Translation

For Information
June 2016

Legislative Council Panel on Transport
Subcommittee on Matters Relating to Railways

Progress and Financial Situation of the Construction of the Hong Kong Section of the Guangzhou-Shenzhen-Hong Kong Express Rail Link

(Quarterly Report for the Period ending 31 March 2016)

INTRODUCTION

This paper aims to brief Members on the major works progress and financial situation of the construction of the Hong Kong section of the Guangzhou-Shenzhen-Hong Kong Express Rail Link ("XRL") and the relevant monitoring work carried out by the Highways Department ("HyD") for the period ending 31 March 2016.

BACKGROUND

2. At the meeting of the Subcommittee on Matters Relating to Railways ("RSC") under the Legislative Council ("LegCo") Panel on Transport in April 2010, Members agreed that reports on progress update and financial situation of the construction of the Hong Kong section of the XRL should be submitted at six-month intervals. To enhance the reporting to the LegCo on the progress update and financial situation of the construction of the Hong Kong section of the XRL, such reports have been submitted to the RSC at quarterly intervals since the fourth quarter of 2014.

3. This paper, which is appended with the progress report (**Annex**) of the MTR Corporation Limited ("MTRCL"), reports on the major works progress,

indicators and financial situation for the first quarter of 2016 (i.e. from 1 January to 31 March 2016).

THE REVISED PROGRAMME TO COMPLETE ("REVISED PTC"), THE REVISED COST TO COMPLETE ("REVISED CTC") AND THE LATEST DEVELOPMENT OF THE XRL

4. The MTRCL submitted the latest assessment of the revised PTC and revised CTC of the XRL to the Government on 30 June 2015. After rounds of considerable discussions, the Government and the MTRCL agreed on the revised CTC to further revise to $84.42 billion, and agreed on the revised PTC of the third quarter of 2018, including a 6-month contingency period.

5. The Government kicked off the process for application of the additional funding to LegCo in December 2015. With rounds of deliberation in the RSC, Public Works Subcommittee and Finance Committee ("FC") meetings, the FC approved the additional funding ($19,602.5 million) for the XRL project on 11 March 2016.

PROGRESS UPDATE OF THE PROJECT

6. Over the reporting period, the HyD, with the assistance of its Monitoring and Verification ("M&V") Consultant, continued to monitor systematically the implementation of the XRL project by the MTRCL under its monitoring mechanism. This includes meetings at various levels (such as meetings of the Project Supervision Committee chaired by the Director of Highways, Project Coordination Meetings chaired by an Assistant Director of HyD, Contract Review Meetings ("CRMs") chaired by HyD's Chief Engineer) and regular site inspections.

7. Since the third quarter of 2015, the HyD and the MTRCL have been monitoring the progress of the remaining works of XRL project against the revised commissioning target of the XRL in the third quarter of 2018.

8. As stated in MTRCL's progress report, the overall progress of the XRL was 78.9 % as at the end of March 2016, which was ahead of the planned progress of 76.7% based on the target of commissioning of the XRL in the third quarter of 2018. According to scrutinisation by the HyD of the PTC submitted by MTRCL which aims at completing the XRL project in the third quarter of 2018, the construction of West Kowloon Terminus ("WKT") North (Contract 810A) is still the most critical contract of the entire XRL project while the construction of Tai Kong Po to Tse Uk Tsuen Tunnels (Contract 823A), construction of Tai Kong Po to Ngau Tam Mei Tunnels (Contract 824) are the sub-critical contracts. The civil works of Huanggang to Mai Po Tunnels (Contract 826), which was previously a sub-critical contract, was substantially completed in end of March 2016. Therefore, this contract had been taken out from the list of sub-critical contracts. As the progress of works contracts for electrical and mechanical ("E&M") systems is closely inter-linked with the various construction works of the WKT and tunnels, as well as the testing and commissioning ("T&C") works of the entire XRL project, its criticality is increasingly significant. We will pay closer attention to it and gradually switch the focus of the M&V of the XRL to the works contracts of E&M systems and T&C works. The progress of the above works contracts is set out below.

