

Part II Findings

Chapter 3 Planning and Site Investigation Stage (May 2000 to January 2010)

3.1 In this Chapter, reference to "Planning and Site Investigation Stage" covers the preparatory works carried out by the Government and the Corporation in relation to the Project between May 2000 and January 2010 prior to the commencement of the construction of HKS of XRL. The Chapter highlights the background information of the Project and the Project framework, the concession approach adopted by the Government in delivering the Project, the Entrustment Agreements signed between the Government and the Corporation, the monitoring mechanism of the Project, and the site investigation work carried out at this stage. It also presents the observations of the Select Committee based on the evidence obtained from the witnesses and the documents available to it.

Key dates for the "Planning and Site Investigation Stage"

Date	Events
May 2000	HKS of XRL (formerly Regional Express Line ("REL")) was first recommended for implementation under the Railway Development Strategy 2000.
October 2007	The Chief Executive announced in his Policy Address the proposed HKS of XRL as one of ten major infrastructure projects.
Early 2008	RDO of HyD commissioned a consultancy study to review institutional arrangements to ensure efficient implementation of the Project by the Corporation.

8 July 2008	FC approved the funding of \$2.7826 billion for the design and site investigation of the Project.
July 2008	RDO of HyD set up a dedicated team for the Project.
24 November 2008	The Government entered into EA1 with the Corporation for the design and site investigation of the Project.
16 January 2010	FC approved the funding of \$66.8175 billion for the Project, of which \$55.0175 billion was for the railway works and \$11.8 billion was for the non-railway works.
26 January 2010	The Government and the Corporation entered into EA2 for the construction, testing and commissioning of HKS of XRL with a target completion date scheduled for 4 August 2015.

Background information on HKS of XRL

3.2 In the Railway Development Strategy 2000 promulgated in May 2000, REL was one of the railway projects recommended for implementation. Following some development, REL became the HKS of the Guangzhou-Shenzhen-Hong Kong Express Rail Link ("ERL") jointly pursued by the Mainland and Hong Kong. In mid-2007, the Kowloon-Canton Railway Corporation ("KCRC") submitted to the Government a project proposal on HKS of ERL on the basis of the Dedicated Corridor Option⁷.

3.3 Following the merger between KCRC and the Corporation on 2 December 2007 ("the Merger"), the Corporation took over the planning of HKS of ERL. Since then, the acronym for the Project was changed from "ERL" to "XRL" to avoid duplication with the use of the acronym "ERL" for the existing East Rail Line after the Merger.

⁷ Building a dedicated rail track running from the West Kowloon Terminus to the boundary.

3.4 HKS of XRL was one of the ten major infrastructure projects announced in the 2007 Policy Address. On 22 April 2008, the Executive Council ("ExCo") decided that the Corporation would be asked to proceed with the further planning and design of HKS of XRL. According to the LegCo Brief⁸ submitted by the Government to LegCo on the same day, the earliest completion date of HKS of XRL was 2014/2015.

3.5 FC approved on 8 July 2008 a sum of \$2,782.6 million in money-of-the-day ("MOD") prices for the design and site investigation of HKS of XRL which was entrusted to the Corporation for implementation under an Entrustment Agreement (EA1).

3.6 Following the Chief Executive in Council's decision on 20 October 2009 that the Corporation should be asked to proceed with the construction, testing and commissioning of HKS of XRL under the concession approach, FC approved on 16 January 2010 the funding for the railway works (\$55.0175 billion MOD) and the non-railway works (\$11.8 billion MOD) of HKS of XRL, amounting to a total of \$66.8175 billion MOD. As indicated in the funding paper⁹ submitted to FC, the work on HKS of XRL was expected to be completed in 2015.

3.7 On 26 January 2010, the Government and the Corporation entered into the Entrustment Agreement for the construction, testing and commissioning of HKS of XRL, i.e. EA2. Mr WAI Chi-sing, former Director of Highways, informed the Select Committee that the estimated handover date to the Government for the Project, as submitted by the Corporation in the final draft version of EA2, was set at 30 June 2015. As there was a six-week delay in obtaining FC's approval on the funding application of the Project, the estimated handover date of the Project was subsequently changed to 4 August 2015 when EA2 was entered into.

3.8 The Select Committee notes that HKS of XRL is a very large and complex project. It is the world's first all-underground high-speed railway project.¹⁰ When completed, HKS of XRL will connect with the

⁸ Legislative Council Brief, File Ref.: THB(T)CR 1/16/581/99.

⁹ Paper submitted by the Government to the Finance Committee of the Legislative Council, PWSC(2009-10)68.

¹⁰ Report of HKS of XRL Independent Expert Panel, paragraph 2.6.

Mainland's National High-speed Railway Network, enabling passengers to travel between Hong Kong and Mainland cities at a speed of up to 200 km/hour.¹¹

3.9 The Select Committee also notes that HKS of XRL will include a terminus situated in West Kowloon to enable passengers to arrive in and depart from the heart of the city.¹² According to Mr Lincoln LEONG Kwok-kuen, CEO of the Corporation, the excavation work at WKT is one of the largest and deepest excavations ever done in Hong Kong. The work at WKT involves building a four-storey underground structure with the lowest level located some 30 metres below ground. The 11-hectare WKT site area is approximately the size of 15 football fields. The main public area of the terminus incorporates a large atrium with a steel-framed station entrance building. The total construction floor area of the station, all of which underground, is around 380 000 m² – almost two thirds of the floor area of Terminal 1 at the Hong Kong International Airport. The trains will run in parallel tunnels, which will extend underground all the way to Shenzhen, a distance of some 26 km.

The Project framework

Concession approach first adopted

3.10 The Select Committee notes that before the Merger in December 2007, all railway projects had been financed under the ownership approach. Under this approach, the two railway corporations were responsible for the funding, design, construction, operation and maintenance of the railway, and ultimately owned the railway. Since the two railway corporations operated on commercial principles, they would not take up financially non-viable railway projects unless adequate financial support was provided by the Government. The form of funding support for each railway project was considered by the Government on a case-by-case basis. Under the ownership approach, the Government did not bear the risks associated with the construction and the operation of the railway.¹³

¹¹ Report of HKS of XRL Independent Expert Panel, paragraph 1.1.

¹² Report of HKS of XRL Independent Expert Panel, paragraph 2.6.

¹³ Legislative Council Brief, File Ref.: THB(T)CR 1/16/581/99, paragraph 13.

3.11 Upon the implementation of the Merger, the Corporation was granted a service concession by KCRC to operate KCRC's existing and new railway lines under construction. The Corporation was and is responsible for the operation, maintenance and improvement of KCRC's railway systems, including the replacement of the concession assets, during the concession period. It was agreed in the context of the Merger that, for new railway projects which were not natural extensions of the existing network of the Corporation, the Government had the discretion to decide whether to adopt the ownership approach or the concession approach.

3.12 HKS of XRL is the first railway project implemented by the Government under the concession approach. Under the concession approach, the Government funds the construction of the railway and its ancillary infrastructure, bears the construction risk and shares the operation risk of the Project¹⁴, and ultimately owns the railway. Under EA2, the Corporation is entrusted with the design, construction, and testing and commissioning of HKS of XRL. According to the letter dated 18 February 2015 from THB to the Clerk to the Select Committee (**Appendix 7**), upon completion of the railway, the Corporation would be granted a service concession for the operation and the Government would receive service concession payment accordingly.

3.13 The Select Committee notes that in considering whether the ownership or concession approach should be adopted for HKS of XRL in 2008, the Government had in mind the following considerations and finally decided to adopt the concession approach for HKS of XRL:

- (a) XRL was a major cross-boundary infrastructure. HKS of XRL would be connected to the Mainland section which would form part of the national railway network owned by the Mainland authorities. Ownership of HKS of XRL by the Government would facilitate coordination and resolution of interface issues between the Hong Kong and Mainland sections, during both construction and operation.

¹⁴ Paper submitted by the Government to the Subcommittee on Matters Relating to Railways, LC Paper No. CB(1)1749/07-08(01), paragraph 6.

- (b) The financial viability of the Project was subject to a host of factors, including, for example, fare level, fare adjustment mechanism and revenue-sharing mechanism which would need to be discussed with the company running the Mainland section, and the availability of train paths and cross boundary facilities arrangement, which would need to be further negotiated between the 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.
- (c) Under the concession approach, the Government could capture the upside of the performance of HKS of XRL under a revenue-sharing mechanism and could get back a fully operational XRL system at the end or upon a 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 sense for the Government.

Entrustment Agreements between the Government and the Corporation

3.14 The Select Committee notes that in early 2008, HyD commissioned a consultancy study to review the institutional arrangements to ensure efficient implementation of the Project by the Corporation. The Lloyd's Register Rail (Asia) Limited ("Lloyd's") was engaged 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 Project if the Project was entrusted to the Corporation by the Government under the concession approach. Lloyd's considered that the Corporation's processes were known to be robust and in line with industry best practices, and the processes were regularly reviewed and audited by external 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 Corporation and the Government.

Introducing the "check the checker" system

3.15 Lloyd's recommended that the Corporation's current project management procedures should be adopted for the delivery of the Project, but that there should be Government participation in key control processes, and that the Government should be able to conduct monitoring and verification ("M&V") of the Corporation's performance in accordance with the agreements between them. This M&V role was described as "check the checker". 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 the construction of HKS of XRL. In November 2008, the Government and the Corporation entered into EA1. In January 2010, the Government and the Corporation entered into EA2.

3.16 As mentioned in paragraph 2.43 of Chapter 2, the Select Committee was given copies of EA1 and EA2 on 4 January 2016¹⁵. The Select Committee notes that under EA2, the Corporation should use its best endeavours to complete, or procure the completion of, the Entrustment Activities (subject to specified exceptions) in accordance with the Entrustment Programme; and to minimize any delay or other effect which any modification may have on the Entrustment Programme¹⁶. In this connection, the Corporation should act in accordance with its management systems and procedures. Moreover, the Government should be entitled to appoint a consultant to help monitor and verify the Corporation's compliance with its obligations under EA2.¹⁷ At any time

¹⁵ Softcopy of EA1 and EA2 can be accessed at the following link:
http://www.legco.gov.hk/yr14-15/english/sc/sc_gshkerl/report/sc_gshkerl-ea1-ea2.pdf

¹⁶ Clause 16.4 of EA2. EA2 defines the term "Entrustment Activities" to mean all activities as detailed in Appendix B to EA2 which are related to specified works and activities. EA2 also defines the term "Entrustment Programme" to mean the programme for the execution of the Entrustment Activities as set out in Appendix C to EA2, as such programme may be adjusted in accordance with the provisions of Clause 8.2 of EA.

¹⁷ Clause 17.10 of EA2.

when the Corporation was in material or persistent breach (or the Government, acting reasonably, suspected that the Corporation was in material or persistent breach) of any of the Corporation's material obligations under EA2, the Government should be entitled to verify the Corporation's compliance with its obligations under EA2.¹⁸

3.17 In the event of any error or omission by the Corporation which constitutes a breach of EA2 by the Corporation as a result of which a re-execution of the Entrustment Activities is necessitated, the Corporation should, 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.¹⁹

3.18 According to the Government, should there be a delay and to the extent that the delay in question was not covered by any modification or adjustment to the Entrustment Programme, it might amount to a breach of the Corporation's obligations under EA2 and the Government might have a claim against the Corporation for such a breach.

3.19 In addition, the Corporation warranted to the Government on a number of matters, including that the Entrustment Activities relating to the provision of project management services should be carried out with the skill and care reasonably expected of a professional and competent project manager whose role included coordination, administration, management and supervision of design and construction work. Should the delay in question involve a breach by the Corporation of any of its warranties, the Government might have a claim against the Corporation for breach of warranty.²⁰

Monitoring mechanism of the Project, including the roles of HyD and THB of the Government, the Corporation and M&V consultant

Roles of respective parties

3.20 Under the concession approach, the design and construction of the Project is entrusted to the Corporation. In gist, HKS of XRL is a public

¹⁸ Clause 17.11 of EA2.

¹⁹ Clause 5.3 of EA2.

²⁰ Clauses 5.1(A) and 5.2 of EA2.

work project and, according to HyD, the Corporation can be regarded as the Government's agent and project manager for the delivery of the Project. Some of the Corporation's responsibilities under EA2 are listed in paragraphs 3.16 to 3.19 above.

3.21 The Select Committee notes that under the Public Finance Ordinance (Cap. 2), the Controlling Officer for HKS of XRL is Director of Highways who is responsible and accountable for all expenditure for HKS of XRL. The key role of HyD in the implementation of HKS of XRL is to oversee the overall implementation of HKS of XRL and the prudent use of public funds allocated for the Project; to monitor and verify, with the support of an external consultant, that the Corporation properly fulfilled its obligations in accordance with the Entrustment Agreements; and to facilitate the implementation of HKS of XRL by liaising and coordinating with the Corporation and other departments concerned in resolving interface issues and seeking necessary approvals associated with the implementation, commission and operation of HKS of XRL.

3.22 According to Professor Anthony CHEUNG Bing-leung, THB is responsible for formulating transport policies and keeping general oversight on implementation of policies. Generally speaking, once an infrastructure project within its portfolio such as the Project has commenced, THB's main focus is to monitor the implementation progress and, where necessary, helps resolve at policy level issues which may affect the delivery of the project. Following established Government practices and division of responsibilities, implementation at the operational level is mainly the responsibility of the relevant departments. Since the commencement of the construction of HKS of XRL in January 2010, THB was carrying out its general oversight role in the implementation of the Project, including the overall programme and project cost. THB and HyD were also working jointly with the Mainland authorities on the development and cross-boundary matters of HKS of XRL.

Monitoring mechanism of the Project

3.23 In April 2010, the Government, vide LC Paper No. CB(1)1573/09-10(04), informed Railways Subcommittee of the Government's monitoring mechanism on the construction of HKS of XRL and its proposal of regular reporting to LegCo on the Project. As stated in the paper, Director of Highways, being the Controlling Officer for the

Project, would lead a Project Supervision Committee. Members of Project Supervision Committee included, among others, representatives of THB (normally a member of staff at Principal Assistant Secretary level) and the Corporation (including the Corporation's Projects Director). Project Supervision Committee would meet on a monthly basis to review progress and to monitor procurement activities, post-tender award cost control and resolution of contractual claims. Project Supervision Committee would also provide steer on matters that would affect the progress of HKS of XRL. The Corporation was required to submit progress reports setting out the latest progress and financial position of the Project. The Select Committee notes that, prior to mid-April 2014, Project Supervision Committee held a total of 44 meetings.

3.24 The Select Committee notes from the same Railways Subcommittee paper that to support and complement Project Supervision Committee's effort, HyD would insert check-points into the Corporation's work processes so that issues of potential concern could be flagged and properly resolved at an early stage. The flowchart on the Government's monitoring mechanism on the construction of the Project is in **Appendix 17**.

3.25 According to the statement from Mr Peter LAU Ka-keung, apart from Project Supervision Committee, an officer at Assistant Director level of HyD held monthly Project Coordination Meetings with the Corporation's General Managers and its Project Managers to monitor various activities for the delivery of the Project including, but not limited to, timely completion of land matters, resolution of third party requests, key issues on design, construction, environmental matters that might have potential impact on the progress and the programme of the Project as well as interface issues with other projects. From January 2010 to mid-April 2014, a total of 50 Project Coordination Meetings were held.

3.26 In addition, an officer, at Chief Engineer level, held monthly Contract Review Meetings with the site supervision staff of the Corporation for major civil and electrical & mechanical ("E&M") works. In case of delay encountered by the Corporation's contractors, the Corporation would report measures being considered to mitigate delay. Up to mid-April 2014, a total of 47 Contract Review Meetings were held. The membership and the terms of reference of Project Supervision Committee, Project Coordination Meeting and Contract Review Meeting appear in **Appendix 18**.

3.27 The Select Committee notes from Professor Anthony CHEUNG Bing-leung's statement that once an infrastructure project has commenced, THB's main focus is to monitor implementation progress and to leave implementation at operational level to the relevant departments. In the case of the Project, HyD assumed the M&V role in the design and construction of the Project. The M&V role was described as the "check the checker" role. HyD would use a risk-based sampling approach to verify the delivery of the requirements of the project scope and the authorized expenditure.

3.28 The Select Committee also notes that HyD had engaged an external consultant, Jacobs (the M&V consultant), to advise and assist in the M&V role. The M&V work of Jacobs focused on cost, programme, safety and quality of HKS of XRL.

3.29 The Select Committee has obtained a copy of the Project Brief of the Consultancy Agreement signed between the Government and Jacobs. The Select Committee notes that the main areas of the M&V work by Jacobs included the following:

- (a) attending the monthly Contract Review Meetings, carrying out regular site visits (joined by HyD staff) and conducting regular audits to verify whether the Corporation has fulfilled its obligations towards the Government under EA2 and implemented the entrusted works in accordance with its project management system for the delivery of HKS of XRL;
- (b) reporting to HyD through monthly reports on the progress of the various work contracts, their potential risks and concerns, as well as any progress delay, and commenting on the appropriateness of the proposed mitigation measures; and
- (c) reporting to HyD through monthly progress meetings discussing major areas of concern.

3.30 The Select Committee also notes that HyD had set up a dedicated division within RDO to oversee the implementation of HKS of XRL. This dedicated division comprised a total of 13 Civil Engineers including a Chief Engineer who was the division head, four Senior Engineers and

eight Engineers as at April 2014. In-house support on the advisory service on E&M works and building submissions were provided.

Communication/reporting mechanism between the Corporation and the Government in respect of the progress of the Project

3.31 The Select Committee observes that under the Entrustment Agreements, the Corporation was responsible for the overall management of the Project. In fulfilling its responsibility, the Corporation had to comply with its own management systems and procedures. The Corporation also had an obligation to provide information concerning any matter relating to HKS of XRL as requested by the Government.

3.32 As stated in paragraph 3.23, Director of Highways, being the Controlling Officer for HKS of XRL, led a high-level inter-departmental Project Supervision Committee. The Committee held monthly meetings with the Corporation and the related Government departments to review project progress, and to monitor procurement activities, post-tender award cost control and resolution of contractual claims. At the meetings, HyD also conveyed the comments from the M&V consultant to the Corporation on progress matters. When the Corporation reported programme delay and proposed mitigation measures, the Government, with the support of the M&V consultant, provided comments to the Corporation for follow-up.

3.33 The Corporation held internal monthly project report meetings among the General Managers, Project Managers and Construction Managers to monitor the progress of HKS of XRL. Representatives from HyD (officers at Senior Engineer level) attended such meetings. The Corporation was also required to submit relevant information to HyD. Upon request, the Corporation would arrange briefing for HyD and the M&V consultant, and/or the other Government departments on issues that might have bearing on the cost, quality or progress of the works.

3.34 The M&V consultant carried out technical audits on the master programme regularly in addition to the regular M&V works. Issues covered in the audits included adequacy of the work programmes, status of the master programme, measures to recover any accrued delay and their impact, etc.

3.35 As required by EA2, the Corporation submitted monthly progress reports to the Government, which provided information on the Project's financial situation and expenditure forecast, safety performance, status of contracts procurement, a summary of progress under individual contracts and any major issues, etc. The Corporation also reported to the Government the overall project progress in terms of percentage completion against the planned figure. Delays in individual contracts were also shown on the Entrustment Programme. In particular, the following regular reports and information were submitted to HyD which were provided to the M&V consultant, as appropriate:

- (a) Briefing and reports on the progress and areas of concern in individual contracts provided at the monthly Contract Review Meetings.
- (b) Briefing on progress and site problems in individual contracts provided at monthly site visits by the M&V consultant's and HyD's staff.
- (c) Monthly cost reports on actual/forecast expenditure, variations, claims and other cost changes with supporting justifications submitted to the Project Control Group meetings (please see **Appendix 19** for its membership and terms of reference).
- (d) Information on key project activities progress matters and interfacing related to coordination with other Government departments provided at the monthly Project Coordination Meetings.
- (e) Monthly Progress Reports and presentations on overall project progress and expenditures, progress of individual contracts, intended mitigation or DRMs, and issues of concern submitted to the monthly Project Supervision Committee meetings.

Observations

Site investigation issues

3.36 The Select Committee notes that unforeseen site conditions are said to be one of the major reasons for the project delay by HyD and the Corporation. The Select Committee has thus examined whether there were deficiencies in the execution of the site investigation for the Project, in particular, the site investigation carried out at the WKT site.

Background information on site investigation at WKT site

3.37 According to the 1st IBC Report²¹, the site investigation work at the WKT site was carried out in phases between 2008 and 2010. Before and after site possession, the Corporation obtained information from over 600 drill holes covering all areas of the work site, with the exception of the former Jordan Road area. The drill holes used in that process were spaced on average 14.4 metres apart. The Corporation indicated that this was in line with the relevant Government guidelines, and was also closer than the industry norm. However, due to the vertical formation of bedrock at this site, even with such closely spaced bore holes, it was possible to miss weak seams of rock and sub-surface boulders.

3.38 The Select Committee notes that at the location of the former City Golf Club, prior to the Corporation taking possession of the premises, the site investigation work had been carried out only at the pedestrian footpath and the car parking areas of the Club. It was only after re-possession of the Club site upon the expiry of an extended tenancy or licence that a full site investigation could be carried out covering the remaining areas of the Club.

3.39 In addition, due to the heavy daily volume of traffic using the eight-lane Jordan Road, road closure for site investigation had not been pursued in the early stages in order to avoid major traffic blockages. The ground conditions under Jordan Road were not adequately documented until the road was eventually re-directed after the construction had begun. Hence the ground conditions and the extensive

²¹ First Report by the Independent Board Committee on the Express Rail Link Project, paragraphs 4.10 to 4.12.

utilities (and how closely laid and intertwined these utilities were) under Jordan Road could not be mapped out prior to the commencement of the construction.

3.40 Further, according to a paper submitted by the Corporation to Railways Subcommittee in May 2014²², up to 31 March 2014, while the southern part of the 810A work area (WKT) using the bottom-up method had been excavated down to B4 level, part of the northern area of the site using the top-down method still required the removal of approximately 78 000 cubic metres of fresh bedrock, out of 100 000 cubic metres of rock, to reach B4 level.

