

**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**

Written Statement of Mr. LAU Ka-keung

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I. Introduction

This Statement is prepared in response to the invitation by the captioned Select Committee to me to attend a hearing and to submit a Statement. As suggested by the Select Committee, this Statement contains information which is relevant to the Select Committee's major areas of study.

II. 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") ("the project delay"), as announced by the Government and MTR Corporation Limited (the MTRCL) in April 2014

(a) Scope and implementation schedule of the construction of the XRL ("the project')

2. The XRL is a 26-kilometer (km) long underground rail corridor. It will run from a new terminus in West Kowloon, going north passing Yau Tsim Mong, Sham Shui Po, Kwai Tsing, Tsuen Wan, Yuen Long to the boundary south of Huanggong, where it will connect to the Mainland section of XRL.

3. On 16 January 2010, the Finance Committee of the Legislative Council ("LegCo") approved the funding for the construction of the railway (\$55.0175 billion) and non-railway works (\$11.8 billion) of the XRL, amounting to a total of \$66.8 billion. On 26 January 2010, the Government and the MTR Corporation Limited (the MTRCL) entered into an Entrustment Agreement for construction and commissioning of the XRL ("EA2").

4. According to the EA2, the MTRCL shall use its best endeavours to complete, or procure the completion of, the Entrustment Activities in accordance with the Entrustment Programme (subject to fair and reasonable adjustment under justifiable situations); and to minimize any delay or other effect which any modifications may have on the Entrustment Programme. The Entrustment Programme indicates that the XRL project would complete testing and trial running, and be ready for operation in August 2015.

(b) Major details of the concession approach which is adopted for implementation of the project

5. The following paragraphs describe the major details of the concession approach. For further details, please refer to:

- (i) *Administration's paper on Hong Kong Section of Guangzhou-Shenzhen-Hong Kong Express Rail Link (Legislative Council Brief)* for the Legislative Council Subcommittee on Matters Relating to Railways ("RSC") meeting on 2 May 2008.
- (ii) *Administration's paper on Hong Kong section of Guangzhou-Shenzhen-Hong Kong Express Rail Link (Follow-up paper)* (LC Paper No. CB(1)1749/07-08(01)) in May 2008; and
- (iii) *Administration's paper on Hong Kong Section of Guangzhou-Shenzhen-Hong Kong Express Rail Link: Funding Arrangement and Special Rehousing Package (Legislative Council Brief)* for the RSC meeting on 22 October 2009.

6. Before the Rail Merger in December 2007, all railway projects were financed under the ownership approach. Under this approach, the railway corporations were responsible for the funding, design, construction, operation and maintenance of the railway, and ultimately own the railway. Since the two railway corporations operated on commercial principles, they would not take up financially non-viable railway projects unless some form of financial support was provided by the Government as appropriate. The form of funding support for each railway project was considered on a case-by-case basis.

7. Upon the implementation of the Rail Merger, the MTRCL was granted a service concession by the Kowloon-Canton Railway Corporation ("KCRC") to operate the existing and new KCR railway lines under construction. The MTRCL is now responsible for the operation, maintenance and improvement of the KCR system, including the replacement of the concession assets, during the concession period. It exercises control over all the operational arrangements of the KCRC network in addition to its own network and is responsible for the performance of the total system. Upon expiry or termination of the

service concession, under the terms of the service concession agreement dated 9 August 2007 between the Corporation and KCRC, the MTRCL would be required to return to KCRC an operating KCR system that meets the prevailing operating standards. In other words, KCRC is not disposing of the railway system to the MTRCL, and the MTRCL is not acquiring the KCRC's railway assets (except for certain low value items such as spare parts and consumables).

8. It was also agreed in the context of the Rail Merger that for individual new railway projects which are not natural extensions of the MTRCL network, the Government has the discretion to determine whether to adopt the ownership approach or the concession approach.

9. The Hong Kong section of the XRL is the first railway project implemented by the Government under the concession approach. Under the concession approach, the Government will fund the construction of the railway and its ancillary infrastructure, and ultimately owns the railway. The MTRCL is entrusted with the design, construction, testing and commissioning of the XRL. Upon completion of the railway, the MTRCL would be granted a service concession for the operation and the Government would receive service concession payment accordingly. Subject to the agreement between the Government and the MTRCL concerning the terms of the service concession, it is the Government's intention that one of the conditions for the grant of service concession for the operation of XRL to the MTRCL would be that upon the expiry or early termination of the franchise granted to the MTRCL under section 4 of the Mass Transit Railway Ordinance (Cap. 556), the MTRCL will have to return the XRL railway and assets to the Government.

10. When considering whether the ownership or concession approach should be adopted for the XRL in 2008, the Government had in mind the following considerations and finally decided to adopt the concession approach for the XRL:

- (i) XRL is a major cross-boundary infrastructure. The Hong Kong section of the XRL would be connected to the Mainland section which forms part of the national railway network owned by the

Mainland authorities. Ownership of the Hong Kong section by the HKSAR Government would facilitate coordination and resolution of interface issues between the Hong Kong and Mainland sections, both during construction and operation. These interface issues include, for example, the adoption of standards to ensure inter-operability of the two systems, the allocation of train paths, the fire-fighting and emergency evacuation arrangements etc.

- (ii) The financial viability of the project is subject to a host of factors, including, for example, fare level, fare adjustment mechanism and revenue split mechanism which need to be discussed with the company running the Mainland section, and the availability of train paths and cross boundary facilities arrangement, which need to be further negotiated between the HKSAR Government and the Mainland authorities. In light of these uncertainties, a conservative approach had been adopted in assessing the financial viability of the project, thus arriving at a substantial funding gap.
- (iii) Under the concession approach, the Government could capture the upside of the XRL's performance under a revenue-sharing mechanism and could get back a fully operational XRL system at the end or upon termination of the service concession. The Government would also be in a better position to liaise with the Mainland authorities over issues such as allocation of train paths and co-location of boundary control facilities to enhance the long-term profitability of the project; hence the concession approach would in the long run make more financial sense for the Government.

(c) Entrustment Agreement between the Government and the MTRCL

11. In early 2008, the Railway Development Office (“RDO”) of Highways Department (“HyD”) commissioned a consultancy to review the institutional arrangements to ensure implementing the XRL project by the MTRCL efficiently. The Lloyd’s Register Rail (Asia) Limited (“Lloyd’s”) was employed to carry out the study. One of the key areas investigated by Lloyd’s was the project management procedures which should be adopted to deliver the XRL project if the project was entrusted to the MTRCL by the Government under the concession approach. Lloyd’s considered that the MTRCL’s processes were known to be robust and in line with industry best practice, and the MTRCL was regularly reviewed and audited by outside bodies and had been proven and refined through the delivery of many high quality railway projects in Hong Kong and abroad. Lloyd’s also identified that in general there were many similarities between the processes adopted by the MTRCL and the Government.

12. Lloyd’s recommended that the MTRCL’s project management procedures for the delivery of the XRL project should be adopted, but there should be Government representation in key control processes, and the Government should be able to conduct monitoring and verification of its interests in the design and construction of the XRL project. This monitoring and verification role would effectively be “check the checker”, i.e. verifying that the MTRCL was implementing its process as specified. It entailed a risk based sampling approach to verify delivery of the requirements of the project scope and authorized expenditure. Lloyd’s also advised that the Government’s resources should be utilized effectively to avoid repetition and micro management of the project. Lloyd’s recommendations were adopted by the Government and formed largely the basis of the Entrustment Agreements for the design and site investigation as well as construction and commissioning of the XRL. In November 2008, the Government and the MTRCL entered into an Entrustment Agreement for the design and site investigation of the XRL (EA1). Then, in January 2010, the Government and the MTRCL entered into another Entrustment Agreement for the construction and commissioning of the XRL, i.e. EA2.

13. As provided in the EA2, the MTRCL shall use its best endeavours to complete, or procure the completion of, the Entrustment Activities in accordance with the Entrustment Programme; and to minimize any delay or other effect which any modifications may have on the Entrustment Programme. In this connection, the MTRCL shall act in accordance with its management systems and procedures. Moreover, the Government shall be entitled to appoint an appropriate consultant to verify the MTRCL's compliance with its obligations under the EA2. At any time the MTRCL is in material or persistent breach (or the Government, acting reasonably, suspects that the MTRCL is in material or persistent breach) of any of the MTRCL's material obligations under the EA2, the Government shall be entitled to verify the MTRCL's compliance with the MTRCL's obligations under the EA2.

14. In the event of any errors or omissions by the MTRCL which constitutes breaches of the EA2 by the MTRCL and as a result of which the re-execution of the Entrustment Activities is required, the MTRCL shall, if required by the Government, at its own cost re-execute (or procure the re-execution of) such Entrustment Activities to the reasonable satisfaction of the Government.

15. Should there be a delay and to the extent that the delay in question is not covered by any modification or adjustment to the Entrustment Programme, it may amount to a breach of the MTRCL's obligations under the EA2 and the Government may have a claim against the MTRCL for such a breach.

16. In addition, the MTRCL warrants the Government on a number of matters including that the Entrustment Activities that relate to the provision of project management services, such Entrustment Activities shall be carried out with the skill and care reasonably expected of a professional and competent project manager whose role includes co-ordination, administration, management and supervision of the design and the construction of works. Should the delay in question involve a breach of the MTRCL of any of its warranties, the Government may have a claim against the MTRCL for breach of warranties.

(d) Accountability of the Government and the MTRCL in respect of the project delay

17. Under the Public Finance Ordinance, the Controlling Officer for the XRL project is the Director of Highways (“DHy”) who shall be responsible and accountable for all expenditure for the XRL. According to the Controlling Officer’s Report by DHy under the 2014-15 Budget, the XRL is one of the new railway projects under the Railway Development Programme (which contributes to Policy Area 21: Land and Waterborne Transport under Secretary for Transport and Housing (“STH”)). The aim of this Programme is to implement the Railway Development Strategy and formulate plans for further development of the railway network.

18. According to the same Controlling Officer’s Report, HyD plans, monitors and co-ordinates various activities associated with the implementation of new railway projects. HyD has to liaise with the MTRCL to undertake necessary preparatory work and statutory procedures, and resolve interface issues arising from the implementation of these projects. Also HyD co-ordinates with other departments concerned for approval of the infrastructure layout design for various new railways and their interface arrangements with other projects, and take part in site liaison for traffic diversion and other construction matters, as well as issues on the commissioning and operation of the XRL.

19. The key roles of HyD in the implementation of the XRL project are as follows:

- (i) To oversee the overall implementation of the XRL project and the prudent use of public funds allocated for this project.
- (ii) To monitor and verify that the MTRCL properly fulfills its obligations in accordance with the Entrustment Agreements entered between the Government and the MTRCL for the design, procurement, construction and testing and commissioning of the XRL project.
- (iii) To facilitate the implementation of the XRL project by

liaising and coordinating with the MTRCL and other departments concerned in resolving interfacing issues and seeking necessary approvals associated with the implementation, commissioning and operation of the XRL.

20. The Transport and Housing Bureau (“THB”) is responsible for the policy work relating to the planning and implementation of XRL project. THB and HyD have worked jointly with the Mainland authorities on the development and cross-boundary matters of the XRL.

21. Since construction of the XRL commenced in January 2010, THB has been carrying out general monitoring of the works progress of the project through representative(s) from THB sitting on the monthly Project Supervision Committee (“PSC”) meetings chaired by DHy between the Government and the MTRCL. In addition, DHy updates STH on the project progress, among other things, at their regular Head of Department (“HoD”) meetings about the work of HyD. Where necessary, DHy also reports to STH any significant issue relating to the implementation of the XRL. With information submitted by the MTRCL and vetted by HyD, THB prepared and submitted half-yearly progress reports (8 reports submitted as at November 2014) on the project to LegCo Panel on Transport Subcommittee on Matters Relating to Railways (“RSC”). THB and HyD also submitted various documents to the RSC in May 2014 reporting on the works progress as at end March 2014 for Members’ perusal.

22. THB would offer advice/input from the policy angle and on issues which may attract public or media attention. For special issues which require immediate attention and/or prompt response, urgent meetings among THB, HyD and the MTRCL would be lined up to discuss the issue and the way forward as necessary.

(e) Monitoring mechanism on the project, in particular the roles of the Government, the MTRCL and the monitoring and verification consultant in the project

23. As described in paragraph 11 above, in early 2008, RDO of HyD commissioned a consultancy to review the institutional arrangements to ensure effective implementation of the XRL project by the MTRCL. Lloyd's was engaged and it recommended the Government to adopt the monitoring and verification role for the design & construction of the XRL project. On this basis, the monitoring and verification role would effectively be "check the checker", i.e. verifying that the MTRCL was implementing its process as specified. This would use a risk based sampling approach to verify delivery of the requirements of the project scope and authorized expenditure.

24. In April 2010, the Government, vide LC Paper No. CB(1) 1573/09-10(04), informed LegCo of the Government's detailed monitoring mechanism on the construction of the Hong Kong section of the XRL. A copy of the paper is at **Annex 2**. A flowchart on the monitoring mechanism is at **Annex 3**.

25. As elaborated in the aforesaid paper, DHy, being the Controlling Officer responsible for the XRL project, leads a PSC. Members of the PSC include, among others, representatives of the MTRCL (including the MTRCL's Projects Director). The PSC meets on a monthly basis to review project progress and to monitor procurement activities, post-tender award cost control and resolution of contractual claims. The PSC also provides steer on matters that would affect the progress of XRL. The MTRCL is required to submit a progress report setting out the latest progress and financial position of the project. Up till January 2015, the PSC has held 55 meetings, with the last regular meeting held on 30 January 2015.

26. In addition, an officer at Assistant Director level of HyD holds monthly Project Coordination Meetings ("PCMs") with the MTRCL's General Managers and Project Managers to monitor various activities for the delivery of the XRL project including, but not limited to, timely completion of land matters, resolution of third party requests, key

issues on the design, construction, environmental matters that may have potential impact on the progress and programme of the XRL project as well as interfacing issues with other projects. From January 2010 to end-January 2015, a total of 59 PCMs were held.

27. Furthermore, an officer, at Chief Engineer level, holds monthly Contract Review Meetings (“CRMs”) with site supervision staff of the MTRCL for major civil and electrical & mechanical (“E&M”) works. In case of delays encountered by the MTRCL’s contractors, the MTRCL would report measures being considered to mitigate such a delay. Up to end-January 2015, a total of 56 CRMs were held.

28. HyD has employed an external consultant, Jacobs China Limited (the monitoring and verification (“M&V”) Consultant), to assist in the monitoring work. The monitoring and verification work of the M&V Consultant focus on cost, programme, safety and quality of the XRL project. The M&V Consultant performs its monitoring role by adopting “check the checker” approach. The main areas of monitoring work include the following:

- (i) carrying out regular site visits (joined by HyD staff) and conducting regular audits systematically to verify whether the MTRCL has fulfilled its obligations under the EA2 with the Government and implemented the entrusted works in accordance with its project management system for delivery of XRL;
- (ii) reporting to HyD on a monthly basis and having monthly progress meeting with HyD on its monitoring and verification works to report and discuss major areas of concerns; and
- (iii) reporting to HyD the progress of various works contracts, their potential risks and concerns, as well as any progress delay, and commenting on the appropriateness of the proposed mitigation measures.

29. Representative(s) from THB sit on the PSC. In addition, DHy updates STH on the project progress, among other things, at their regular monthly meetings on the work of HyD. Where necessary, DHy also reports to STH any significant issue relating to the implementation of

the XRL. From time to time, HyD and/or the MTRCL are requested to provide briefings to THB on major issues relating to the project.

