now almost four years into its five-year delivery period and delays have continued to accrue since the commencement of construction activities in January 2010. Overall progress is 53.22% (from 51.34% last month), against a revised planned 83.42% (81.41% previous month); the gap has widened slightly from 30.07% to 30.20% against the revised baseline during October 2013. This equates to about 11 months delay overall to the original baseline programme. In reality the overall project delay will be determined by the dominant delays of the various civil works contracts and their impact on P-way, TRIP and T&C activities. WKT contracts 810A, 810B, 811B and tunneling contracts 822, 824 and 826 are now running a year or more late to their approved Master Programmes, according to the MTRCL's latest Project Report, and Contracts 810B and 824 are running about 20 months late.

Summary of Main Reasons for Delays

93. The reasons for the delay are many and varied and at various stages of the project different contracts were potentially impacting the completion date. To illustrate this, further extracted information as set out in our MPR and six monthly reports following Jacobs appointment in August 2010 are presented as follows*:

January 2011

94. Jacobs reported that foundation contracts for WKT, Contracts 803A, B, C, D, had all encountered problems either due to access to site and/or problems with the diaphragm walls – 'Soft Toe'.
95. Jacobs reported that dates for the award of contracts 810A and 810B had been deferred by about one month whilst the completion dates would remain unchanged; the date for award of the associated BS Works Contracts series 816 had been similarly deferred. This compression of the construction programme together with unresolved issues related to the soft toe problems in Contracts 803A and 803D could impact the completion date for the WKT.

* - Paragraphs 93 to 133 are based on extracts from Jacobs reports to HyD.

June 2011

96. Jacobs reported continued concerns with regard to Jacobs' ability to monitor overall programme management and stated in Jacobs report that "Whilst the MTRCL is diligent in its assessment and approval of individual contract programmes and their revisions, in order for us to have a clear understanding of the overall interfacing and inter-relationship of the various programmes we have requested, through RFD, a copy of the overall Project Programme, a summary of which (2 pages) is provided monthly in the MTRCL's Project Report." The MTRCL responded, through RDO that it was not appropriate to issue this programme. Jacobs noted that the XRL Programme was being revised to include changes due to the reprogramming of works in Contracts 803A, 803B, 803D and 810A at WKT and also Contracts 802, 820, 822 and 824 tunnels, subject to PCG approval.
97. For WKT Jacobs reported that remedial works related to defective diaphragm wall interfaces (Soft-toe) in Contracts 803A and 803D were ongoing. Provision had been included in Contract 810A Tender and 810B Contract for any associated impacts on those contracts. Jacobs commented that these matters needed to be resolved in advance of the excavation works in Contracts 810A and 810B.
98. The date for the award of Contract 810A had been deferred to 19 October 2011 whilst the completion date remained unchanged. This compression of the construction programme together with the continuing issues related to the soft toe problems in Contracts 803A and 803D could impact the completion date for the WKT.
99. In the tunnel contracts there were concerns at progress but no specific issues impacting project completion, except in Contract 802 where issues were arising with pile removal along the line of the Contract 820 TBM tunnel, higher rock strength in Contract 823A launching shaft, delay to land resumption in Contracts 823A and 823B and the ongoing delay in the Mainland tunnels impacting Contract 826.

December 2011

100. Jacobs reported that the progress of H-pile removal in Contract 802 remained a key issue. Contract 820 would commence its southbound down track TBM drive as planned, and if the obstructions were not removed in time then the drive would be halted until the associated pile removal works had been completed.
101. For WKT, Contracts 803A, B, C, D were substantially complete and for Contract 811B, the overall delay was now about 29.5 weeks (from 27.5 weeks), diaphragm wall construction continued to be further delayed due to the continued presence of core stones in the south eastern top down area. There was also an indication of the presence of a higher rock-head than indicated in the Geotechnical Baseline Report (GBR) which would impact the programme for top down construction of the WKT approach tunnels. Given the problems associated with D-wall progress to date, there was a high risk that the delay trend would continue south in the existing Jordan road area due to high core stones, especially in the east D-wall.

102. Contract 810A commenced on 24 October 2011, three months later than originally planned. The Completion Date remained unchanged which meant that the programme was compressed.

February 2012

103. Jacobs noted that the MTRCL had recorded that the overall physical progress is now 15.7% actual against 20.8% planned with the delay accruing causing concern. Jacobs understood that the MTRCL was exploring, with its individual civil contractors, ways and means to arrest the delays and seek to protect the Programme.