(a) <u>Construction of WKT North (Contract 810A)</u>

9. According to MTRCL's progress report, about 97.4% of excavation works and 70.3% of concrete structural works for WKT North were completed. The progress of concrete structural works had improved in this quarter with its production rate meeting the expected one. As urged by the HyD, the MTRCL continued to thoroughly review the sequence of the remaining concreting works and the monthly concreting rates, especially the progress of the construction of partition walls, so as to facilitate the installation of E&M and building services ("BS") systems in WKT to commence in accordance with the programme. The HyD and the M&V Consultant will continue to conduct regular site inspections and hold monthly CRMs and ad-hoc meetings to follow up and monitor the effectiveness of proposals and measures implemented by the MTRCL.

10. There are three critical paths for the construction of the WKT North, namely (i) excavation works near Jordan Road for the northern portion of the WKT; (ii) steelwork fabrication for the Station Entrance Building ("SEB"); and (iii) construction works for the Lin Cheung Road Underpass. These critical construction activities are being followed up as below.

11. The rock excavation by blasting at the northern portion of WKT was completed in February 2016, and the majority of critical excavation works was also completed. The remaining rock excavation works would be carried out by mechanical means. Since the commencement of the blasting works, the MTRCL's records showed that the impact due to vibration arising from the blasting works was minimal.

12. The HyD was very concerned about the progress of the steelwork fabrication for the SEB, which was highly complicated. HyD noticed that the MTRCL was working very hard with the contractor to implement proposals, including the fabrication, delivery and erection of the steelwork and external wall systems ("EWS"), as well as the planning and implementation of the temporary works, in order to overcome the various works-related difficulties and expedite the progress of works. The erection of the steelwork is presently progressing in full swing. The erection of ten out of the twelve sets of V-trusses was completed, and the connections to those V-trusses were being installed. Regarding the EWS of WKT, the fabrication of glass panels commenced in March 2016. The HyD and the M&V Consultant will continue to closely monitor the progress of the SEB, and the implementation of the programme protection measures, such as the addition of a steelwork fabrication yard and the continuous increase in additional resources within this reporting period.

13. As regards the construction works for the Lin Cheung Road Underpass, the contractor was carrying out relevant excavation and structural works. The Lin Cheung Road Underpass was constructed within a limited area located between Kowloon Station and WKT with the deepest section to be excavated down to 23m below ground level and the presence of congested

underground utilities including power cables, water mains, sewers and gas mains etc. As such, the contractor is experiencing a number of difficulties and challenges during the course of construction. The HyD is urging the MTRCL to step up the monitoring of work progress, formulate and implement improvement measures in order to achieve the completion target.

14. In addition, to facilitate the construction of the underpass at the junction of Austin Road West and Lin Cheung Road, the first phase of the temporary closure of the Wui Man Road southbound was implemented in February 2016. The traffic condition was generally normal upon the temporary closure. The MTRCL was preparing a proposal for the second phase temporary closure of the Wui Man Road northbound. The HyD actively coordinated with the relevant local groups and Government departments, and anticipated that the proposal for concerned temporary road closure could be implemented in the third quarter of 2016.

(b) Construction of Tai Kong Po to Tse Uk Tsuen Tunnels (Contract 823A)

15. All the civil works of the Tai Kong Po to Tse Uk Tsuen South Tunnels section was completed in end January 2016. The civil works of the uptrack North Tunnels commenced in end March 2016 and was anticipated for completion in the second quarter of 2016. The HyD and its M&V Consultant will continue to closely monitor the progress of the remaining tunnel works.

(c) Construction of Tai Kong Po to Ngau Tam Mei Tunnels (Contract 824)

16. The progress of the tunnel lining works under Contract 824 showed continuous improvement. The tunnel lining works of South Tunnels section was completed in mid-February 2016 while the tunnel lining works of North Tunnels section was anticipated for completion in the second quarter of 2016. The HyD and its M&V Consultant will continue to closely monitor the progress of the remaining tunnel works.

(d) Construction of Huanggang to Mai Po Tunnels (Contract 826)

17. Regarding the Huanggang to Mai Po cross-boundary tunnel section, the progress of civil works was better than expected and it was substantially completed in end March 2016.