30. Furthermore, HyD has set up a dedicated division under RDO to oversee the implementation of the XRL project. This dedicated division comprised a total of 13 Civil Engineer posts including a Chief Engineer who is the division head, 4 Senior Engineers and 8 Engineers as at April 2014. In-house support on the advisory service on E&M work and building submissions are provided.

(f) Communication / reporting mechanism between the MTRCL and the Government in respect of the progress of project

The MTRCL's works programmes

31. As recommended by Lloyd's, the MTRCL shall deliver the XRL project according to the MTRCL's project management procedures. For project progress monitoring, the MTRCL used Primavera P6 (a software for programming and progress monitoring) to prepare its works programmes and requires the contractors to use the same software to develop the contract programmes for compatibility. The MTRCL set up a master programme of the XRL project at high level with key dates and manage the contracts to achieve those key dates. This allows the MTRCL to manage the civil contracts and their interfaces according to those key dates, which include the target dates for handing over the completed section of works from individual civil contracts to follow-on E&M contracts. In addition, the MTRCL also developed a Track Related Installation Programme ("TRIP") for monitoring the progress of tunneling works and their interfaces as noted in paragraph 6.6 of the *Report of the Hong Kong Section of the Guangzhou-Shenzhen-Hong Kong Express Rail Link Independent Expert Panel* ("IEP"). Impact of any delay under individual tunnel contracts to follow-on E&M contracts could be determined from the TRIP, which allows the MTRCL to sequence track-related activities to best achieve the target completion of the XRL project.

32. The master programme developed by the MTRCL is different from the integrated master programme mentioned by the IEP, which is a single comprehensive programme for the whole project covering all key activities. As a tool for monitoring works progress, an integrated master programme developed and maintained by the project manager can easily show the effect of delay of any activities under individual contracts on the project critical path.

33. The MTRCL records the accruing delays on a monthly basis against each of the key activities in the contract programmes. The time impacts for delays in individual contracts were fed into the TRIP to determine the impact of delays under civil contracts on the follow-on

system-wide E&M works. To recover the delay, mitigation measures will still need to be devised and carried out under individual contracts with reference to the contract programmes, as in the currently adopted practice. As advised by the M&V Consultant, the MTRCL's philosophy was to implement delay mitigation measures to keep all the contracts on course to meet the targets. Even if some civil contracts continue to fall behind schedule, it is key to the project to deploy all efforts to arrange for enough civil works to be completed to give access to the follow-on system-wide E&M contracts for the railway.

34. The M&V Consultant carries out technical audits on master programming regularly in addition to the regular monitoring and verification works mentioned above. Issues covered in these audits include adequacy of works programme, status of the master programme, measures to recover the accrued delays and their impacts, etc. While no non-compliance has been identified in these audits, the M&V Consultant had made some suggestions to the MTRCL regarding programme monitoring. For example, the M&V Consultant had asked in April 2012 if the MTRCL intended to prepare an integrated programme for West Kowloon Terminus ("WKT"), which was in fact a Coordination Installation Programme ("CIP") for tracking E&M works and their interface subsequent to completion and handing over of sites from civil works. In order to prepare this CIP, the MTRCL needed the realistic access/handover dates for the E&M works, which were not finalized at that moment.

Regular Reports provided by the MTRCL

35. As required by the Entrustment Agreement, the MTRCL submits monthly progress reports to the Government, which provide information on the project financial situation and expenditure forecast, safety performance, status of contracts procurement, a summary of progress under individual contracts, and any major issues, etc. The MTRCL also reports the overall project progress in terms of percentage completion against the planned figure. Delays against individual contracts are also shown on the Entrustment Programme. In particular the following regular reports and information are submitted to HyD:

- (i) Briefing and reports on the progress and areas of concern of individual contracts provided at monthly CRMs.
- (ii) Briefing on progress and site problems of individual contracts provided at monthly site visits by the M&V consultant and HyD staff.
- (iii) Monthly cost reports on actual / forecast expenditure, variations, claims and other cost changes with supporting justifications submitted to Project Control Group (PCG) meetings.
- (iv) Information on key project activities progress matters and interfacing related to coordination with other Government departments provided at monthly PCMs.
- (v) Monthly Progress Reports and presentations on overall project progress and expenditures, progress of individual contracts, intended mitigation or delay recovery measures, and issues of concern submitted to monthly PSC meetings.

36. There were occasions that HyD requested for information from the MTRCL under the established reporting mechanism as outlined in the preceding paragraphs, but HyD was not provided with all the information that it requested in a timely manner. The First Report by the Independent Board Committee (“IBC”) on the Express Rail Link Project published by the MTRCL further borne out the fact the MTRCL Project Team had withheld key information on progress from HyD. According to the IBC Report, the Projects Director of the MTRCL did not communicate with the Government regarding the mounting concerns of the Project Team of the MTRCL expressed to the Projects Director in November 2013 as to the cumulative effect of delays across key parts of the Project and that, as a result, the completion date would fall in 2016. The IBC also believes that while HyD clearly had access to a great deal of information about the delays on the various contracts, HyD should have been given a fuller assessment of the achievability of the overall Project timetable.

III. Performance of the Government and the MTRCL in dealing with the project delay

(a) Implementation progress of the project as at April 2014

The different types of works in XRL

37. According to the nature of the works of the XRL project, its construction works can be grouped into two categories, namely the WKT and the Approach Tunnels which are constructed by cut-and-cover method, and the 26 km tunnel.

38. The WKT is located within a footprint of approximately 110,000 m² in West Kowloon with the MTR Austin Station to the east, West Kowloon Cultural District (“WKCD”) to the south, MTR Kowloon Station to the west and Jordan Road to the north. The WKT will be a 4-level underground station with a total of 380,000 m² gross floor area. Above ground, the station will be signified with a steel entrance structure with sophisticated design. It is intended to become a landmark representing the high speed train terminus. The construction of WKT and the associated approach tunnels are split into four contracts as shown below:

Contract No.	WKT and Approach Tunnels
810A	West Kowloon Terminus Station North
810B	West Kowloon Terminus Station South
811A	West Kowloon Terminus Approach Tunnel (North)
811B	West Kowloon Terminus Approach Tunnel (South)

39. In the XRL project, apart from the Approach Tunnel contracts to WKT, there are eight major tunnel contracts as listed below.

Contract No.	Tunnel Section
820	Hoi Ting Road to Mei Lai Road

821	Mei Lai Road to Shek Yam
822	Shek Yam to Tse Uk Tsuen
823A	Tse Uk Tsuen to Tai Kong Po
823B	Shek Kong Stabling Sidings & Emergency Rescue Siding
824	Tai Kong Po to Ngau Tam Mei
825	Ngau Tam Mei to Mai Po
826	Mai Po to Hong Kong boundary

40. Major E&M contracts that interface directly with civil contracts are Contracts 830 (Trackworks and Overhead Line System) and 845 (Traction Power System).

Overall Progress of XRL Construction announced in April 2014

41. The MTRCL submits monthly progress reports to HyD on the progress of the XRL project. The M&V Consultant also submits regular reports to HyD covering progress of the XRL project. The M&V Consultant's Monthly Progress Report No.42 (an extract was given in Annex 3.1 of the Independent Review Report prepared by HyD which was submitted to LegCo as part of the LegCo paper CB(1)1328/13-14(03)) gave a summary of the progress as at end March 2014.

42. According to the M&V Consultant's summary, the actual overall physical progress as at end February 2014 was 54.75% (from 53.22% previous month). The overall project progress remained at about 10 months behind the revised baseline. This was an indication of average progress but did not take account of the dominant criticality of individual civil contracts and the impact of any delays therein on interfacing follow-on contracts.

43. The M&V Consultant reported that the MTRCL continued to explore how much of the individual WKT and tunnelling works contracts delays could be absorbed by the follow-on contracts programmes. The M&V Consultant considered that this target was looking very challenging given the accruing delays in Contracts 823A and 824, and noted that the MTRCL's updated programme was expected to be available in May 2014.

44. The M&V Consultant observed that the MTRCL carried out continuous internal programming assessments to establish the impacts of known civil works delays and sought to extract realistic best achievable dates from its civil works contractors to recover or partly recover delays. It adopted a holistic approach when considering whether to instruct Delay Recovery Measures (“DRMs”) including assessing whether the implementation of DRMs would be more cost effective than prolongation of individual contracts. The MTRCL also sought to identify opportunities to accelerate the follow-on E&M works, including trackwork and Overhead line (“OHL”) system work, to protect, as much as possible, the Project Completion Date. Such measures included staged access to parts of buildings and sections of tunnels, increasing labour and equipment resources and maximising working patterns. As at end February 2014, there were seven civil works contracts which were showing delay extending deep into the TRIP :

Contract 826	Continued poor progress of both Tunnel Boring Machine (“TBM”) tunnels
Contract 820 (south of Nam Cheong)	Extensive delays caused by the removal of unforeseen H-pile obstructions in front of south TBM downtrack drive and two additional, one currently ongoing, delay events due to unforeseen H-pile obstructions in the south up track drive
Contract 823A (both down track)	TBM drives not yet completed
Contract 824	Slow initial progress in tunnel excavation and slow progress in tunnel lining works.
WKT Contracts 810A, 810B and 811B	Slower than planned excavation and concrete structure works would impact access dates to track level at B4 and platforms.

45. As instructed by the STH, HyD conducted an Independent Review in April 2014 on the delay of the XRL project. The progress of individual contracts under the XRL project as at April 2014 was given in

the Independent Review Report which was attached as Annex C in LC Paper No. CB(1) 1328/13-14 (03). Relevant extracts are given in **Annex 4** for easy reference.

(b) Reasons for the Project Delay

General issues in deep-underground open excavation works in a built-up area with heavily used public roads

46. The construction of WKT and its approach tunnels involves deep underground open excavation work. There are the following common issues which may affect the construction of deep-underground open excavation works in a built-up area with heavily used public road within and surrounding the site:

- (i) difficulty in ascertaining the underground conditions such as sub-soil conditions, exact position of underground utilities and the presence of other obstructions;
- (ii) requiring extensive existing roads and utility diversions to be put in phases for carrying out the construction works;
- (iii) difficulty in providing site access due to constraints imposed by the need to maintain the adjoining road network; and
- (iv) requiring completion of water tight diaphragm wall system for protecting adjoining ground.

47. In addition, due to the complexity of the underground WKT station coupled with the extensive special-designed steel roof supported on mega columns, the following key issues are specific to the WKT site:

- (i) requiring sophisticated lateral supporting systems at different stages of construction;
- (ii) requiring attention on the proper loading development in various stages of construction of the special-designed steel roof; and
- (iii) requiring effective co-ordination of the complicated interfacing arrangements among the various Contractors of different trades.

General Issues in Tunnelling Works

48. Apart from the approach tunnels, the other XRL tunnels are constructed mainly using two excavation methods, namely the use of a TBM or the conventional “Drill-and-blast” method.

TBM Method

49. TBMs have been widely and commonly used in tunnel construction in Hong Kong and worldwide. This construction method has minimum impact to the environment and the neighbouring communities. During tunnel construction, the excavated face will be supported by the shield near the front of the TBMs. Permanent precast segmental tunnel linings (walls) will be installed immediately behind the cutter head of the TBM as the TBM advances.

Drill-and-blast Method

50. Drill-and-blast method is also proven to be a safe and effective method for tunnel construction and is commonly adopted for excavation of tunnels located deep in rock. The method consists of drilling holes in the rock face and installing explosives in these holes for blasting. The blasted rock face will firstly be stabilized and then the rock fragments will be disposed of. After then, tunnel linings will be constructed.

General issues in TBM and Drill-and-blast methods

51. The TBM method is effective in excavating through soil and rock strata with a reasonable soil/rock support during its operation. However, TBMs cannot drill through metal or other hard artificial materials. Therefore, the TBM progress will be greatly affected by the presence of uncharted underground utilities or unforeseen abandoned hard metal obstructions which will require manual cutting/removal before the TBM can advance further. Furthermore, when weak ground or instability of soil such as cavities in marble area is encountered, the weak ground has to be stabilized by substantial ground treatment and

strengthening works before the TBM can advance through.

52. For the Drill-and-blast method, progress will be greatly affected by the presence of weak rock or fault zones as slower mechanical breaking method together with appropriate temporary protection works to be adopted instead.

Issues resulting in progress delay in XRL

53. Under the Independent Review carried out in April 2014, HyD identified quite a number of issues during the construction of the XRL which had affected the progress of various contracts, resulting in progress delays. Unfavourable ground conditions, with some being unforeseen, is a common primary cause in many of these issues, affecting the whole spectrum of works, including TBM tunnelling, Drill-and-blast tunnelling, diaphragm wall construction and excavation. Other causes include Contractors' resources, workmanship and logistic problems, interfacing issues and coordination problems of Contractors, utility diversions, temporary traffic diversion constraints, and inclement weathers.

54. Apart from the above-mentioned general issues, HyD also identified in its Independent Review Report some specific and detailed causes of delay in the seven civil works contracts which warrant particular attention – Contracts 810A, 810B and 811B for the construction of the WKT and its Approach Tunnel; and Contracts 820, 823A, 824 and 826 on tunnel construction. As a summary for the three contracts which were critical to the completion of XRL, for Contract 810A, progress had been affected by unfavourable ground conditions, utility diversion complications, site coordination and inadequate work fronts. For Contract 826, progress had been affected by the late arrival of the TBMs from Huanggang of Shenzhen. For Contract 823A, progress had been affected by the slow excavation rate of the two TBMs. The flooding of one of the TBMs has made things worse. Further details for the seven contracts are given in **Annex 5**.

55. The above issues and causes of delay are generally in line with the ten important causes of delay mentioned in the Second Report by

the MTRCL's IBC, namely:

- (i) a fast-tracked front end of the project programme led to late construction start;
- (ii) unforeseen site conditions;
- (iii) late arrival of TBMs from the Mainland;
- (iv) unreliability of TBMs;
- (v) interface issues;
- (vi) delays at the WKT site;
- (vii) flooding;
- (viii) lower than anticipated production rates;
- (ix) design changes; and
- (x) labour shortages in an overheated construction sector in Hong Kong aggravating the previous items.

56. It is noted that the IEP had identified, as stated in its Report of the XRL, a number of systemic problems, some of which are related to the lack of robustness of the MTRCL's project management. We will investigate if such systemic problems had contributed directly or indirectly to the delay of XRL and will consider appropriate actions under the terms of the EA2.

(c) Delay recovery measures adopted by the MTRCL to catch up with the implementation programme

57. The MTRCL is entrusted to implement the XRL project and is responsible for the design and overall management of the project including contracting with contractors for the construction works. During project implementation, the MTRCL has an overall implementation plan of the project and knows all detailed design and construction details. In the case of delays, the MTRCL is responsible for negotiating with the contractors for the implementation of delay mitigation measures or DRMs to catch up the programme. With the “check the checker” role, HyD and the M&V Consultant will provide the MTRCL with their professional advice on the proposed DRMs.