Site investigation prior to commencement of construction

3.41 The Select Committee is of the view that, at the time when FC approved funding for the construction of HKS of XRL and when EA2 was signed on 26 January 2010, the site investigation work had not yet been completed for the following reasons:

- (a) According to the statement of Dr Philco WONG Nai-keung, Projects Director of the Corporation, during the site investigation process, access was not available before site possession of certain areas such as Jordan Road, the public transport interchange between Austin Road and Kowloon stations and the central portion of the City Golf Club used as a golf driving range. In particular, before re-possession of the land at the City Golf Club, investigation at the site was only possible at the perimeters and the car parking areas of the Club.
- (b) Mr WAI Chi-sing informed the Select Committee at the open hearing on 2 June 2015 that the site investigation carried out in 2009 did not include the location of the former City Golf Club as the Government had acceded to the request of the operator to extend its operation until December 2009. A complete site investigation was only

²² Paper submitted by the MTR Corporation Limited to the Subcommittee on Matters Relating to Railways, LC Paper No. CB(1)1354/13-14(01), paragraph 29.

carried out in 2010 after re-possession of the land and the same was completed after June 2010.²³

- (c) As for Jordan Road, Mr Lincoln LEONG Kwok-kuen, CEO of the Corporation, stated in his statement that, due to the heavy daily volume of traffic using the eight-lane Jordan Road, road closure for the site investigation work was not possible. The ground conditions under Jordan Road could not be adequately documented until the road was moved from its original location after construction had started. It is for this reason that the ground conditions and the extensive utilities (and how closely laid and intertwined these utilities were) under Jordan Road could not be mapped out prior to the construction work commencing.
- (d) The Select Committee has asked THB whether the Corporation had made any request to the Government for a temporary closure of Jordan Road for the site investigation work before the commencement of the construction of WKT. THB replied on 18 February 2015 (**Appendix 7**) and stated that the construction of WKT at Jordan Road fell within contract 811B (West Kowloon Terminus Approach Tunnels (South)) which had commenced in August 2010. According to HyD's available records, before the commencement of the contract, there was one record of request made by the Corporation in March 2010 to carry out trial trench excavation for water-mains laying across Jordan Road

²³ Minutes of evidence of open hearing of the Select Committee, 2 June 2015, pages 25 to 27; and the Official Record of Proceedings of the Legislative Council, 11 June 2014, page 14827. At that Council meeting, the Secretary for Transport and Housing, Professor Anthony CHEUNG Bing-leung, pointed out that the Government noted that the geological memoir mentioned by Ms Claudia MO, which was conducted by the Kowloon-Canton Railway Corporation in 1997 at Austin Station of the West Rail, as well as the other geological memoirs completed on the relevant projects in the area of the West Kowloon Terminus Station North in the early period, had been included in the relevant contracts, i.e. the contractual documents of contract 810A on West Kowloon Terminus Station North, to serve as reference information for the contractors concerned.

outside the WKT boundary. This application was approved by HyD in March 2010.

The Select Committee considers that notwithstanding the need to carry out site investigation before work began in the Project, the Corporation did not conduct as soon as possible full site investigation at the City Golf Club, resulting in the time allowed for site investigation to be further compressed. This showed that the Corporation was lacking in alertness to the complex ground conditions in the area concerned.

Whether underground conditions were known before construction

3.42 The Select Committee considers that the higher-than-industry norm site investigation work should have minimized, albeit not eliminated, the possibility of unforeseen site conditions but this was not the case in reality. The Select Committee is dismayed by the fact that the enormous quantity of underground bedrock at WKT was not discovered at an earlier stage so that appropriate actions could be taken in time.²⁴

3.43 Notwithstanding the incomplete site investigation, Mr WAI Chi-sing informed the Select Committee that, prior to the commencement of the construction of HKS of XRL, both he and the Corporation had been aware of the underground conditions and the complex underground utilities at the WKT site when he was Director of Highways prior to June 2010. There was also no record showing that the Corporation had drawn to the attention of HyD or himself the magnitude of the difficulties in removing the bedrock at WKT before he left the office of Director of Highways in June 2010. As for the cost of removing the underground bedrock, Mr WAI Chi-sing advised that it had been included in the estimated cost of the Project. The work for removing the bedrock had also been included in the relevant tender documents.

3.44 Mr Peter LAU Ka-keung informed the Select Committee at the open hearing on 21 April 2015 that, according to the assessment of HyD, there was no substantial difference between the quantity of rock estimated

²⁴ Members voted on Mr Gary FAN Kwok-wai's proposal to amend paragraph 3.42. The proposal was defeated (please refer to paragraphs 6 and 7 of the Minutes of Proceedings of the meeting held on 7 June 2016 in this Report).

during the site investigation and at the current stage but time was required to excavate the volume of rock present.

3.45 The Select Committee notes from the statement of Mr Lincoln LEONG Kwok-kuen, CEO of the Corporation, that *"[a]s the project involves approximately 25 km of underground tunnels and an underground station as deep as 30 metres below surface level, ground conditions are a major determinant of project progress. Unfavourable ground conditions have been a significant cause of delay. These conditions include higher than anticipated rock head levels, weak seams, the presence of cobbles and boulders, high water inflows and the presence of underground steel obstructions. These conditions were often unanticipated despite extensive site investigation"*. His view was echoed by Mr Henry CHAN Chi-yan, Principal Government Engineer/Railway Development of HyD, who explained to the Select Committee that even with site investigation, it was impossible to know every rock detail. Mr Henry CHAN Chi-yan said that, in large-scale projects, it was very difficult to provide an accurate estimate of underground conditions.

3.46 Mr Lincoln LEONG Kwok-kuen also informed the Select Committee at the open hearing on 15 July 2015 that extensive site investigation had indeed been carried out prior to the commencement of construction. However, even with closely-spaced bore holes used in the site investigation, it was still possible and likely that weak seams of rocks and subsurface boulders would be missed, and the actual ground conditions were worse than those originally envisaged during the site investigation.

3.47 The Select Committee is of the view that many construction projects have to deal with underground utilities and ground conditions and has enquired at a hearing why it was particularly difficult for the WKT site. In response, Mr Mark LOMAS, Project Manager-Technical Support of the Corporation, said that the WKT site was formed from a very complex series of reclamations over a number of years. It was almost 700 metres long from the start of the structure under 811B, north of Jordan Road, down to the south of Jordan Road and all the way down to the diaphragm wall near the Victoria Harbour. The complexity of the site posed different construction challenges. He said that, on a project of this scale and nature, these kinds of problems were inevitable and, whilst they were able to overcome many of these challenges through hard work,

unfortunately, they were unable to overcome all the challenges that occurred at WKT.

3.48 Dr Philco WONG Nai-keung, Projects Director of the Corporation, also informed the Select Committee in his statement that, although public utilities, such as power and lighting cables, were known to exist and were charted to an extent, the configuration, spread²⁵, alignment and slack²⁶ within the utilities and the locations of the utilities joints, as well as the interrelationship between the various services, could not be properly identified until possession of the site was taken for construction.

3.49 Mr WAI Chi-sing and Dr Philco WONG Nai-keung also explained to the Select Committee that site investigation could only provide underground information of particular bore holes. In many cases, there would be a difference between the actual distribution and the kinds of underground rock and the results of site investigation.

3.50 The Select Committee considers that, since full site investigation had not been conducted at the location of the former City Golf Club and Jordan Road covering a substantial area prior to the construction work commencing, the contingency period set by the Corporation should have been lengthened to absorb risks brought by unexpected ground conditions.

3.51 The Select Committee considers that the setting of the timetable to complete the Project by 4 August 2015 imprudent. The Corporation as the project manager should have allowed a longer contingency period to cater for unforeseen ground conditions as site investigation was known to have its limitations.²⁷

²⁵ The term "spread" refers to the manner in which a number of cables are bundled together.

²⁶ The term "slack" refers to the extent to which cables can be moved out of the way of construction works.

²⁷ Members voted on Mr Gary FAN Kwok-wai's proposal to amend paragraph 3.51. The proposal was defeated (please refer to paragraphs 12 and 13 of the Minutes of Proceedings of the meeting held on 7 June 2016 in this Report).

New role of the Government under the concession approach and deficiencies of EA2

3.52 The Select Committee notes the differences between the ownership approach adopted in development of railway projects in the past and the concession approach adopted for the Project. The rationale of the Government in adopting the concession approach for this Project is given in paragraph 3.13 of this Chapter.

3.53 The Select Committee observes that, under the ownership approach, the Government's role in monitoring the implementation of railway projects had been more passive because the Government's involvement was essentially financial in that it would bridge a funding gap either by providing a capital grant or by granting development rights to the Corporation for construction of railway lines found to be financially not viable. The Corporation would then build, own and run the railway line upon completion at its own risk and cost. Whereas under the concession approach, the Government would own the railway system, pay for the project and assume the construction risks.²⁸

3.54 The Select Committee has studied the respective responsibilities of the Government and the Corporation in respect of the management of the Project under EA2, as set out in paragraphs 3.14 to 3.30 of this Chapter.

3.55 The Select Committee observes that, on paper, the concession approach, EA2, the monitoring mechanism, the communication channels between the Government and the Corporation were carefully designed to provide guidelines for stakeholders to follow as well as different check points at different levels to ensure delivery of the Project on time and within budget. As stated by Mr WAI Chi-sing at a hearing, *"the systems were already there but they are not alive, the people who use them are alive"*. The Select Committee takes Mr WAI Chi-sing's words to mean that the Government officers who have been monitoring the Project did not make better use of the systems already in place when performing their duties.²⁹

²⁸ Report of HKS of XRL Independent Expert Panel, paragraph 2.3.

²⁹ Members voted on Mr Gary FAN Kwok-wai's proposal to amend paragraph 3.55. The proposal was defeated (please refer to paragraphs 19 and 20 of the Minutes of Proceedings of the meeting held on 7 June 2016 in this Report).

3.56 As stated in paragraph 3.19, the Corporation has to carry out the Entrustment Activities with the skill and care reasonably expected of a professional and competent project manager whose role includes coordination, administration, management and supervision of the design and the construction work.

3.57 Professor Anthony CHEUNG Bing-leung informed the Select Committee at the hearing on 21 December 2015 that, under EA2, the Corporation as the project manager had the responsibility to monitor and deliver the Project. The Government adopted the indirect "check the checker" M&V role recommended by Lloyd's back in 2008. The Select Committee was also informed by Professor Anthony CHEUNG Bing-leung that, other than as the checker, the Corporation also had the duty to deliver the Project. HyD needed the Corporation to provide information for its work in its role as the checker of the checker. Professor Anthony CHEUNG Bing-leung said that there were approximately 750 employees within the Corporation engaged in the Project, compared to about 40 staff within HyD and the M&V consultant.

3.58 Professor Anthony CHEUNG Bing-leung admitted to the Select Committee that, with the benefit of hindsight, the "check the checker" approach had flaws. He also said at an open hearing that, if the concession approach were to be adopted again in future, the content of the Entrustment Agreement should be reviewed.

Institutional arrangements to be improved

3.59 The Select Committee notes IEP's recommendation that the institutional arrangements in concession agreements should be improved. To this end, it is important to set up robust institutional arrangements, introduce incentives and penalties, allow step-in arrangements to allow the Government to take over the relevant project, and conduct quantitative risk analysis to establish baseline parameters including schedule and cost.³⁰

3.60 Mr Peter LAU Ka-keung stated in his statement that HyD would accept the above recommendation generally. HyD agrees that there is a need to improve the institutional arrangements in concession agreements

³⁰ Report of HKS of XRL Independent Expert Panel, paragraph 7.2.

and to clearly define the obligations, duties, roles and responsibilities of the contracting parties. HyD considers 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 and taking into account the experience gained from the implementation of the Project, the suggestions recommended by IEP and overseas experience.

3.61 The Select Committee also notes the view of Mr WAI Chi-sing that a lack of cooperation and trust amongst the stakeholders might have led to the project delay. Mr WAI Chi-sing suggested that, in future, the spirit of cooperation and trust between the contracting parties should be emphasized in Government work contracts.

3.62 The Select Committee considers that, under the concession approach, while HyD might have over-relied on the Corporation to deliver the Project on time and within budget, the Corporation might have been taking the view that it was only required to use its best endeavours to complete the Project under EA2, without having to bear the risk of project delay and cost overrun.

3.63 The Select Committee is of the view that, although the Corporation was entrusted with the design, construction, and testing and commissioning of HKS of XRL and had a duty to deliver the Project, HyD should have played a more active and proactive role in monitoring the Project regardless of the size of staff engaged in the Project and whether or not such role was expressly stipulated in the Entrustment Agreement. Given the considerable scale and cost of the Project and the fact that HKS of XRL is the first railway project carried out under the concession approach, the Select Committee considers that the Government, as the ultimate owner of HKS of XRL and guardian of public fund, should have been monitoring more closely the construction of the Project and taking to heart its important role in the Project.

3.64 The Select Committee considers that the lack of initiative on the part of HyD in monitoring the Project might have been brought about by the knowledge of the good track record of the Corporation in delivering railway projects. The Select Committee also suspects that the lack of practical experience and expertise in building railway lines within the Government might also have contributed to a lack of confidence within HyD/RDO in playing a more active and proactive monitoring role over

the work of the Corporation, which was considered an expert in this area.³¹

3.65 The Select Committee considers that, when the Government implements large-scale railway projects in future, they will have to substantially improve the concession approach with reference to experience gained in the Project.

³¹ Members voted on Mr Gary FAN Kwok-wai's proposal to delete paragraph 3.64. The proposal was defeated (please refer to paragraph 27 of the Minutes of Proceedings of the meeting held on 7 June 2016 in this Report).

Part II Findings

Chapter 4 Early Construction Stage (January 2010 to April 2013)

4.1 In this Chapter, reference to "Early Construction Stage" covers the incidents that took place at different sites of the Project between late January 2010 and April 2013, the corresponding actions taken by the stakeholders and the issues that arose as a result. This Chapter outlines the key dates for the Early Construction Stage and the chronology of developments mainly based on the 1st IBC Report. It also sets out the Select Committee's observations on whether the Entrustment Programme in EA2 is tight, the project management issues and the corporate governance of the Corporation. During the course of its inquiry, the Select Committee has used its best endeavours to discover the reasons for the project delay and to draw conclusions based on the available evidence and information.

Key dates for the "Early Construction Stage"

Date	Events
Late January 2010	Construction of the Project commenced.
1 February 2010	Mr CHEW Tai-chong was appointed as Projects Director of the Corporation.
28 May 2010	The Corporation advised the Government that the Mainland section of the cross-boundary tunnel would suffer a delay of six months.
12 July 2010	Contract 823A at the location of the former Choi Yuen Tsuen was awarded.
16 August 2010	HyD employed Jacobs as the M&V consultant to monitor and verify cost, programme, safety and quality aspects of the Project. Contract

commenced in August 2010 and was scheduled to end in January 2016.

September 2010 Mr Peter LAU Ka-keung was appointed Director of Highways.

May 2011 Land resumption in Choi Yuen Tsuen was completed.

End May 2012 Mr Joseph LAI Yee-tak was appointed Permanent Secretary for Transport and Housing (Transport).

1 July 2012 Professor Anthony CHEUNG Bing-leung was appointed Secretary for Transport and Housing.

18 July 2012 Mr Jay H WALDER, the then CEO of the Corporation, wrote to Professor Anthony CHEUNG Bing-leung stating that the Corporation maintained their target of completing all works to enable the successful opening of HKS of XRL in 2015 as planned.

17 April 2013 Contractor of contract 810A proposed to revise the completion date of WKT to June 2016, but was rejected by Projects Director. Contractor of contract 810A was asked to work on a Partial Opening Plan, with the aim of achieving the opening of HKS of XRL in 2015.

Chronology of developments

4.2 The Select Committee had difficulties in obtaining certain important minutes of meetings/documents which were considered to be pertinent to the reason for the project delay. For this reason, the Select Committee had to rely on certain findings of fact in the 1st IBC Report to fill in gaps in the period from January 2010 to April 2013 during the construction phase of HKS of XRL. The construction phase of the Project began in late January 2010. At the second Project Supervision Committee meeting held on 28 April 2010, it was reported that the tunnel

and E&M detailed design were on schedule, the piling and the diaphragm wall works at WKT were gaining momentum and there was only a minor delay in the civil works design and in the preparation of tender documents. The progress report presented at the April 2010 Board meeting indicated that HKS of XRL would be ready for service in 2015.³²

First signs of delay

4.3 At the third Project Supervision Committee meeting on 28 May 2010, the Corporation reported to the Government a possible project delay, advising that the Mainland section of the cross-boundary tunnel would likely incur a delay of approximately six months; however, mitigation measures were discussed with Shenzhen authorities in order to ensure the commissioning of the Mainland section by mid-2015. In June 2010, the Government reported to Railways Subcommittee that the progress of the tunnel works in the Project was generally satisfactory with no major difficulty, the foundation works of WKT were progressing on schedule and the detailed design of the terminus building was being finalized.³³

4.4 Since early days of the Project, however, specific work streams started to experience delay – namely, the cross-boundary tunnel works, the removal and re-provisioning of the Nam Cheong Property Foundation under contract 802 and the West Kowloon Terminus Approach Tunnels as well as some issues with the WKT itself. These delays were reported to the Government and the Corporation undertook certain mitigation measures.³⁴

Impact of late land possession on contract 823A

4.5 At an early stage, the late possession of land in Yuen Long caused delay to contract 823A – railway tunnels from Tai Kong Po to Tse Uk Tsuen. The Select Committee notes from the Corporation's report

³² First Report by the Independent Board Committee on the Express Rail Link Project, paragraph 4.14.

³³ First Report by the Independent Board Committee on the Express Rail Link Project, paragraph 4.15.

³⁴ First Report by the Independent Board Committee on the Express Rail Link Project, paragraph 4.16.

submitted to Railways Subcommittee in May 2014³⁵ that "*[contract 823A] is at the location of the former Choi Yuen Tsuen. Site access was delayed at the beginning of the project due to land resumption problems. Landowners and other interested parties strongly objected to the land being resumed and as a result, the land resumption process took significantly longer than originally anticipated resulting in a delay from November 2010 to May 2011. This also restricted the amount and extent of the site investigation works that could be carried out prior to this contract being tendered*". It is understood from the 2nd half-yearly report to Railways Subcommittee that contract 823A was awarded on 12 July 2010 whereas the land resumption in Choi Yuen Tsuen was completed in May 2011.

4.6 According to the evidence of Mr Lincoln LEONG Kwok-kuen, contract 823A was delayed by the late possession of land at Choi Yuen Tsuen, higher than anticipated rock head levels, tunnel boring machine breakdown and frequent repair and inability to achieve the planned production rates.

4.7 While the original contract scope was to use only one tunnel boring machine, it became necessary to deploy a second tunnel boring machine to mitigate the delay and the Corporation instructed the contractor to procure the machine accordingly.³⁶

All tunnel projects affected by delay events

4.8 The Select Committee notes that³⁷ in fact all eight of the major tunnel contracts for the Project, namely contract 820 – Mei Lai Road to Hoi Ting Road Tunnels; contract 821 – Mei Lai Road to Shek Yam Tunnels; contract 822 – Shek Yam to Pat Heung Tunnels; contract 823A – Tse Uk Tsuen to Tai Kong Po Tunnels; contract 823B – Shek Kong Stabling Sidings and Emergency Rescue Sidings; contract 824 – Tai Kong Po to Ngau Tam Mei Tunnels and contract 825 – Ngau Tam Mei to Mai Po Tunnels and contract 826 – Huanggang to Mai Po Tunnels

³⁵ Paper submitted by the MTR Corporation Limited to the Subcommittee on Matters Relating to Railways, LC Paper No. CB(1)1354/13-14(01), paragraph 36.

³⁶ Paper submitted by the MTR Corporation Limited to the Subcommittee on Matters Relating to Railways, LC Paper No. CB(1)1354/13-14(01), paragraph 38.

³⁷ First Report by the Independent Board Committee on the Express Rail Link Project, paragraph 4.108.

had been affected by a number of delay events some of which had been critical to the Project programme path.

4.9 Problems with the major tunnel contracts include:

- (a) all eight tunnel contracts had been affected by unforeseen ground conditions, such as higher than anticipated rock head levels, high water inflows, presence of cobbles and boulders and presence of underground steel obstructions and so on. The delay to each contract as a result of unforeseen ground conditions varied up to 12 months;
- (b) the late arrival of both tunnel boring machines from the Mainland substantially delayed the commencement of the Hong Kong section of contract 826 by up to 15 months, thus making contract 826 one of the three most critical contracts affecting the completion of the Project on time;
- (c) contract 823A had been delayed by the late possession of land at Choi Yuen Tsuen, unforeseen ground conditions, breakdown and frequent repairs of both tunnel boring machines and inability to achieve the planned production rates; and
- (d) with the exception of contracts 820 and 821, all tunnel contracts had been unable to achieve the overall planned production rates which was one of the major causes of delay to the Project.

Problems at WKT

4.10 The Select Committee also notes that the four civil construction work contracts for WKT, namely: contract 811A – West Kowloon Terminus Approach Tunnel (North); contract 811B – West Kowloon Terminus Approach Tunnels (South); contract 810A – West Kowloon Terminus Station (North) and contract 810B – West Kowloon Terminus Station (South), had all been affected by delay in a number of events some of which had been critical to the Project programme path.³⁸

³⁸ First Report by the Independent Board Committee on the Express Rail Link Project, paragraph 4.106.