June 2012

104. Jacobs reported that XRL Project Construction, Testing and Commissioning phase was two and a half years into its five-year delivery period and the overall progress delay reported by the MTRCL equated to about five and a half months behind the revised baseline. The overall physical progress was reported to be about 40% and the gap between the planned progress and actual progress had increased from 16.3% to 17.7% (revised) during May 2012. Using basic logic Jacobs calculated the delay as $54\text{months} \times 17.7\% = 9.5\text{ months}$.

105. The most significant critical delays were at the south end of the XRL, at WKT, and in TBM tunneling Contracts 820 and 826.

106. DRMs initiated to date (being May 2012) did not appear to have arrested the worsening delay situation to date, either against the Master Programmes or target programmes.

107. The main issues on tunnel contracts were in Contract 822 where ground conditions were impacting progress; Contract 823A which was 33 weeks and Contract 823B which was 31 weeks in delay. Progress on tunnel drives was poor and some harder and higher rock head was encountered. Contract 826, which was dependent on the TBM's progress in the Mainland, was also delayed.

December 2012

108. Jacobs reported that the actual overall physical progress curve compared to the planned curve, calculated by the MTRCL, had continued to diverge since the commencement of construction activities in January 2010 and was now indicating that the overall progress is 29.9%, against a planned 43.1%; the gap has further widened from 11.7% to 13.2% in the last month (being December 2012).

109. Jacobs was aware that the MTRCL was carrying out a continuous major internal programming assessment to establish the impacts of known civil works delays, taking account of delay recovery measures instructed and DRMs being adopted by the civil contractors and was looking for opportunities to accelerate the E&M works, including trackwork and OHL, wherever possible to minimise delays within the TRIP for the railway systems and Coordinated Installation Programme (“CIP”) in WKT and to protect the T&C programme.

110. Jacobs was also aware that discussions were continuing between MTRCL and its contractors for contracts 810A, 810B and 811B towards finalising Delay Recovery Measures (DRMs) and/or best endeavours programmes to mitigate against the accruing delays.
111. Jacobs also recorded that the P-way contractor had been asked to produce a time/chainage programme to show how currently forecast, unrecoverable, civil works delays for contracts 823A, 823B, 824 and 825 could be accommodated into the 830 programme in order to identify potential impacts on the Track Related Installation Programme (TRIP) and any special measures that would be required from contract 830 to mitigate against such impacts.

June 2013

112. Jacobs reported that the actual overall physical progress curve compared to the planned curve, calculated by the MTRCL, had continued to diverge since the commencement of construction activities in January 2010 and was indicating that overall progress was 39.63%, against a revised planned 57.82%; the gap had widened from 16.31% to 17.69% against the revised baseline in the last month (being June 2013).
113. Whilst this means of recording provides a guide to overall progress trends, it does not take account of the criticality of individual contracts and the impact of any delays therein on interfacing follow-on contracts. MTRCL carries out continuous internal programming assessments to establish the impacts of known civil works delays and seeks to extract realistic best achievable dates from its civil works contractors to recover or partly recover delays.
114. A presentation was given by the MTRCL to senior HyD/RDO and Jacobs' personnel on 08 May 2013 to explain the current status of civil works delays and their potential impact on E&M installation, T&C through to Project Completion in 2015. There were four civil works contracts which were showing delay extending deep into the TRIP:
- | | |
|-----------------------------|--|
| Contract 826 | • Due to poor TBMs progress in Mainland |
| Contract 820 | • Due to unforeseen H-pile obstructions in front of so
TBM down track drive |
| Contracts 810A / B
(WKT) | • Due to initial late access dates and accrual of delays
excavation and concrete structures |
115. During the presentation, the MTRCL acknowledged that the delays to civil works would impact on the E&M works in the TRIP, and advised it was seeking ways and means to minimise the impacts on the dynamic T&C regimes and test running periods. One option was to carry out T&C wherever completed E&M works were available and filling the gaps as further lengths became available. The MTRCL advised this strategy could apply in particular to the cross Boundary T&C which would be affected by late completion of the Contract 826 civil works and resulting impact on the TRIP works.

116. It was noted that excavation in WKT Contract 810A slipped a further three weeks against the approved Master Programme during the reporting period. Both Contracts 810A and 810B were reporting further slippage in station structure works of 2.3 and 1.3 weeks respectively against their Master Programmes.
117. For Contract 826 the MTRCL had previously reported forecast delays of about 12 months in the two GSG Mainland contractor driven TBMs reaching the Boundary. Whilst TBM production during the last month (being April 2013) showed some improvement on the previous month it still fell short of the target required to arrive at the Boundary in October and December 2013.
118. The MTRCL advised that, in respect of Contract 811B, further delays were recorded in the top down area excavations against both the Master Programme and the DRM6 programme, although an improvement in CC tunnel excavation had been recorded. Jacobs considered that there remained a high risk that production would slow down further when corestones and higher than previously predicted rock head were encountered, particularly in the top down area.
119. Another contract which was causing concern was Contract 802 where the focus was on the removal of the remaining 26 up track H-piles.
120. The MTRCL reported that progress on Contract 823A TBM was at risk and Contract 824 was forecast to have a delay of 5 months.
121. Further, Jacobs had determined that contracts 810B, 810A, 811B, 820, 822, 824 and 825 all recorded delays of over 26 weeks (6 months) against their Approved Master Programmes.