58. In the monthly report furnished by the MTRCL on the XRL project, progress of individual contracts is compared with the original programme or revised programme in the form of percentages. Where there is progress delay, the MTRCL will be asked to consider mitigation measure to recover the delay. In the process, the MTRCL will discuss with the contractors and formulate revised programme for critical component(s) of the works. HyD will use this revised programme to continue monitoring the works. The existence of progress delays under individual contracts does not necessarily imply that completion of the Project would be delayed. The overall progress is also an important consideration. From the experience in other major works contracts, a contractor could adopt mitigation and recovery measures to catch up progress delays. The increase in manpower, plant and working overtime is of course one of the possible measures. The important thing is to avoid affecting the commencement of subsequent critical work activities. Through splitting of work processes into parts and re-sequencing of work flow, delayed activities could be moved away from the critical path. An example is the delayed completion of an excavation process. If the completion sequence of the different parts of the excavation process could be arranged such that the subsequent work process, e.g. construction of station structure, could commence timely within the area already excavated, the progress delay could be mitigated. The overall completion programme of the XRL project would not be affected.

59. Mitigation measures and delay recovery measures have been implemented by the MTRCL to address these issues. Such mitigation measures include the following:

- (i) deployment of additional plant and labour resources;
- (ii) adoption of alternative works procedures or working method, e.g. using blasting instead of mechanical breaking of rock;
- (iii) design changes and re-sequencing of works activities;
- (iv) redefining the programme completion date of non-critical contracts, i.e., a contract with float time associated with its original target completion date and therefore not directly affecting the completion programme of the whole project; and
- (v) refinement of the programme of subsequent E&M works, sometimes through phased access arrangements.

60. As at early April 2014, there were still residual progress delays in various fronts because the mitigation measures or DRMs might not be able to recover or offset wholly the effect of past aggregate progress delays, or because new issues or events had popped up. The MTRCL was working with the Contractors to develop further mitigation measures or DRMs to address the residual progress delays, while HyD had repeatedly pressed the MTRCL to demonstrate with detailed work plan how the residual progress delay could be finally mitigated.

61. Under the MTRCL project management procedures, all proposed delay mitigation measures and DRMs would need the approval of its PCG before the proposals can proceed. The MTRCL would forward all modifications and changes to the XRL with cost implications including DRMs to HyD before they are approved. HyD and the M&V Consultant would provide professional advice on the proposals and follow up with the MTRCL. If HyD has any queries or questions on the effectiveness of the proposals, HyD would request the MTRCL to provide additional information to justify the proposals, if necessary.

62. The M&V Consultant monitors the implementation of the MTRCL's proposed mitigation measures and DRMs which would form part of the works once instructed, through the multi-level monitoring

mechanism described in **Part II(e)** above, and reports to HyD on the progress of relevant contracts.

63. The following paragraphs provide some examples of the delay mitigation and recovery measures implemented, and the monitoring actions by HyD and the M&V Consultant.

Contract 823A : Tse Uk Tsuen to Tai Kong Po Tunnels - Procurement of an additional Tunnel Boring Machine (TBM)

64. In April 2011, during the construction of the launching shaft of TBM under Contract 823A, the Contractor encountered rock head levels higher than those anticipated in the Geotechnical Baseline Report. This slowed down the progress of construction works and also directly affected the commencement of the subsequent tunnel excavation works. In order to recover the progress delay, the MTRCL discussed with the Contractor and formulated a series of mitigation measures and DRMs which included the procurement of an additional TBM to allow the two tunnel sections to be excavated simultaneously. The MTRCL subsequently submitted the related DRM proposals to the PCG on 3 November 2011 and 1 March 2012 for approval. HyD and the M&V Consultant assessed the DRM proposals and provided comments for follow up by the MTRCL. Subsequent to the signing of a Supplementary Agreement between the MTRCL and the Contractor in early 2013, the additional TBM was launched in March 2013.

65. HyD and the M&V Consultant then monitored the progress of the two TBMs through monthly site visits, and discussed with the MTRCL the performance of the TBMs and the issues encountered. In addition, HyD requested the MTRCL to provide daily progress report of the tunnel excavation works for better monitoring on the operation and performance of the TBMs. This could allow HyD to review with the MTRCL about the effectiveness of the DRMs and reflect concerns on the tunneling works in a timely manner. In view of the unsatisfactory performance of the two TBMs during rock excavation, HyD, in collaboration with relevant government departments, held working meetings with the MTRCL on 23 July, 5 September and 16 December 2013 to discuss measures to improve the TBM operation and progress.

The MTRCL briefed HyD at various levels on the tunnelling works and review the TBM excavation progress accordingly. The TBM excavation progress was improved after implementation of the improvement measures.

Removal and Re-provisioning of Nam Cheong Property Foundation

66. In mid-2010, in the course of pile-removal work under Contract 802, the Contractor found that the piles were deformed, and were not straight as indicated in the record drawings. Thus, normal extraction methods could not be deployed. As those deformed piles were in conflict with the XRL alignment, they had to be removed before the arrival of the TBM. Upon learning the above, the MTRCL discussed with the Contractor about the measures to recover the delay. After exploring different options with Contractor, the MTRCL suggested adopting a new “Rotator and Wedge” extraction method from Japan to remove these piles. Representatives of HyD, the MTRCL and the Contractor visited Japan to inspect the effectiveness of the new method. It was concluded that the new method was effective. On 23 December 2010, the MTRCL submitted the DRM proposal to the PCG for approval.

67. In mid 2011, the MTRCL reported that there was about a 44-week delay and a ten-week delay in the removal and re-provisioning of Nam Cheong Property Foundation against the original programme, and the revised working programme respectively. HyD and M&V Consultant kept monitoring closely the effectiveness and operation of the new method, visited the pile-removal site every month and held CRMs with the MTRCL regularly to track the removal progress. By adopting the new method, the Contractor successfully recovered the delay such that the piles were removed before the arrival of the TBM, and avoided affecting the interfacing tunnel boring works.

Temporary Traffic Management Scheme (“TTMS”) at Jordan Road

68. Under Contract 811B (West Kowloon Terminus Approach Tunnel (South)), the original plan was to divert Jordan Road (“JOR”) northward on top of the completed diaphragm wall at north of JOR, allowing the diaphragm wall within the existing alignment of Jordan

Road to be constructed. However, the construction of diaphragm wall at north of JOR was delayed due to adverse ground conditions including encountering of core stones. If no DRM was implemented, the JOR northward diversion would be delayed for about eight months from December 2011 to July 2012.

69. In view of the situation, the MTRCL presented a DRM proposal to the PCG on 29 September and 6 October 2011, proposing to first move JOR to the south allowing the Contractor to take up the major portion of the original space of JOR to construct the underground diaphragm wall and, at the same time, continue to complete construction of the diaphragm wall at north of JOR. HyD provided comments on the proposed DRMs with particular concerns on its effectiveness and requested the MTRCL to submit further assessment on its impact to the nearby construction sites.

70. Since the PSC meeting held in September 2011, HyD raised concerns about the implementation of the TTMS concerned and requested the MTRCL to regularly report the progress. After the TTMS implemented in February 2012, HyD and the M&V Consultant inspected the site regularly, monitoring the progress after the TTMS implementation. It was intended that the commencement of the construction of the diaphragm wall panels at northern part of West Kowloon Terminus would be brought forward by about six months.

71. Since then, adverse ground conditions had further impacted on the bulk excavation works of both Contract 811B and the adjoining Contract 810A (West Kowloon Terminus (North)) and the overall delays of these two Contracts accrued. The MTRCL subsequently proposed other mitigation measures to address the delays.

(d) Action taken by the Government in response to the project delay

72. Since the commencement of the XRL project in 2010, HyD has instituted a multi-level project monitoring system and, until early April 2014, the MTRCL had repeatedly reassured the Government that the target completion date of 2015 was achievable, and that even though the project had encountered numerous challenges as elaborated in **Part III(b)** above, programmes would be speeded up through mitigation or delay recovery measures. On its part, HyD has been carrying out monitoring works in line with the monitoring framework as reported to LegCo (see **Part II(e)** above). In general, the following regular monitoring actions are carried out:

- (i) The M&V Consultant and HyD staff attend monthly CRMs in which the site staff of the MTRCL of the major contracts report the progress of individual contracts and areas of concern.
- (ii) The M&V Consultant and HyD staff carry out site visits and meets with the MTRCL's site staff regularly and the M&V Consultant submits monthly reports to HyD.
- (iii) HyD at Chief Engineer level attends monthly cost control meetings convened by the MTRCL, and provides views on the MTRCL's assessment of variations, claims and other cost changes through correspondence or attendance at the MTRCL's PCG meetings.
- (iv) HyD at Assistant Director level co-chairs monthly PCMs with the General Manager of the MTRCL to monitor project progress and to assist in coordination with other Government departments to facilitate the process of works under the project.
- (v) DHy chairs monthly PSC meetings attended by the Projects Director of the MTRCL and his team. Among other issues, progress is discussed on the basis of Monthly Progress Reports submitted by the MTRCL and other available information. When delay is noted by HyD at different monitoring fora, the MTRCL is

asked to explain the causes of delay and the intended mitigation or delay recovery measures.

73. During the course of project implementation, the XRL project at various junctures has encountered issues causing delay and remedial measures have been deployed by the MTRCL to mitigate the delay. When there was delay against the programmed schedule, HyD would request the MTRCL to devise mitigation measures or delay recovery measures to ensure that the overall programme would be maintained.

74. Besides, HyD took proactive co-ordination and facilitative action to manage and to mitigate the effect of the issues which had caused or would likely cause delay. An example was the liaison with relevant Mainland authorities with the aim to speed up arrival of the two TBMs from Huanggang of Shenzhen. While HyD was monitoring the seriousness of the cumulative delay, HyD came to the view from its independent assessment that the overall completion of the XRL project could be at risk. HyD therefore asked the MTRCL in November 2012 to submit quarterly reports in conjunction with its Mainland counterpart.

75. All along, HyD has been working vigorously towards, and shares the public concern with the timely completion of the XRL project. A chronology of events setting out the Government's progress monitoring actions from January 2010 to April 2014 is given at Annex G of LC Paper No. CB(1)1328/13-14(03) submitted to RSC. HyD's major actions in response to project delay are given below.

Date	Actions
28/5/2010	At the 3 rd PSC meeting, the MTRCL advised that the Mainland section of the cross-boundary tunnel would likely suffer a delay of six months. HyD suggested that the issue be discussed with the relevant Mainland authorities.
10/6/2010	A meeting on the cross-boundary connecting tunnel was held with the relevant Mainland authorities. It

Date	Actions
	<p>was noted that there was some delay in the cross-boundary tunnelling works and mitigation measures should be taken. The Shenzhen side was working out solutions to ensure the commissioning of this section by mid 2015.</p>
26/11/2010	<p>At the 9th PSC meeting, the MTRCL stated that the diaphragm wall defects were causing concern and actions were being taken to solve the problem. The MTRCL advised that there was a one-month delay in the preparation of the tender drawings for a contract; a five-month delay in the removal and re-provisioning of Nam Cheong Property Foundation; and a one-month delay in the piling works of WKT. The MTRCL would closely monitor the progress of the works. HyD requested the MTRCL to develop measures to recover the delay.</p>
23/11/2012	<p>A meeting was held with the relevant Mainland authorities. It was noted that works had to be expedited. The meeting agreed to step up monitoring efforts over the relevant works. The MTRCL and the owner of the Mainland section of XRL would be invited to submit regular progress reports on the construction works.</p>
25/1/2013	<p>At the 31st PSC meeting, DHy enquired when the MTRCL could advise on the overall project master programme as well as the delay recovery measures for WKT.</p>

Date	Actions
1/3/2013	<p>At the 32nd PSC meeting, RDO/HyD enquired and the MTRCL responded that the revised master programme only incorporated the revised programmes of the tunnel contracts while those for WKT contracts were yet to be agreed with the contractors. HyD again enquired when the MTRCL would give a presentation on the overall project master programme as well as the delay recovery measures for WKT. The MTRCL replied that it would do so once ready. [Note: Such a presentation was given to RDO/HyD on 8/5/2013.]</p>
8/5/2013	<p>The MTRCL presented the progress situation to RDO/HyD that the WKT works and Contract 826 were behind schedule with the TRIP works extending into the testing and commissioning period. The MTRCL proposed to procure additional plants for trackworks as mitigation measures to catch up the delay.</p>
18/7/2013	<p>At the 37th PSC meeting, the MTRCL advised that the overall programme had a delay of about seven and a half months. Various measures were being implemented under the WKT and tunnel contracts to mitigate the delay. The MTRCL said that significant efforts had been made in implementing delay recovery measures for WKT. The MTRCL said that a presentation would be given to HyD on the overall master programme and the revised WKT programme in August 2013.</p>

Date	Actions
23/7/2013	<p>At the request of THB, RDO/HyD and the MTRCL briefed THB on the overall progress of the Hong Kong section and the cross-boundary section. It was forecast that the cross-boundary tunnel civil works would be completed in March 2015; testing across the boundary would commence in July 2015; and the target for revenue service would be December 2015. The Government reminded the MTRCL to make its best endeavour to deliver the project on time and within budget.</p>
29/8/2013	<p>At the 38th PSC meeting, DHy expressed concern about the big difference between the actual progress and the planned progress, especially the progress of WKT works. The MTRCL responded that the situation had been improved in July and the overall progress was expected to pick up in the coming months. The MTRCL supplemented that, with the change in the WKT contractors' management, all parties involved had clear targets of the coming milestones and they would explore all possible measures to improve the situation and to resolve any potential obstacles. The MTRCL said that there was an overall delay of about eight months. Various measures were being considered under the WKT and tunnel contracts to mitigate the delay. The MTRCL undertook to present the latest overall programme and financial situation to DHy and HyD in September 2013.</p>

Date	Actions
13/9/2013	<p>The MTRCL approached DHy to explore a partial opening scenario whereby essential parts of the works would be completed towards the end of 2015 whereas testing and trial runs would start upon the completion of various sections of tunnels, with the aim of allowing partial operation (sufficient to meet the early-year demand) by the end of 2015. Under the partial opening scenario, six out of the 15 tracks and the essential railway facilities should be ready to provide passenger service. As there was inadequate information on the feasibility of the partial opening scenario, HyD, without indicating agreement to the proposal, requested the MTRCL to provide further information such that a report could be made to THB.</p>
29/10/2013	<p>At the 40th PSC meeting, DHy was very concerned about the progress of works and requested the MTRCL to provide details on the 25% difference between the actual progress and the planned programme. The MTRCL said that there were challenges on different fronts, with the biggest at WKT. The MTRCL was working hard to catch up the progress with a view to meeting the target opening date. DHy further requested that the MTRCL provide information on the roadmap towards the project opening for monitoring against the actual progress. DHy remarked that an opening plan, including the readiness of the external works and public areas, would be necessary.</p>

Date	Actions
29/11/2013	At the 41 st PSC meeting, DHy requested the MTRCL to especially monitor and improve the progress of the works of the Tai Kong Po to Tse Uk Tsuen tunnels. HyD requested the MTRCL to beef up the roadmap with critical milestones under individual contracts for achieving the target completion in 2015. DHy further requested and the MTRCL agreed to provide more details on the proposed opening arrangement for the project, including the readiness of the external works of WKT and public areas.
24/1/2014 & 28/2/2014	At the 42 nd and 43 rd PSC meetings, DHy expressed his continued concern about the significant programme slippage and enquired whether the forecast project completion in 2015 could be achieved. The MTRCL said it was working closely with the contractors to meet the target and stated that a presentation would be given to HyD on the latest project commissioning scenario.
2/4/2014	At the 44th PSC meeting, DHy showed concern about the significant programme slippage and asked if the target completion in 2015 was still achievable. The MTRCL replied that it was reviewing the overall picture of project delivery and would give a presentation to DHy in May.