(e) E&M Systems and the respective Testing

18. The works on E&M systems were progressing at the WKT, Shek Kong Stabling Sidings ("SSS"), various ventilation buildings and tunnels. As a whole, the progress of the E&M systems at the SSS, ventilation buildings and tunnels was satisfactory. The progress of the E&M systems at the WKT remained critical. The progress is detailed below.

19. The installation of the E&M at Shek Kong Operation Control Centre ("OCC") was complete. T&C of the E&M systems were underway. The optical fibres for the communication network connecting to the OCC, the Shek Kong Plant Building South and North, and Pat Heung Ventilation Building were installed. The E&M systems at OCC were being undergone various tests for remote access and monitoring. The MTRCL made use of the additional temporary server installed under the Main Control System ("MCS") at the OCC to perform preliminary simulation tests for the system interface of WKT MCS.

20. The contractors for trackwork, overhead line, trackside auxiliaries, communications system and signalling system accessed about 81.6% of the tunnel areas for carrying out the installation works. A total of 51 km (about 69.7%) of long rail tracks was laid while a total of 32 km (about 44%) of overhead lines was installed. The MTRCL took over the Southbound tunnels section between Shek Kong and Hoi Ting Road of Mong Kok and the Northbound tunnels section between Pat Heung and Hoi Ting Road of trackside auxiliaries for the coordination of various works carried out by the contractors in full swing, which included 25kV overhead line supporting rack, 11kV power cables, communication cables, low voltage and lighting cables, drainage and fire

services water pipes, etc. There were 520 km (approximately 90%) and 295 km (approximately 60%) of the power cables laid in downtrack and uptrack tunnels respectively. The testing of the tunnel lighting system of the downtrack tunnel had commenced.

21. The start-up test for ventilation fans and air ducts for tunnel environmental control systems at Kwai Chung Ventilation Building and Nam Cheong Ventilation Building had been completed. The BS system at Mai Po Ventilation Building and Shek Kong Plant South and North had been completed while the progress of the BS system installation at Pat Heung, Mong Kok and Shing Mun Ventilation Buildings were also progressing well. Together with 8 sets of transformers at Mong Kok and Pat Heung Ventilation Buildings connected to 11kV power cables, a total of 31 sets of transformers at individual ventilation buildings were in operation. At present, 31 sets of tunnel ventilation fans had been delivered to individual ventilation buildings while another 10 sets of tunnel ventilation fans had been delivered to the WKT site, which would be installed at a later time. The installation and testing of the 132kV cables and 25kV traction power system at the Mong Kok West Traction Supply Station had been completed. The 25kV traction power system at Shing Mun Ventilation System was being installed for subsequent coordination with China Light and Power Company Ltd. ("CLP") for energisation.

22. At the WKT, the contractors for various E&M systems (including low voltage electrical installation, environmental control system, lifts and escalators and moving walkways, fire services, plumbing and drainage systems, etc.) had accessed about 152,200 m^2 of the site (about 31.8% of the total site area). The contractors for various BS systems continued their works in the critical rooms of WKT (South) at Levels B1 to B4. The work sites for fifteen escalators and thirty-six lift shafts had been handed over to the concerned contractors for installation works. In parallel, the contractors had strengthened their plant and manpower resources in order to recover the slippage of works at individual areas, and mitigate the impact caused by the previous delay of civil works at various floors and zones. The BS system of the North and South telecommunication equipment rooms at Level B2 of the WKT had been completed. The contractor

for fixed communications system had commenced the installation of equipment racks. The BS system at the signalling equipment room of WKT was completed, and the room was handed over to the contractor for trackside signalling equipment for equipment installation for preparation of the first phase of high speed train testing. At the South of WKT, the installation of chiller and heat exchanger was about 90% and 55% completed respectively. The installation of the fire services, plumbing and drainage systems was about 70% completed while the construction of the sea water pump house at Level B2 and the service corridor for sea water pipes at Level B3 of WKT were substantially completed. The civil construction of the environmental control room, plant rooms and switch rooms at Levels B2 and B3 of at WKT (North) were progressively completed for subsequent installation works by individual E&M contractors. Four transformers rooms at the North of WKT were handed over to CLP for installation of transformers while four sets of low-voltage switchboards were delivered on site for subsequent installation in low-voltage switch rooms.