December 2013

122. Jacobs reported that the actual overall physical progress curve compared to the planned curve, calculated by the MTRCL, had continued to diverge since the commencement of construction activities in January 2010 and was now indicating that the overall progress was 49.62%, against a revised planned 78.93%; the gap had widened from 28.15% to 29.31% against the revised baseline during the last month (being December 2013). It was noted by Jacobs that based on the approved Master Programme, delays of 86.5 weeks were being reported by the MTRCL for the WKT Contract 810B and 84.3 weeks for tunnel Contract 824. Notwithstanding, the MTRCL advised in their monthly report that it was continuing to explore how much of the individual WKT and tunneling works contracts delays could be absorbed by the follow-on contracts programmes.
123. Furthermore, Jacobs understood that, due to the current progress delays in individual contracts, the MTRCL would phase the T&C into four individual sections, down track, up track, WKT and cross-Boundary. The MTRCL advised that its initial focus

would be to complete the down track works between Nam Cheong and Mai Po to provide sufficient length of energised railway to commence dynamic testing of the trains and integration of the systems by the end of 2014.

124. Jacobs December 2013 report identified the Contracts in significant delay for reasons documented in Jacobs' report, being:

Contract 826	Due to late handover of TBMs at the Boundary
Contract 820 (south of Nam Cheung)	Due to delays caused by the removal of unforeseen H-pile obstructions in front of south TBM down track drive
Contract 823A	Due to continued poor progress of TBMs in the down track, up track drives have not yet commenced.
Contracts 822 and 824	Due to general slow initial progress in tunnel excavation and current slow progress in tunnel lining works, although Contract 822 has recently shown some improvement to tunnel lining works progress.
WKT Contracts 810A, 810B and 811B	Due to initial late access dates and accrual of delays to excavation and concrete structures which will impact access dates to track level B4 and platforms.

125. It was noted by Jacobs that excavation progress in WKT Contract 810A suffered further delay of 3.3 weeks against the approved Master Programme during the reporting period and is now 53.0 weeks in delay. Jacobs believed that excavation delays in Contract 810B had worsened from 50.0 weeks to 53.1 weeks in the month of December 2013 against the Master Programme. Both Contracts 810A and 810B were reporting further slippage in station structure works of 2.9 and 0.7 weeks respectively against their Master Programmes and were recording 68.0 and 86.5 weeks overall delay respectively. Both 810A and 810B were being monitored against target programmes, DRM.02 (June 2013) and P2C2 (Feb 2013) respectively, and these were indicating overall delays of 12.3 (from 10.6) weeks and 6.6 (from 5.5) weeks respectively.
126. Jacobs reported that, for Contract 811B, further delays were recorded in the top down area excavation against both the Master Programme and 16.7 weeks against the DRM7 target programme. Progress on cut and cover tunnel excavation (bottom up) had slipped 1.1 weeks to 49.9 weeks. Jacobs believed that there remained a high risk that excavation production would slow further when corestones and higher than previously predicted rock head were encountered in the eastern part of the top down area.
127. In respect of Contract 820, Jacobs observed that the delays to tunnel construction

south of Nam Cheong would impact the access dates for P-way and E&M systemwide TRIP works south of Nam Cheong in both up and down track tunnels.