76. Para. 4.11 of the IEP report stated that *‘In July 2013, the M&V Consultant estimated a “potential delay of almost 11 months to the Completion Date” (i.e. July 2016). There is no indication that the HyD acted upon this information to request MTRCL for an in-depth review on XRL Project progress’*. This “potential delay” reflected what would happen if the MTRCL did not do anything to catch up the delay. In fact, HyD at the time was well aware of the situation of progress delay and as

clearly shown in the above table, and the MTRCL had been asked to submit an overall project master programme back in January 2013. The MTRCL presented a revised programme in May 2013 and at the same time proposed a DRM to speed up the track work. In the minutes of the 37th PSC meeting in July 2013 (the next meeting after the M&V Consultant's comment above), it was recorded that the MTRCL promised to make a presentation on the overall master programme and the revised WKT programme in August 2013 (upon HyD's request). Subsequent to the RSC meeting in November 2013, HyD had pressed the MTRCL at every PSC meeting to submit a revised master programme to address the delay.

IV. Communication and reporting mechanism among the Government, the MTRCL and Legislative Council on the project delay

(a) Communication/reporting mechanism between the MTRCL and the Government in respect of the announcement of the project delay

77. The communication between the MTRCL and the Government involving HyD in respect of reporting to RSC at its meeting on 22 November 2013 on the progress of XRL and the MTRCL's announcement of project delay are set out in the following paragraphs.

78. We understand that on 22 October 2013, based on information by HyD, it was reported to STH that the cross-boundary tunnelling works continued to encounter delay. If the delay could not be mitigated, testing and commissioning of the XRL could only start in October 2015, thus impacting on the overall commissioning date for the XRL. At the same time, the MTRCL had recently proposed a target of partial opening of XRL (putting into service six tracks by end-2015) and a full Day 1 commissioning (including 10 tracks) in mid-2016. This was based on the latest progress of works, taking into account all delay recovery measures being implemented in various contracts. The WKT and the cross-boundary tunnel section were on the critical path of the XRL project and any further delays at either of these might affect the target commissioning date of the XRL. Mitigation measures such as re-sequencing of works and phased access of E&M installation works were under consideration. Based on the latest financial situation and status of contract claims, it was considered that the expenditure of the project could be kept within the approved project estimate. In view of the latest development, THB requested the MTRCL and HyD to provide a detailed briefing on the latest progress of the project.

79. At the PSC meeting on 29 October 2013, the MTRCL reported an overall progress delay of about nine months for the WKT, and 11 months for the Contract 826 tunnel. While HyD had expressed concern, the MTRCL stated that it had been working hard to catch up the progress with a view to meeting the proposed target opening scenario. HyD requested that the MTRCL provide information on the roadmap towards the proposed XRL opening scenario for assessing and monitoring

against the actual progress.

80. On 8 November 2013, HyD (represented by DHy) and the MTRCL (represented by Projects Director) were invited to brief the Permanent Secretary for Transport and Housing (Transport) (“PST”) on the latest position of the XRL project. The MTRCL presented the progress of XRL works including the WKT and 826 tunnelling works. At the meeting, the MTRCL stated that WKT could be ready for partial opening scenario by December 2015. As for the 826 tunnelling works, they could only be completed by October 2015 and the testing of XRL (which would normally take three months) could only commence from October 2015. As it would take another three months to conduct trial runs, the target opening date of end-2015 might be affected. THB queried if the testing of XRL could only commence from October 2015, it would be unlikely that the XRL could start operation by end-2015. If that was the case, the public should be informed as soon as possible. A similar briefing was conducted for STH by HyD on 20 November 2013. Based on the assessment of works progress, THB contemplated making it public at the RSC meeting scheduled for 22 November 2013 that the XRL might only commence operation after 2015 and explaining the latest construction progress and the actual challenges encountered.

81. On the following day (21 November 2013), the Chief Executive Officer (“CEO”) of the MTRCL called STH, expressing disagreement with reporting to RSC that the target for commencing operation in 2015 could not be met. The CEO stressed that it was still feasible to complete all the works and that the XRL could commence operation by end-2015.

82. As directed by STH, an urgent meeting was held amongst THB (led by PST), HyD and the MTRCL (led by CEO) in the evening of 21 November 2013. MTRCL emphasized that it was imperative that the target of 2015 be adhered to, lest the MTRCL would lose its leverage to press its contractors to push forth the project. The MTRCL added that it was still possible for the XRL to complete and commence operation within 2015. THB pointed out that according to an earlier briefing by the MTRCL, XRL had encountered problems at WKT and the cross-boundary tunnelling works. THB enquired why MTRCL remained

of the view that XRL could be completed and commissioned in 2015. The MTRCL said that it was trying hard to identify solutions to meet this target; at the very least, single track operation (i.e. to use a single tunnel for the northbound and southbound trains, running alternately between WKT and the boundary of the Mainland) was possible. THB stated that single track operation did not comply with the Government's requirement and was therefore unacceptable. THB reiterated that while it was appreciated that the MTRCL needed to use the 2015 target to continue exerting pressure on its contractors to expedite the works, the Government needed a realistic assessment and should alert the public immediately if the target was not achievable. THB said that based on the MTRCL's information, the XRL would only be ready for testing in October 2015 and queried if the XRL could be commissioned in time within 2015. It was noted that there was delay in the cross-boundary tunnelling works, and such delay would eat into the time for the tunnelling work on Hong Kong side, thus posing challenges to the MTRCL. The MTRCL responded that it would be in a position to assess the impact once the cross-boundary tunnelling works were completed on the Mainland side and commenced on the Hong Kong side. THB cautioned the MTRCL not to over-state its ability to overcome the challenges. The MTRCL requested that the Government give it six months before making a judgment on whether XRL could be completed by 2015. After much discussion, the meeting concurred that while the target of 2015 should be maintained at that stage, the Government and the MTRCL should be upfront with the challenges faced by the project when attending the RSC meeting the following day. Meanwhile, the MTRCL should provide the Government with a clear roadmap on how the target could be met.

83. At the RSC meeting on 22 November 2013, the Government stated that based on the latest assessment of the MTRCL, the major works of the XRL could be completed within 2015. Thereafter, testing and trial runs would be conducted. Normally, this would take six to nine months. The railway might only come into operation after the relevant authorities have approved the test results so as to ensure the safety and reliability of the railway service. In response to a query on progress delay at the RSC meeting, the following was reported by HyD at the meeting:

“Apart from the cross-boundary section, some of the construction works in the remaining [XRL] also lagged behind the schedule and as such, various measures were adopted to catch up the schedule.”

84. After the RSC meeting, at the PSC meeting on 29 November 2013, the MTRCL presented a roadmap towards the proposed target opening scenario, which set down the target dates for completion of all civil works and E&M works by June 2015 for testing and commissioning. DHy was not satisfied because the roadmap was very brief and only listed out the target completion dates without any milestones for assessing and monitoring whether the target dates could be met. The MTRCL undertook to arrange another briefing to provide more details on the proposed XRL opening arrangement, including the readiness of WKT external works and public areas.

85. Subsequently, at the PSC meetings in January and February 2014, DHy expressed his continued concerns on the programme slippage against the original schedule. The MTRCL said that it would review the overall programme situation and present to HyD in April 2014 the latest forecast opening arrangement and commissioning timeframe. At the February 2014 meeting, the MTRCL said that it had been working closely with the contractors on measures to catch up with the construction programme.

86. At the PCM on 18 March 2014, the MTRCL still maintained that the project was targeted for completion in 2015.

87. At the PSC meeting on 2 April 2014, in response to HyD’s concerns about the continued programme slippage, the MTRCL said that it was still reviewing the overall picture of the project delivery and had scheduled to give a briefing to HyD on 7 May 2014 on the forecast project commissioning date and updated financial position. At the same meeting, the MTRCL reported that a minor slope failure at the side of a drainage channel at Shek Kong had caused flooding of the lower end of the tunnel including the north drive TBM and that the contractor was assessing the damage to the TBM. HyD requested the MTRCL to report the detailed findings of the incident and its assessment on the associated cost and programme impacts.

88. It is noted from the MTRCL's paper dated May 2014 to RSC (LC Paper No.: CB(1)1354/13-14(01) that the MTRCL had requested the Contractor 810A to advise whether the target of completion of the terminus in 2015 could be achieved with a revised Minimum Operation Requirement (para. 52(j)). Eventually, the contractor took about 5 months to review and replied to the MTRCL in March 2014 that such a target could not be met (para. 52(w)). This indicates that in the course of a review on a catch-up programme, a study covering various aspects is required, such as revision of the construction method, re-sequence of works, resolution of interface issues and addition of resources. All these tasks would involve deliberations among contractors and sub-contractors on the cost changes, which would take time to complete.

89. In the weekend of 12 – 13 April 2014, the MTRCL informed the Government that the completion date of 2015 could not be met.

(b) The timeliness and comprehensiveness of the information provided by the Government and the MTRCL to the Subcommittee on Matters Relating to Railway under the Panel on Transport of the Legislative Council on the project delay

90. At the meeting of the RSC on 16 April 2010, the Administration made proposal on the scope of the progress report on the project to be submitted to the Railways Subcommittee. RSC Members agreed that the report should be submitted at six-monthly intervals, with the first report covering the period between 16 January 2010 and 30 June 2010. Members also agreed on the scope and issues to be covered in the half-yearly reports, which should include the progress update of the construction works of the XRL and its financial situation.

91. The Government has treated the delay of the construction of the Hong Kong section of the XRL very seriously. Upon notification by the MTRCL in the weekend of 12-13 April that the completion date of 2015 could not be met, the Government immediately informed the public on 15 April about the delay after seeking confirmation from the MTRCL. A full account was given by the STH to the RSC on 5 May 2014 and 19 May 2014. THB and HyD also submitted various documents to the RSC reporting on the works progress as at end March 2014 for Members' perusal.

92. Prior to the announcement of delay to the XRL project by the MTRCL in mid-April 2014, a total of seven Half-yearly Reports have been submitted to RSC covering the period up to 30 June 2013. A summary of progress update given in these Half-yearly Reports are listed in **Annex 6**. The progress as reported in these seven Half-yearly Reports as submitted to the RSC by the Administration reflected generally the actual situation regarding the works progress of the XRL project. As given in the earlier part of this Statement and in particular the table under paragraph 75, during the reporting period of these reports, the MTRCL had maintained a 2015 target completion date of XRL and hence no new completion date was included in the reporting.

93. The Administration also submitted a paper for the RSC

meeting on 24 May 2013 on the progress and financial situation of the construction of the XRL to address the concerns expressed by the media about the construction of the project. The paper reported that all major construction contracts for civil, electrical and mechanical works had been awarded and over 70% of the excavation works for the tunnels and WKT had been completed as at 31 March 2013. The Administration also mentioned that there were often unexpected difficulties in the course of construction, and the MTRCL would liaise closely with the contractors to work out the most appropriate solutions.

V. Latest Development since announcement of project delay

94. Since the announcement of project delay in April 2014, the following latest development has been made.

(a) Initial responses to IEP's Recommendations and Observations

95. In May 2014, the Chief Executive appointed the IEP to investigate the delay of the construction of the Hong Kong section of the XRL. In December 2014, the IEP submitted its *Report of the Hong Kong Section of the Guangzhou-Shenzhen-Hong Kong Express Rail Link Independent Expert Panel* ("the Report") to the Chief Executive. The Government has released the Report in full to the public. The Report offered a number of recommendations. HyD's initial responses to these recommendations are set out below.

Recommendation 1: Improve institutional arrangements for concession agreements – including setting up robust institutional arrangements, introducing incentives and penalties, allowing step-in arrangements to allow the Government to take over the project, and conducting quantitative risk analysis to establish baseline parameters including schedule and cost

Initial response:

96. HyD accepts this recommendation generally. HyD agrees that there is a need to improve the institutional arrangements for concession agreements and to clearly define the obligations, duties, roles and responsibilities of the contracting parties. We consider that before proceeding to another entrustment agreement adopting the concession approach, there is a need to carry out a detailed study probably by engaging a consultant taking into account the experience gained from the implementation of the XRL project, the suggestions recommended by the IEP and the overseas experience.

97. As regards relevant provisions in the EA2, the Government had followed largely Lloyd's recommendations. In particular, according to the EA2, the MTRCL shall discharge its duties and responsibilities

relating to the planning and construction of the project with the skill and care reasonably expected of a professional and competent project manager [EA2 clause 5.1(A)]. The MTRCL shall use its best endeavours to complete the Entrustment Activities, and to minimize any delay [EA2 Clause 16.4.]. The MTRCL shall act in accordance with the MTRCL's management systems and procedures [EA2 clause 4.6].

98. On remedies and intervention mechanisms, according to EA2, if the MTRCL commits a material or persistent breach of any of its material obligations under the entrustment agreement, the Government may terminate the entrustment agreement [EA2 clause 20.3(B)].

99. HyD agrees that the introduction of appropriate incentives and penalties would better drive the trustee to meet its obligations under an entrustment agreement. This should be one of the subjects to be reviewed in the future study mentioned above.

Recommendation 2: Adopt internationally recognized best practices for complex projects – including establishing a project controls and oversight function, developing and maintaining an integrated master programme, continued assessment of cost and schedule risk using quantitative risk assessment, and demonstrating the impact of DRMs by reference to updated integrated master programme

Initial response:

100. HyD accepts this recommendation generally. HyD agrees that an integrated master programme can easily show the effect of delay of any activities under individual contracts on the project critical path. We will consider its adoption for progress monitoring in complex projects in future.

101. While an integrated master programme has its advantage, the same information can also be obtained by making reference to contract-based master programme coupled with analysis of relevant progress information. As mentioned in paragraph 31 above, for project progress monitoring, the MTRCL used Primavera P6 (a software for programming and progress monitoring) to prepare its works programmes

and requires the contractors to use the same software to develop the contract programmes for compatibility. The MTRCL set up a master programme of the XRL project at high level with key dates and managed the contracts to achieve those key dates. This allows the MTRCL to manage the civil works contracts and their interfaces according to those key dates.

102. HyD considers that systematic risk analysis can allow a relatively more systematic review of project risks and hence assessment of the impacts on the project cost and programme. In implementing complex projects in future, HyD will consider the suitable form of risk analysis to be adopted and whether the quantitative form is more appropriate.

103. In fact, a similar risk management system is required under existing guidelines for public works projects. Environmental, Transport and Works Bureau Technical Circular No. 6/2006 requires that all major capital works projects should implement Systematic Risk Management (SRM) from the project planning stage to identify potential risks which may affect the programme of works. Associated management and mitigation measures shall be developed to minimize the potential impacts and to improve the project delivery. SRM shall be regularly reviewed and updated throughout the entire project implementation.

104. For normal-sized projects, the above Circular requires implementation of largely qualitative form of risk management. For complex mega scale projects, quantitative form of risk management is recommended.

105. For the XRL project, HyD noted that the MTRCL's internal Project Integrated Management System ("PIMS") requires regular review of programme and cost risks. For risk management, the MTRCL will conduct cost risk analysis for all awarded contracts on a monthly basis. The cost impacts of foreseeable and unforeseen risks will be reviewed for assessment of the risk allowances required for individual contracts and the project.

106. HyD agrees that DRMs targeted to catch up the delay of

critical activities shall be assessed with reference to their impacts on the critical path. In this regard, an integrated master programme can easily show the project critical paths. However, not every DRM is targeted for recovering delay of critical activities. Some DRMs are developed to address delay of non-critical activities with the aim to prevent or minimize the amount of potential claims (prolongation cost) from the contractors.