4.11 Such events include:

- (a) the two advanced work foundation contracts 803A and 803D in the 810A station (north) and 810B station (south) areas encountered unforeseen ground conditions prolonging the construction of the external station box diaphragm wall. This affected the contract award dates for the two main station contracts 810A and 810B;
- (b) in the 810B station (south) area a number of design changes were incorporated to align with the latest design of West Kowloon Cultural District. Despite the site investigation that had been carried out, the unforeseen ground conditions together with the late utility diversions also affected the progress of the works. These delays caused knock-on delay to the work of the critical 810A station (north) area, in particular, the centre core station structure and the roof, to an order of 11 months;
- (c) in the 811A and 811B approach tunnel areas and in particular 811B, significant delays due to the late utility diversions, deployment of measures to overcome the complex utility arrangements and more unforeseen ground conditions had prolonged the construction of the diaphragm wall in the three key areas (to the north of Jordan Road and then within the area bounded by Jordan Road after the road had been diverted) that were required to be constructed sequentially. These delays had knock on effect on the work of the 810A station (north) top-down area directly affecting one of the Project's critical paths to an order of 15 months; and
- (d) 810A was further delayed by the issues relating to the quality of the steel couplers³⁹, the unexpected movement of the west diaphragm wall, the unforeseen ground conditions, the design changes, the issues related to the quality of roof steelwork fabrication and the

³⁹ Couplers are used to couple two steel reinforcement sections before pouring concrete into the structure.

interdependencies between the temporary and permanent structural designs. The latter three issues caused significant delay to the roof construction.⁴⁰

The then CEO wrote to Professor Anthony CHEUNG Bing-leung on 18 July 2012

4.12 Despite the difficulties set out above, on 18 July 2012, the then CEO of the Corporation wrote to Professor Anthony CHEUNG Bing-leung to the effect that the Corporation maintained its target of completing all works to enable the successful opening of HKS of XRL in 2015 as planned, despite certain challenges including those on completion of the connecting tunnels with the Shenzhen side, which was six months behind schedule as of 18 July 2012.

4.13 By the end of 2012, WKT was experiencing considerable delay to its civil works, and there were also delays in the tunnelling works of the Mainland section.⁴¹ At the Project Supervision Committee meeting on 25 January 2013, the Corporation confirmed that as at the end of December 2012, the actual progress of the Project was 31.4% complete against the planned progress of 46.1% under the original programme. Mr Peter LAU Ka-keung enquired when the Corporation could advise on the overall Project master programme as well as the DRMs planned for WKT. The Corporation responded that it was working on a presentation for the matter. The Corporation advised the Government that the slippage in the programme for excavating the WKT site could be made up for by mid-2013 and that the Corporation was further exploring measures to compress the works of contract 826 (the cross-boundary tunnels) and expediting other activities so as to absorb the delay and to ensure completion in 2015.⁴²

4.14 The Select Committee notes from the 1st IBC Report that from 2010 to 2012, there was no change made to the planned opening date in

⁴⁰ First Report by the Independent Board Committee on the Express Rail Link Project, paragraph 4.106.

⁴¹ First Report by the Independent Board Committee on the Express Rail Link Project, paragraph 4.18.

⁴² First Report by the Independent Board Committee on the Express Rail Link Project, paragraph 4.19.

August 2015.⁴³ The Select Committee finds this extraordinary in light of the fact that the construction works in different areas under different contracts were going through very rough patches during this period.

Projects Director told the Board in March 2013 that things were fine

4.15 During his presentation on the progress on all the Corporation's projects at the Audit Committee Meeting on 5 February 2013, Mr CHEW Tai-chong noted that there were "critical" delays with the WKT construction and significant delays with the tunnelling works. However, he confirmed that good progress was still being made despite the challenges and discussed at the meeting the DRM initiatives. Subsequently, at the Board meeting on 7 March 2013, Mr CHEW Tai-chong confirmed to the Board that all projects were on target from a cost and time perspective.⁴⁴

4.16 A similar commitment to the August 2015 goal was expressed in the Project Supervision Committee meeting on 22 March 2013, when the Corporation stated that, despite the slow progress of the tunnelling works in the Mainland section, most of the works would be completed by August 2015 for testing and commissioning. By the time of this Project Supervision Committee meeting, the Corporation was reporting that the actual progress of the Project was 34.3% complete as against the 51.9% planned under the original programme.⁴⁵

Projects Director was urged to revise completion date

4.17 In an e-mail dated 27 March 2013 to Mr CHEW Tai-chong, the Chief Programming Engineer of the Corporation urged that the completion date for the whole of the works should be revised to the end of September 2015 with a revised opening date in December 2015 for HKS of XRL. At the Board meeting on 15 April 2013, while slippages were acknowledged, there was no suggestion that HKS of XRL would not

⁴³ First Report by the Independent Board Committee on the Express Rail Link Project, paragraph 4.16.

⁴⁴ First Report by the Independent Board Committee on the Express Rail Link Project, paragraphs 4.20 and 4.21.

⁴⁵ First Report by the Independent Board Committee on the Express Rail Link Project, paragraph 4.22.

open in 2015.⁴⁶

4.18 On 27 March 2013, Jacobs attended a Project Master Programme ("PMP") Audit meeting with the Corporation at which an updated copy of the PMP was tabled. But Jacobs was not given a copy of the updated PMP. (**Appendix 22**)

Contractor requested to revise completion date to June 2016

4.19 On 17 April 2013, a workshop was held by the Project Team of the Corporation with the contractor for contract 810A in WKT to analyze progress and measures to recover delay. At that meeting, the contractor put forward a revised construction completion date of June 2016 for the entire work. This revised completion date in 2016 was rejected, however, by Mr CHEW Tai-chong, and the contractor was asked to work with the Project site team to identify solutions for achieving the original target opening of HKS of XRL in 2015.⁴⁷

4.20 Whilst the Project Team had first begun to consider a partial opening plan in March 2013 due to the delays already experienced with the WKT contracts, it was after this meeting with the contractor of contract 810A that a plan for a partial opening scenario was worked on in earnest ("Partial Opening Plan"). This Partial Opening Plan, which the Project Team worked on throughout April to June 2013, was being made on the assumption that only six long-haul tracks would be operational at the time of the opening (as opposed to the originally proposed 10 tracks) with the tunnels fully operational. It was formulated and proposed as a solution for achieving the opening of HKS of XRL in 2015 on a reduced operational scope.⁴⁸

4.21 Under the Partial Opening Plan, some external works (e.g. footbridges and subways) and the WKT roof structure would not be completed by the end of 2015. It was thought that this would not affect the operation of passenger services. The knowledge of the existence of

⁴⁶ First Report by the Independent Board Committee on the Express Rail Link Project, paragraph 4.23.

⁴⁷ First Report by the Independent Board Committee on the Express Rail Link Project, paragraph 4.26.

⁴⁸ First Report by the Independent Board Committee on the Express Rail Link Project, paragraph 4.27.

the Partial Opening Plan was largely confined to the Project Team until it was revealed to ExCom in a presentation in July 2013.⁴⁹

4.22 The Select Committee sent a letter to the Corporation at an early stage of the inquiry in January 2015, requesting a copy of the minutes of the workshop held on 17 April 2013 between the Corporation and the contractor of contract 810A. The Corporation responded that no formal minutes of the 17 April 2013 workshop had been taken by the Corporation.

4.23 At the Board meeting on 25 April 2013, Mr CHEW Tai-chong reported that, despite some slippages in the programme (including delays in the WKT excavation work), all works remained generally on target and, from a budget perspective, contingency balances were generally appropriate.⁵⁰

Director of Highways asked to be informed of any delay

4.24 At the Project Supervision Committee meeting on 26 April 2013, the Chairman of Project Supervision Committee, i.e. Mr Peter LAU Ka-keung, indicated that, if there was delay to the opening of HKS of XRL, HyD should be informed as soon as possible. The Corporation advised that a presentation of a revised programme for WKT would be given to HyD in July 2013. At that meeting, Mr Peter LAU Ka-keung also requested that due consideration should be given to the potential prolongation cost and the acceleration cost and that either approach would have to be substantiated and justified.⁵¹

4.25 On 30 April 2013, the Corporation reported to Project Supervision Committee that the actual percentage completion as against the planned progress of the Project was 37.56% and 53.87%, respectively.⁵²

⁴⁹ First Report by the Independent Board Committee on the Express Rail Link Project, paragraphs 4.27 and 4.28.

⁵⁰ First Report by the Independent Board Committee on the Express Rail Link Project, paragraph 4.29.

⁵¹ First Report by the Independent Board Committee on the Express Rail Link Project, paragraph 4.30.

⁵² First Report by the Independent Board Committee on the Express Rail Link Project, paragraph 4.31.

4.26 THB submitted a total of five half-yearly reports to Railways Subcommittee, covering the period from 16 January 2010 to 30 June 2012, with the 5th report submitted in October 2012. In these reports, the Corporation was said to have maintained throughout the period a target completion of the Project in 2015. However, the actual and planned progress of the Project was not presented in any of these five reports.

Observations

Whether the Entrustment Programme is too tight

Timetable

4.27 The Select Committee has focused on the issue of whether the Entrustment Programme in EA2 to complete the Project was tight. The Select Committee notes the comments of IEP and IBC and sought the views of the witnesses from the Government and the Corporation; and deliberated on whether a "too-tight" programme was a reason for the project delay.

4.28 The Select Committee notes from the IEP Report that "*[a]s to the provision in EA2 that the XRL Project would be completed and handed to Government by 4 August 2015, [the Corporation] set this planned completion date and sought assurance from third party consultants regarding the achievability of the timeline. [The Corporation] was advised that the schedule was extremely tight but achievable and was dependent on unusually high production rates for certain key activities, notably the Terminus. In addition, [the Corporation] had been made aware of potential shortages of skilled labour resources.*"⁵³

⁵³ Report of HKS of XRL Independent Expert Panel, paragraph 3.13.

4.29 On 3 November 2015, Mr Lincoln LEONG Kwok-kuen informed the Select Committee that *"with regard to the timetable, as members are aware and well highlighted in the IEP Report, there were a number of third parties that reviewed and looked at the timetable and the programme-to-complete together with [the Corporation]. And, all along, the views that we have from the third parties are that the timetable is doable but tight"*.

4.30 Mr Peter LAU Ka-keung also informed the Select Committee at the hearing on 21 April 2015 that the Entrustment Programme was indeed a tight one and the Government had asked the M&V consultant to check the feasibility of the timetable, which had been found feasible by the Corporation back in 2007. The M&V consultant found that the timetable would be a tight one with little contingency. But the consultant did not advise that it was impossible.

4.31 When asked at a hearing whether there were contingency periods allowed for the contracts under EA2 and whether they were sufficient, Dr Philco WONG Nai-keung, the Projects Director, and Mr Mark LOMAS, Project Manager–Technical Support, of the Corporation confirmed that, although there were contingency periods allowed for critical contracts, those contingency periods were not sufficient to cater for the delays caused by the unexpected ground conditions.

4.32 Mr WAI Chi-sing, former Director of Highways, also informed the Select Committee at the hearing on 2 June 2015 that when the Government set the completion date, the Entrustment Programme was found to be reasonable with 4 August 2015 set as the target completion date. Referring to the comments made by his colleagues in HyD, Mr WAI said that the contractors had also assessed the schedule and had found that the work could be completed within the time frame and budget.

4.33 The Select Committee also notes from the evidence of Mr WAI Chi-sing at the above hearing that no tenderer had raised during the tender process that the deadline in individual contracts was not achievable, and that after all major contracts had been awarded, there was still a considerable amount of time for contingency left for the Project. The

Select Committee was not, however, provided with any of the contracts signed between the Corporation and its contractors despite request.⁵⁴

No change of completion date if commencement date of a contract deferred

4.34 Mr WAI Chi-sing commented that when the Government considered the Entrustment Programme, there were a total of over 40 contracts in the Project and that each contract would have a start date and a completion date. When one were to realistically analyze the situation, one had to consider that, if the start date of a contract was deferred, its completion date should also be correspondingly deferred. If in any contract the start date was postponed but the completion date was not, then the contingency allowed would be reduced. The 1st IBC Report⁵⁵ said that "[f]rom 2010 to 2012, there was no change made to the planned opening date of August 2015".

4.35 The Select Committee further notes from the evidence of Mr Henry CHAN Chi-yan at the hearing on 20 October 2015 that contract 811B had been delayed by the problems with the construction of the diaphragm wall and had in turn affected the commencement of contract 810A. Mr Henry CHAN Chi-yan also informed the Select Committee that they understood that the commencement date of contract 810A had

⁵⁴ In response to the Select Committee's request for extract of the work contracts signed between the Corporation and main contractors in respect of the WKT and a number of tunnels for the Project, the Corporation informed the Select Committee in February 2015 that owing to concerns on confidentiality or commercial sensitivity, the documents would be provided to the Select Committee if the Select Committee agrees that such documents would not be disclosed to the public and be kept under strict control in a designated location and not to be removed from that location or photocopied. The Corporation further stated that the consent of the Select Committee to this arrangement would be required before the relevant information or documents could be disclosed and that extracts from the relevant work contracts would be provided if the Select Committee agrees to keep the documents and their contents confidential and to use the documents at closed hearings only. The Select Committee considers it inappropriate to enter into an agreement with the Corporation as condition precedent for the provision of documents to it and finds the proposed arrangements unacceptable and rejects them.

⁵⁵ First Report by the Independent Board Committee on the Express Rail Link Project, paragraph 4.16.

been deferred but its completion date had not been postponed. It was Mr CHAN's belief that the Project Team of the Corporation had taken the view that the Project could still be completed by August 2015 without having to extend the work schedule and with the use of DRMs.

4.36 Mr TAM Hon-choi, Government Engineer/Railway Development 2 of HyD, also informed the Select Committee that *"it was normal for the industry to move some of the items in a contract to the other contract so as to retain the completion date of the contract due to the late commencement of the contract. We noticed that the Corporation had put in a lot of efforts and taken out some works items from a contract to the other contract. It was also observed that during the tender process, no tenderer for the other contract had raised that it was not achievable even if the completion date was not postponed."*

4.37 The Select Committee notes the view of Mr Anthony J W KING of Jacobs at the hearing on 10 November 2015 that *"...we reported consistently that the project was in delay due to the various component delays of the various contracts. And if the delays continued and were not recovered, there was going to be a risk to the end date of the Project"*.

4.38 The Select Committee considers that, as all the planned work items under the Project had to be completed by the original completion date of August 2015, the postponement of the commencement dates of some contracts along the line would inevitably have impact on the overall completion date of the Project. The Select Committee sees no evidence to show that the DRMs, in general, had the effect of reducing the overall delay, which was accumulating. The act of the Corporation to rearrange the work items from one contract to another contract was postponing the problem, not reducing it, let alone eliminating it. Other project management issues will be further discussed in the ensuing Chapters.

Over-optimism on the part of the Corporation

4.39 The Select Committee notes IEP's comment⁵⁶ that *"[a]lthough [the Corporation] generally acknowledged the risks identified by its consultants, no [Schedule Risks Assessments] or sensitivity studies were carried out at the time of establishing EA2 or the initial baseline to*

⁵⁶ Report of HKS of XRL Independent Expert Panel, paragraph 3.14.

estimate the probability that the Project could be completed by the specified date". It is noted that IEP believed that such analysis would have shown that the 2015 opening date of HKS of XRL was overly optimistic.

4.40 The Select Committee also observes that⁵⁷ the Project had an increased risk profile compared to the previous railway projects, because HKS of XRL was of a different project type (High-speed Rail), required integration with Mainland rail (cross-boundary issues) and followed a new organizational setup (concession approach). Each of these factors was a "first" for the Corporation, thereby increasing the uncertainties and, therefore, the risk profile of the Project.

4.41 The Select Committee further notes that the 2nd IBC Report⁵⁸ commented that *"[i]nternational experience shows that [high-speed rail] projects are notoriously difficult to build to schedule and cost. It is not unusual for projects of this size and complexity to be subject to delays and cost increases. Building this type of project underground, including a main terminal, in one of the most densely populated urban areas in the world – as is the case for XRL – exacerbates the difficulties".*

4.42 Based on the above findings, the Select Committee considers that the Corporation and the Project Team were over-optimistic in accepting the project completion date. The Select Committee considers that, if the risk of cost overrun in the Project was borne by the Corporation instead of by the Government (EA2, Clauses 2.3 and 8.1), the Corporation might have been more cautious in agreeing to work with such a tight time schedule given the uncertainties inherent in the Project.

4.43 Mr Lincoln LEONG Kwok-kuen admitted at the hearing on 3 November 2015 that *"[e]ventually, continuing delays in several critical contracts meant that the original project completion date could not be achieved. Although the challenges and delays on individual contracts were well communicated to Government, over-optimism led to a belief that the original overall project completion date could still be met."*

⁵⁷ Second Report by the Independent Board Committee on the Express Rail Link Project, Appendix paragraph 1.2.

⁵⁸ Second Report by the Independent Board Committee on the Express Rail Link Project, Appendix paragraph 1.1.

Target completion date of 4 August 2015

4.44 It appears to the Select Committee that the Government and the Corporation have different interpretations of the completion date of the Project. The Select Committee is of the view that when an agreement for work is signed (in this case EA2), there must be a target completion date of the work programme, otherwise there would not be any discussion about delay. The Select Committee also notes that in Appendix C (Entrustment Programme) to EA2, there is a reference to "Estimated Handover Date: 4 August 15".

4.45 The Select Committee notes from the statement of Mr WAI Chi-sing that *"[a]ccording to the EA2, the [Corporation] shall use its best endeavours to complete the Entrustment Activities in accordance with the Entrustment Programme subject to adjustment under justifiable situation. The [Corporation] shall consult and liaise with the Government in a timely manner if any adjustment would have the effect of amending the Entrustment Programme. The Entrustment Programme indicates that the XRL project would complete testing and trial running, and be ready for operation by 4 August 2015"*. The statement of Mr YAU Shing-mu, Under Secretary for Transport and Housing, also stated that *"[t]he Entrustment Programme indicates that the XRL project would complete testing and trial running, and be ready for operation in August 2015."*

4.46 However Mr Lincoln LEONG Kwok-kuen said in his statement that *"[EA2] does not impose an absolute obligation [on the Corporation] to complete the project by 4 August 2015 considering that, with a project as challenging and complex as the XRL, there is always a risk of delays. Rather, under [EA2], the Corporation is to use its best endeavours to complete, or procure the completion of, the project in accordance with the Entrustment Programme and to minimise the effect of any delay. The Entrustment Programme is subject to modification as a result of change, including as a matter of right due to contractor delays that result in extensions of time for the contractors to deliver their obligations."*

4.47 At the hearing on 21 December 2015, Professor Anthony CHEUNG Bing-leung, in reply to the questions raised by the Select Committee, expressed that the date of 4 August 2015 was meaningful and should be regarded as a completion date in the implementation of the Project. Professor CHEUNG also informed the Select Committee that,

although it was difficult to take the date as an absolute date subject to no change, the Corporation should use its best endeavours to procure the completion of the Project because, before signing EA2, the contracting parties should have made their own assessment and found the completion date acceptable.

4.48 The Select Committee considers that the Government, or indeed the Government led by Sir Donald TSANG Yam-kuen, the former Chief Executive, chose at the planning stage to rely on the Corporation to deliver the Project by adopting the "check the checker" formula and the fast-track front end approach. The Select Committee considers that, if the "check the checker" system was not working well, or not seen to be working well, and the Entrustment Programme was set too tight and ultimately led to delay in the Project, the delay might be inevitable. As such, it might be unfair to put all the blame on the incumbent officials in THB or HyD.^{59, 60, 61}

Insufficient contingency to absorb unforeseen conditions or events

4.49 At the hearing held on 2 June 2015, Mr WAI Chi-sing quoted the view of the Independent Experts appointed by the Corporation that *"the negative impact of unforeseen events on the schedule was not so much caused by any flaw in engineering or project management as by a lack of an adequate schedule contingency for critical contracts. A longer schedule contingency would have allowed the Project Team to absorb unforeseen events as they occurred"*.

⁵⁹ Members voted on Mr WU Chi-wai's proposal to delete paragraph 4.48. The proposal was defeated (please refer to paragraph 44 of the Minutes of Proceedings of the meeting held on 7 June 2016 in this Report).

⁶⁰ Members voted on Mr TANG Ka-piu's proposal to delete "因此，把所有責任歸咎於運輸及房屋局或路政署的現任官員，指他們沒有做好監察該工程項目的工作，或會有欠公允。". The proposal was defeated (please refer to paragraphs 45 and 46 of the Minutes of Proceedings of the meeting held on 7 June 2016 in this Report).

⁶¹ Members voted on Mr Gary FAN Kwok-wai's proposal to amend paragraph 4.48. The proposal was defeated (please refer to paragraphs 47 and 48 of the Minutes of Proceedings of the meeting held on 7 June 2016 in this Report).

4.50 In this connection, the Select Committee notes⁶² the observation of IBC that, when compared with the benchmark of international projects, HKS of XRL was planned with a shorter than usual front-end process for the project programme. The front-end process from ExCo policy support to signing project agreement included the gazettal of the scheme and the gazettal of amendments to the scheme. The time between these gazettals reflected the time needed by projects to address objections regarding their environmental and social impact. The Select Committee notes that⁶³ the other four railway projects currently under construction took on average 45 months from ExCo policy support to project agreement, whereas the international benchmark showed an average length of front-end process at 37 months. The Select Committee notes that the Project completed the front-end process in 22 months, which was substantially shorter than the average of the other four railway projects under construction in Hong Kong and the international benchmark.

4.51 However, the Select Committee finds no evidence to show that the relatively short front-end process for the Project had affected the site investigation.

4.52 As stated in paragraph 4.5 above, the protests at Choi Yuen Tsuen and the delayed site possession demonstrated that, due to fast tracking, the objections of the external stakeholders had not been fully addressed in time. Subsequently, the late site possession delayed the commencement of work by 225 days (contract 823A) and 130 days (contract 823B) respectively.⁶⁴

4.53 The Select Committee also notes from the 2nd IBC Report that, at interviews, the Project Team acknowledged that, in hindsight, the Corporation should have re-negotiated the opening date instead of relying on schedule compression.⁶⁵

⁶² Second Report by the Independent Board Committee on the Express Rail Link Project, Appendix paragraph 3.12.