23. The contractor for trackwork and overhead line completed the first phase of concreting works from the fourth to the ninth platforms (a total of six tracks) at Level B4 of WKT. With the gradual completion of underground structures at all floors in WKT, the number of access for delivery is diminishing. This caused limitation of work fronts and access for materials delivery. The HyD was urging the MTRCL to pay attention to this issue and formulate mitigation measures. The respective contractors had to enhance the coordination so as to overcome this construction bottleneck. In addition, as the peak of the installation works for E&M systems would be closely interfaced with the integrated T&C phase of the whole railway system, different government departments and Mainland parties must maintain close communication and collaboration in order to facilitate the timely completion of the concerned T&C process. The HyD will continue to guide the co-ordination work in this regard.

(f) <u>XRL Trains</u>

24. According to the current plan, the first XRL train will be delivered to Hong Kong in 2016 timely for the first phase testing and acceptance.

Transport and Housing Bureau
Highways Department
June 2016

Annex

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Legislative Council Panel on Transport
Subcommittee on Matters Relating to Railways

Progress and Financial Situation of the Construction of the Hong Kong Section of Guangzhou-Shenzhen-Hong Kong Express Rail Link

(Report for the period between 1 January and 31 March 2016)

INTRODUCTION

This report presents the construction progress of the Hong Kong section of the Guangzhou-Shenzhen-Hong Kong Express Rail Link ("XRL") project up to 31 March 2016.

BACKGROUND

2. Additional funding of the XRL project was approved by the Finance Committee of Legislative Council ("LegCo") on 11 March 2016, which allows the Corporation to take the project forward for completion in the third quarter of 2018, according to the revised schedule ("2018 Schedule for Completion").

3. The progress reported below is based on 2018 Schedule for Completion and the project progress, key performance indicators ("KPIs") as well as financial status for the period between 1 January and 31 March 2016 are reported in this paper.

MAJOR WORKS PROGRESS OF THE XRL PROJECT

(I) Overall Progress of the Construction Works

4. As at 31 March 2016, the overall progress of the XRL project was 78.9%[1] complete against the 76.7% planned progress according to the 2018 Schedule for Completion. West Kowloon Terminus Station North (Contract 810A) is still the key critical contract of the entire XRL project while Tai Kong Po to Tse Uk Tsuen Tunnels (Contract 823A) and Ngau Tam Mei to Tai Kong Po Tunnels (Contract 824) are the critical tunnel contracts. As for the cross-boundary tunnels (Contract 826), the civil works were substantially completed and is currently not critical to the programme.

(II) Major Progress with Tunnel Construction

5. The excavation of the entire 26-km tunnels for the Project has been completed in December 2015.

6. For Contract 823A – Tai Kong Po to Tse Uk Tsuen Tunnels, dismantling of the tunnel boring machine was behind schedule after completion of the tunnel excavation. Concreting works for the tunnel invert slabs and walkway commenced in end March 2016 after the machine was completely removed from the tunnel. The Corporation will closely monitor the performance of the contractor to complete the concreting works so that track laying can commence in the second quarter of this year.

7. For Contract 824 – Ngau Tam Mei to Tai Kong Po Tunnels, the tunnel lining works for southbound tunnel and northbound tunnel were 100% and 97.5% complete respectively. The construction of walkways in both tunnels is progressing steadily.

8. As for another tunnel contract, Contract 826 – cross-boundary tunnels,

[1] sum of all weighted percentage completed of all major contracts

concreting works for tunnel invert slabs and walkways were substantially completed. All six cross passages have been completed in the first quarter of 2016. This tunnel contract is currently not the critical contract under the XRL project.

9. Structural works for six out of seven Ventilation Buildings along the alignment of the tunnels have been completed. The remaining Ngau Tam Mei Ventilation Building was also about 88% complete.