Recommendation 3: Enhance progress reporting – including the use of appropriate quantified metrics and dashboards in reporting to facilitate clear and ready understanding, and reports should be fit for purpose

Initial response:

107. HyD agrees that the enhanced design for reporting will enable stakeholders, especially at management level, to realize and understand the progress of works and the risks more easily. In the past six months, the MTRCL, in consultation with HyD, has in its reports included quantitative criteria and simple traffic light indicators (green, amber, pink and red colour to show different level of progress/delay situation). This has enabled stakeholders to understand the progress of works more easily.

108. HyD has followed up with the MTRCL and the M&V Consultant on the implementation of the series of recommendations made by the MTRCL's IBC and its independent experts (in the reports issued in July and October 2014 respectively) on the enhanced reporting for regular XRL project reports.

Recommendation 4: Suggestions of immediate application to the XRL Project – including reporting against an integrated master programme, performing regular quantitative schedule risk analysis for cost risk assessments, and enhancing the involvement of the M&V Consultant

Initial response:

109. We agree that the “Integrated Master Programme” could

show clearly the critical path of the project and reflect the impacts of the delay of certain activities on the overall project completion. We will discuss with the MTRCL and the M&V Consultant on ways to refine the existing progress monitoring system along the principle of an integrated master programme, and also the arrangements for carrying out quantitative schedule risk analysis for the remaining works.

110. HyD agrees that the involvement of the M&V Consultant should be strengthened. As a matter of fact, HyD has been making use of the advice and information provided by the M&V Consultant in following up with the MTRCL on the project progress and use of funds at various levels of meetings. To further strengthen the involvement of the M&V Consultant, HyD will arrange the M&V Consultant to attend future PSC Meetings.

Recommendation 5: the Government’s external scrutiny of its portfolio of infrastructure projects – an independent advisory group

Initial response:

111. HyD considers that there is a need to further review this recommendation taking into account existing policy on the delivery of public works projects.

IEP’s observations:

112. Para. 4.11 of the IEP report stated that *‘In July 2013, the M&V Consultant estimated a “potential delay of almost 11 months to the Completion Date” (i.e. July 2016). There is no indication that the HyD acted upon this information to request the MTRCL for an in-depth review on XRL Project progress’*. This “potential delay” reflected what would happen if the MTRCL did not do anything to catch up the delay. In fact, HyD at the time was well aware of the situation of progress delay and as given in the table in paragraph 75, the MTRCL had been asked to submit a overall project master programme back in January 2013. The MTRCL presented a revised programme in May 2013 and at the same time proposed a DRM to speed up the track work. In the minutes of the 37th PSC meeting in July 2013, it was recorded that the MTRCL promised to

make a presentation on the overall master programme and the revised WKT programme in August 2013 (upon HyD's request). Subsequent to the RSC meeting in November 2013, HyD had pressed the MTRCL at every PSC meeting to submit a revised master programme to address the delay.

113. Para. 4.20 of the IEP report stated that "The IEP has found no evidence of HyD exercising independent insight to plan, programme, forecast, etc. at any time prior to its review in April 2014." In this respect, HyD actually took proactive co-ordination and facilitative action to manage and to mitigate the effect of the issues which had caused or would likely cause delay. An example was the liaison with relevant Mainland authorities with the aim to speed up arrival of the two TBM from Huanggang of Shenzhen. While we were monitoring the seriousness of the cumulative delay, HyD came to the view from its independent assessment that the overall completion of the XRL project could be at risk. HyD therefore asked the MTRCL in November 2012 to submit quarterly reports in conjunction with its Mainland counterpart.

(b) Enhanced Monitoring and Reporting

Enhanced Involvement of M&V Consultant

114. After the MTRCL's announcement in April 2014, HyD has pressed the MTRCL to submit revised programme and revised estimated cost for completion of XRL. We have asked the M&V Consultant to assist in reviewing the above proposals of the MTRCL. Upon completion of the review of the MTRCL's revised programme, HyD considers that the revised programme could be attained provided that the target progress is met for the critical contracts and various major conditions are satisfied, including (but not limited to) that the contractors maintain their best endeavours through to completion of their respective works; and various assumed production rates of key construction activities for tunnel and WKT contracts can be met, etc. Regarding the MTRCL's revised estimated cost, based on the information provided by the MTRCL, HyD, with the assistance of its M&V consultant, has largely completed the review of the revised estimated cost. HyD has passed the M&V Consultant's and our comments to the MTRCL. In response, the

MTRCL is carrying out a further review of the programme and estimated costs taking into account HyD's comments and the comments expressed by the two experts in the second IBC Report.

115. In view of the delay of the project, HyD has already extended certain service of the M&V Consultant to cover the lengthened construction period. Moreover, with effect from February 2015, the M&V Consultant will be invited to join the PSC meetings for more direct communication with the MTRCL as stated in paragraph 110.

Strengthening of the XRL Team

116. Since August 2014, an additional senior professional has been deployed to the XRL team in HyD to strengthen the support for monitoring and verification work. Moreover, a further addition of one senior professional and two professionals would be deployed to the XRL team with effect from April 2015. The additional manpower would be tasked to strengthen monitoring of the programming and cost of the XRL project.

Enhanced reporting by the MTRCL

117. In response to HyD's request, the MTRCL has agreed to enhance its progress reporting to enable readers of different background to have a clear appreciation of current and forecast project status. In particular, the following measures have been introduced:

- (i) reporting on the progress status of key milestone activities using a "traffic light" system (with red, pink, amber, and green indicators);
- (ii) reporting on the status of overall progress using a Schedule Performance Index, and achievement of critical path as additional key performance indicators, both coupled with associated "traffic light" systems; and
- (iii) reporting on the updated status of delay recovery measures.

Enhanced Reporting by HyD to THB

118. HyD now provides progress report on major projects (including the XRL project) to THB on a monthly basis for discussion with STH at a dedicated meeting on top of the regular HoD meeting. The reports give quantified progress in an easy-to-understand “traffic light” system (with red, pink, amber and green indicators) to facilitate understanding of current project status. The reports also cover project cost estimates, risks and mitigation.

Enhanced Reporting by the Government to LegCo

119. In order to enhance the reporting to LegCo on the progress of the XRL project, THB has committed to submitting the progress and financial situation reports on the construction of the XRL project (and also domestic railway projects under construction) on a quarterly basis (instead of half-yearly basis as previously adopted). This enhanced arrangement would keep LegCo members abreast of the latest progress of the project.

(c) Relationship between the Government and the MTRCL

120. The Government will continue to proactively carry out its duty as the majority shareholder of the MTRCL and enhance monitoring of the MTRCL. The Government has required the MTRCL to strengthen its management to ensure high-quality services and proper delivery of new railways, as well as early identification of risks faced by the MTRCL in different aspects and to introduce the necessary reform so as to maintain an overall high standard of corporate governance. The MTRCL announced on 21 August 2014 the establishment of two new committees under the Board of the MTRCL, namely the Capital Works Committee and Risk Committee. These two new committees will facilitate more in-depth and focused monitoring of construction progress and overall risk management of the MTRCL (including railway service, maintenance and repair). Subsequently, the MTRCL announced on 14 October 2014 the memberships of the two aforementioned committees. On the same day, the MTRCL also announced the appointment of four new Directors, including one Government Director and three independent

non-executive Directors. It is expected that this would strengthen the MTRCL's corporate governance and operation.

K K Lau
Director of Highways
February 2015

Annex 1

List of Abbreviations

List of Abbreviations

CEO	Chief Executive Officer
CIP	Coordination Installation Programme
CRM	Contract Review Meeting
DHy	Director of Highways
DRM	Delay Recovery Measure
EA1	Entrustment Agreement for Design and Site Investigation of the Hong Kong Section of the Guangzhou-Shenzhen-Hong Kong Express Rail link
EA2	Entrustment Agreement for Construction and Commissioning of the Hong Kong Section of the Guangzhou-Shenzhen-Hong Kong Express Rail link
E&M	Electrical and Mechanical
HyD	Highways Department
IBC	MTRCL's Independent Board Committee on the Express Rail Link Project
IEP	Independent Expert Panel appointed by the Chief Executive of the Government
JOR	Jordan Road
Lloyd's	Lloyd's Register Rail (Asia) Ltd
The MTRCL	MTR Corporation Ltd
M&V	Monitoring and Verification
OHL	Overhead Line
PCG	Project Control Group

PCM	Project Co-ordination Meeting
PIMS	Project Integrated Management System
PSC	Project Supervision Committee
PST	Permanent Secretary for Transport and Housing (Transport)
RDO	Railway Development Office of Highways Department
RSC	Legislative Council Panel on Transport Subcommittee on Matters Relating to Railways
STH	Secretary for Transport and Housing
SRM	Systematic Risk Management
TBM	Tunnel Boring Machine
THB	Transport and Housing Bureau
TRIP	Track Related Installation Programme
TTMS	Temporary Traffic Management Scheme
WKT	West Kowloon Terminus
WKCD	West Kowloon Cultural District
XRL	The Hong Kong Section of the Guangzhou-Shenzhen-Hong Kong Express Rail link

Annex 2

LC Paper No. CB(1) 1573/09-10(04) on
the Government's detailed monitoring
mechanism on the XRL

**For information
16 April 2010**

**Legislative Council Panel on Transport
Subcommittee on Matters Relating to Railways**

**Government's Monitoring and Reporting on the
Construction of the Hong Kong Section of
Guangzhou-Shenzhen-Hong Kong Express Rail Link**

Introduction

This Paper briefs Members on the Government's monitoring mechanism on the construction of the Hong Kong section of the Guangzhou–Shenzhen– Hong Kong Express Rail Link (XRL) and the proposal of regular reporting to the Legislative Council (LegCo) on the XRL project.

Background

2. The Hong Kong section of the XRL is an express rail connecting Hong Kong with Shenzhen, Dongguan, and Guangzhou and will form part of the national high-speed rail network. Following the approval of the Finance Committee of the LegCo on the funding for construction of the railway and non-railway works of the Hong Kong section of the XRL on 16 January 2010, Government entered into an entrustment agreement with the MTR Corporation Limited (MTRCL) on 26 January 2010 for the construction and commissioning of the XRL project. Construction works then started in end January 2010 for completion in 2015.

Monitoring Regime for the Implementation of the XRL Project

3. Under the entrustment agreement, the MTRCL is responsible for the overall management of the project. In doing so, the MTRCL has to comply with its own management systems and procedures. The MTRCL also has the

obligation to provide any information concerning any matters relating to the XRL project as requested by the Government. The Government spares no effort in monitoring the works of MTRCL to ensure that the implementation of the project is within the approved project estimate, of good quality and on schedule.

Project Supervision Committee

4. The Director of Highways, being the controlling officer responsible for the XRL project, leads a high-level inter-departmental Project Supervision Committee (PSC). The Committee holds monthly meetings with the MTRCL and the related Government departments to review project progress, monitor procurement activities, post tender award cost control and resolution of contractual claims. The PSC also provides steer on any matters that would affect the progress of the XRL project.

5. To support and complement the PSC's effort, the Highways Department (HyD) inserts various check points into the MTRCL's relevant work processes so that issues of potential concern can be flagged up and appropriately resolved at an early stage.

Check Points in the MTRCL's Work Processes

(a) Tendering procedure

6. The MTRCL engages services from consultants, contractors and suppliers for the XRL project by means of a four-stage process, which includes expression of interest, pre-qualification for shortlisting of tenderers, tendering and tender assessment. In general, the Procurement Team of the MTRCL undergoes this four-stage process before making recommendations for tender award. The Team submits recommendations for approval of the Divisional Director, the Tender Board, or the MTRCL Board depending on the tender sum.

7. The procurement and tendering procedures of the MTRCL comply with the provisions of the World Trade Organisation's Agreement on Government Procurement. The same procedures also apply to the contracts relating to the Hong Kong section of the XRL project, including those that have been tendered.

8. Representatives of the HyD, normally at directorate level, attend tender readiness presentations made by the Procurement Team and all meetings of the Procurement Team and the Executive Tender Panel concerning procurement of works and services for the XRL project. Where a major procurement decision is to be made by the MTRCL Board, the Director of Highways participates in the relevant meeting of MTRCL's Executive Committee that makes recommendations to the Board.

(b) Project management

9. The MTRCL holds monthly project report meetings to monitor the progress of the XRL project. Representatives from the HyD attend such meetings. The MTRCL is also required to submit relevant information to the HyD. Upon request, the MTRCL will arrange briefings for the HyD and/or other Government departments on issues that may have bearing on the cost, quality or progress of the works.

(c) Cost and budget control mechanism

10. The MTRCL has built-in mechanism that enables and encourages cost saving initiatives. During the tendering process, tenderers are allowed to submit alternative proposal which may achieve better performance and/or at lower costs. During the course of construction, the MTRCL, its contractors, suppliers and the relevant government departments conduct value engineering sessions to identify and assess opportunities that can save cost while delivering the same or even better values. These processes, in which HyD representatives participate, help bring down the overall project cost of the Hong Kong section of the XRL.

11. The MTRCL convenes cost control meetings to review the financial situation of the constituent consultancies, construction contracts and the XRL project as a whole. Representatives from the HyD attend these meetings. The MTRCL has also set up a Project Control Group to scrutinize the assessment of variations and claims arising from the contracts of the XRL project. The HyD representatives, at directorate level, attend such meetings to provide comments and reflect views of the Government.

External monitoring and verification

12. In view of the scale of the XRL project, the HyD will also employ an external consultant to assist in the monitoring work and undertake regular audits to verify the MTRCL's compliance with its obligations under the entrustment agreement with Government. The monitoring and verification exercise is not limited to the work of the MTRCL, but also includes that of the consultants, contractors or agents employed by the MTRCL for the XRL project. Moreover, the HyD consultant will identify and advise the HyD any potential risk regarding the implementation of the XRL project and propose appropriate mitigation measures. This would help ensure that the XRL project will meet the required standards and will be completed on schedule and within budget.

Reporting on Progress and Finance of the XRL Project

13. When seeking the approval of the LegCo Finance Committee for the funding applications for the railway and non-railway works of the XRL project in January 2010, the Government undertook to report regularly to the Subcommittee on Matters Relating to Railways (the Subcommittee) of the Panel on Transport of the LegCo on the construction of the Hong Kong section of the XRL.

14. We note that the Government reported to the LegCo regularly on the progress of the Airport Core Programme (ACP) projects to enable LegCo to keep track of the large scale projects. Members generally felt that this was an effective monitoring arrangement. We propose that the reporting framework used for the ACP projects be adopted for the purpose of reporting to the Subcommittee on the XRL project. A copy of the ACP report for the period

— from July to September 1997 is enclosed at **Appendix** for reference. Similar to the ACP reports, we propose that the XRL reports should cover the progress and the financial position of the construction of the XRL project. Major items to be covered by the XRL reports are set out below.

15. The ACP comprised a wide range of projects, covering the airport, highways, railways, tunnels, reclamation and new town development, implemented by various parties and funded in different ways. The ACP reports provided updates on the progress of individual major projects, including updated cost estimates, funding and financing positions, and claims. The XRL project is one single rail project under the public works programme. It comprises mainly tunnel and terminus construction and the ancillary railway facilities and road works. To enhance transparency and provide the Subcommittee with a more in-depth update, we propose to divide the XRL project into three major components, namely –

- (a) the railway tunnels, including the ancillary railway facilities;
- (b) the West Kowloon Terminus, including the road works and pedestrian links in the nearby area; and
- (c) system-wide electrical and mechanical works, including rolling stock.