⁶³ Second Report by the Independent Board Committee on the Express Rail Link Project, Appendix paragraph 3.13.

⁶⁴ Second Report by the Independent Board Committee on the Express Rail Link Project, Appendix paragraph 3.13.

⁶⁵ Second Report by the Independent Board Committee on the Express Rail Link Project, Appendix paragraph 3.13.

Queries surrounding the PMP

4.54 The Select Committee notes the criticism of IEP⁶⁶ that *"[t]he absence of reporting against a fully integrated, whole-project master programme has left Government in the dark"*.

4.55 In brief, IEP recommends⁶⁷ that, in accordance with best practice, the project manager should establish a project control and oversight function; develop and maintain an integrated master programme covering the whole scope of the project as a baseline for progress monitoring and reporting and carry out quantitative risk analysis to cover cost and schedule risks. IEP, in particular, recommends that *"the integrated master programme is to show, inter alia, all significant contracts, interfaces, handovers, contract completions, overall project completion and dates when the railway will enter passenger service. The critical path or paths to overall project completion are to be highlighted."*

4.56 Mr Peter LAU Ka-keung indicated in his statement to the Select Committee that HyD accepted this recommendation generally. HyD agreed that an integrated master programme could easily show the effect of delay of any activity under the individual contracts on the Project's critical paths. Mr Peter LAU Ka-keung also stated that, while an integrated master programme had its advantages, the same information could also be obtained by making reference to a contract-based master programme coupled with analysis of the relevant progress information.

4.57 Mr Peter LAU Ka-keung stated that, for project progress monitoring, the Corporation used P6 Primavera (a software for programming and progress monitoring) to prepare its work programmes and required the contractors to use the same software to develop their contract programmes for compatibility. The Corporation set up a master programme of the Project with key dates and managed the contracts to achieve those key dates.

4.58 Mr Henry CHAN Chi-yan informed the Select Committee at the hearing on 20 October 2015 that, to his knowledge, the Corporation had

⁶⁶ Report of HKS of XRL Independent Expert Panel, paragraph 6.11.

⁶⁷ Report of HKS of XRL Independent Expert Panel, paragraphs 7.5 to 7.9.

not developed an integrated master programme, but they knew that the Corporation had a master plan showing the timetable of each individual contract. He informed the Select Committee that the most important thing was that the Corporation had developed a programme called "TRIP" (i.e. Track Related Installation Programme) for monitoring the progress of the tunnelling works, track-laying and E&M works, and that the Project Team of the Corporation was able to sequence the track-related activities to best achieve the target completion date of the Project. He said that they had understood that the Corporation had made use of TRIP to monitor the Project.

4.59 Mr William NG Siu-kee of Jacobs, the M&V consultant, informed the Select Committee at the hearing on 10 November 2015 that *"generally, we did not have too much difficulty in...getting information from the Corporation...But for some of the sensitive documents like the overall master programme, we might have difficulty obtaining that instantly first-hand information..."*.

4.60 Mr Anthony J W KING also informed the Select Committee at the same hearing that *"but as you see from earlier discussions, we did ask for a project master programme and we did not see that project master programme. It was not delivered to us. We saw it on the table at audits but it was not delivered to us."*

4.61 The Select Committee has asked Jacobs in writing the number of times it had requested both verbally and in writing, through HyD, the "overall Project Programme" from the Corporation up to mid-April 2014 and the feedback from, or follow-up actions taken by, HyD. In response, Jacobs replied (**Appendix 20**) that they had requested the Corporation to provide and update the PMP on at least 17 occasions from April 2011 to April 2014 through the Monthly Progress Reports to HyD; and had raised similar programme related issues through the Issue List which was updated regularly and sent to HyD. HyD then forwarded the Issue List to the Corporation and requested it to respond to the issues raised by Jacobs, including the provision of the updated PMP. HyD requested Jacobs to review the Corporation's responses and note for the future M&V if necessary.

4.62 The Select Committee notes that, according to HyD (**Appendix 21**), the Issue List was prepared by the M&V consultant on a monthly basis based on the findings and observations during the course of

its document reviews, site visits and audits in its M&V work. HyD and the M&V consultant reviewed the Corporation's response to the comments and followed up with the Corporation, through regular meetings and other means within the monitoring mechanism until HyD was satisfied with the Corporation's response. It is noted that, through this arrangement, the Government would communicate with the Corporation in a timely manner on major and prevailing concerns on the progress of work, technical matters, safety and quality issues and necessary follow up actions. Nevertheless, at the hearing of 20 October 2015, Mr Henry CHAN Chi-yan informed the Select Committee that in respect of the advice given by HyD, they had not kept any record in the Issue List of any advice that the Corporation did not take actions accordingly, and that HyD would review such arrangement.

4.63 Further, in response to the questions raised by the Select Committee on the "overall Project Programme" as mentioned in paragraph 4.61 above, Jacobs replied that *"[i]n August 2011, following a Request for Documents (RFD), Jacobs received a copy of the programme entitled 'MTRCL's Master Programme for XRL Project (July 2011)' from [the Corporation] via HyD. Jacobs carried out a review of that Programme. In its review, Jacobs raised concerns regarding 16 issues it believed were deficiencies in the Programme, including that it was not an integrated and coordinated programme but a collection of individual contract programmes for Civil and E&M works."* Jacobs also informed the Select Committee that it had requested copies of three PMP related programmes through the Request For Documents process in April 2013. However, the Corporation advised Jacobs that it was not appropriate to supply these copies as the overall programme had not been finalized. It appears to the Select Committee that Jacobs was only given in August 2011, following a Request for Documents, a copy of the programme entitled "MTRCL's Master Programme for XRL Project (July 2011)" via HyD, which was not *"an integrated and coordinated programme"* envisaged by Jacobs or referred to by IEP in its report.

4.64 In November 2015, the Select Committee has sought answers from the Corporation on whether the Corporation had in its possession or under its control an integrated master programme for the Project; if yes, whether the Corporation had provided the integrated master programme to the Government and/or Jacobs, and if so, when.

4.65 The Corporation replied to the Select Committee on 21 December 2015 (**Appendix 22**) stating that the Corporation had developed and maintained an integrated PMP during the construction phase of the Project, that the PMP was based on summarising the individual contractors' master programmes using P6 Primavera format planning software. The reply also pointed out that Jacobs carried out seven separate audits of the PMP relating to the process and technical compliance under EA2 up to 30 April 2014 (i.e. PMP audits) and that none of the PMP audits necessitated any follow-up action on the part of the Corporation.

4.66 The letter also confirmed that a copy of the PMP updated to 31 January 2011 was tabled at the first PMP Audit meeting with Jacobs on 23 February 2011. Updated copies of the PMP were tabled at subsequent PMP Audit meetings with Jacobs on 1 December 2011, 24 August 2012, 27 March 2013 and 25 September 2013 respectively. It also said that, in response to the request made by Jacobs, the Corporation provided a copy of the PMP, updated to July 2011, to RDO on 24 August 2011. The Corporation indicated in their reply letter that the PMP had been developed and in place at the time of the announcement of the project delay and included elements not materially different from the elements of the master programme referred to in paragraph 7.6 of the IEP Report. All major civil and E&M contracts were shown, as were the key interfaces and handovers, the work dates for the individual contracts, the testing and commissioning and the operational readiness dates for the overall project, as well as other significant activities such as the implementation of temporary traffic management schemes and the major utility diversions.

4.67 The Select Committee notes that the Corporation also reiterated in their reply that, together with the use by the Corporation of internationally recognized and effective methodology for forecasting completion of complex railway projects, including the Track-Related Installation Programme, the Corporation had applied effective methods for monitoring the progress across the multiple contracts in the Project, in accordance with the Corporation's Project Integrated Management System.

4.68 At the hearing on 21 December 2015, the Select Committee raised with Professor Anthony CHEUNG Bing-leung a question whether the PMP had been supplied to him. Professor CHEUNG informed the

Select Committee that he knew that the Corporation had a master plan. However, he thought that it was not the master delivery strategy document mentioned by IEP. Professor CHEUNG further said that what IEP recommended was a document which should provide the metrics of performance for each of the parties that could be checked and verified throughout the course of the Project and that these metrics would include high-level milestones and key cost triggers appropriate to the different stakeholders. He considered that the document proposed by IEP was different from the master plan that the Corporation had been using.

4.69 In the light of paragraphs 4.54 to 4.68 above, the Select Committee considers that the Corporation might have a master plan showing *"a collection of individual contract programmes for Civil and E&M works"* (see paragraph 4.63). It agrees with the finding of IEP that the Corporation did not have *"a fully integrated, whole-project master programme"* (see paragraph 4.54). The effect was that *"[the Corporation] was late to recognise and forecast delays on individual contracts. This, coupled with the absence of an integrated master programme, meant that it was not possible to understand which contracts were critical to the project completion date"*.⁶⁸

Effectiveness of DRMs to mitigate the project delay

4.70 The Select Committee has inquired into the effectiveness of the DRMs adopted by the Corporation to mitigate the project delay. Views and statements were reviewed and witnesses were questioned at the hearings to ascertain the effectiveness of the DRMs.

4.71 According to Mr Peter LAU Ka-keung, the Corporation was responsible for negotiating with the contractors for the use of DRMs to catch up with the programme plan in case of delay. With the "check the checker" role, HyD and the M&V consultant would provide the Corporation with their professional advice on the proposed DRMs.

4.72 Mr Peter LAU Ka-keung stated that, where there was any progress delay, the Corporation would be asked to consider mitigation measures to make up for the delay. In the process, the Corporation would discuss with the contractors and formulate a revised programme

⁶⁸ Report of HKS of XRL Independent Expert Panel, paragraph 3.23.

for the critical components of the works. HyD would use this revised programme as a basis to continue monitoring the work progress. The existence of progress delay in the individual contracts did not necessarily imply that the overall completion of the Project would be delayed. The overall progress was also an important consideration.

4.73 At the hearing on 3 November 2015, Mr Lincoln LEONG Kwok-kuen informed the Select Committee that DRMs were important to stop any further delay, for instance, in the programme or further cost overruns, and to move a particular contract back into the original contract duration. Mr Lincoln LEONG Kwok-kuen also said that there were many examples of successful DRMs.

4.74 Mr Peter LAU Ka-keung indicated that, from experience in other major work contracts, a contractor could adopt mitigation and DRMs to catch up with progress delay. The increase in manpower, plant and work overtime would be considered. The important thing was to avoid impact on the commencement of subsequent critical work activities. Through splitting of work processes into parts and re-sequencing work flow, delayed activities could be removed from the critical path.

4.75 The Select Committee notes from the statement of Mr Peter LAU Ka-keung that the Corporation had deployed some DRMs to catch up with the programme, including the deployment of additional plant and labour resources; the adoption of alternative work procedures or work methods, e.g. using blasting instead of mechanical breaking of rock; design changes and re-sequencing work activities; re-defining the programme completion date of non-critical contracts; and the refinement of the subsequent E&M work programme, sometimes through phased access arrangements.

4.76 The Select Committee notes from the IEP Report⁶⁹ that it had identified instances where the Project had benefitted through DRMs, such as the procurement of an additional tunnel boring machine for tunnelling in contract 823A and the removal of piles obstructing the tunnelling activities in contract 820.

⁶⁹ Report of HKS of XRL Independent Expert Panel, paragraphs 3.16 to 3.19.

Examples of successful DRMs at contracts 823A and 802

4.77 The Select Committee notes the successful examples of DRMs from the evidence given by Mr Peter LAU Ka-keung that in April 2011, during the construction of the launching shaft of the tunnel boring machine under contract 823A, the contractor encountered rock head levels higher than those anticipated in the Geotechnical Baseline Report. This slowed down the progress of the tunnelling works and also directly affected the commencement of the subsequent tunnel excavation works. To recover the progress delay, the Corporation proposed a series of DRMs which included the procurement of an additional tunnel boring machine to allow two tunnel sections to be excavated simultaneously. As a result, the additional tunnel boring machine was launched in March 2013. The tunnel boring excavation progress was improved after the implementation of these measures.

4.78 The Select Committee also notes another example of successful DRMs in that, in mid-2010 during the course of the pile-removal work in contract 802, the contractor found that the piles were deformed and were not straight as shown in the record drawings. Thus, the normal extraction methods could not be used. As the deformed piles were in conflict with the alignment of HKS of XRL, they had to be removed before the arrival of the tunnel boring machine. After exploring different options with the contractor, the Corporation suggested adopting a "Rotator and Wedge" extraction method from Japan to remove these piles. On 23 December 2010, the Corporation submitted the DRM proposal to the Project Control Group for approval. HyD and the M&V consultant, without indicating any disagreement⁷⁰, kept on monitoring the effectiveness of the alternative method, visited the pile-removal site every month and held Contract Review Meetings with the Corporation regularly to track the removal progress. Eventually, the contractor recovered the delay successfully such that the piles were removed before the arrival of the tunnel boring machine, which was itself delayed.

4.79 The Select Committee observes that, initially, the DRMs enabled catching up on progress in certain contracts as set out in the preceding paragraphs. It is possible that these instances of success and past

⁷⁰ Paper submitted by the Government to the Subcommittee on Matters Relating to Railways, LC Paper No. CB(1)1422/13-14(02), paragraphs 11 and 12.

successful experience in other railway projects boosted the confidence of the Project Team/Mr CHEW Tai-chong in recovering delays with the use of DRMs.

4.80 However, the DRMs implemented in relation to the other contracts did not have much success. The Select Committee notes that IEP found instances where the Corporation was over-optimistic on the viability of the proposed DRMs in achieving their purpose.⁷¹ Besides, the Select Committee also notes from the joint statement of Mr Anthony J W KING and Mr William NG Siu-kee of Jacobs with respect to DRMs in March 2012, *"[t]here is no sign yet that the situation will improve, nor that Delay Recovery Measures instructed and Supplemental Agreements implemented to date have started to have any meaningful impact"*. The effectiveness of DRMs will be further discussed in Chapter 5.

⁷¹ Report of HKS of XRL Independent Expert Panel, paragraph 3.17.

Part II Findings

Chapter 5 Difficult Stage (May to October 2013)

5.1 In this Chapter, reference to "Difficult Stage" covers various incidents that took place between May 2013 and October 2013 which are said to have made the construction work of the Project difficult, the issues that have surfaced and the corresponding actions taken by the Corporation and the Government. It also sets out the Select Committee's observations on the impact of labour shortage on the construction of the Project and on the Corporation's project management and corporate governance.

Key dates for the "Difficult Stage"

Date	Events
7 May 2013	Media reported that there would be a delay of one year or more in the completion of the Project.
23 May 2013	THB submitted the 6 th half-yearly report covering the period from 1 July 2012 to 31 December 2012, which was discussed at the Railways Subcommittee meeting on 24 May 2013. At this meeting, Professor Anthony CHEUNG Bing-leung reported that the target completion date of the Project in 2015 would be maintained.
June 2013	The Projects Programme team of the Corporation produced a Schedule Risk Assessment for the first time, in which it was shown that the opening of HKS of XRL in 2015

could be achieved on a partial opening basis.⁷²

- | | |
|----------------------|--|
| 13 July 2013 | The Corporation's Project Team gave a presentation ("the July Presentation") to the then CEO, the then Deputy Chief Executive Officer ("DCEO"), the then Finance Director ("FD") of the Corporation on the Partial Opening Plan. |
| 13 July 2013 | Mr CHEW Tai-chong, the then Projects Director of the Corporation, highlighted labour shortage as one of the key challenges affecting the delivery of the Project on time. |
| 20 August 2013 | The Corporation proposed to RDO and HyD the Partial Opening Plan. |
| 22 August 2013 | Mr CHEW Tai-chong presented to the Corporation's Board meeting that there was a programme in place to complete the key elements of the Project for opening in 2015. At this Board meeting, there was no mention of the Partial Opening Plan by Mr CHEW Tai-chong and others who had been present at the July Presentation. |
| July to October 2013 | The Corporation's Project Team considered what might entail to achieve the Partial Opening Plan. The contractors were asked to think of a work plan. |
| 13 September 2013 | A presentation was given by the Chief Programming Engineer of the Corporation to Mr Peter LAU Ka-keung and RDO, putting forward the Partial Opening Plan in detail. |

⁷² First Report by the Independent Board Committee on the Express Rail Link Project, paragraphs 4.37 and 4.65.

- October 2013 The Projects Programme team updated the Schedule Risk Assessment, which showed that the situation in contract 826 was deteriorating and would not meet the December 2015 deadline for opening even with the Partial Opening Plan, and that the situation in contract 810A had deteriorated significantly since March 2013.
- 22 October 2013 HyD reported to Professor Anthony CHEUNG Bing-leung and Mr Joseph LAI Yee-tak that there were delays in the cross-boundary tunnelling works and that the Corporation had proposed a Partial Opening Plan to achieve opening in 2015.
- 29 October 2013 At the Project Supervision Committee meeting, the Corporation reported that the gap between the actual and planned progress at the end of September 2013 had reached approximately 25%.

Chronology of developments⁷³

Delay reported by the media

5.2 In early May 2013, approximately three years into the construction process, news articles appeared in the media to the effect that there would be a delay of one year or more before the Project's completion, with an estimated cost overrun of more than \$4 billion. The news reports appeared to have been based on information received from contractors. At that time, the press reports were refuted by the Corporation and the Government, who maintained that the Project would be completed on time and within budget.⁷⁴

⁷³ First Report by the Independent Board Committee on the Express Rail Link Project, paragraphs 4.41 to 4.77.

⁷⁴ Report of HKS of XRL Independent Expert Panel, paragraph 2.14.

5.3 In May 2013, THB submitted the 6th half-yearly report covering the period from 1 July to 31 December 2012 to Railways Subcommittee, in which the Corporation was said to have reported a target completion date of the Project in 2015. The 6th half-yearly report was discussed at the Railways Subcommittee meeting on 24 May 2013. At this meeting, the Government stated that the construction of HKS of XRL would still be targeted for completion in 2015 and that the Corporation had an obligation to comply with EA2.

5.4 In June 2013, the Projects Programme team of the Corporation produced a Schedule Risk Assessment for the first time to some members of ExCom, in which it was shown that opening in 2015 could be achieved on a partial opening basis.⁷⁵

5.5 At the Project Supervision Committee meeting held on 28 June 2013, the actual progress of the Project as at the end of May 2013 was reported as 39.7% complete against the planned progress of 61.8% under the original programme, representing an overall delay of six to seven months.

Presentation by the Project Team of the Partial Opening Plan

5.6 On Saturday 13 July 2013, a presentation was given by the Project Team to the then CEO, the then DCEO and the then FD, i.e. the July Presentation, where it was reported that the Project's completion cost was estimated to be \$65.1 billion and that a 2015 opening could be achieved on the Partial Opening Plan. The July Presentation suggested that the target opening date would not be in August 2015 but in December 2015.

5.7 According to its report, IBC understood that the focus of the July Presentation was on achieving the Project goals that had been agreed with the Government. The progress of the tunnelling sections was discussed, in relation to which the Project Team indicated that the excavation would be 100% complete by September 2014 and that all sections would be handed over to E&M works by March 2015. The Project Team also indicated that the trains would be delivered by December 2014 and the

⁷⁵ First Report by the Independent Board Committee on the Express Rail Link Project, paragraphs 4.37 and 4.65.

stabling yards would be ready. These indications were consistent with a commencement of passenger service at the end of 2015.⁷⁶

5.8 The Select Committee notes that, in relation to WKT, however, the Project Team reported significant delays in some of the works and the DRMs being undertaken as well as how they were then prioritizing critical plant rooms and track access for Day-1 operations. Day-1 operations would include six long-haul tracks in the centre of WKT, railway facilities, station entrances, customs, immigration, quarantine, Government areas, taxi lay-by, Public Transport Interchange and pedestrian connections to Kowloon Station and Austin Station at ground level. The Project Team had informally begun to refer to the changes made to the individual components of the Project, and that notwithstanding, the Project would still achieve the overall goal under Minimum Operating Requirement ("MOR"). However, at this stage, MOR was described in just one of an approximately 20-slide presentation pack showing how the works could be prioritized.⁷⁷

Partial opening to meet Day-1 Operational Requirements

5.9 The attraction of the Partial Opening Plan to the presenter, and to the three members of ExCom to whom it was addressed, was that it would allow the Corporation to commence a limited passenger service that would be able to meet Day-1 Operational Requirements with the Government's agreement.⁷⁸

5.10 The presentation of Mr CHEW Tai-chong also highlighted shortage of labour as one of the key challenges affecting the Corporation's ability to meet the time schedule in the Project.⁷⁹

5.11 The Select Committee notes from the 1st IBC Report that at a briefing given to THB on construction progress on 23 July 2013, the

⁷⁶ First Report by the Independent Board Committee on the Express Rail Link Project, paragraphs 4.41 and 4.42.

⁷⁷ First Report by the Independent Board Committee on the Express Rail Link Project, paragraph 4.43.

⁷⁸ First Report by the Independent Board Committee on the Express Rail Link Project, paragraph 4.44.

⁷⁹ First Report by the Independent Board Committee on the Express Rail Link Project, paragraph 4.46.

Corporation advised the Government that the target for revenue service of HKS of XRL would be December 2015. THB reminded the Corporation to use its best endeavours to deliver the Project on time and within budget.⁸⁰

5.12 At the ExCom meeting on 25 July 2013, Mr CHEW Tai-chong highlighted the fact that under the Project Cost Report for June 2013, the Project exceeded its budget projection at the time. He mentioned that an update on the Project would be given to ExCom in August 2013, followed by a paper to RDO. The then DCEO was chairing this meeting (in the then CEO's absence). Apparently no reference to the Partial Opening Plan or the meeting on 13 July 2013 was made at this ExCom meeting held on 25 July 2013.⁸¹

5.13 In the following week, at the ExCom meeting on 31 July 2013 chaired by the then DCEO (in the then CEO's absence), Mr CHEW Tai-chong reported that the shortage of workers remained a serious concern for the Corporation's ongoing projects and that the Project continued to experience challenges, but so far its costs had stayed within budget and the target opening date could still be met. The apparent contradiction between this report and Mr CHEW Tai-chong's report in the previous week regarding budget projection excess appeared not to have been commented upon.⁸²

5.14 At the Audit Committee meeting on 14 August 2013, Mr CHEW Tai-chong reported that the Project was on time and within budget, although there would be multiple challenges to overcome and DRMs to be undertaken.⁸³

⁸⁰ First Report by the Independent Board Committee on the Express Rail Link Project, paragraph 4.47.