128. Jacobs noted that Contract 822 was in delay against the approved Master Programme by more than one year and the MTRCL and the Government had not reached agreement on a revised best efforts programme to achieve Degree 1 dates for tunnels. Jacobs advised that this could place the MTRCL target of down track energisation by the end of 2014 at risk.
129. Jacobs reported that TBM production in Contract 823A was continuing to fall short of the required targets, particularly the down track drive north, in which 31 rings were built during November 2013, equating to about one ring/day at which rate breakthrough into Contract 824 would not be achieved until April 2014. It was observed that the south down track TBM towards Contract 822 achieved eight rings in November which was short of target of six rings/day.
130. Jacobs noted that, in respect of Contract 824, excavation rates in both tunnels north from Tai Kong Po continued to fall short of planned targets, particularly in the more critical down track. Tunnel lining works were falling behind excavation in the down track where there was no progress for the third month in succession and only one bay concreted in the up track in November 2013. Excavation for both tunnels was then about 67 weeks behind the approved Master Programme and tunnel lining production has slipped one month further behind the planned targets for each tunnel with the down track now 76 weeks behind the approved Master programme and the up track 94 weeks behind. A DRM programme, which had been developed in September 2012 was showing a delay of approximately 40 weeks. At the time the contractor had advised the MTRCL that his best achievable date for Degree 1 in the drill and blast tunnels was end December 2014.
131. In respect of Contract 826, Jacobs reported that the down track TBM reached the Boundary on 24 November 2013, the up track TBM however fell behind and was more than 600m behind the down track TBM. The down track TBM was almost 1.5km to drive to the retrieval shaft at Mai Po and, Jacobs believed that if energisation of this section for T&C was to be achieved by mid-2015 then Degree 1 would be required by the end of 2014 which would require that the down track tunnel drive from the Boundary needed to be completed in 10 months. Jacobs believed this should be possible provided an average rate of 75 rings/month could be maintained. Jacobs observed that the situation with the up track TBM was worse; it built only 31 rings during November and at that rate would not reach the Boundary until late October 2014. Jacobs reported that the Mainland contractor and Contract 826 must be urged to improve TBM production significantly in order to fit in with the cross Boundary stage of the MTRCL's current T&C strategy.

May 2014

132. Jacobs reported that the Secretary for Transport announced on 15 April 2014 that he had been notified by the MTRCL that the construction of the Hong Kong section

of the XRL would not be completed by 2015. Subsequent to that announcement the MTRCL announced that the completion date would be postponed to 2016 with the line ready for operation in 2017.

133. In its report to the Legco Panel on Transport Subcommittee on Matters Relating to Railways, the MTRCL stated that under the proposed revised schedule the target for opening of the XRL would be by the end of 2017. In that report the MTRCL stated that the two most challenging civil contracts were the TBM tunneling Contract 823A and WKT Contract 810A, with the cross Boundary tunneling Contract 826 being slightly less challenging. The report stated that the Contracts 823A and 826 up track tunnels are targeted to be ready for dynamic T&C in December 2016 (The down track tunnel targets being February 2016) and WKT targeted to be available for dynamic T&C in January 2017 with revenue service commencing in November 2017.

Other Significant Events

134. In January 2013 the MTRCL advised HyD that the original completion date of August 2015 could not be met and the target for revenue service was moved to December 2015.
135. Jacobs agreed with the MTRCL at the time that the following contracts currently posed the greatest threat to the XRL completion date:

Contract 826	Continued poor progress of both TBM tunnels towards Mai Po retrieval shaft.
Contract 823A	Poor TBM tunneling progress. If the north down track TBM could not be repaired to re-commence tunneling by August 2014 to complete the last 60m of tunnel then the fallback option to use the Contract 820 south up track TBM may have to be implemented. The south down track TBM broke through on 20 May 2014 and is being relocated to commence the south up track drive.
Contract 824	Continued slow progress particularly in tunnel lining works.
WKT Contract 810A	The highest risks in Contract 810A are associated with rock excavation in the northern top down area, fabrication and erection of the structural steelwork for the station entrance building and constraints in constructing Lin Cheung Road underpass.
WKT Contract 811B	Future excavation in rock below B3 level could delay P-Way and TRIP works

136. In September 2013 the MTRCL presented a partial opening proposal to HyD and Jacobs where first stage works could be completed at the end of December 2015 with the remainder of the Day 1 works (The works being the scope of the current contracts) being completed later. This was identified as the Minimum Operating Requirements (MOR). The first phase was the completion of six tracks only plus baselined facilities to commence a passenger railway service. The second phase was the completion of the remainder of the works.
137. The MTRCL's presentation to HyD and Jacobs was a simple overview with no detail, particularly on the operation of only part of the WKT terminal and the interface with the other WKT stakeholders.
138. Jacobs did not have the opportunity to further discuss this proposal and understand that it was eventually dropped.
139. Jacobs understands that RDO pressed the MTRCL to update the project programme and that this was promised in Q3 2013, Q1 2014 and was eventually overtaken by the events in early April 2014 in relation to flooding of the 823A tunnel, following which a new programme to complete was prepared moving the completion date to October 2017.

II Performance and accountability of the Government and the Corporation relating to the project delay

140. Jacobs view is that, for all major projects, delay events are common and often unavoidable but require careful and effective management and mitigation strategies.

III Whether the Government and the Corporation have deliberately covered up the project delay

141. To our knowledge, throughout the project, Jacobs believed the MTRCL reported in an open and transparent way on the issues and delays on each individual contract and the impact on the percentage completion of the project.
142. Jacobs did not attend any of the high level project meetings between the MTRCL and the Government and therefore is unable to comment on how, at the time, this information was discussed and dealt with.