The Ngau Tam Mei Ventilation Building in Yuen Long is taking shape.

10. The architectural builder's works and finishes works in Shek Kong Stabling Sidings ("SSS") and Emergency Rescue Siding (Contract 823B) were completed. Remaining road paving and landscape works are in progress.

11. Backfilling for the southern section of the approach tunnel area near Jordan Road (Contract 811B) was about 46.5% complete, and this will remain the case to make way for the construction of the roof section of the approach tunnel and the West Kowloon Plant Building.

12. Works for the new Public Transport Interchange ("PTI") near Jordan Road are progressing at both the north and south areas. The construction of ground beams and landscape deck of the PTI structure are in steady progress.

Construction of the new PTI landscape deck

(III) Major Progress of the Construction of West Kowloon Terminus

13. Overall excavation of the West Kowloon Terminus ("WKT") was 98.5% complete, and 78.1% of the concrete structure was cast, which is generally in line with the planned progress of 98.4% and 73.9% respectively.

14. The blasting operation at Level B4 of the Terminus north-top-down area was completed in late February 2016. Up to the end of the reporting period, a total of 119,535m^3 of rock had been excavated. After blasting, the remaining excavation of WKT is expected to be completed in the second quarter of 2016 by mechanical breaking.

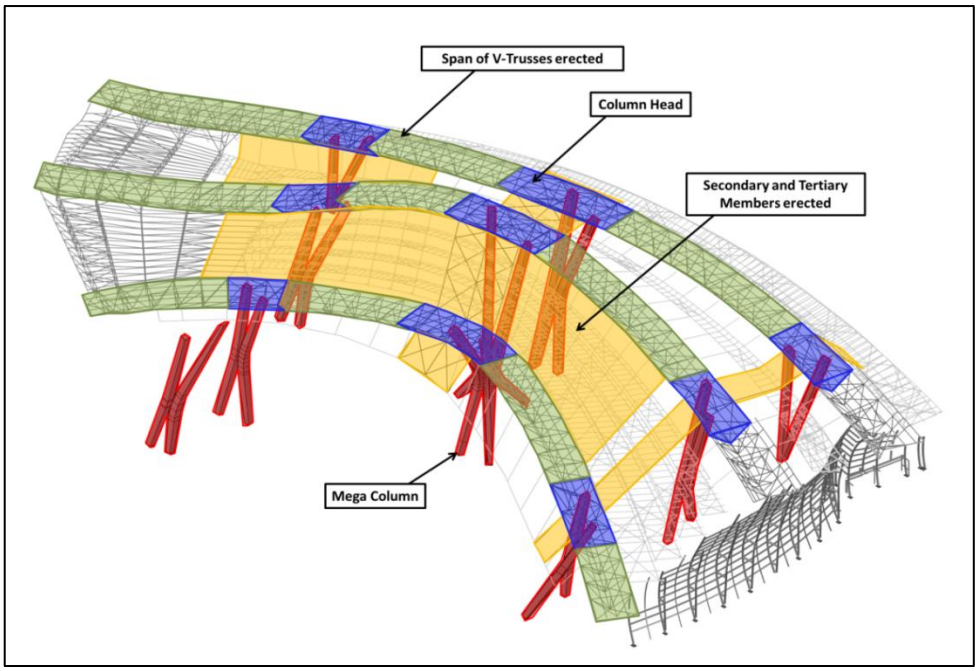
15. For the Station Entrance Building ("SEB"), erection of the temporary steelwork was 100% complete while permanent steelwork was 73% complete, which is a significant improvement against the figure of 46.9% as at the end of fourth quarter of 2015.

16. Fabrication of all spans of V-Trusses has been completed and ten out of twelve spans of V-trusses have been erected followed by the completion of all nine permanent mega columns. The remaining two spans of V-Trusses are expected to be erected by the second quarter of 2016 as planned. Installation of the secondary

and tertiary steel members connecting the V-trusses has progressed well. Upon completion of this work, the temporary supports to the V-trusses can then be removed for the next phase of the roof construction, i.e., constructing the concrete slab on the V-trusses to complete composite structure. This is targeted to commence in the second quarter of 2016.