⁸¹ First Report by the Independent Board Committee on the Express Rail Link Project, paragraph 4.48.

⁸² First Report by the Independent Board Committee on the Express Rail Link Project, paragraph 4.49.

⁸³ First Report by the Independent Board Committee on the Express Rail Link Project, paragraph 4.50.

The Government first informed of the Partial Opening Plan

5.15 The Government was first informed of the Partial Opening Plan on 20 August 2013, when the Corporation made known its proposal to RDO and HyD to open HKS of XRL by the end of 2015 with six long-haul platforms/tracks in service. The outstanding balance of the works would be completed in mid-2016.⁸⁴

Partial Opening Plan not reported at the Board meeting

5.16 The Select Committee notes that, in his presentation to the Board meeting on 22 August 2013, Mr CHEW Tai-chong said that he believed that there was a programme in place to complete the key elements of the Project for opening in 2015 and within budget, although some non-essential works might have to be completed at a later date. He explained that various measures had been adopted to control costs and manage the programme, including awarding fixed-price contracts and ensuring all contracts to have on average 80% of their labour requirements. At this meeting, however, there was no mention of the Partial Opening Plan by Mr CHEW Tai-chong or any other person who had attended the meeting on 13 July 2013.⁸⁵

5.17 The Select Committee also notes from the IEP Report⁸⁶ that when Mr CHEW Tai-chong was questioned by the independent non-executive directors at the Board meeting on 22 August 2013 on the progress of the Project, he responded that the Project would be delivered on time and within budget.

5.18 The Select Committee further notes that, at the same Board meeting, one of the independent non-executive directors stressed the importance of good project management so that any issue could be identified and reported to the Government at the right opportunity, especially in light of the fact that any additional funding would require LegCo's approval. There appeared to have been no reaction to this

⁸⁴ First Report by the Independent Board Committee on the Express Rail Link Project, paragraph 4.51.

⁸⁵ First Report by the Independent Board Committee on the Express Rail Link Project, paragraph 4.52.

⁸⁶ Report of HKS of XRL Independent Expert Panel, Annex 3 paragraph 176.

observation from Mr CHEW Tai-chong or anyone else present at the 13 July 2013 meeting.⁸⁷

5.19 At the 29 August 2013 Project Supervision Committee meeting, Mr Peter LAU Ka-keung expressed concerns on the difference between the actual progress and the planned progress of the Project, especially the progress of the WKT works.⁸⁸

5.20 At the ExCom meeting on the same day, the General Manager-XRL Tunnels presented a report headed "Projects Progress Reports for July 2013". In that report, it was stated that labour shortage was an issue common to all five of the Corporation's on-going projects. On average, there was a 20% shortfall across all contracts.⁸⁹

Challenges mounting

5.21 On 13 September 2013, a presentation (the content of which was largely the same as the July Presentation) was given by the Chief Programming Engineer of the Corporation to Mr Peter LAU Ka-keung and RDO, putting forward the Partial Opening Plan in greater detail with a target opening date set for December 2015. RDO was very concerned about the incomplete works shown by the Partial Opening Plan, but it did not make any explicit objection to the Corporation. HyD, without indicating agreement to the Partial Opening Plan, requested the Corporation to provide further information for a report to be made to THB.⁹⁰

5.22 Notwithstanding the commitment of Mr CHEW Tai-chong made at the ExCom meeting on 25 July 2013 to update ExCom on the Project in August 2013, it was in fact on 19 September 2013 that the Project Team made another presentation to ExCom (chaired by DCEO as the then CEO was away) on the Project programme and projected outturn costs.

⁸⁷ First Report by the Independent Board Committee on the Express Rail Link Project, paragraph 4.53.

⁸⁸ First Report by the Independent Board Committee on the Express Rail Link Project, paragraph 4.54.

⁸⁹ First Report by the Independent Board Committee on the Express Rail Link Project, paragraph 4.55.

⁹⁰ First Report by the Independent Board Committee on the Express Rail Link Project, paragraph 4.56.

The presentation included a description of the Partial Opening Plan and a reference to the target opening date in December 2015 with cost estimated at \$65.1 billion.⁹¹

5.23 The Select Committee notes that, during the presentation by the Project Team, it was explained to ExCom that there were major delays in contracts 810A, 810B and 811B which would prevent the completion of works in May 2015 as originally planned and that a partial opening would be achievable in December 2015. The programme progress and timelines were based on the assumption that the key challenges identified would be mitigated with improved productivity and efficiency. In the absence of an improvement in productivity, the Project Team warned that further delay would be expected.⁹²

5.24 The Corporation's Corporate Relations Department was asked at the meeting on 19 September 2013 to come up with a "line to take" taking into account the latest status of the Project and the briefing provided by the Project Team. This item did not appear to have been logged on the register of matters arising and followed up by DCEO in subsequent meetings or elsewhere.⁹³

5.25 During the period from July to October 2013, the delay in the Project became steadily worse. In an e-mail exchange between Mr CHEW Tai-chong and the Chief Programming Manager on 11 October 2013, Mr CHEW Tai-chong stated his concern that the opening of HKS of XRL by the end of 2015 was reaching a point of "near impossibility".⁹⁴

⁹¹ First Report by the Independent Board Committee on the Express Rail Link Project, paragraph 4.57.

⁹² First Report by the Independent Board Committee on the Express Rail Link Project, paragraph 4.58.

⁹³ First Report by the Independent Board Committee on the Express Rail Link Project, paragraph 4.59.

⁹⁴ First Report by the Independent Board Committee on the Express Rail Link Project, paragraph 4.60.

Professor Anthony CHEUNG Bing-leung being informed of the Partial Opening Plan

5.26 The Select Committee notes that on 22 October 2013, based on the third quarterly report on the construction progress of the cross-boundary tunnel section of HKS of XRL, the subject team in THB reported to Professor Anthony CHEUNG Bing-leung and Mr Joseph LAI Yee-tak that the cross-boundary tunnelling works continued to suffer delay. The subject team also reported that the Corporation had recently proposed to HyD a partial opening of HKS of XRL (putting in use six tracks by end-2015) and the commissioning of four more tracks in mid-2016, and that WKT and the cross-boundary tunnel section were on the critical paths of the Project and any further delay at either of these work projects might jeopardize the target commissioning date of HKS of XRL. Mitigation measures were under consideration. In view of the development, Mr Joseph LAI Yee-tak became very concerned that HKS of XRL could not commence service in 2015 and therefore requested the Corporation and HyD to provide a detailed briefing on the latest progress of the Project.

5.27 When presenting his Project Progress Report for September 2013 at the ExCom meeting on 24 October 2013, Mr CHEW Tai-chong emphasized that critical delays were occurring in contracts 810A, 810B, 811B and the Mainland section of XRL. According to the latest forecast, the first tunnel boring machine from the Mainland side would only reach the boundary at Shenzhen by the end of November 2013, which would have a significant impact on the overall timetable for completing the Project in 2015. It was also noted by Mr CHEW Tai-chong that THB had been made aware of the delay and that a further briefing would be given to THB on the latest progress. On the WKT recovery plan, it was reported that there were still issues to be overcome due to unforeseen complications.⁹⁵

5.28 At the end of July 2013, the Corporation had begun discussion with the WKT contractors and the E&M experts in relation to what a Partial Opening Plan would entail. Between July and October 2013, the Corporation's on-site team (together with the E&M team) had been

⁹⁵ First Report by the Independent Board Committee on the Express Rail Link Project, paragraph 4.62.

working to ascertain the critical parts of the WKT construction programme in order to decide on the essential elements of the Partial Opening Plan.⁹⁶

5.29 In October 2013, the Corporation gave the contractors the E&M mark-ups and a set of drawings which showed the footbridges and the other facilities needed for partial opening. The contractors were asked to come up with a plan on that basis.⁹⁷

Actual progress falls behind planned progress by 25%

5.30 At the Project Supervision Committee meeting on 29 October 2013, it was reported by the Corporation that the difference between the actual progress and the planned progress of the Project as at the end of September 2013 had reached approximately 25%. According to HyD's information⁹⁸, the difference was 28.3%. The Corporation further reported that there was an overall delay in the Project of about nine months and an 11-month delay in the cross-boundary tunnelling works.⁹⁹ The IEP inquiry confirmed that the Project was delayed by about nine months in general and by eleven months in respect of the cross-boundary tunnelling works.¹⁰⁰

5.31 In October 2013, the Projects Programme team updated the Schedule Risk Assessment which they had first produced in June 2013. This showed that the situation in contract 826 was deteriorating and the Project would not meet the December 2015 deadline for partial opening, as the Mainland section was three months late in reaching Hong Kong. The Schedule Risk Assessment also showed that the situation in contract 810A had worsened significantly since March 2013.¹⁰¹

⁹⁶ First Report by the Independent Board Committee on the Express Rail Link Project, paragraph 4.63.

⁹⁷ First Report by the Independent Board Committee on the Express Rail Link Project, paragraph 4.63.

⁹⁸ Paper submitted by the Government to the Subcommittee on Matters Relating to Railways in May 2014, LC Paper No. CB(1)1328/13-14(03).

⁹⁹ First Report by the Independent Board Committee on the Express Rail Link Project, paragraph 4.64.

¹⁰⁰ Report of HKS of XRL Independent Expert Panel, Annex 3 paragraph 189.

¹⁰¹ First Report by the Independent Board Committee on the Express Rail Link Project, paragraph 4.65.

5.32 The Select Committee notes that¹⁰² Mr Peter LAU Ka-keung, at the Project Supervision Committee meeting held on 29 October 2013, had requested the Corporation to provide information on the roadmap toward the proposed opening scenario for monitoring against the actual progress. At the following Project Supervision Committee meeting in November 2013, General Manager-XRL of the Corporation responded that "*[the] Project Team had developed 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.*"

Observations

Project management and corporate governance of the Corporation

The Partial Opening Plan not reported to the Board until mid-April 2014

5.33 As indicated in paragraph 4.20 of Chapter 4, the Project Team of the Corporation first began to consider a Partial Opening Plan in March 2013 due to the delay already experienced with the WKT contracts. After the workshop held on 17 April 2013, the contractor for contract 810A was requested to work on a Partial Opening Plan under which only six long-haul platforms/tracks would be operational in WKT with the relevant tunnels fully operational. It was formulated and proposed as a solution for achieving an opening of HKS of XRL in 2015 on a reduced scope.¹⁰³ It could be inferred from the necessity for such a plan that there was already a very serious overall delay in the Project at that time. Yet the existence of the Partial Opening Plan eventually formed was knowledge restricted to ExCom and not brought to the attention of the Board until mid-April 2014.

¹⁰² Report of HKS of XRL Independent Expert Panel, Annex 3 paragraph 190.

¹⁰³ First Report by the Independent Board Committee on the Express Rail Link Project, paragraph 4.27.

5.34 The Select Committee shares IBC's view¹⁰⁴ that the Partial Opening Plan was not a unilateral solution that could be imposed on the Government under EA2. If implemented, this would represent a material change to the Project programme and would require the consent of the Government. IBC found that the failure to report the Partial Opening Plan by ExCom to the Board reflected poor judgment on the part of Mr CHEW Tai-chong, the then Projects Director of the Corporation, and Mr Jay H WALDER, the then CEO. The Select Committee considers that the failure also reflected poor judgment on the part of ExCom as a whole.

5.35 Since Mr CHEW Tai-chong and Mr Jay H WALDER declined the Select Committee's invitation to attend a hearing, the Select Committee did not have the opportunity to make enquiry on relevant matters of concern.

5.36 The Select Committee is of the view that, apart from the poor judgment of Mr CHEW Tai-chong, Mr Jay H WALDER and ExCom, the Board's governance over the Corporation's affairs was also less than satisfactory. The Select Committee notes that¹⁰⁵ the Corporation announced on 15 April 2014 that the opening date for HKS of XRL had been delayed to 2017 from an originally anticipated opening in 2015, and that the Board was only informed of such delay and its reasons for the first time at a Special Board Meeting held on 16 April 2014. It was also at this time that the Board and its Chairman first learned of the Partial Opening Plan. In the context of the history of this matter, this speaks volumes of the governance, or the lack of it, in the Corporation. The Select Committee finds this startling from a corporate governance perspective.

¹⁰⁴ First Report by the Independent Board Committee on the Express Rail Link Project, paragraphs 1.31 and 1.32. The Select Committee notes Clause 8.1 of EA2. The Select Committee also notes Clause 8.2 of EA2 providing that the Corporation shall be entitled to adjust Appendix C (Entrustment Programme) to EA2 under specified circumstances.

¹⁰⁵ First Report by the Independent Board Committee on the Express Rail Link Project, paragraph 1.29.

5.37 The Select Committee observes¹⁰⁶ that within the Corporation, there were a number of matters delegated by the Board to be dealt with by ExCom without the need to refer back to the Board for approval. The Select Committee considers such a delegation without a proper and effective mechanism and system for reporting back to the Board inappropriate.

5.38 With regard to internal communication amongst ExCom, Mr CHEW Tai-chong and Mr Jay H WALDER, the Select Committee notes from the IEP Report that *"[b]y October 2011, the ExCom Reports stopped quantifying delays to overall Project and less precise statements were included."*¹⁰⁷

5.39 The Select Committee further notes from the IEP Report that¹⁰⁸ *"[a] review of ExCom monthly progress meeting notes has identified limited discussion concerning the Project. In addition, in the ExCom Report, 'matters requiring executive action' has been blank for the 17 ExCom reports that we [IEP] have reviewed. During the Panel Meeting with Projects Director on 15 August 2014, the following was noted on his communication with the CEO/ExCom:*

'Mr Chew admitted that on three or four earlier occasions he could have made it clear to the CEO that 2015 was out of question but he had left it to the programme and writing in the monthly progress reports to tell the situation of the project.'

'He opined that there were clear indications on the problems encountered in the Project and it was up to the senior executives on what questions should be raised or asked'."

Mr CHEW Tai-chong's assertiveness hindered frank communication

5.40 It is noted that when Mr CHEW Tai-chong was questioned by independent non-executive directors of the Board at the meetings on

¹⁰⁶ First Report by the Independent Board Committee on the Express Rail Link Project, paragraphs 1.40 to 1.47.

¹⁰⁷ Report of HKS of XRL Independent Expert Panel, Annex 3 paragraph 170.

¹⁰⁸ Report of HKS of XRL Independent Expert Panel, Annex 3 paragraphs 171 to 173.

22 August and 10 December 2013 on the progress of the Project, he had persistently responded that the Project would be delivered on time and within budget.¹⁰⁹ He never suggested that the cumulative effect of the contract delays, including delay in contracts 810A and 826, was making the original timetable unachievable. He also did not report fully and accurately to the then CEO, ExCom, the Audit Committee and the Board the information presented by the Project Team indicating their concerns about delivering the Project on time.

5.41 The Select Committee shares the view of IBC that Mr CHEW Tai-chong should have responded fully, frankly and unreservedly to the questions and concerns raised by the members of the Board.

5.42 Mr Jay H WALDER has indicated¹¹⁰ to IBC that, other than attending a number of ExCom meetings in which the members of the Project Team were present, he had also met with Mr CHEW Tai-chong individually and reviewed with him the status of the Project frequently, and that in those meetings, he had accepted and relied in good faith upon the assurances from Mr CHEW Tai-chong that notwithstanding the delay, the Project would still be completed by the end of 2015 on a partial opening basis. If what Mr Jay H WALDER said to IBC were true, the Select Committee finds his judgment questionable. According to paragraph 5.39, since Mr CHEW Tai-chong had told the situation of the Project in the ExCom monthly progress reports with clear indication on the problems encountered in the Project, Mr Jay H WALDER should have a good understanding of the progress status of the Project. The Select Committee considers that as head of the executive arm of the Corporation, Mr Jay H WALDER could not have relied upon the assurances given by Mr CHEW Tai-chong alone, without question and without proper, credible and verifiable evidence to show how the problems could be managed. As Mr CHEW Tai-chong stated to IEP, it was up to the senior executives (including Mr Jay H WALDER) on what questions should be raised or asked. Mr Jay H WALDER should have made independent enquiries, raised questions and sought clarification and corroboration of such assurances.

¹⁰⁹ First Report by the Independent Board Committee on the Express Rail Link Project, paragraph 1.42.

¹¹⁰ First Report by the Independent Board Committee on the Express Rail Link Project, paragraph 1.43.

5.43 According to the 1st IBC Report¹¹¹, when Mr CHEW Tai-chong was asked why he had not reported the concerns of the Project Team, he stated that pending a response from the WKT contractor to the Partial Opening Plan, he believed that there was still time for DRMs to effectively mitigate the delay. IBC also found it unfortunate that there had been a "chain of command" style within the Project Team as to who should do the talking such that caution and proper concerns were not openly and freely aired to qualify or challenge Mr CHEW Tai-chong's assertion that an opening for HKS of XRL in 2015 was achievable. This might have led to the failure of the Audit Committee and the Board to have been notified and the consequent lack of regular and proper enquires made on progress.

5.44 The Select Committee notes¹¹² that the then CEO stated to IBC that he was largely relying on the information and views provided by Mr CHEW Tai-chong alone. Given the then CEO's knowledge of the sustained delays in the Project, and particularly given the importance of the Project to the Government and the public, IBC believed that the then CEO should have exercised more critical judgment in supervising the progress of the Project as a whole. The Select Committee finds it difficult to believe that, in implementing such a large scale project, the Corporation seemed to merely rely on the then CEO and ExCom, who would, in turn and for so many years, merely rely upon the views fed by Mr CHEW Tai-chong alone. In reality, therefore, it would seem that one person was effectively making the important decisions relating to the Project, at least as to time and costs.

5.45 In this connection, the Select Committee notes¹¹³ IEP's comment that the Corporation's project organization arrangements were missing an independent project control function that is typical in large capital projects usually known as Programme Management Office. IEP commented that, although there was good communication among the managers within the Project Team for HKS of XRL on technical matters, overall project delays and forecast completion dates were not clearly

¹¹¹ First Report by the Independent Board Committee on the Express Rail Link Project, paragraph 1.45.

¹¹² First Report by the Independent Board Committee on the Express Rail Link Project, paragraphs 1.46 and 1.47.

¹¹³ Report of HKS of XRL Independent Expert Panel, paragraphs 3.9 to 3.11.

communicated in the monthly project progress reports submitted to ExCom or in the Project Supervision Committee reports submitted to HyD.

5.46 The Select Committee finds the failure of Mr CHEW Tai-chong to properly report the progress and the challenges of the Project to the Board startling and unacceptable. The Select Committee notes from the 1st IBC Report that the Board (including the Chairman) was informed for the first time at a Special Board Meeting on 16 April 2014 that the completion of the Project would be delayed to 2017 and the reasons for the delay. It was also at this time that the Board first learnt of the Partial Opening Plan.¹¹⁴ The Select Committee considers that the Board should have taken a more earnest and vigilant interest in the progress of the Project, especially after the media reports in May 2013 had articulated possible delays and cost overrun at WKT. The Board should have raised more questions with the then CEO, ExCom and the Projects Division. In light of the above, the Select Committee considers that the Board has neglected to exercise adequate supervisory functions in the Project.

Establishment of the Capital Works Committee

5.47 As indicated in Chapter 2, the Select Committee is disappointed that the non-Executive Chairman of the Board, Dr Raymond CH'EN Kuo-fung, declined the Select Committee's invitation to attend to give evidence. In view of this, the Select Committee subsequently decided to extend the invitation to any member of the Board who was familiar with the Project to attend to give evidence from the Board's perspective. Regrettably, such invitation was also declined.

5.48 The Select Committee notes from the 1st IBC Report¹¹⁵ that "[t]he Board should establish a Capital Works Committee to oversee in the future any project involving design and/or construction with a capital value of a certain material size as assessed by the Board". This recommendation seems to suggest, perhaps with the benefit of hindsight,

¹¹⁴ First Report by the Independent Board Committee on the Express Rail Link Project, paragraph 1.29.

¹¹⁵ First Report by the Independent Board Committee on the Express Rail Link Project, paragraphs 6.5 and 6.6.

that there was inadequacy in the past and the proposed establishment of a Capital Works Committee under the Board would provide a remedy for the future. The Select Committee also notes that the Capital Works Committee would have to report to the Board on a quarterly basis on progress of projects and their respective budgets. It was the view of IBC that the role of the Capital Works Committee was not to manage projects but to provide oversight and review to the Board in relation to project progress.

5.49 The Select Committee notes that IBC has also reviewed the format and the content of future project reporting by ExCom to the Board and the Audit Committee. This is to ensure that the Board would be provided with clear and comprehensive information regarding ongoing projects and be advised of critical challenges as well as financial reporting in each project.

5.50 The Select Committee finds it unacceptable that for a public company providing railway service to more than 5 million passenger rides per day¹¹⁶, having vast experience in construction of railways and being entrusted with the task of building the world's first underground high-speed rail, Mr CHEW Tai-chong appeared to be the only person having overall charge of the Project and the Board and the senior management simply relied on his take on the status of the Project, without more. The Select Committee does not see any effective check and balance in this respect. As a corollary, the Select Committee finds that the Board should take a measure of criticism for failing to supervise ExCom and the senior management diligently and effectively in delivering the Project according to EA2.

Project management of the Corporation

5.51 The Select Committee notes that IEP criticized the project management of the Corporation as lacking in robustness¹¹⁷. The Select Committee has examined this issue.