16. To enable Members to keep track of the progress of the XRL project to ensure timely completion, we will report the works done and major contracts¹ awarded for each major project component during the reporting period as well as the planned works and the schedule of major contracts to be awarded in the next reporting period. The report will also cover the progress of major pre-construction preparatory work (such as land clearance, condition surveys for buildings along the railway alignment, and important temporary traffic arrangements), as well as major interface issues (such as traffic impact in affected areas due to construction works and coordination with related projects).

¹ Major contracts with contract sum exceeding HK\$50 million will be reported to the Subcommittee. Other contracts will be reported collectively.

As to the financial situation of the XRL, we will report the expenditure position and contractual claims of each major project component during the reporting period.

17. As the XRL project is fully publicly-funded with a narrower scope than the ACP, its project management is expected to be less complicated. We consider it appropriate to update the Subcommittee on the construction of the XRL project at six-month intervals.

18. Subject to Members' views, we propose that the first report should cover the period between 16 January 2010, when the Finance Committee approved the project funding, and 30 June 2010. Subsequent reports will cover six month periods ending 31 December and 30 June of the future years until the high-speed railway is commissioned.

Transport and Housing Bureau
April 2010

NOTE FOR FINANCE COMMITTEE

Quarterly Report on Progress, Financing, Cost Estimate, Funding and Claims of the Airport Core Programme Projects (July to September 1997)

INTRODUCTION

Encl. 1
Encls. 2&3

This is the thirteenth quarterly report on the Airport Core Programme (ACP) projects for the Finance Committee, and covers the period July to September 1997. A summary is at Enclosure 1 and the full report is at Enclosure 2. The ACP claims summary is at Enclosure 3.

2. Subsequent to the issue of the last quarterly report in August 1997, we have completed a review of the cost estimates for the ACP. Principally because of rigorous cost control efforts of the Government, the estimated net expenditure for government ACP projects has been reduced from \$50,650 million by \$1,042 million to **\$49,608 million**. While the cost estimates for the new airport, Airport Railway (AR) and Western Harbour Crossing remain unchanged, the adjustments on the part of government projects have reduced the overall ACP cost estimates from \$156,364 million to **\$155,322 million**.

3. We would be happy to give a more detailed briefing on the report, and to answer questions, if Members so desire.

OVERALL PROGRESS OF THE ACP

4. As at 30 September 1997, the overall ACP is approximately 90% complete and we have completed 99% of the government ACP works. So far, 181 major ACP contracts have been awarded by the Government [92], the Airport Authority (AA) [57], the Mass Transit Railway Corporation (MTRC) [31] and the Western Harbour Crossing franchisee [1], at a total value of \$96,361 million.

/5.

5. The AA's works for the new airport and the AR works were both 89% complete as at 30 September 1997, and are on course to meet their respective target opening dates of April and June 1998. Preparatory work for new airport and AR opening has now entered a critical stage. Efforts are being made by all concerned to ensure that the works programme as well as all the preparation work, such as systems, testing and commissioning, training and trials, etc. that are required for airport and AR opening will be completed on schedule.

UPDATED COST ESTIMATES OF THE ACP

6. The ACP budget has been reduced to **\$155,322 million** as a result of the reduction in estimated expenditure for government ACP projects from \$50,650 million to \$49,608 million. The cost estimates of AA's share of the new airport project and of the AR remain within the estimates of \$49,787 million (based on April 1998 opening) and \$34,000 million (based on June 1998 opening) respectively.

7. The net government ACP budget has been reduced by \$1,042 million primarily because of savings identified in Government Facilities at the New Airport (\$488 million), Tung Chung Development Phase 1 (\$326 million), Lantau Link (\$107 million), Route 3 (\$303 million), West Kowloon Reclamation (\$492 million) and Utilities and Others projects (\$109 million). These gross savings of \$1,825 million from project budgets less the reductions of \$783 million in the reimbursements from AA and MTRC for the new airport and AR related projects result in a net saving of \$1,042 million.

8. As for the West Kowloon Reclamation (WKR), while individual works item under the project (WKR Hinterland Drainage Package 1) will require an additional funding of \$35 million, we have been able to identify a net saving of \$492 million for the project as a whole. This comprises \$242 million related to works under four WKR works items and \$250 million from land resumption and compensation expenditure.

9. There is a reduction of \$747 million in the reimbursement from the MTRC due to the setting up of advance accounts so that some works originally intended to be temporarily funded by Capital Works Reserve Fund project contingencies have been directly funded by the MTRC. The reduction of \$36 million in the reimbursement from the AA is due to the decrease in the estimate for North Lantau Refuse Transfer Station.

FUNDING POSITION OF THE ACP

10. The Finance Committee has so far approved a net total of \$49,897 million for government ACP projects. This represents 101% of the revised project estimates. As at 30 September 1997, the Administration had committed \$45,342 million, or 91% of the project estimate. Of this, we had spent \$43,790 million or 88% of the project estimate. We intend to reduce the amount of funds approved by the Finance Committee for various Public Works Project items to reflect the revised estimates. The revised figures will be incorporated in future quarterly reports.

11. The Finance Committee has approved an equity commitment of \$36,648 million for the new airport. As at 30 September 1997, the AA had committed \$42,048 million, or 84% of the project estimate. Of this, the AA had expended \$40,502 million, or 81% of the project estimate.

12. The Finance Committee has approved an equity commitment of \$23,700 million for the AR. As at 30 September 1997, the MTRC had committed \$30,399 million, or 89% of the project estimate. Of this, the MTRC had expended \$27,286 million, or 80% of the project estimate.

FINANCING OF THE NEW AIRPORT

13. On 19 September 1997, the AA signed a HK\$4,000 million syndicated revolving credit facility with 32 international financial institutions. This facility is for general corporate purposes, including the financing of the second runway, the northwest concourse and new capital expenditure arising after the opening of the new airport. The facility will not be used for the opening phase of the new airport (Phase 1a), for which funding provisions have been made through a credit facility of HK\$8,200 million signed by AA and a group of 48 banks in January 1996.

CLAIMS

14. As at 30 September 1997, the Government, the AA and the MTRC had received a total of 18 536 claims against 152 major ACP construction contracts. Of these, we have resolved 5 224 at a cost of \$2,580 million against an original claim amount of \$9,741 million. Our current assessment is that sufficient contingency remains to meet the unresolved claims, and that we will have a reasonable balance to meet changes and variation orders for the remaining contract period.

/THE

THE NEXT QUARTERLY REPORT

15. The next quarterly report covering the period October to December 1997 will be issued in January 1998.

New Airport Projects Co-ordination Office
Works Bureau
November 1997

ACP QUARTERLY REPORT

July - September 1997

Quarterly Review

As at 30 September, we had completed approximately 90% of the ACP, with government ACP works 99% completed. 181 major ACP contracts at a total cost of approximately \$96 billion had been awarded by Government (92), AA (57), MTRC (31) and Western Harbour Tunnel Company Ltd (1). The list of major ACP contracts awarded so far is at Annex I and the tender schedule for the next quarter ending 31 December 1997 is at Annex II. A list of countries, indicating the extent of their involvement in major ACP contracts awarded, is at Annex III.

**The New Airport
AA Works**

The AA works were approximately 89% complete.

Final fixings for the roof membrane of the Passenger Terminal Building (PTB) were substantially complete except for those at the northwest and southwest concourses. Clerestory gasket installation was complete in the processing terminal, north and south concourses and the east hall. Acceleration measures have been taken by the superstructure contractor to meet the revised target completion date by December 1997. Fit-out works continued on all fronts, and some critical items would be airfreighted to recover previous slippages. Placement of the

granite hard flooring in the public areas was 78% complete. Fitout works for the landlord areas, public toilets, fixed link bridges (FLBs) and government areas continued.

Primary and secondary steelwork for 37 out of the 38 FLBs has been completed, with 34 installed with cladding panels. All 76 aircraft loading bridges have been delivered to site, out of which 52 have been erected and 36 pre-commissioned.

Overall, the PTB building services contract was 89% complete, with installation 84% complete. Acceleration measures have been taken by the contractor to meet target substantial completion by mid-January 1998. Works continued in the communication rooms, FLBs and internal fit-out works areas.

Works continued on the specialist contracts for the automated people mover (APM), lifts and escalators, fixed ground power and baggage handling system. Test running for APM vehicles commenced in August following successful inspection by the Hong Kong Railway Inspectorate. Overall installation of the APM was 94% complete. Installation of 48 out of the 54 moving walkways was substantially complete, with testing and commissioning 5% complete. Lift installation was 88% complete with testing and commissioning 25% complete. Work on installation of 57 out of the 61 escalators continued with overall installation 97% complete and testing and commissioning 3%

complete. Baggage handling conveyor works continued on programme and was over 95% complete. Computers have been installed in the baggage control room and software testing on site has commenced.

As for special systems contracts, acceleration measures have been implemented to achieve the target programme, with special attention paid to potential problem areas, including voice and data cabling, flight information system, fixed communication system and systems integration programme.

Progress on the Ground Transportation Centre (GTC) is improving. The MTRC and AA were working closely with a view to providing timely access to plant and communications rooms within the station for commencement of AR system contracts. Roof completion was targeted for mid October to allow MTRC critical access to the departures level trackbed and overhead catenary and platform screen door brackets.

The airfield works were proceeding with asphalt base and wearing course placement on the crossfield and northern taxiways. The cargo apron was complete. Pavement quality concrete and block paving works continued in the apron areas surrounding the PTB. Over 83% of pavement quality concrete has been laid. Laying of block paving was over 41% complete. Pre-commissioning of the airfield ground lighting has commenced. High mast lighting erection was complete at the cargo

apron, and continued at the PTB apron with 82 out of the 122 masts erected. Pressure testing of the aviation fuel system continued. Over 70% of the fuel pipeline system covering the PTB's south, north and west aprons has been tested.

As for landside infrastructure, works concentrated on the expressway, the south perimeter and the roads in the catering south commercial area. Work on bridges and drainage works for the airport expressway and landside areas continued. The deck and retaining walls for the five southern bridges were complete and parapet works were underway. Works on the eastern airfield tunnel and approach ramps were substantially complete. Testing and commissioning of the essential electrical and mechanical equipment was sufficiently complete for tunnel opening. Outstanding work in the western tunnel was limited to completion of backfill of the south portal end wall.

Development of the Airport Operational Readiness (AOR) programme continued, covering activities that were critical for airport opening. The Airport Opening Implementation Plan was being regularly refined. AA continued to monitor the developments of its franchisees and other commercial developments.

Franchises

Progress on Hong Kong Air Cargo Terminals Ltd (HACTL)'s Superterminal 1 facility has experienced delays on the main building and

cargo systems installations. This was accentuated by the wet weather with incomplete roof covering, resulting in a six-week delay in overall terms and a 16-week delay in the box storage system. HACTL was working with the contractor on acceleration measures to meet target 50% operational capacity by end April 1998. Meanwhile, installation of warehouse cargo handling equipment continued along with assembly of cargo transfer vehicles as well as erection of the box storage system racking and stacker cranes in the north and south voids. The first zone of the west cargo storage system was fully commissioned and handed over to HACTL for system integration on 29 September.

Asia Airfreight Terminal Co Ltd's main building works continued with concrete works complete and the roof under construction. Building services work was underway on all levels. Erection of racking for the automatic storage and retrieval system as well as the pallet handling system was underway.

Installation of glazing and curtain walling continued for Cathay Pacific Catering Services (HK) Ltd's facility, with testing and commissioning of stacker cranes underway. Lifts were ready for inspection following energisation of transformers. Weather-tightness has been achieved for the LSG Lufthansa building. Installation of chillers and freezers inside the building was complete while electrical and mechanical installation

continued. As for Gate Gourmet, concrete works have been completed, blockwork and electrical & mechanical installation continued, and cladding steelwork has commenced.

Aviation fuel tank farm works at Chek Lap Kok continued. Progress of internal and external painting of the nine tanks was affected by the wet weather, but this should not have impact on the overall programme. The fuel receiving facility at the Sha Chau Jetty structure was over 84% complete. Dredging of the basin adjacent to the jetty was 60% complete.

At the Hongkong Aircraft Engineering Co Ltd's site, both halves of the hangar roof steelwork have been assembled and lifted into position. Assembly of the hangar doors has commenced.

All in all, satisfactory progress was being made by the AA and all concerned to meet the April 1998 target opening date. On PTB works, acceleration measures have been put in place to meet the target of issuing the temporary occupation permit by December 1997. Preparation for operational trials for the PTB commencing from January 1998 was well advanced. In addition, good progress was being maintained in the development of the five-phase plan for the mobilisation and move of airport operations from Kai Tak to the new airport.

Meanwhile, special attention continued to be

directed to five key areas, i.e. fit-out works at the PTB; progress of works of franchisees, particularly HACTL's cargo handling facilities; progress on various systems and software; the AOR Programme; and the recruitment and training of staff for airport opening.

Government Facilities at the New Airport

Overall, the projects were 91% complete, tracking slightly ahead of programme.

The Air Traffic Control Complex, Police Station, Microwave Station and Sub-divisional Fire Station were substantially complete. Work on building services and systems installation continued at the Government Flying Service Building and the Airmail Centre.

Installation, acceptance testing and calibration of most of the air traffic control systems were substantially complete. The Civil Aviation Site Acceptance Test was scheduled to commence in October 1997. Minor rectification work continued on the off-the-shelf simulator, aerodrome terminal information system, speech processing equipment, surveillance radars, world area forecast system data processing workstation and the aviation meteorological data processing system. Most of the postal mechanisation system equipment has been delivered to site and installation work was progressing well.

Airport Railway (AR)

Overall, the AR was 89% complete with progress generally in accordance with the project programme. While building services work at Tsing Yi Station was 30% complete, critical cable containment and cable installation to support Test Running in early 1998 were progressing well. Delay recovery measures were being implemented to meet critical access dates for system-wide contracts.

On Hong Kong Station, work on the floor finishes and ceiling works at the Airport Express Line (AEL) concourse and mezzanine floor was in progress. Finishing works and building services installation at the Hong Kong Station were 60% complete. The contractor would increase the output of these works to meet the critical access dates for system-wide contractors. As for the Central Subway, architectural finishing works have commenced following substantial completion of the reinforced concrete work. Overall, works were 86% complete.

Structure of the Kowloon Station was nearly complete, and building services work at the Tung Chung Line (TCL) level and at AEL level was 35% complete. Construction of the western elevated road was progressing well with all piers and crosshead completed. Overall, works were 82% complete.

Waterproofing work for the Olympic Station

structure was complete and system-wide works were in progress. Overall, works were 98% complete.

At the Lai King Station, deviation of the existing MTR Tsuen Wan Line (Tsuen Wan bound) was effected on 6 July 1997, following which construction of platform extension slab over the abandoned track commenced. Building work, building services installation and system-wide work continued. Overall, works were 87% complete.

Architectural finishing works for the Tsing Yi Station were in progress. Critical fibre optic cable pulling from central equipment room to all four cable termination rooms at platform was progressing well. Manpower for building services work has increased to meet the critical access dates for system-wide contractors. Overall, works were 88% complete.

Building and architectural finishing works at the Tung Chung Station were in good progress. Building services work were 78% complete. Overall, works were 95% complete.