V-Trusses erection in progress at WKT

17. Fabrication of External Wall System has also been commenced in March 2016.



The latest progress of the structural works for the Station Entrance Building at WKT (items in colour are completed)

(IV) E&M and Signaling Systems

18. Works under various Electrical & Mechanical ("E&M") contracts are in progress and were 54.6% complete overall.

19. The trackwork and overhead line contractor (Contract 830) has been given access to about 81.6% of the XRL track areas to carry out installation works. Out of the total track length of 72.8km, over 69.7% of tracks had been laid. Approximately 32km of 25kV overhead line wire was installed.

Track setting at WKT

20. Track installation was completed in the southbound and northbound tunnels between Shek Kong and Hoi Ting Road. Works trains have been deployed in these areas to facilitate E&M installation including cabling, 25kV overhead line, telecommunications equipment, signaling system, etc.

21. Signaling trackside equipment installation continues in the southbound tunnel between Mei Lai Road to Hoi Ting Road (Contract 820) and Shek Yam to Mei Lai Road (Contract 821) and is expected to complete by the third quarter of 2016.

Trackside E&M installation works at southbound tunnel from Shek Yam to Mei Lai Road

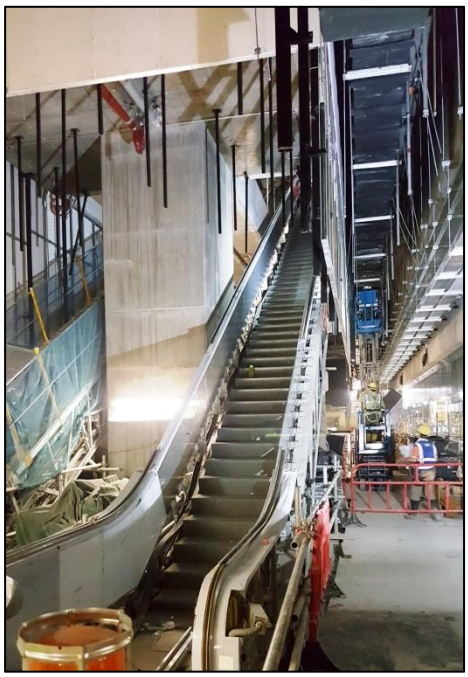
22. Installation of building services equipment in the seven ventilation buildings was 67.4% complete against the planned target of 61%

23. A total of thirty-one 11kV transformers, more than 40% of the total, were energized at various ventilation buildings and SSS, whilst 11kV cable laying for the southbound tunnel between SSS and Mongkok West Ventilation Building was substantially completed.

24. At SSS, testing of building services work continues, while second fix at Diesel Fueling Station is in progress. Partial Acceptance Test for SSS signaling equipment, covering Engineering Train Sidings and Loco Sidings, has commenced in late February 2016 and is expected to complete by the second quarter of 2016.

25. At WKT, E&M contractors have been given access to an area of around 152,202m², i.e. about 32% of the total floor area for E&M installation under Contracts 810A, 810B and 811B area. Building services of WKT was 44.1% complete against the planned target of 41.1%.

26. Fifteen out of seventy-one escalators are being installed at WKT. Manufacturing of another twenty-nine units has commenced for installation scheduled for the third quarter of 2016.



Installation of escalators at WKT is in progress

27. Installation continues in full swing for the chiller plant and heat exchanger plant at WKT. Chillers, chilled water pumps and pipe fitting installations were substantially completed. The chilled water circuit is expected to be completed in May 2016.

28. 11kV cabling work for WKT South has been completed and ready for energization to facilitate subsequent testing and commissioning of other E&M systems.

(V) Construction Challenges

(a) West Kowloon Terminus

29. The complicated works of the SEB continue to be one of the major construction challenges facing the project. The Corporation is closely monitoring the progress and will work with contractors to overcome the challenge to meet the delivery program for the Project.