5.52 According to the evidence of Mr Lincoln LEONG Kwok-kuen, CEO of the Corporation, the Corporation's project management systems

¹¹⁶ Source: <http://www.mtr.com.hk/en/corporate/investor/patronage.php>

¹¹⁷ Report of HKS of XRL Independent Expert Panel, paragraph 6.1.

and procedures were set out in the Corporation's Project Integrated Management System and Procurement and Contracts Procedures documents. These documents covered all project delivery areas including programme management, design management, construction management, safety management, environmental management, cost management, procurement, contract administration and reporting. They were designed to operate in accordance with recognized international standards on safety, quality, and risk and asset management, as well as internationally recognized good practices.

5.53 Mr Lincoln LEONG Kwok-kuen also pointed out in his statement to the Select Committee that Jacobs performed a total of over 250 audits between January 2010 and April 2014. The audit reports from Jacobs disclosed no significant deficiencies other than certain observations such as opportunities for improvement (mainly in relation to safety reporting on near misses) and updating of contractor submissions in method statements, in relation to which improvement actions were taken.

5.54 Further, Mr Lincoln LEONG Kwok-kuen quoted paragraph 5.3 of the 1st IBC Report in his statement to the Select Committee that IBC had *"not identified any systemic flaw in the engineering aspects of the project management process which would suggest that [the project] delays should have been avoided or could reasonably have been handled better."*

5.55 Nevertheless, according to IEP, the Corporation's project management systems and practices, which had worked well on projects with less complex interfaces, have come under severe stress in the Project. This was primarily due to the complexity of contract interfaces and the multiple delays in adjacent contracts.

Communication channels not effective enough

5.56 The Select Committee notes the comment of IEP¹¹⁸ that *"although there were good communications among the managers within the XRL Project Team on technical matters, overall project delays and forecast completion dates were not clearly communicated in the monthly*

¹¹⁸ Report of HKS of XRL Independent Expert Panel, paragraphs 3.9 to 3.11.

project progress reports (submitted to the [Corporation]'s ExCom) or Project Supervision Committee reports (submitted to the Highways Department). As a result, the interpretation of the likelihood of achieving the planned project completion date relied on the judgment of the Projects Director [Mr CHEW Tai-chong]."

5.57 The Select Committee further notes from the statement of Professor Anthony CHEUNG Bing-leung that, according to the Corporation's own submission to Railways Subcommittee in May 2014 and from its 2nd IBC Report, Project Supervision Committee was not given an accurate picture of the prognosis for the Project as a whole by the Corporation so that Project Supervision Committee was unable to make timely decision on the critical delay in the Project.

5.58 At the hearing on 28 April 2015, Mr YAU Shing-mu informed the Select Committee that even the senior management of the Corporation failed to have an accurate picture of the Project, and that the Corporation had not disclosed all the necessary information, including the progress of the Project, to the Government.

5.59 The Select Committee has reservations on whether the senior management of the Corporation and the Board had used their best endeavours to monitor and supervise the Project. The Select Committee considers that the senior management of the Corporation and the Board should have coordinated various parts of the Project at a higher level and made proper enquiries on the progress of the Project at different stages instead of relying solely on the report and assurances made by the Project Team headed by Mr CHEW Tai-chong.

DRMs not so effective at certain sites

5.60 In Chapter 4, the Select Committee has examined the effectiveness of some DRMs adopted by the Corporation to mitigate the project delay. The Select Committee notes the successful examples of DRMs used in contract 823A and contract 802, as set out in paragraphs 4.77 and 4.78 in Chapter 4. The Select Committee notes that initially, the DRMs implemented were able to recover the delays in certain contracts. These successes and past successful experience might have boosted the confidence of the Project Team and Mr CHEW Tai-chong in recovering the cumulative delays in the Project by means of DRMs.

5.61 The Select Committee notes from the evidence of Mr Peter LAU Ka-keung that, under contract 811B (West Kowloon Terminus Approach Tunnel (South)), the original plan was to divert Jordan Road northward on top of the completed diaphragm wall at north of Jordan Road, thus allowing the diaphragm wall within the existing alignment of Jordan Road to be constructed. However, the construction of the diaphragm wall at north of Jordan Road was delayed due to unfavourable ground conditions, such as core stones. If no DRM was taken, the Jordan Road northward diversion would be delayed for about eight months from December 2011 to July 2012.

5.62 In view of this, the Corporation presented a DRM proposal to Project Control Group on 29 September and 6 October 2011, proposing to move Jordan Road to the south allowing the contractor to take up the major portion of the original space of Jordan Road to construct the underground diaphragm wall and, at the same time, continue to complete the construction of the diaphragm wall at north of Jordan Road. HyD provided comments on the proposed DRM with particular concerns on its effectiveness and requested the Corporation to submit further assessment of its impact to the construction sites nearby.

5.63 Since the Project Supervision Committee meeting held in September 2011, HyD raised concerns on the implementation of the Temporary Traffic Management Scheme and requested the Corporation to regularly report on progress. HyD and the M&V consultant inspected the site regularly in order to monitor the progress after the Temporary Traffic Management Scheme's implementation in February 2012. It was intended that the construction of the diaphragm wall panels at the northern part of WKT could be brought forward by about six months.

5.64 It is noted from the evidence of Mr Peter LAU Ka-keung that since then, adverse ground conditions had further affected the bulk of the excavation works in both contract 811B and contract 810A (WKT(North)), and the overall delays in these two contracts accumulated. The Corporation subsequently proposed other mitigation measures to address the problems.

5.65 The Select Committee finds that unfavourable ground conditions had the effect of reducing the effectiveness of the DRMs adopted. The Select Committee notes that IEP found instances where the Corporation had been over-optimistic about the viability of the proposed DRMs. IEP,

in particular, pointed out that the Partial Opening Plan had assumed the workability of certain perceived time-saving benefits before their viability could be determined.¹¹⁹ Further, the Select Committee notes IEP's comment that, despite the heavy reliance on DRMs to bring the overall Project back on track, it has found no evidence that the Corporation had any process for measuring the benefits of DRMs.¹²⁰

5.66 Further, at the hearing on 10 November 2015, Mr Anthony J W KING told the Select Committee that they had reported at certain stages that, despite the implementation of DRMs, the Project's progress was still slipping. Mr Anthony J W KING also said, *"...we reported to HyD through our monthly reports, at monthly meetings and through our review reports; and we reported the delays, the escalating delays, and then some assessments of what those delays would mean for the end date of the project"*.

5.67 The Select Committee notes the comment from the joint statement of Mr Anthony J W KING and Mr William NG Siu-kee on the DRMs taken in March 2012, *"[t]here is no sign yet that the situation will improve, nor that Delay Recovery Measures instructed and Supplemental Agreements implemented to date have started to have any meaningful impact"*.

5.68 The Select Committee notes from IEP¹²¹ that Jacobs had reported delays in individual construction contracts and had estimated the impact on the overall project programme in its monthly reports to HyD. From December 2011 (and at monthly intervals thereafter), Jacobs alerted HyD that delays in individual construction contracts were likely to threaten the overall project completion date. Starting from May 2012, Jacobs recommended that the Corporation should *"undertake a complete appraisal of the overall project programme and the current delay situation"*.

5.69 The Select Committee observes that when the Project encountered challenges, the Corporation would make efforts to speed up progress through the use of DRMs. The Select Committee observes that

¹¹⁹ Report of HKS of XRL Independent Expert Panel, paragraph 3.17.

¹²⁰ Report of HKS of XRL Independent Expert Panel, paragraph 3.18.

¹²¹ Report of HKS of XRL Independent Expert Panel, paragraph 4.10.

nevertheless, even with the implementation of DRMs, there were still signs of a widening gap between the actual and the planned progress of the Project according to the reports made to Project Supervision Committee from June 2010 to April 2014. According to the chart presented in paragraph 6.46 in Chapter 6, the differences between the actual and the planned progress as of January in 2011, 2012, 2013 and 2014 were 0.9%, 4.9%, 14.7% and 30.7% respectively. Given these data, the Select Committee considers that the DRMs deployed were unable to avert the delay in the programme or to narrow the widening gap between the actual and the planned progress, which seemed to have become a systemic trend.

5.70 The Select Committee notes from the 2nd IBC Report¹²² that, at the interviews, *"the Project Team acknowledged that in hindsight [the Corporation] should have renegotiated the opening date instead of relying on schedule compression."* It also notes from the same report that *"[w]hilst the proposed DRMs were undertaken in good faith with the clear objective of recovering delays and completing the Project by 2015, in hindsight and taking into account the on-going effect of other delay events, the DRMs implemented were insufficient to finish the Project by 2015."* The Select Committee shares these views.

Whether labour shortage led to delay in the Project

5.71 The Select Committee has examined the issue of whether labour shortage had contributed to the project delay. Both the Corporation and Mr Peter LAU Ka-keung claimed that labour shortage was one of the factors contributing to the delay in the Project.

5.72 The Select Committee notes from the IEP Report¹²³ that the Corporation had foreseen early in the Project that the manpower requirement was expected to reach a peak of about 11 000 workers in 2013, including 9 200 construction workers and 1 800 technical and professional staff. Mr CHEW Tai-chong also reported to the Board on 9 July 2010 that staff recruitment was generally satisfactory and there was

¹²² Second Report by the Independent Board Committee on the Express Rail Link Project, Appendix paragraphs 3.13 and 3.30.

¹²³ Report of HKS of XRL Independent Expert Panel, Annex 3 paragraphs 293 to 296.

no problem in hiring senior staff, and that the supply of local construction workers might be a concern in future. However, the Corporation's half-yearly reports to Railways Subcommittee covering June 2010 to June 2012 suggested that the Project seemed to have met its planned staffing levels for technical and professional staff during the period, but they also showed that the levels of construction workers fell short of the planned levels in June 2011 and June 2012 by 7.7% and 13% respectively.

5.73 The IEP Report¹²⁴ further commented that *"the XRL Project and the current expansion of the Hong Kong rail network have been handicapped by a shortage of skilled labour. [The Corporation] was aware of this problem from the outset of the XRL Project."* The Select Committee also notes from the IEP Report, quoting the 2009 report by Arup and Atkins which had warned that *"construction resources, particularly skilled labour...are no longer available in the same quantities as was the case during the last major expansion of infrastructure that took place"*.

5.74 In July 2013, when Mr CHEW Tai-chong presented the Partial Opening Plan to the then CEO, DCEO and FD, he highlighted labour shortage as one of the key challenges affecting the Corporation's ability to meet the Project's programme schedule.¹²⁵ Mr Peter LAU Ka-keung also mentioned labour shortage as one of the reasons accounting for the delay in the Project.

5.75 Mr Lincoln LEONG Kwok-kuen expressed in his statement to the Select Committee that *"the acute shortage of labour has had a significant impact on the project. This is an industry wide factor that has impacted on all projects in Hong Kong. The Corporation was aware that we would face challenges in this area, although the extent of those challenges has been greater than foreseen at the time the original programme was developed"*.

¹²⁴ Report of HKS of XRL Independent Expert Panel, paragraph 2.11.

¹²⁵ First Report by the Independent Board Committee on the Express Rail Link Project, paragraph 4.46.

5.76 Mr Lincoln LEONG Kwok-kuen said that the Corporation had introduced various mitigation measures to deal with the labour shortage issue, for instance:

- (a) active engagement with the Government and the Construction Industry Council on the enhancement of the Supplementary Labour Supply Scheme and the construction-related training schemes;
- (b) holding job fairs;
- (c) improving work conditions (e.g. introduction of a life insurance scheme for contractors' site workers, provision of free health check services); and
- (d) incorporating additional requirements in work contracts relating to safety and welfare issues, employment of apprentices and graduate engineers and training.

5.77 Mr Lincoln LEONG Kwok-kuen said that despite these measures, labour shortage had significantly impacted a large number of third party contracts. Civil works contractors in the Project had reported a shortage of labour averaging around 20% on a monthly basis for the period between January 2013 to April 2014 (monthly average of 4 894 actual against 6 135 planned). Mr Lincoln LEONG Kwok-kuen informed the Select Committee that the problem was especially acute with regard to skilled labour, specialist tunnel workers and frontline supervision. Particular trades had reported an average shortage of over 60% in the last year.

5.78 Dr Philco WONG Nai-keung, Projects Director of the Corporation, stated that *"a significant shortfall in skilled labour and frontline supervision has caused, or contributed to, production rates falling short of programme plans across many of the contracts."* Dr Philco WONG Nai-keung also informed the Select Committee at the hearing on 15 December 2015 that *"in the most recent few months, the Project is short of 6 to 8 % workers, i.e. about 300 workers. Since it will take about 6 to 8 months to apply for import of labour through the Supplementary Labour Scheme, such a long process could not fit well our works programme. At the present moment (i.e. December 2015), we are still suffering from shortage of labour"*.

5.79 Dr Philco WONG Nai-keung further explained at the hearing that the Corporation had to undergo a series of procedures in applying for import of labour. For instance, they had to try to recruit workers from the local labour market first, having failed to find suitable workers, they then had to provide the number of workers, the trade to which they belonged, the level of wages offered and the other arrangements to the Labour Department in the application.

5.80 When asked whether HyD had provided assistance in this respect at the hearing, Dr WONG said that HyD had provided assistance in getting workers through the Supplementary Labour Scheme and, as a result, the relevant time required was shortened. But he said it would still take about five to six months to successfully get the workers in place, and each case differed from another.

5.81 In an e-mail on 6 December 2013, shortly before Mr CHEW Tai-chong was due to meet the Labour Department (with RDO), the Chief Programming Manager expressed his concern on the labour shortage as follows:¹²⁶

- (a) Age of workers and hence consequential lack of productivity;
- (b) Lack of frontline supervision;
- (c) Lack of new blood or continuous inflow of workers to maintain a core of experienced workers; and
- (d) Lack of skilled workers, general labour used for skilled trades.

5.82 The Select Committee also observes that the Corporation and the Government have tried to work together to resolve the problem. The solution, however, seemed not to have come timely enough to raise productivity at the sites where it was greatly needed to recover delay. Given the serious labour shortage in some trades and the ageing problem within the construction industry, the Select Committee considers that

¹²⁶ First Report by the Independent Board Committee on the Express Rail Link Project, paragraph 4.87.

some of the DRMs proposed by the Corporation involving additional labour would unlikely be effective.

5.83 The Select Committee considers that, if the Corporation and the Government had anticipated labour shortage back in 2009 before the signing of EA2, they should have taken early measures to address the problem, such as stepping up training of the local workforce to increase the supply of skilled labour and streamlining the procedures required by the Supplementary Labour Scheme to expedite the import of labour (if necessary) to meet the manpower demand of the Project. Since the Government had the overall picture of labour supply through the Construction Workers Registration System, it had a greater responsibility than the Corporation for lack of foresight of the impact of labour shortage on the construction of the Project, in particular, when the Government had decided to implement five railway projects in parallel with construction commencing between 2009 and 2012 and completing between 2014 and 2020.

5.84 The Select Committee considers that, in future, when a major infrastructure project is to be undertaken by the Government, manpower resources, in particular, the maintenance of a core skilled and experienced workers and frontline supervisors, must be given a more meticulous consideration and effective measures should be in place to ensure a continuous and steady supply of labour throughout the implementation of the project.

Part II Findings

Chapter 6 Very Difficult Stage (November 2013 to April 2014)

6.1 In this Chapter, reference to "Very Difficult Stage" covers various incidents that took place between November 2013 and April 2014 when the Government and the Corporation announced the project delay. It also sets out the Select Committee's observations on the causes of the project delay, as well as the deficiencies of the Government and the Corporation in respect of the monitoring and delivery of the Project in various aspects.

Key dates for the "Very Difficult Stage"

Date	Events
7 November 2013	Mr CHEW Tai-chong, the then Projects Director of the Corporation, wrote to the General Managers in the Project Team proposing that, if there were serious doubts on the commencement of service operation by December 2015, he wanted to have a plan to first inform the Board and the executives.
8 November 2013	The Project Team gave a presentation on partial opening to Mr Joseph LAI Yee-tak, Permanent Secretary for Transport and Housing (Transport); Ms Rebecca PUN Ting-ting, Deputy Secretary for Transport and Housing (Transport) ¹ ; Mr Peter LAU Ka-keung, Director of Highways, and RDO. THB raised the concern that, if testing could only commence in October 2015 as proposed, it was unlikely that HKS of XRL could commence operation by the end of 2015.

- 20 November 2013 Professor Anthony CHEUNG Bing-leung was briefed by HyD about the possibility that HKS of XRL might only commence passenger service operation after 2015 due to delay in the cross-boundary tunnelling works.
- 21 November 2013 Mr Jay H WALDER called Professor Anthony CHEUNG Bing-leung to express his disagreement on informing Railways Subcommittee that the 2015 completion target could not be met.
- 21 November 2013 Professor Anthony CHEUNG Bing-leung directed that an urgent meeting should be held the same day amongst THB (led by Mr Joseph LAI Yee-tak), Mr YAU Shing-mu, HyD and the Corporation (led by the then CEO).
- 22 November 2013 At the Railways Subcommittee meeting, the Government stated that, based on the latest assessment of the Corporation, the major works of HKS of XRL could be completed within 2015. Thereafter, testing and trial runs would be conducted and this would normally take six to nine months.
- 19 December 2013 The Chief Programming Manager of the Corporation sent an updated Schedule Risk Analysis report to the General Manager of the Project, copied to Mr CHEW Tai-chong, stating that WKT could not be opened within 2015 even on a partial opening basis and suggesting an opening date in May 2016.
- 7 March 2014 In a programme status presentation given by the Project Team to Mr CHEW Tai-chong, the slides in the presentation showed the overall programme outlook and set January 2017 as the target month for the completion of the railway works and April 2017 as the target month for revenue operation.

- 30 March 2014 A black rainstorm of exceptional intensity led to serious flooding at the Yuen Long Tunnel.
- 15 April 2014 Professor Anthony CHEUNG Bing-leung informed the public that he had received verbal notification from the Corporation that the completion of HKS of XRL would be delayed. The Corporation subsequently held a press conference and stated that the completion date of HKS of XRL would be postponed to 2016 for operation in 2017.

Chronology of developments

Target to complete the Project by August 2015 became difficult or impossible to achieve

6.2 The Select Committee notes from the 1st IBC Report¹²⁷ that, starting from November 2013, the target to complete the Project by August 2015 had become well nigh difficult, if not impossible, to achieve, as shown in the internal communications of the Corporation below:

- (a) On 7 November 2013, Mr CHEW Tai-chong, the then Projects Director, wrote to the General Managers in the Project Team: *"The figures and achievement by each contract remain a serious concern. I am sure you have a plan or a DRM or two to secure the recovery to what we have committed in July to CEO of our Minimum Operating Requirement for Day-1 operation by December 2015. If we are now in serious doubt about this commitment, I want to be sure that we have a plan to first inform of Board and Executive ASAP..."*¹²⁸

¹²⁷ First Report by the Independent Board Committee on the Express Rail Link Project, paragraphs 4.66, 4.71 and 4.72.

¹²⁸ First Report by the Independent Board Committee on the Express Rail Link Project, paragraph 4.66.

- (b) On 11 November 2013, Mr CHEW Tai-chong wrote: *"Further to my e-mail [of 7 November...], I have had a number occasions trying to come to some clearer understanding with all the progress and challenges associated with XRL [sic]. But I have totally failed. We have presented to our CEO and Executives in July indicating that we can make December 2015. A similar presentation was given to Perm Sec (Transport) last Friday. As you know, many of our planned target and production rate have failed to materialise and if anything, the pressure on our cost/contingency is increasing..."*¹²⁹
- (c) On 14 November 2013, a memorandum from the Chief Programming Manager to the Projects Director confirmed that the opening would likely be delayed to about April or May 2016, even on a partial opening basis. In his cover e-mail, the Chief Programming Manager stated: *"We need a major turnaround of events on 810A to Open to Public MOR in mid 2016 and complete all external works within a 2016 time frame."*¹³⁰

The Government contemplated making public the project delay

6.3 On 8 November 2013, HyD (represented by Mr Peter LAU Ka-keung) and the Corporation (represented by Mr CHEW Tai-chong) briefed Mr Joseph LAI Yee-tak and other THB officers on the latest position of the Project. The Corporation presented the progress of the works of HKS of XRL, including WKT and the contract 826 (Hong Kong/Shenzhen boundary to Mai Po) tunnelling works. At the meeting, the Corporation stated that WKT would be ready for partial opening by December 2015. They explained that, even with only six tracks in operation in this interim period, it would be sufficient to meet early demand. As for the contract 826 tunnelling works, they could only be completed by October 2015 and the testing (which would normally take three months) could only commence from October 2015. As it would

¹²⁹ First Report by the Independent Board Committee on the Express Rail Link Project, paragraph 4.71.

¹³⁰ First Report by the Independent Board Committee on the Express Rail Link Project, paragraph 4.72.

take another three months to conduct trial runs, the target opening date of end-2015 might be affected.

6.4 Mr Joseph LAI Yee-tak informed the Select Committee that it was at this meeting that the Corporation first formally put to THB the proposed Partial Opening Plan. At that meeting, the Corporation maintained that, notwithstanding the delay with the tunnelling works, HKS of XRL could still commence service in 2015 in a partial opening scenario. Mr Joseph LAI Yee-tak informed the Select Committee that as he considered that it was necessary for the Government departments, including HyD and Transport Department, to examine the feasibility of the proposal, he did not confirm whether the proposed partial opening was acceptable to the Government. He further queried whether and how the proposed partial opening would help, given that the slow progress of the tunnelling works remained a major obstacle. He pointed out to the Corporation that, if the testing of HKS of XRL could only commence from October 2015, it was unlikely that HKS of XRL could start operation by the end of 2015. If that were the case, the public should be informed as soon as possible.

6.5 A similar briefing was conducted by Mr Peter LAU Ka-keung for Professor Anthony CHEUNG Bing-leung on 20 November 2013. Professor Anthony CHEUNG Bing-leung informed the Select Committee in his statement that as HKS of XRL was controversial, he considered that the Government should come clean if there was a possibility that the target of 2015 could not be achieved. Based on the assessment of the work progress then, he contemplated making it public at the Railways Subcommittee meeting scheduled for 22 November 2013 that HKS of XRL might only commence operation after 2015 and explaining the latest progress in construction and the actual challenges encountered.