The main and ancillary buildings at the Siu Ho Wan Depot, the depot access road bridge and associated road work were substantially complete. Building work, building services installation and system-wide work continued. Overall, works were over 98% complete.

Mitigation measures were in place to mitigate previous delays experienced in the works entrusted to the AA's Landside Infrastructure and GTC contracts. Plant rooms in the Airport Station have now been made available to MTRC's contractors, whose target was to complete the system-wide contracts by end 1997 for commencement of AR Test Running.

Tracklaying works from the Airport Station at Chek Lap Kok to the Hong Kong Station were in progress. Commissioning of the mainline test track was substantially complete. Test runs of the TCL trains in North Lantau at a speed of 135 km/hr were successfully performed in August 1997. The contractor has mobilised additional resources and plans for night works were being formulated to increase tracklaying productivity at Hong Kong Station, Kowloon Station and on Chek Lap Kok. Overall, works were 98% complete.

Signalling installation continued on schedule. Main cabling was substantially complete from the middle of Tsing Ma Bridge to just before the Airport Station, and from Olympic Station to the Lai King viaduct. The manufacturing and delivery of fans, dampers, cables, motor control centres and environmental control system control panels continued.

Overall, good progress continued to be made by MTRC towards meeting the June 1998

target commissioning date. The Kowloon Station was topped out in September; tracklaying was near completion; and the test run for the first TCL train was successfully performed in August. With the substantial completion of civil works and trackwork, emphasis was now placed on completion of the electrical and mechanical system-wide installations to allow the timely commencement of AR Test Running scheduled for early 1998.

**North Lantau Expressway
(NLE)**

The NLE project was essentially complete with only minor remedial works outstanding.

**Tung Chung Development Phase
1 (TCD)**

The project was 96% complete.

Commissioning tests for the Tung Chung Pumping Station and the Siu Ho Wan Sewage Treatment Plant were complete. The Police Station was substantially complete.

Work on the Refuse Transfer Station was progressing well. The Station is expected to be operational by March 1998 to tie in with airport opening in April 1998. Design work was substantially complete, and construction of the superstructure and the marine vessel was in progress.

The Home Ownership Scheme blocks and public rental flats were complete and handover of flats to residents commenced on 21 July and 19 August respectively. Other

facilities were being commissioned in stages to support the population intake.

Lantau Link (LL)

The LL was essentially complete.

Following completion of site acceptance tests, the essential traffic control and surveillance systems and equipment were handed over to the Tsing Ma Control Area operator for operation in August 1997.

Route 3 – Kwai Chung and Tsing Yi Sections (RT3)

The RT3 project was essentially complete.

Minor outstanding works and rectification of defects would be completed within the maintenance period.

West Kowloon Reclamation (WKR)

Overall the WKR was 99% complete.

Hinterland drainage works in the southern and northern areas were substantially complete. The outstanding road reinstatement works were scheduled for completion by December 1997.

Some of the localized ACP drains/pipes in the hinterland were behind programme. Actions have been taken by the contractors to expedite progress, which would be closely monitored.

All of the ACP new roads in WKR have been opened to traffic except for the eastbound carriageway of Road SR4, which would be

completed and opened to traffic by December 1997.

**West Kowloon Expressway
(WKE)**

The WKE project was essentially complete. Minor outstanding works would be finished within the maintenance period.

**Central Reclamation Phase 1
(CWR)**

Works under the reclamation contract were essentially complete. The following outstanding station-related works, which have been entrusted to the MTRC and included in the AR Hong Kong Station Contract, are expected to be completed by June 1998:

- Rumsey Street flyover extension: falsework for the first span of the bridge deck was complete; construction of columns and pilecaps continued; and casting of the first span of the deck would commence.
- Jubilee Street underpass: Stage 2 construction of the diaphragm walls and base slabs was complete; stage 3 construction has commenced.
- New bus termini: work has yet to commence.
- Footbridge FB1: construction was in good progress.
- Pumping Station: base slab has been cast; and casting of walls continued.

- Remaining Landscape work has yet to commence.

Utilities and Others

The ACP-funded utilities (i.e. water works) were essentially complete.

Western Harbour Crossing (WHC)

The WHC was complete and opened to traffic on 30 April.

Enclosure 3

ACP Claims Summary as at 30 September 1997

Introduction

1. ACP construction contracts apportion risks involved in the construction process between the Employer and the Contractor. They must therefore contain means by which contractors may submit claims for additional money (cost claim) or time (extension of time or “EOT”) or both, associated with the risks where the Employer has liability. Contractual claims are a normal and natural part of construction contracting.

2. From the inception of the ACP, the Government has aimed to set in place systems which will enable the early identification of contractual claims. Equally, we have put in place mechanisms which would allow claims to be dealt with early and to avoid, as far as possible, contractual claims turning into formal contractual disputes.

Total claims recorded against ACP

3. As shown at the Annex, the Government, the Airport Authority (AA) and the MTR Corporation (MTRC) (collectively referred to below as the Works Agents) had awarded a total of 152 major ACP construction contracts with a total award value of \$89,291 million as at 30 September 1997. We have not included the contract for the Western Harbour Crossing because the franchisee is responsible for all claims on the contract.

4. The Works Agents have recorded a total of 18,536 claims against the awarded contracts since inception. Of these, the Works Agents have resolved 5,224 claims either by way of settlement or withdrawal of the claims by the contractors, leaving 13,312 unresolved claims.

Settlement of claims

5. In resolving the 5,224 claims, the Works Agents have awarded \$2,580 million to the contractors. The original amount claimed was \$9,741 million.

Enclosure 3
(cont'd)

Unresolved claims

6. As at end September 1997 unresolved claims for CWRP projects totalled 2,620 and the total amount claimed was \$4,115 million. The estimated contingent liability for these unresolved claims stood at \$863 million.

7. As at 30 September 1997 the AA had a total of 49 major construction contracts. Against these, 8,304 claims had been recorded and 7,072 remained unresolved. Contractors were seeking a total of \$6,003 million against such unresolved claims and the AA's estimated contingent liability stood at \$1,840 million.

8. For the MTRC, the number of awarded AR contracts remained at 31 as at end September 1997. Against these, 4,620 claims had been recorded with 1,000 of them resolved. The amount claimed by contractors in respect of the 3,620 unresolved claims was \$3,270 million. The MTRC's estimated contingent liability stood at \$1,480 million.

9. In total, of the 13,312 unresolved claims, 10,260 are claims for cost or both cost and EOT. The contractors were, as at end September, seeking recovery of \$13,388 million for these claims and the Works Agents have estimated their contingent liability against these claims at \$4,183 million.

10. Current assessment by the Works Agents indicates that there is sufficient contingency within the revised estimate for the ACP projects to settle these claims while leaving a reasonable balance to meet changes and variation orders for the remaining contract period.

11. EOT claims will also be closely monitored to ensure that critical contract completion dates will remain unaffected. The Works Agents will, as a safeguard, have the right to order acceleration measures in those instances where a valid EOT claim might jeopardise a critical completion date.

12. In short, we are confident that sufficient allowance exists within the overall ACP budget to meet ACP claims requirements.

Situation on ACP Contractual Claims
(as at 30 September 1997)

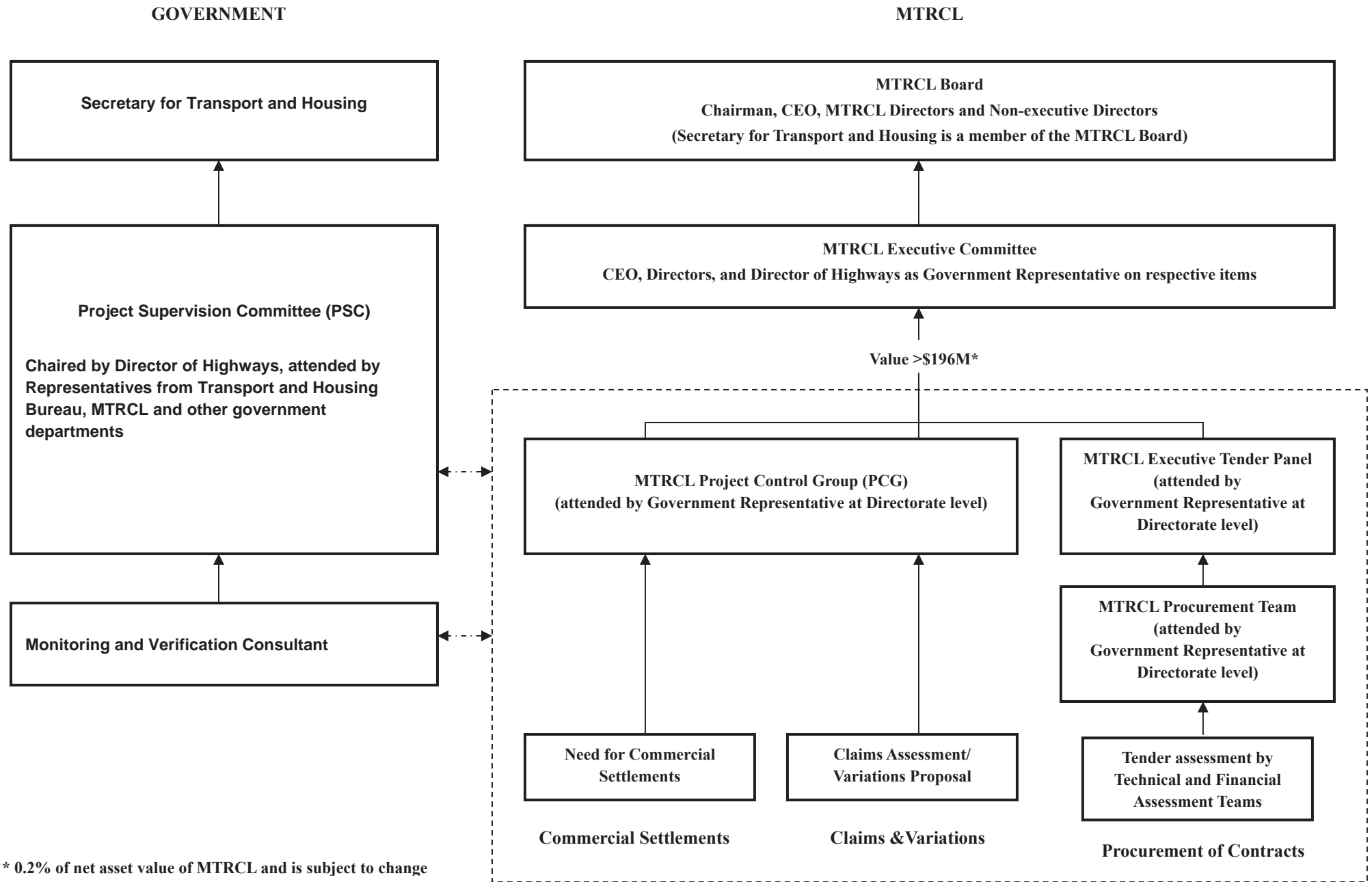
ACP Project	Number	Award Value \$M	Works completed ⁽²⁾ \$M	Number	Number	Amount claimed originally \$M	Amount awarded \$M	Number ⁽³⁾	Amount claimed \$M	Estimated contingent liability ⁽⁴⁾ \$M
CWRF	72	37,393	36,645	5,612	2,992	5,637	964	2,620	4,115	863
AA - CLK Airport	49	34,142	30,828	8,304	1,232	2,556	1,050	7,072	6,003	1,840
MTRC - Airport Railway	31	17,756	17,860	4,620	1000	1,548	566	3,620	3,270	1,480
TOTAL	152	89,291	85,333	18,536	5,224	9,741	2,580	13,312	13,388	4,183

- Notes :
- (1) Excludes non-construction contracts such as design, supply and equipment contracts.
 - (2) May exceed award value due to contract variations
 - (3) Includes rejected claims
 - (4) Includes interim awards

Annex 3

A flowchart on the monitoring mechanism

Flowchart on Government’s monitoring mechanism on the construction of the Hong Kong section of the XRL Project



* 0.2% of net asset value of MTRCL and is subject to change

Annex 4

Progress of Works in Major Civil Contracts

Progress of Works in Major Civil Contracts

1. Contract 810A – West Kowloon Terminus Station North

(i) Excavation

The excavation had reached Level B4 at some locations and the total excavation work was approximately 65% complete. For the centre core structure, the construction sequence was to excavate from ground level to B4 level and to start the concreting works bottom up. While at the northern part of the 810A adjoining 811B and peripherals near Lin Cheung Road at the west and Wui Man Road at the east, the construction sequence was from top down, i.e. excavation was to start from B1 level and after concreting the B1 slab, further excavation and subsequent concreting down to B4.

(ii) Construction of station box

The concreting works was approximately 20% complete. The M&V Consultant conducted site visit, joined by HyD staff, to monitor site progress. Based on the report by the M&V Consultant, concreting to B4 level commenced in September 2012.-Since January 2014, the volume of concrete cast had increased with more workfronts becoming available.

(iii) Construction of steel roof truss and mega column

Steel mega columns and roof trusses units were being fabricated at the fabrication yards in Thailand and Mainland respectively. Erection of column units had started but progress was slow.

2. Contract 810B – West Kowloon Terminus Station South

(i) Excavation

The excavation had reached level B4 in most locations with approximately 95% of the total volume complete. The remaining excavation mainly involved removal of rock encountered in the south-eastern corner. The Contractor was

preparing to increase more workfronts and plant to increase rock excavation rate.

(ii) Construction of station box

The concreting works was approximately 60% complete. Except B4 level, B1 to B3 slabs had been mostly completed. Internal wall construction continued in the critical areas to allow early access by Building Service and E&M Contractors.

(iii) Austin Road West Underpass

Excavation and construction of lateral support for the Austin Road Underpass was in progress, which was partly integrated with the WKT station structure.

(iv) Interface with E&M works

Access or partial access had been provided to E&M contractors and building services installation was progressing under Contracts 816A, 816B, 816C and 816D in the southern portion of WKT in levels B2 and B3.

3. Contract 811B – West Kowloon Terminus Approach Tunnel (South)

(i) Excavation

The excavation works of the approach tunnel was approximately 55% complete.

(ii) Construction of tunnel structure

The tunnel box was constructed using top-down method at the southern end of the site adjacent to Contract 810A. Tunnel top slab construction on south side of Jordan Road was substantially complete except for one small bay in south-eastern corner.

(iii) Construction of WKP, PTI and footbridge

The construction of WKP would start after Jordan Road reinstatement to be completed by end 2014.

4. **Contract 811A – West Kowloon Terminus Approach Tunnel (North)**

(i) Excavation

The excavation works of the approach tunnel was almost completed (99%). The backfilling works at the northern part was in progress.

(ii) Construction of MKV

The construction of MKV was in progress and the level 2 slab had been constructed.

(iii) Construction of cut and cover tunnel

The concreting works was about 65% complete. In general, the progress of the cut and cover tunnel structure was in good shape where the northern part was being backfilled.

5. **Contract 820 – Hoi Ting Road to Mei Lai Road**

(i) Tunnel Construction

Tunnel	Progress (as at mid-April 2014)
Northbound (downtrack)	Tunnel broke through in July 2012
Northbound (uptrack)	Tunnel broke through in July 2013
Southbound (downtrack)	Tunnel broke through in Sept 2013
Southbound (uptrack)	14% of the tunnel section had been constructed

(ii) The Nam Cheong Ventilation Building was about 90% complete.

6. **Contract 821 – Mei Lai Road to Shek Yam**

(i) Construction of the 3.6km long tunnel was completed in 2013.