Structural works for Station Entrance Building at WKT

(b) Labour Shortage

30. As at the end of March 2016, a daily average of about 6,713 construction workers and technical / professional staff members are employed for the construction and E&M works for the tunnels and the WKT during the reporting period. As the project moves towards installation and finishing works, the demand of E&M workers will grow, which are in short supply in Hong Kong. The Corporation continued its efforts in helping contractors on the recruitment of workers and labour importation under the Supplementary Labour Scheme.

(VI) Preparation and Interface Works

31. The temporary closure of the Wui Man Road (WMR) southbound was implemented in the first quarter of 2016. Temporary traffic management scheme will be further enhanced in early April 2016 to address the concerns expressed by the nearby community. Full closure of WMR (with the closure of the northbound traffic) is currently being reviewed by relevant government departments and scheduled for implementation in the third quarter of 2016.

(VII) Updated Financial Situation of the XRL project

32. As at 31 March 2016, the cumulative expenditure for the awarded contracts was $53.92 billion.

33. The Corporation will continue to monitor closely the costs and progress of the XRL project. Details of the financial situation of the project are shown at Annex 2.

MTR Corporation Limited
June 2016

Annex 1 - KPIs of Major Works Progress

Summary of the Construction Progress of the XRL Project

Works Commencement Date	26 January 2010
Target Completion Date	Q3 2018, including a 6-month contingency period
Works Progress	Overall completion progress: 78.9% [as at end March 2016]

Progress of Key Civil Works Contracts

Cumulative progress of contracts for WKT construction:

Contract No.	Concrete structural works	Terminus excavation works
	End March 2016	End March 2016
810A	70.3% (64.6%)	97.4% (97.1%)
810B	98.6% (98.2%)	100% (100%)

Percentage in bracket is the planned progress of the Q3 2018 Schedule for Completion

Cumulative progress of contracts for tunnel construction:

Contract No.	Actual progress	Planned progress*
	End March 2016	End March 2016
811A	99.5%	98.7%
811B	75.6%	72.7%
820	100%	100%
821	100%	100%
822	99.9%	99.9%
823A	94.5%	93.8%
823B	99.4%	98.9%
824	94.0%	89.8%
825	98.7%	97.9%
826	99.9%	97.6%

Cumulative progress of E&M works:

E&M Works Progress	Actual progress	Planned progress*
	End March 2016	End March 2016
WKT Building Services	44.1%	41.1%
Track Laid	69.7%	65.8%
Overall installation	32.0%.	26.1%
Overall E&M	54.6%	52.6%

** Percentage is the planned progress of the Q3 2018 Schedule for Completion*

Annex 2 - Financial Expenditure

Expenditure report ending 31 March 2016

Table 1 – Situation of Expenditure

	Awarded contract sum for the contracts ($ million)	**Cumulative expenditure ($ million)**
Railway Tunnels	22,473.5	28,636.3
WKT	14,596.3	18,493.5
E&M Works	8,189.4	6,785.3
Total	**45,259.2**	**53,915.1**

Table 2 – Situation of substantiated claims

	Claims resolved			**Claims unresolved**		
	Number	Amount claimed originally* ($ million)	Amount awarded ($ million)	Number	Amount claimed* ($ million)	Interim award ($ million)
Railway Tunnels	121**	3,317	1,732	355	9,004	1,892
WKT	47	258	193	292	11,285	2,680
E&M Works	2	0	0	66	3,476	271
Total	**170**	**3,575**	**1,925**	**713**	**23,765**	**4,843**

**Amount stated in the contractor's detailed claim report.*

***One claim withdrawn by the contractor*

2. As at 31 March 2016, the Corporation had received 883 substantiated claims and the amount claimed in total was approximately $27.3 billion, representing 60.4% of the awarded contract sum for the contracts. The

Corporation has been discussing the details of the claims with the contractors concerned, and would thoroughly assess the amount claimed. The Corporation would process each claim in a prudent manner, and the contractors would have to provide sufficient justifications and information. As at 31 March 2016, 170 cases were resolved and about $1,925 million was awarded, representing about 4.3% of the awarded contract sum for the contracts. Subject to the needs of individual works and progress of the relevant assessment and discussion, interim awards amounting to about $4,843 million have been made for some cases.