The telephone calls on 21 November 2013, the day before the Railways Subcommittee meeting on 22 November 2013

6.6 The Select Committee notes that in the morning of the following day (i.e. 21 November 2013), Mr Jay H WALDER spoke with Professor Anthony CHEUNG Bing-leung over the telephone expressing his disagreement on informing Railways Subcommittee that the target for commencing operation in 2015 could not be met. According to paragraph 4.78 of the 1st IBC Report, Mr Jay H WALDER expressed the Corporation's concern that any such announcement would compromise

the Corporation's leverage to put pressure on the contractors to meet the timetable. The Select Committee notes from Professor Anthony CHEUNG Bing-leung's statement that, in response, he told Mr Jay H WALDER that the decision had been made after taking into account Mr CHEW Tai-chong's advice on the progress of HKS of XRL. Mr Jay H WALDER later telephoned Professor Anthony CHEUNG Bing-leung again and stressed that, after consulting Mr CHEW Tai-chong, it was still feasible to complete all the necessary works to enable HKS of XRL to commence operation by the end of 2015.

The urgent meeting in the evening of 21 November 2013

6.7 Professor Anthony CHEUNG Bing-leung informed the Select Committee that, as a result of the telephone conversation in the preceding paragraph, he had asked Mr Joseph LAI Yee-tak to convene an urgent meeting with the Corporation on the same day, i.e. 21 November 2013.

6.8 The Select Committee notes that at the meeting on 21 November 2013, Mr Joseph LAI Yee-tak, Mr YAU Shing-mu, Mr Peter LAU Ka-keung, Mr Henry CHAN Chi-yan (Head of RDO), and three other government representatives were present. The Corporation's representatives included Mr Jay H WALDER, Mr CHEW Tai-chong, Dr Jacob KAM Chak-pui, Operations Director, Mr Antonio CHOI Fung-chung, the former General Manager (XRL), and another representative. Jacobs was not present at the meeting.

6.9 The Select Committee notes that, at the meeting, the Corporation emphasized that it was imperative that the target completion in 2015 should be maintained, lest the Corporation would lose its leverage to press its contractors to complete the Project on time. The Corporation indicated at the meeting that it was still possible for HKS of XRL to be completed and to commence operation within 2015. THB pointed out that, according to an earlier briefing by the Corporation, HKS of XRL was experiencing problems at WKT and in the cross-boundary tunnelling works. THB queried that, even if the partial opening scenario for WKT were adopted, HKS of XRL could not commence operation if the

tunnelling works of contract 826 could not be finished in time¹³¹. THB queried why the Corporation should still take the view that HKS of XRL could be completed and commissioned in 2015. The Corporation responded that it was trying hard to identify solutions to meet this target and, at the very least, a single-track operation¹³² was possible. It was explained to the Corporation that a single-track operation would not satisfy the Government's requirements and was unacceptable. THB reiterated that while it appreciated that the Corporation needed to use the 2015 target as leverage with its contractors to expedite the works, the Government required a realistic assessment and should alert the public immediately if the 2015 target was not achievable. THB said that based on the Corporation's latest information, HKS of XRL would only be ready for testing in October 2015 and queried whether HKS of 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 works on the Hong Kong side of the boundary, thus posing challenges to the Corporation. The Corporation responded that it would be in a position to assess the impact once the cross-boundary tunnelling works had been completed on the Mainland side and works had begun on the Hong Kong side.

6.10 THB cautioned the Corporation not to over-state its ability to overcome the challenges. To this Mr CHEW Tai-chong responded that without the single-track option, the Corporation would look at other ways to recover the delays (e.g. by bringing in an additional tunnel boring machine). While he was confident that this could be achieved over the next two years, he stated that the Corporation would be able to give a better picture in six months after the cross-boundary tunnelling works had commenced on the Hong Kong side.¹³³

6.11 The Corporation requested the Government to give it six months before making judgment on whether HKS of XRL could be completed by

¹³¹ The construction works of the Project can be grouped into two categories, namely WKT and the Approach Tunnels which are constructed by cut-and-cover method, and the 26 km tunnel.

¹³² Single track operation scenario is to use a single tunnel for the northbound and southbound trains, running alternatively between WKT and the boundary of the Mainland.

¹³³ First Report by the Independent Board Committee on the Express Rail Link Project, paragraph 4.81.

2015. After much discussion, it was eventually concurred at the meeting that while the target completion of 2015 should be maintained at that stage, the Government and the Corporation should be upfront with the challenges faced by the Project when attending the Railways Subcommittee meeting on the following day. Meanwhile, the Corporation was asked to provide the Government with a clear roadmap on how the target could be met.

The Railways Subcommittee meeting on 22 November 2013

6.12 At the Railways Subcommittee meeting on 22 November 2013, Mr YAU Shing-mu, heading the Government team, stated that based on the latest assessment of the Corporation, the major works of HKS of XRL could be completed within 2015. Thereafter, testing and trial runs would be conducted. In response to an enquiry from the Railways Subcommittee Chairman, Mr YAU Shing-mu said that the testing and trial runs normally would take about six to nine months. HKS of XRL would only come into operation after the relevant authorities had approved the test results on the safety and reliability of the service.

6.13 According to the 7th half-yearly report presented to Railways Subcommittee, the Government indicated that *"[w]e will continue to monitor the progress of the project to ensure that it is within the approved budget and will be completed as scheduled with high quality."*¹³⁴

The Board meeting on 10 December 2013

6.14 The Select Committee notes that after the Railways Subcommittee meeting on 22 November 2013, the Board held a meeting on 10 December 2013. Professor Anthony CHEUNG Bing-leung, being a non-executive Director of the Board, mentioned that the actual opening date of HKS of XRL would depend upon the completion date of the construction works, given the six-month period required for testing and trial runs. Mr CHEW Tai-chong gave his Half Yearly Update of New Railway Projects presentation which included an update on the progress of the Project. He made a general statement that the project works were

¹³⁴ Paper submitted by the Government to the Subcommittee on Matters Relating to Railways, LC Paper No. CB(1)81/13-14(01).

managed with necessary mitigations, coupled with recovery plans in case of programme delay. The Select Committee notes from IEP¹³⁵ that the other Board members had put questions to Mr CHEW Tai-chong on the Project cost and progress, and Mr CHEW Tai-chong confirmed that "*XRL Project works would be completed by end of 2015.*"

6.15 The Board also asked questions regarding the budget (covering management of claims) and completion was also discussed¹³⁶. In response to a direct question from an independent non-executive director, Mr CHEW Tai-chong confirmed that the Project would be completed by the end of 2015. None of the other members of ExCom present or anyone else present with knowledge of the Partial Opening Plan challenged or qualified this statement made by Mr CHEW Tai-chong or mentioned the Partial Opening Plan to the Board. Another independent non-executive director¹³⁷, on the back of this dialogue, stressed the importance of keeping LegCo informed of any development which could have an impact on the budget for the Project.

Mr CHEW Tai-chong came to know that commissioning of WKT within 2015 was impossible even on a partial opening basis

6.16 The Select Committee notes that, on 19 December 2013, the Chief Programming Manager sent an updated Schedule Risk Analysis report to the General Manager of the Project, copied to Mr CHEW Tai-chong, stating that WKT could no longer be opened within 2015 even on a partial opening basis and suggesting an alternative opening date in May 2016. The actual progress of the Project by the end of December 2013 was reported as 51.34% complete against the planned progress of 81.41% in the original programme.¹³⁸

6.17 On 19 February 2014, the Project Team of the Corporation received an informal and incomplete response from the contractor of contract 810A in relation to the Partial Opening Plan which the Corporation had supplied to the contractor in October 2013. The

¹³⁵ Report of HKS of XRL Independent Expert Panel, Annex 3 paragraph 177.

¹³⁶ First Report by the Independent Board Committee on the Express Rail Link Project, paragraphs 4.89 and 4.90.

¹³⁷ Mr Abraham SHEK.

¹³⁸ First Report by the Independent Board Committee on the Express Rail Link Project, paragraph 4.91.

response indicated that according to the contractor's calculations, even with the proposed partial opening, there would be no track access until June 2016.¹³⁹

6.18 The opening date was further revised to mid-2017 in a programme status presentation given by the Project Team to Mr CHEW Tai-chong on 7 March 2014; the slides in the presentation showed the overall programme outlook and set January 2017 as the target month for completion of the railway works and April 2017 as the target month for revenue operation.¹⁴⁰

6.19 However, in the RDO/HyD coordination meetings held from January to March 2014, the Corporation maintained that the Project remained on target for completion in 2015.¹⁴¹

Two significant events at the end of March 2014

6.20 Two events occurred at the end of March 2014. The first was a black rain storm in the night of 30 March 2014, and its aftermath; the second was a formal presentation by the contract 810A contractor on 31 March 2014 regarding the construction progress at WKT.¹⁴²

6.21 On 31 March 2014, the contract 810A contractor gave a presentation to the Corporation in relation to the Partial Opening Plan, showing that access for track-laying would not be available in December 2015 and through 2016, and that a completion of contract 810A's scope of work would only take place in 2017. Hence at least one of the critical paths which the Partial Opening Plan had relied upon was unworkable. Mr CHEW Tai-chong indicated that the entire Project completion schedule should be re-assessed ignoring partial opening.

¹³⁹ First Report by the Independent Board Committee on the Express Rail Link Project, paragraph 4.96.

¹⁴⁰ First Report by the Independent Board Committee on the Express Rail Link Project, paragraph 4.99.

¹⁴¹ First Report by the Independent Board Committee on the Express Rail Link Project, paragraphs 4.92 and 4.100.

¹⁴² First Report by the Independent Board Committee on the Express Rail Link Project, paragraph 4.102.

Implementation progress of the Project in April 2014

6.22 At the 44th Project Supervision Committee meeting held on 2 April 2014, the Corporation reported that the actual progress of the Project was 54.8% complete against the planned progress of 85.5% in the original programme. At the meeting, the Chairman (Mr Peter LAU Ka-keung) expressed concerns on the significant programme slippage and asked whether the target completion in 2015 was still attainable. The Corporation replied that they were reviewing the overall picture of project delivery and would give a presentation to Mr Peter LAU Ka-keung in May 2014.¹⁴³

6.23 The Select Committee notes that, at the above meeting, the Corporation reported a serious flooding incident concerning the Tai Kong Po to Tse Uk Tsuen tunnels, which had caused the submersion of a tunnel boring machine in flood water. The Corporation said that the contractor was assessing the damage and would make use of any available spare parts for replacement if the machine was repairable. The Corporation and the contractor were also looking into the feasibility of contingency plans. The Chairman requested the Corporation to report on the detailed findings of the incident and their assessment on the associated cost and time implications when available.

Announcement of the project delay

6.24 Professor Anthony CHEUNG Bing-leung informed the Select Committee that at around noon on 12 April 2014 when he was out of town, Mr Jay H WALDER called to inform him that the construction work of HKS of XRL could only be completed by the end of 2016 and that service could only be commissioned in 2017. More details had yet to be ascertained. According to Professor Anthony CHEUNG Bing-leung, he was shocked by the news as there was a two-year gap between the new and the original target and it had been projected by the Corporation at the 21 November 2013 meeting that HKS of XRL would be opened in 2015. He immediately contacted his staff after the telephone conversation. Ms Rebecca PUN Ting-ting, Deputy Secretary for Transport and Housing (Transport)¹, informed Professor Anthony

¹⁴³ Paper submitted by the Government to the Subcommittee on Matters Relating to Railways, LC Paper No. CB(1)1328/13-14(03), Annex G.

CHEUNG Bing-leung that she had also just received the same news from Mr CHEW Tai-chong who had telephoned Mr Peter LAU Ka-keung and her in the afternoon of that day. Professor Anthony CHEUNG Bing-leung asked her to get in touch with Mr Peter LAU Ka-keung to find out more.

6.25 In the morning of 13 April 2014, the Chairman of the Corporation, Dr Raymond CH'EN Kuo-fung, called Professor Anthony CHEUNG Bing-leung with regard to the delay. Both of them agreed that the Government and the Corporation should inform the public as soon as possible. They also agreed to have an urgent meeting on 14 April 2014 when Professor Anthony CHEUNG Bing-leung would be back in the office.

6.26 On 14 April 2014, an urgent meeting was held at THB attended by, amongst others, Dr Raymond CH'EN Kuo-fung, Mr Jay H WALDER and Mr CHEW Tai-chong. Professor Anthony CHEUNG Bing-leung requested the Corporation to provide a full assessment report on the construction progress including a full and proper account for the substantial delay. He also instructed Mr Peter LAU Ka-keung to provide him with an independent review and assessment of the construction progress of HKS of XRL, including an assessment of the reasons for the substantial delay.¹⁴⁴ At the meeting, it was agreed that Professor Anthony CHEUNG Bing-leung and the Corporation should inform the public on the following day, and make a report to Railways Subcommittee at the meeting originally scheduled for 2 May 2014 to explain the situation.

6.27 On 15 April 2014, Professor Anthony CHEUNG Bing-leung informed the public via the media that he had received verbal notification from the Corporation that the completion of HKS of XRL would be delayed, and that he had requested the Corporation to submit a full assessment report. At the same time, he had also requested Mr Peter LAU Ka-keung to conduct an independent review and assessment of the construction progress. The Corporation subsequently held a press conference and stated that the completion date of HKS of XRL would be

¹⁴⁴ The review report by HyD is attached in Annex C of the paper submitted by the Government to the Subcommittee on Matters Relating to Railways for the meeting on 5 May 2014, LC Paper No. CB(1)1328/13-14(03).

pushed back to 2016 for operation in 2017. Copies of the press releases of the Government and the Corporation appear in **Appendices 1 and 2** respectively.

6.28 Railways Subcommittee subsequently held two meetings on 5 May and 19 May 2014 to discuss the matter and conducted a site visit to WKT on 28 April 2014. The Government also submitted a paper to Railways Subcommittee¹⁴⁵ providing information on the latest position of the Project as at the end of March 2014.

Observations

Progress of the Project not fully reported to the Government by the Corporation

6.29 As revealed by the internal communications of the Corporation in November 2013 mentioned in paragraph 6.2 above, the Select Committee observes that the target to complete the Project by August 2015 had become impossible to achieve, even if HKS of XRL was to operate on a partial opening basis. However, the Corporation assured the Government on 21 November 2013 that it was still feasible to complete all the necessary works to enable HKS of XRL to commence operation by the end of 2015.

6.30 Professor Anthony CHEUNG Bing-leung informed the Select Committee in his statement that *"Now, from [the Corporation's] own submission to [Railways Subcommittee] in May 2014 and from its Independent Board Committee (IBC) Report of October 2014 that:*

- (i) *as early as February 2013 [the Corporation's] Projects Director was citing "critical" delays with WKT construction;*
- (ii) *despite delays, [the Corporation] had consistently adopted the stance that it was confident that the project could be delivered on time and on budget;*

¹⁴⁵ Paper submitted by the Government to the Subcommittee on Matters Relating to Railways, LC Paper No. CB(1)1328/13-14(03).

- (iii) *[Project Supervision Committee] chaired by [Director of Highways] was not being given by [the Corporation] an accurate picture of the prognosis for the project as a whole so that it was unable to make timely decision on the critical delay of the whole XRL project;*
- (iv) *by December 2013, [the Corporation's] Management must have known clearly that WKT could not open, even on a partial basis, until May 2016, but it has failed to inform Government; and*
- (v) *from December 2013 onwards, [the Corporation's] Management had been contemplating various scenarios of XRL delay in commissioning target year, and the cost implications involved, but had all along failed to keep Government informed. This is not the kind of trusting, honest and timely communication expected of [the Corporation] under the Entrustment Agreement."*

6.31 The Select Committee notes a similar observation in the 1st IBC Report¹⁴⁶, which stated that Mr CHEW Tai-chong had not communicated with the Government regarding the mounting concerns of the Project Team expressed in November 2013 as to the cumulative effect of delays across the key parts of the Project and that, as a result, the completion date would be in 2016. IBC believed that while the Government clearly had access to a great deal of information about the delays on the contracts, it should have been given a fuller assessment of the achievability of the overall Project timetable. IBC also commented that the more analytical and objective assessment communicated by the members of the Project Team regarding the effect of the cumulative delays in the critical paths of the Project should have been reported by Mr CHEW Tai-chong to the Government.

6.32 The Select Committee notes from the IEP Report¹⁴⁷ that "*we [IEP] are not aware of meeting minutes for any Contract Review Meetings. Briefings prepared for Contract Review Meetings include*

¹⁴⁶ First Report by the Independent Board Committee on the Express Rail Link Project, paragraphs 1.38 and 5.41.

¹⁴⁷ Report of HKS of XRL Independent Expert Panel, Annex 3 paragraph 192.

quantified delays (in weeks) for individual contracts. No reporting on overall Project delay is provided in the briefings that we [IEP] have reviewed. In briefings between June 2010 and August 2013, numerous bar charts with 'time-now lines' were included and the 'Estimated Handover Date' or 'XRL Opening' date on these charts remains at August 2015. From September 2013 bar charts were not included."

6.33 The Select Committee considers that the Corporation and its Project Team should have reported the actual progress of the Project to the Government in a timely and proper manner, so as to enable the Government to form its own judgment and deal with the problems much earlier. On the other hand, the Select Committee also takes the view that HyD had not properly and professionally performed its monitoring role in the Project and its performance was unsatisfactory. This issue will be examined further in paragraph 6.54.

Judgment of the Government

The urgent meeting between the Government and the Corporation on 21 November 2013

6.34 The Select Committee observes that starting from November 2013, THB became increasingly concerned about whether the target completion date of August 2015 could be achieved, and was aware that the chances of completing the Project by August 2015 were extremely low. Therefore, THB had contemplated reporting the project delay at the Railways Subcommittee meeting scheduled for 22 November 2013. However, the telephone conversation between Mr Jay H WALDER and Professor Anthony CHEUNG Bing-leung and the subsequent meeting between the Government and the Corporation on 21 November 2013 brought about a change of mind.

6.35 The Select Committee has examined whether the judgment of the Government made on 21 November 2013 was sound. Due to the importance of the events that took place on 21 November 2013, the Select Committee has asked THB and the Corporation to provide the telephone recording or transcript of the telephone conversation between Mr Jay H WALDER and Professor Anthony CHEUNG Bing-leung, as well as the record of the meeting on 21 November 2013. Professor Anthony CHEUNG Bing-leung responded (**Appendix 7**) that there was no telephone recording or record of the telephone conversation and that what

had transpired during the telephone conversation was already included in the Government's paper to Railways Subcommittee (LC Paper No.: CB(1)1328/13-14(03)) based on his recollection. The Corporation also advised (**Appendix 10**) that no recording or contemporaneous written record of this conversation had been prepared by the Corporation.

6.36 As for the record of the meeting on 21 November 2013, Professor Anthony CHEUNG Bing-leung informed the Select Committee (**Appendix 7**) that the key points of discussion at the meeting had already been put in the Government's response to Railways Subcommittee dated 15 May 2014 (LC Paper No.: CB(1)1422/13-14(04)) and that THB had no other record of that meeting. The Corporation informed the Select Committee (**Appendix 10**) that no contemporaneous written record of that meeting had been prepared by the Corporation.

6.37 Mr Joseph LAI Yee-tak informed the Select Committee in an open hearing that he had convened the meeting of 21 November 2013 on the basis that the discussion between the Government and the Corporation would be conducted in "good faith". The Corporation should have the professional engineering expertise and project management competence to tender sound advice to the Government. Further, the Corporation should have been well prepared for the meeting, with full grasp of the latest situation. He had also expected that the Corporation had fully understood the consequences of not informing the public in good time if it had known that it could not achieve the target date for commissioning HKS of XRL.

6.38 Mr Joseph LAI Yee-tak pointed out that the Government had two prime considerations at the meeting on 21 November 2013, namely:

- (a) while the commissioning of HKS of XRL by 2015 was an important policy and planning objective which should be achieved as much as possible, the Government had to face fairly and squarely any irreversible delay caused by insurmountable technical difficulties. If there were any irreversible delay, it was important that the Government should alert LegCo and the public as soon as possible; and
- (b) at the meeting, the then CEO and the then Projects Director both assured the Government many times that HKS of XRL could be commissioned in 2015, and

remained firm on their assurance despite the Government's repeated queries and challenges. Based on the information available, Mr Peter LAU Ka-keung and his colleague could not completely rule out the possibility of commissioning HKS of XRL in 2015. At the meeting, the Corporation also made it clear that should the target of 2015 be postponed at that stage, the Corporation would lose its leverage with its contractors in pushing the Project forward, and the commissioning of HKS of XRL in 2015 would then be really impossible. At the time, the Government representatives considered the Corporation's view not unreasonable.

6.39 Mr Joseph LAI Yee-tak further informed the Select Committee that the Government officers at the meeting had decided to give the Corporation the benefit of the doubt. The Corporation was requested to provide the Government with a clear roadmap to demonstrate how the target of opening in 2015 could be met.

6.40 Professor Anthony CHEUNG Bing-leung informed the Select Committee that, based on the judgment of Mr Joseph LAI Yee-tak and Mr Peter LAU Ka-keung, he had directed Mr YAU Shing-mu that the Government should not report to Railways Subcommittee that HKS of XRL would be commissioned in 2015 but the construction of HKS of XRL could be "*completed within 2015 plus six to nine months for testing and trial runs*".

The Railways Subcommittee meeting on 22 November 2013

6.41 The Select Committee has examined whether the Government and/or the Corporation had deliberately covered up the project delay at the Railways Subcommittee meeting on 22 November 2013 as instructed by its terms of reference. The Select Committee notes that the statement made by Mr YAU Shing-mu at the Railways Subcommittee meeting was consistent with the instruction given to him by Professor Anthony CHEUNG Bing-leung.