Major outstanding structural work inside the Main Tunnel including maintenance and evacuation walkways, was expected to be completed in May 2014. The trackwork within the completed tunnel was actively underway.

- (ii) The Kwai Chung Ventilation Building was substantially completed.

7. Contract 822 – Shek Yam to Tse Uk Tsuen Tunnels

- (i) Excavation of the 7.65km long tunnel by Drill-and-blast method was completed in early March 2014. The remaining civil work, including tunnel lining and partition wall, were expected to be completed in August 2014. The trackwork within the completed tunnel was actively underway. The Pat Heung Ventilation Building was substantially completed. The construction of Shing Mun Ventilation Building was in progress. The Contractor had addressed the insufficient labour resources problem and improvement in production was evident.

8. Contract 823A – Tse Uk Tsuen to Tai Kong Po Tunnels

- (i) As at mid-April 2014, the progress of the tunnel construction under Contract 823A was as below:

Tunnel	Progress (as at mid-April 2014)
North section (downtrack)	about 93% of the tunnel section had been excavated but TBM drive suspended
North section (uptrack)	tunnel excavation not yet commenced
South section (downtrack)	about 92% of the tunnel section has been excavated
South section (uptrack)	tunnel excavation not yet commenced

- (ii) Mining operation for the north downtrack tunnel was

suspended in view of the damaged North TBM due to the flooding on 30 March 2014 pending rescue of the TBM. The South TBM at Shek Kong for the downtrack drive was anticipated to breakthrough in May 2014. Upon breakthrough, the pre-flooding intention was for the two TBMs to be dismantled with the components transported back to their respective launching shafts for re-assembly before the second launch for the uptrack tunnels excavation. The flooding event on 30 March 2014 had cast doubt on this strategy and MTRCL's advice as to how it planned to proceed was awaited. HyD was still awaiting further mitigation measures and DRM proposals from MTRCL to mitigate the progress delay.

9. Contract 823B - Shek Kong Stabling Sidings & Emergency Rescue Siding

- (i) As at mid-April 2014, the ERS and about 70% of the approach tunnels had been completed. Completion of civil works for incoming E&M Contractor) for ten out of the 14 depot buildings had been achieved. Track works and installation of overhead power lines at the SSS areas were actively underway.

10. Contract 824 – Tai Pong Po to Ngau Tam Mei Tunnels

- (i) As at mid-April 2014, about 70% of the tunnel and the cross passages excavation as well as 20% of the tunnel lining had been completed. The construction of the NTM VB had commenced and was actively underway. According to the current rate of progress, tunnel breakthrough was likely to be achieved by end 2014.

11. Contract 825 – Ngau Tam Mei to Mai Po

- (i) Breakthrough of the downtrack TBM tunnel was achieved in mid-2013 and the invert slab and cross passages were being constructed. The uptrack TBM drive commenced in July 2013 and as at mid-April 2014, the uptrack tunnel was about 50% complete. It was anticipated that breakthrough of the

tunnel would likely be in the 4th quarter of 2014. The construction of the Mai Po Ventilation Building was substantially completed.

12. Contract 826 – Mai Po to Hong Kong Boundary

- (i) As at mid-April 2014, about 12% of the tunnel section under Contract 826 had been excavated. The two TBMs were mining underneath the Mai Po fish ponds.

Progress of Major Electrical and Mechanical (E&M) Contracts that interface directly with civil contracts

13. Contract 830 - Trackworks and Overhead Line System

- (i) The XRL would adopt non-ballasted tracks inside tunnel but use ballasted tracks at the Shek Kong Stabling Sidings (SSS) respectively. Access would be made available to Contractor for installation of trackworks and overhead line system after each section of tunnel lining is finished. As at end March 2014, the Contract 830 Contractor had been given site access to 11.3 km (22%) out of 51.3 km of mainline tunnel.

14. Contract 845 - Traction Power System

- (i) The XRL would adopt 25kV traction power system for tunnels and in the SSS. The 25kV traction power was supplied from two traction substations at Shek Kong and Mong Kok West to power the overhead line system for the high speed trains in the mainline, stabling sidings and trains under routine maintenance in the SSS with sufficient capacity and redundancy. The installation of traction substation at Shek Kong was well under way with two out of three traction transformers installed to date. With the first traction transformer in SSS Traction Substation tested and energized in end March 2014 in accordance with original project programme, the second traction substation installation work at Mong Kok West would commence in the second half of 2014.

Annex 5

Detailed Causes of Delay for the Seven
Civil Works Contracts

Express Rail Link Project

Detailed Causes of Delay for the Seven Civil Contracts

Contract 810A – West Kowloon Terminus Station North

Impact on concreting rate due to failure of mechanical couplers in test samples

1. Failure of mechanical couplers in some samples was reported in July 2013. Concreting operation involving mechanical couplers was suspended. At the request of Buildings Department, MTRCL carried out an investigation and adopted an enhanced sampling process. Further testing had demonstrated specification compliance. Concreting operation resumed in October 2013.

Delay in site handovers (Jordan Road) due to unfavourable ground conditions in other adjoining contracts

2. Due to unfavourable conditions for diaphragm wall construction under Contract 811B, the planned Jordan Road diversion required an additional phase which falls within the Contract 810A site. The final road diversion away from the site was delayed by about two months. This has led to consequential delay in the subsequent site activities.

Delay in site handovers from adjoining contract

3. Due to adoption of different methods of excavation under Contract 810A and 810B, the excavation rate for the central core under Contract 810A had been hindered, resulting in delay of about 4 months.

Slow progress for construction of lateral support for deep excavation

4. The southern portion of the Contract 810A site should be constructed with the central core of the station structure using bottom up method (concreting process) while those on the east and west sides

should be adopting top down method, after the lateral support to the diaphragm wall by the permanent B1 slab having been extended from the central core. Owing to the site co-ordination problems, the permanent B1 slab was slow in construction forbidding the excavation near the diaphragm resulting in progress delay.

Low excavation rate due to high rock head

5. The concerned high rock head profile is in the northern part of Contract 810A site and has been identified before the award of tender. The construction method is also top town (concreting process). Owing to the previous delay experienced in the tackling of utilities in the Jordan Road, the top down construction of the B2 and B3 slab is still underway. The rock excavation at approximately the B3/B4 level has yet to start in some part of the site. The existence of the high rock head has posed a difficulty for the Contractor to mitigate the previous delay experienced.

Slow progress of steel roof truss fabrication and installation

6. The installation of the lower part of the first mega column was completed in February 2014 but the progress was slow.

Contract 810B – West Kowloon Station South

7. Problems which had affected progress for Contract 810B up to April 2014 are as follows:

- (i) late possession of works sites due to occupation by previous foundation Contractors;
- (ii) low excavation rate due to limited barging facilities for spoil disposal;
- (iii) excavation works suspended pending the construction of planned lateral support system within the adjoining contract; and
- (iv) impact on concreting rate due to failure of mechanical

couplers in test samples.

Contract 811B – West Kowloon Terminus Approach Tunnel (South)

8. Problems which had affected progress for Contract 811B up to April 2014 are as follows:

- (i) late possession of some of the works sites due to occupation by previous foundation Contractors;
- (ii) slow progress in construction of diaphragm wall due to unfavourable ground conditions; and
- (iii) slow progress of works due to utility diversion for reinstatement of Jordan Road.

Contract 820 – Hoi Ting road to Mei Lai Road Tunnels

9. Problems which had affected progress for Contract 820 up to April 2014 are as follows:

- (i) suspension of TBM drive due to the encountering of abandoned temporary piles in Hoi Wang Road in January 2013. (The TBM resumed boring in August 2013 and the tunnel section was completed in September 2013.)
- (ii) suspension of TBM drive due to encountering of steel obstructions in January and March 2014. (The TBM resumed boring in end March 2014.)

Contract 823A – Tse Uk Tsuen to Tai Kong Po Tunnels

Unfavourable ground conditions

10. Under the original contract provision, the bored tunnels were to be excavated by a single TBM (i.e. the North TBM). The construction of the North TBM launching shaft at Tsat Sing Kong has been affected due to the presence of high rock head, which would have a knock-on

effect on the commencement of tunnel construction if not mitigated.

Low excavation rate in rock and long down time of TBM

11. The excavation rate of the two TBMs has generally been very low and unsatisfactory through the rock zone. There were also frequent down time for routine and emergency maintenance/repairs of the TBM as well as precautionary grouting works necessary for the TBM operation.

Flooding within the TBM tunnel on 30 March 2014

12. The North TBM was submerged in flood water under the severe black rainstorm at night on 30 March 2014 during its downtrack drive. As reported by MTRCL, the cause of the flooding is due to collapse of a slope within the Contract 823B Shek Kong site that has led to blockage of the inlet of the temporary drainage channel resulting in water overflowing into the ERS tunnel and finally the excavated North TBM tunnel under Contract 823A was flooded. The situation of the flooding was worsened by the mal-functioning of the emergency pumps at the TBM shaft. Although no injury was reported due to the incident, the mining operation of the North Tunnel was halted due to the incident.

Contract 824 – Tai Kong Po to Ngau Tam Mei Tunnels

Unfavourable geological conditions

13. During the early stage of construction, delay was encountered mainly due to unfavourable ground conditions with significant water seepage into the Drill-and-blast tunnel and shaft excavation faces. In this respect, the Contractor carried out extensive fan grouting to the shaft and the tunnel prior to and after the excavation. Furthermore, boulders and fault zones were encountered during the excavation of the NTM shaft and tunnel respectively. Excavation has been slowed down due to the use of mechanical drilling method. The progress of excavation has therefore been significantly affected.

Contractor's Logistic Arrangement and Site Management

14. It is noted that there were conflicts on works fronts for the tunnel excavation and the construction of NTM VB. In particular, the frequent spoil removal at the NTM shaft after the Drill-and-blast of the tunnels had significantly affected the construction of NTM VB. Furthermore, change of senior personnel of the Contractor within a relatively short period in 2013 has also affected the progress due to a temporary lack of senior management direction. Progress of tunnel lining works has also been slow, due partly to the Contractor's logistic arrangement of work sequence.

Contract 826 – Mai Po to Huanggang Tunnel

Late arrival of the two TBMs at the HK Boundary

15. The construction method adopted is to make use of the same two TBMs (one for each tunnel) for the construction of the tunnel between Huanggang of Shenzhen and the HK boundary (Shenzhen section) and between the HK boundary and Mai Po (Hong Kong section). The original programme was that the two TBMs would arrive at the boundary by end 2012. Upon crossing the boundary, the Contract 826 Contractor would take over the operation of the two TBMs and continue mining the Hong Kong section to Mai Po. The actual arrival date of the two TBMs at the HK boundary was in November 2013 and March 2014 respectively, which was about 11 and 14 months beyond the original target dates.

Tunnel excavation rate lower than anticipated

16. Upon crossing the HK boundary, the progress of the two TBMs is generally slower than MTRCL's anticipated excavation rates for completing the excavation works of the tunnel section within 10 months, due primarily to the Contractor's resource problem.

Annex 6

A summary of progress updates given in
Half-yearly Reports

Annex 6

XRL Half-yearly Report to LegCo RSC	Details and Summary of Reporting	Remarks
1st Half-yearly Report for the period ending 30 June 2010 (LC Paper No. CB(1)2290/09-10(01)) submitted in July 2010	The report stated that 11 major construction contracts have been awarded, making up a total awarded value of \$13.9 billion. For the overall progress of the key areas of works, the Administration reported that in general, the progress of tunnel works is satisfactory without major difficulty so far. The foundation works of WKT are progressing on schedule and the detailed design of the terminus building is being finalized. The Government will continue to monitor closely the progress of the XRL project through the monitoring mechanism.	MTRCL had been reporting a target completion date of XRL in 2015 throughout the period covered by the Half-yearly Report
2nd Half-yearly Report for the Period ending 31 December 2010 (LC Paper CB(1)1585/10-11(07)) submitted in March 2011	The report stated that 16 major construction contracts have been awarded, making up a total awarded value of \$24.5 billion. The Administration also reported that preparatory work for tunnel excavation and construction of launching shafts for tunnel boring machines is progressing smoothly with the first tunnel blast conducted in November 2010. 70% of the WKT	MTRCL had been reporting a target completion date of XRL in 2015 throughout the period covered by the Half-yearly Report

	foundation works has been completed as scheduled.	
3rd Half-yearly Report for the Period ending 30 June 2011 (LC Paper No. CB(1)3049/10-11(01)) submitted in September 2011	The report stated that 21 major construction contracts have been awarded, making up a total awarded value of \$28.5 billion. Excavation works for the launching shafts for tunnel boring machines (TBM) are underway as scheduled and tunnel drilling and blasting works are also underway. The WKT diaphragm wall works are almost completed, and over 90% of the piling works have been completed. Major excavation works for the station commenced in April 2011.	MTRCL had been reporting a target completion date of XRL in 2015 throughout the period covered by the Half-yearly Report
4th Half-yearly Report for the Period ending 31 December 2011 (LC Paper No. CB(1)1710/11-12(01)) submitted in April 2012	The report stated that 32 major construction contracts were awarded with a total awarded value of \$41.8 billion. For the overall progress of the key areas of works, the Administration reported that the first tunnel boring machine commenced tunnel boring works in September 2011. The WKT diaphragm wall works and piling works of the Terminus have been completed while the major excavation works for the Terminus are underway.	MTRCL had been reporting a target completion date of XRL in 2015 throughout the period covered by the Half-yearly Report
5th Half-yearly Report for the Period ending 30 June 2012 (LC	The report stated that 38 major construction contracts together with other minor contracts	MTRCL had been reporting a target completion

<p>Paper No. CB(1)24/12-13(02)) submitted in October 2012</p>	<p>were awarded with a total awarded value of \$44.49 billion. The Administration reported two more TBMs also commenced tunnel boring works in February and April of 2012 while tunnel blasting works are in full swing. The WKT excavation works for the main structure of the Terminus have been completed by 29%.</p>	<p>date of XRL in 2015 throughout the period covered by the Half-yearly Report</p>
<p>6th Half-yearly Report for the Period ending 31 December 2012 (LC Paper No. CB(1)1108/12-13(01)) submitted in May 2013</p>	<p>The report stated that 39 major construction contracts together with other minor contracts were awarded with a total awarded value of \$44.81 billion. The Administration also reported that six tunnel boring machines (TBMs) are in operation and the two TBMs for the Mainland section also commenced operation in June and November 2012 respectively. Excavation works for the main structure of the Terminus have been completed by about 45%. Underground structural works at the southern end of the Terminus have reached level B3 and for the main structure of the Terminus, the excavation works have reached the lowest level B4, i.e. the platform level of the Terminus.</p>	<p>MTRCL had been reporting a target completion date of XRL in 2015 throughout the period covered by the Half-yearly Report</p>
<p>7th Half-yearly Report for the Period ending</p>	<p>The report stated that seven tunnel boring machines</p>	<p>MTRCL had been reporting a</p>

<p>30 June 2013 (LC Paper No. CB(1)81/13-14(01)) submitted in November 2013.</p>	<p>(TBMs) were in operation and the drill-and-blast tunnelling works were in full swing. 55% of the tunnelling works, including drill-and-blast and TBM excavation works, have been completed. For WKT, over 60% of the excavation works for the Terminus structure have been completed. Structural works at the southern end of the Terminus reached the lowest level B4, and the concrete structure of the first two levels (B1 to B2) was also completed.</p>	<p>target completion date of XRL in 2015 throughout the period covered by the Half-yearly Report</p>
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