6.42 According to Professor Anthony CHEUNG Bing-leung, the statement made at the Railways Subcommittee meeting on 22 November 2013 by the Government reflected the respective views of THB (and HyD) and the Corporation on the progress of the construction. In particular,

THB sought to convey the message that while the major works could be completed within 2015, the date of commissioning had yet to be confirmed. The statement also took into account the consideration canvassed by the Corporation that by not giving up on the 2015 completion target, the Corporation could press the contractors to give the Project a further push, thereby giving the Corporation a chance to catch up with the delay.

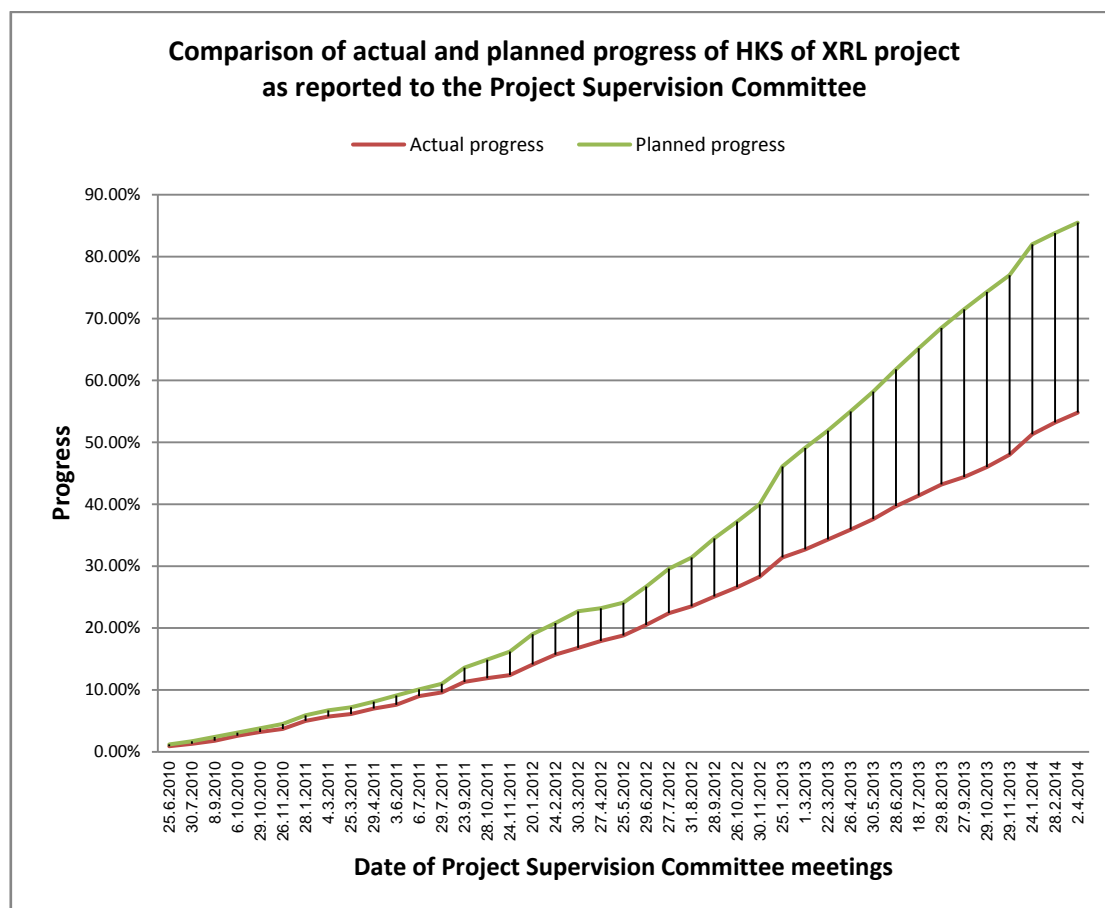
6.43 Nevertheless, Professor Anthony CHEUNG Bing-leung admitted in evidence that, with the benefit of hindsight, THB and HyD had reposed too much trust in the Corporation. In addition, the Government should have made public the difference of views between the Government and the Corporation at the Railways Subcommittee meeting in November 2013.

6.44 The Select Committee enquired whether the Government had consulted Jacobs after the meeting on 21 November 2013 and before attending the Railways Subcommittee meeting on the following day. Professor Anthony CHEUNG Bing-leung replied in the negative. The Select Committee considers that THB/HyD should have made better use of the M&V consultant to provide independent objective assessment and advice as to whether the Project could be delivered on time throughout the implementation of the Project.

6.45 The Select Committee recognizes that in the construction industry, it may not be uncommon for contractors to lose incentive to meet targets if completion dates were postponed. However, the Select Committee considers that the public should have been informed when the target completion date of the Project had become impossible or nearly impossible to achieve and that all the relevant parties should have been more pragmatic in accepting reality and come up with contingency plans and a revised schedule at the earliest opportunity.

6.46 The Select Committee notes that at the monthly Project Supervision Committee meeting, the Corporation had regularly reported the percentage of the actual progress of the Project against the planned progress of the Project. These figures were only presented to Railways

Subcommittee for the first time at its meeting on 5 May 2014¹⁴⁸ after the announcement of the project delay. The Select Committee has made use of these percentages provided in the Government's paper to Railways Subcommittee in May 2014 to produce the chart below.



6.47 It can be seen from the chart that there was persistently a widening gap between the planned progress and the actual progress of the Project despite the implementation of DRMs from January 2013 onwards. Together with the repeated warnings from Jacobs on the project slippage since December 2011¹⁴⁹ and on the ineffective DRMs as mentioned in Chapter 5 of this report, the Select Committee finds it incomprehensible why the Government should have accepted the repeated assurances from the Corporation in catching up with the delay which ran contrary to the figures presented to Project Supervision Committee on a monthly basis

¹⁴⁸ Paper submitted by the Government to the Subcommittee on Matters Relating to Railways, LC Paper No. CB(1)1328/13-14(03), Annex G.

¹⁴⁹ Report of HKS of XRL Independent Expert Panel, paragraph 4.10.

and which conflicted with the assessment and advice of Jacobs. In fact, the figures showed that delay had been building up since late 2011 and still the Government chose to give the Corporation "the benefit of the doubt" at the meeting on 21 November 2013. It was said that the officers in THB were mostly generalists by training. The Select Committee considers that this factor could not absolve the Government as such civil service system was adopted by the Government. Even generalists could adopt various common management tools such as "management by exception" or "management by result" to ensure that their judgment was soundly based on the key performance indicators available to them. The Select Committee considers that the Government was not well prepared for its role under the new concession approach and might have in practice been affected by the ethos of the old ownership approach when monitoring the Project (paragraphs 3.10 to 3.13 of Chapter 3 of this report refer).

6.48 The Select Committee is of the view that, when the partial opening scenario was proposed to the Government in August and September 2013, the Government should have been alerted to the grave extent of the project delay and should have informed Railways Subcommittee of the possibility of delay. The chances of catching up with the delay appeared to be very remote even then.

Performance and judgment of HyD

6.49 As indicated in paragraphs 5.32 and 6.4 of this report, the Select Committee finds that both THB and HyD had queried the Corporation regarding the progress of the Project. In response, the Corporation consistently reassured the Government that the delays in the individual contracts could be recovered through DRMs and that the original target completion date could still be achieved.¹⁵⁰ HyD acquiesced in this response before April 2014.

¹⁵⁰ Report of HKS of XRL Independent Expert Panel, paragraph 4.18.

6.50 The Select Committee also notes IEP's opinion regarding the performance of HyD¹⁵¹ as follows:

- (a) *"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 Highways Department acted upon this information to request [the Corporation] for an in-depth review on XRL Project progress."*
- (b) *"Highways Department could have done more to validate the Corporation's opinions by demanding regular updates on: i) the forecast for overall project completion; and ii) the effectiveness of DRMs. This was not done."*
- (c) *"The Panel [IEP] has found no evidence of Highways Department exercising independent insight to plan, programme, forecast, etc. at any time prior to its review in April 2014."*

6.51 Mr Peter LAU Ka-keung informed the Select Committee in his statement that the "potential delay" mentioned in paragraph 6.50 above reflected what would happen if the Corporation did not do anything to catch up. In fact, HyD was at the time well aware of the delay and the Corporation had been asked to submit an overall PMP back in January 2013. The Corporation presented a revised programme in May 2013 and, at the same time, proposed a DRM to speed up the track work. According to Mr Peter LAU Ka-keung, it was recorded in the minutes of the 37th Project Supervision Committee meeting in July 2013 that the Corporation promised to make a presentation on the overall PMP and a revised WKT programme in August 2013 at HyD's request. Subsequent to the Railways Subcommittee meeting in November 2013, HyD had pressed the Corporation at every Project Supervision Committee meeting to submit a revised PMP to address the delay. The Select Committee notes that the requests for PMP and updated PMP by HyD were probably done at the request of Jacobs, but apparently to no avail.

¹⁵¹ Report of HKS of XRL Independent Expert Panel, paragraphs 4.11, 4.19 and 4.20.

6.52 Mr Peter LAU Ka-keung further informed the Select Committee at an open hearing that, since the construction of WKT was very complicated, HyD was not able to form a judgment itself on whether the assurances made by the Corporation should be accepted or not. As such, it had pressed the Corporation to submit a revised PMP to enable HyD to make an assessment on the completion date of the Project.

6.53 Mr Peter LAU Ka-keung said in his statement to the Select Committee that with the benefit of hindsight, HyD should have considered whether it would be appropriate to request Jacobs to conduct an independent assessment on the completion of WKT. However, as mentioned in paragraph 6.50(a) above, it would appear that Jacobs had already estimated that the completion date would need to be postponed to July 2016 and had alerted HyD. But no follow-up action was taken.

6.54 The Select Committee considers that the approach taken by HyD in assessing the completion date of the Project was highly unsatisfactory. While the performance of HyD might have been restricted by its role under EA2, the Government had nonetheless failed to make the best use of Jacobs as the M&V consultant in the Project. The Select Committee considers that HyD's excuse of having limited manpower resources in the Department, compared to that of the Corporation, to perform its monitoring role is not acceptable. When information was presented to HyD, it showed, more often than not, that the progress in the construction work was seriously lagging. The Select Committee shares IEP's opinions set out in paragraph 6.50 that HyD should have done more to validate the Corporation's opinions by, for instance, demanding regular updates on the forecast for overall project completion and the effectiveness of DRMs.

Flooding as one of the causes of the project delay

6.55 The Select Committee notes that the flooding as a result of the severe black rainstorm in the night of 30 March 2014 was one of the causes of the project delay as reported by Mr Peter LAU Ka-keung in his statement and in the 2nd IBC Report.¹⁵² When the Corporation announced the project delay on 15 April 2014, the first paragraph of the

¹⁵² Second Report by the Independent Board Committee on the Express Rail Link Project, Appendix paragraph 1.3.

press release (**Appendix 2**) reads: *"A tunnel boring machine (TBM) severely damaged by floodwater is affecting progress on the Hong Kong Section of the Express Rail Link (XRL) project. This unforeseen challenge has added to the difficulties of the project and will push the completion date to 2016 with the line ready for operation in 2017."* This was a major reason then given by the Corporation to the public.

6.56 The Select Committee has enquired whether the Corporation had required the contractor of contract 823A (Construction of Tse Uk Tsuen to Tai Kong Po Tunnels) to take flood prevention measures at the work site; and whether the Government has assessed the impact of the damage to the tunnel boring machine on the progress of the Project.

6.57 The Corporation's response to the Select Committee (**Appendix 22**) was that flood protection plans for the work sites were constantly revised to suit each particular construction stage. The flood plan at the contract 823A work site prior to the black rainstorm on 30 March 2014 had been implemented accordingly. The principle behind the flood plan was to have a surface flood wall built around the cut-and-cover tunnel to channel surface water away from the tunnel. A drainage system and multi-tier flood protection measures were in place within the site boundary and protected the site during past typhoons and rainstorms. The flood on 30 March 2014 was caused by a collapsed slope, which was built in compliance with the Government requirements but could not withstand the exceptionally heavy rain that blocked the drainage system and the resultant flood damaged part of the surface flood wall in that area, allowing water to enter the tunnel.

6.58 Mr Peter LAU Ka-keung also stated in his statement that the situation caused by flooding was made worse by the mal-functioning of the emergency pumps at the tunnel boring machine shaft. The mining operation of the relevant tunnel was stopped due to the incident.

6.59 The Select Committee notes IBC's comment in its report¹⁵³ that *"by its tone and content the press statement materially overstated the effect on the Project programme of the flooding of the [tunnel boring machine] (contract 823A)"*. The Select Committee asked Mr Joseph

¹⁵³ First Report by the Independent Board Committee on the Express Rail Link Project, paragraph 5.62 (E).

LAI Yee-tak whether the Corporation had reported at the 44th Project Supervision Committee meeting held on 2 April 2014 on the damage of the tunnel boring machine and how it had impacted on the progress of the work.

6.60 Mr Joseph LAI Yee-tak informed the Select Committee (**Appendix 23**) that at the 44th Project Supervision Committee meeting held on 2 April 2014, the Corporation had reported that a tunnel boring machine had been damaged due to flooding. The contractor was assessing the damage to the machine and would make use of any available spare parts for replacement if necessary, provided that the machine was not beyond repair. The Corporation had also said at the meeting that they had been working on measures to minimize the delay. At that meeting, the Chairman, Mr Peter LAU Ka-keung, requested the Corporation to make detailed findings of the incident, as well as their assessment on the associated cost and programme impact, and report back to Project Supervision Committee. The Corporation submitted on 5 May 2014 a preliminary investigation report on the flooding incident and a final report on 5 June 2014 which addressed the queries from HyD.

6.61 According to the statement of Dr Philco WONG Nai-keung, due to the severe damage to the tunnel boring machine at the north down-track tunnel as a result of flooding, more than 2 000 (mostly electrical and electronic) components in the machine required replacement. While it was originally anticipated that the damaged machine would only be able to resume full operation after repair and testing in December 2014, the contractor was able to borrow the parts from another tunnel boring machine that had just completed a task and was being repositioned. As such, the damaged machine was able to resume operation in July 2014, several months earlier than planned.

6.62 The Select Committee notes that the assessment of the impact of flooding to the project delay was not provided to the Government by the Corporation before the public announcement of the project delay in mid-April 2014. In addition, at the Project Supervision Committee meeting on 2 April 2014, the Corporation did not mention that the damage to the tunnel boring machine had an impact on the project delay.

6.63 The Select Committee notes that flood prevention measures were in place at the work site of contract 823A (Construction of Tse Uk Tsuen to Tai Kong Po Tunnels). Unfortunately, the rainfall in the night of 30 March 2014 was exceptionally heavy, causing damage to a tunnel boring machine and making it impossible to catch up with its programme. The Select Committee considers that the damage to the tunnel boring machine caused by flooding was a contributing factor to the project delay which was beyond the control of the Corporation. However, the Select Committee also notes that, before the black rainstorm on 30 March 2014, Mr CHEW Tai-chong had known that the target to complete the Project by August 2015 had become impossible to achieve (see paragraphs 6.16 and 6.18 of this report). As such, the Select Committee shares IBC's view that the press statement of the Corporation on 15 April 2014 had overstated the effect of the damaged tunnel boring machine caused by the flooding on 30 March 2014 on the Project programme.

Comprehensiveness and timeliness of reporting to Railways Subcommittee on the progress of the Project by the Government and the Corporation

6.64 The Select Committee notes that, as agreed at the Railways Subcommittee meeting on 16 April 2010, the Government would submit reports at six-month intervals to Railways Subcommittee which would cover the progress and the financial position of the Project. The first report covered the period between 16 January 2010, i.e. when FC approved the project funding of HKS of XRL, and 30 June 2010. The subsequent half-yearly reports covered the Project progress for the periods ending 30 June and 31 December respectively of each of the following years.¹⁵⁴ The Select Committee notes that, up to April 2014, the Government had submitted a total of seven half-yearly progress reports to Railways Subcommittee.

6.65 The Select Committee further notes that the scope of the progress reports, in addition to the work progress, also covered some major aspects of the Project such as pre-construction preparatory work, claims situation, interface issues and employment opportunities created by the Project.

¹⁵⁴ Paper submitted by the Government to the Subcommittee on Matters Relating to Railways, LC Paper No. CB(1)1573/09-10(04).

6.66 The Select Committee notes that, except for the 1st half-yearly report which mentioned that *"Up to 30 June 2010...[t]here is no sign of budget overrun or programme delay"*,¹⁵⁵ the remaining six half-yearly reports did not mention at all whether there was any budget overrun or programme delay in the Project. Furthermore, although the seven half-yearly reports contained descriptions of the progress of some major contracts in the Project, there was no information on the actual progress against the planned progress of the Project. Nevertheless, the Select Committee notes from a report submitted to Railways Subcommittee in May 2014 that such information had been regularly included in the monthly reports submitted by the Corporation to Project Supervision Committee chaired by Mr Peter LAU Ka-keung.

6.67 Furthermore, as mentioned in paragraph 5.68 of this report, Jacobs had repeatedly alerted HyD on the project slippage since December 2011¹⁵⁶. Mr Peter LAU Ka-keung also informed the Select Committee that HyD had been well aware of the project delay. However, the Select Committee notes that Railways Subcommittee members were not informed of the worsening situation and the accruing slippage in the overall programme.

6.68 The Select Committee finds that the Government and the Corporation did not report the Project's progress to Railways Subcommittee in sufficient detail, including those figures mentioned in paragraph 6.46 of this report, to enable the Subcommittee to fully understand the actual status and progress of the Project. Further, both the Government and the Corporation appeared to have reported only the good news but not the bad news about the Project before April 2014. The progress of the construction work at WKT is an obvious example.

6.69 In the 7th half-yearly report for the period ending 30 June 2013¹⁵⁷ presented at the Railways Subcommittee meeting on 22 November 2013, the progress of the construction work at WKT was reported in Annex 1 to the report that: *"[a]s regards the main structure of the WKT, the concrete*

¹⁵⁵ Paper submitted by the Government to the Subcommittee on Matters Relating to Railways, LC Paper No. CB(1)2290/09-10(01).

¹⁵⁶ Report of HKS of XRL Independent Expert Panel, paragraph 4.10.

¹⁵⁷ Paper submitted by the Government to the Subcommittee on Matters Relating to Railways, LC Paper No. CB(1)81/13-14(01).

structure of the underground station to the south of Austin Road was being constructed by top-down approach. Underground structural works at the southern end of the WKT reached the lowest level B4 (a total of four levels from B1 to B4). For the northern part of the WKT, excavation works reached the lowest level B4 and construction of the main structure by bottom-up approach continued."

6.70 However, in another paper submitted by the Corporation to Railways Subcommittee in May 2014¹⁵⁸ (i.e. after the announcement of the project delay), which was discussed at the Railways Subcommittee meeting on 5 May 2014, it was reported that "*[w]hile one part of the 810A works area has been excavated down to the B4 level and that part of the terminus structure is being built using the bottom-up method, **the north top-down area of the site** still requires the removal of approximately 78,000 cubic metres of fresh bedrock, out of 100,000 cubic metres of rock, to reach B4 level."* [emphasis added]

6.71 It is noted that in relation to the same area at WKT, in the 7th half-yearly report presented at the Railways Subcommittee meeting on 22 November 2013, it mentioned that "*For the northern part of the WKT, excavation works reached the lowest level B4*"; whereas in the other paper submitted to Railways Subcommittee in May 2014, it mentioned that "*the north top-down area of the site still requires the removal of approximately 78 000 cubic metres of fresh bedrock, out of 100 000 cubic metres of rock, to reach B4 level*". Obviously, the necessity for removing about 78 000 cubic metres of fresh bedrock in the top-down area of the site had not been reported in the 7th half-yearly Report submitted to Railways Subcommittee in November 2013.

6.72 The Select Committee further observes that the slide presented at the Railways Subcommittee meeting on 5 May 2014 (**Appendix 24**) showed the division of different parts of the site, i.e. WKT(core area), WKT(North) and WKT(South) as well as the construction methods adopted for the different parts together with their respective progress. It was clearly noted from the slide that the **north top-down area** of WKT(North) only reached B1/B2 Level. In comparison, none of these details had been included in the slide presented at the Railways

¹⁵⁸ Paper submitted by the MTR Corporation Limited to the Subcommittee on Matters Relating to Railways, LC Paper No. CB(1)1354/13-14(01).

Subcommittee meeting on 22 November 2013 (**Appendix 25**). The slide presented at the 22 November 2013 meeting would give an erroneous impression that the bottom-up method had been adopted for the whole of WKT(North) when no detail was given on the north top-down part of WKT(North). A member of the Select Committee pointed out that the report and the slide presented to Railways Subcommittee on 22 November 2013 had misled some members of Railways Subcommittee.

6.73 In addition, the Select Committee gets the impression that the wording used in the half-yearly reports submitted to Railways Subcommittee was toned down compared with the wording used in the monthly Project Supervision Committee reports relating to the progress of the Project. The Select Committee has enquired into how the half-yearly reports to Railways Subcommittee were prepared. In response, Mr Peter LAU Ka-keung said that HyD had to "digest" the reports prepared by the Corporation and then produce the half-yearly reports to THB, which would then submit the reports to Railways Subcommittee. Railways Subcommittee received its reports on the progress of the Project at six-month intervals whereas Project Supervision Committee received its reports on a monthly basis. Hence the situation might not be the same.

6.74 Professor Anthony CHEUNG Bing-leung informed the Select Committee (**Appendix 26**) that the Corporation, as the project manager, was responsible for preparing the first draft of the half-yearly progress reports. Upon receipt of the Corporation's draft progress reports, HyD would verify the accuracy of their content and proof-read the original version, such as correcting spelling and grammar as well as improving presentation to facilitate easier reading and comprehension. In principle, the main content in the Corporation's draft progress reports was retained. Any amendment to the draft would first be given to the Corporation for review. With the agreement of the Corporation, the Government would submit the reports as the joint reports of the Government and the Corporation to Railways Subcommittee. The Select Committee considers that the "digesting" of the reports submitted by the Corporation to HyD might have led to a failure in providing a full picture of the situation to Railways Subcommittee.