

Legislative Council Panel on Transport
Subcommittee on Matters Relating to Railways
Progress Update of the Construction of the Shatin to Central Link
(As at 31 March 2018)

(Translation)

Introduction

This paper reports to Members on the progress of the main construction works of the Shatin to Central Link (“SCL”) as at 31 March 2018.

Background

2. SCL, with a total length of 17 kilometres, consists of the following two sections –

- (a) Tai Wai to Hung Hom Section: this is an extension of the Ma On Shan Line from Tai Wai via Southeast Kowloon to Hung Hom where it will join the West Rail Line; and
- (b) Hung Hom to Admiralty Section: this is an extension of the East Rail Line from Hung Hom across the Victoria Harbour to Wan Chai North and Admiralty.

3. There are ten stations in SCL. Apart from bringing improvements to the existing Tai Wai Station, the SCL project involves construction of new stations or extension of existing stations at Hin Keng, Diamond Hill, Kai Tak, Sung Wong Toi, To Kwa Wan, Ho Man Tin, Hung Hom, the Hong Kong Convention and Exhibition Centre, and Admiralty. It is a territory-wide strategic railway project (alignment layout at **Annex 1**). Admiralty Station and Ho Man Tin Station will become integrated stations providing interchange service to passengers of SCL and South Island Line (East)(“SIL(E)”), as well as passengers of SCL and Kwun Tong Line Extension (“KTE”) respectively.

4. The entire SCL project is funded by the Government under the “concession approach”. The MTR Corporation Limited (“MTRCL”) is entrusted by the Government to carry out the construction of the project. On 18 February 2011, the Finance Committee of the Legislative Council approved the funding applications for “**63TR** – Shatin to Central Link – construction of railway works – advance works” and “**64TR** – Shatin to Central Link – construction of non-railway works – advance works” with a total of about **\$7,700 million** (in money-of-the-day prices). Thereafter, the Government and MTRCL entered into an agreement for entrusting to the latter the advance works of SCL at the expanded Admiralty Station and Homantin Station while implementing SIL(E) and KTE respectively. The advance works commenced in May 2011.

5. Regarding the main works of SCL, the Finance Committee of the Legislative Council approved the funding applications on 11 May 2012 for “**61TR** – Shatin to Central Link – construction of railway works – remaining works” and “**62TR** – Shatin to Central Link – construction of non-railway works – remaining works” with a total of about **\$71,400 million** (in money-of-the-day prices). Thereafter, the Government and MTRCL entered into an agreement for entrusting construction, testing and commissioning of the main works of SCL to the latter. The entrustment cost concerned is about \$70.8 billion. MTRCL has been entrusted to provide management and monitoring service to the SCL project. The main works commenced in July 2012. According to the agreement for the main works of SCL, the original target commissioning date for the “Tai Wai to Hung Hom Section” is December 2018 and the original target commissioning date for the “Hung Hom to Admiralty Section” is December 2020.

6. The Finance Committee of the Legislative Council approved the funding application for increasing the Approved Project Estimate of **63TR** by \$847.7 million from \$6,254.9 million to \$7,102.6 million at its meeting on 17 June 2017 for the additional fund required by the Government for the SCL advance railway works. The Approved Project Estimate for the entire SCL project is adjusted upward from the original estimate of \$79,800 million to **\$80,700 million**¹ (in money-of-the-day prices).

¹ The Approved Project Estimate for the entire SCL project comprises (i) Protection Works (**58TR** Shatin to Central Link – construction of railway works – protection works and **59TR** Shatin to Central Link – construction of railway works – protection works in Wan Chai Development Phase II) of about \$700 million (in money-of-the-day prices); (ii) Advance Works (**63TR** and **64TR**) of about \$8,600 million (in money-of-the-day prices); and (iii) Main Works (**61TR** and **62TR**) of about \$71,400 million (in money-of-the-day prices). The total is about \$80,700 million.

7. The Government received the latest cost estimate of the main works of the SCL project from the MTRCL on 5 December 2017. MTRCL indicated a need of adjusting upward the entrustment cost of the main works of the SCL project, from \$70.8 billion to \$87.3 billion, i.e. an increase of about \$16.5 billion. The Government is conducting a detailed review of the MTRCL's latest cost estimate.

8. MTRCL considered that the main reasons for the increase in construction cost included the archaeological and conservation works at Sung Wong Toi Station, the additional expenses due to delays in the handover of work sites at Wan Chai north, and the station works required for allowing flexibility for the topside development at Exhibition Centre Station. Since December last year when MTRCL submitted the latest cost estimate of the main works of SCL project, the Highways Department (“HyD”), in collaboration with the monitoring and verification (“M&V”) consultant, have held several meetings with MTRCL, and is reviewing rigorously the information given by the MTRCL. HyD will scrutinize the assumptions and background of the estimates according to the usual practice for government public works projects to ascertain whether there are sufficient reasons for the estimate of the MTRCL. As the SCL project involves many works contracts and the amount of information required detailed examination is substantial, HyD had requested MTRCL to provide more information for its detailed review. The detailed review concerned is still in progress. Upon completion of the detailed review, the Government will apply for additional funds from the LegCo to continue with the SCL works.

9. According to the entrustment agreement, MTRCL is responsible for the overall management of the SCL project. The Government maintains a mechanism to closely monitor the work of the MTRCL, which includes a Project Supervision Committee (“PSC”) led by the Director of Highways (“DHy”). The PSC holds monthly meetings to review the progress of the project and monitor the procurement activities, post-tender cost control and resolution of contractual claims. MTRCL submits monthly progress reports to the Highways Department (“HyD”) to report the latest progress and financial position of the SCL project. Moreover, HyD holds monthly Project Coordination Meetings and Project Progress Meetings with MTRCL to monitor different aspects of the implementation of the project and the progress, the handling of issues in relation to design, construction and environmental fronts that may have potential impact to the progress and programme of the SCL project, as well as the handling of

interfacing issues with other projects. The HyD has also employed a M&V consultant to assist in the monitoring work and undertake regular audits, advise the HyD of any potential risk of delay and also offer comment to the HyD on the appropriateness of MTRCL's proposed delay recovery measures. The DHy meets with the Secretary for Transport and Housing ("STH") on a monthly basis and submits reports to report the progress of the project. Where necessary, he also reports to the STH any significant issue relating to the implementation of the project.

Latest Progress of the Main Works

10. The progress report of the SCL project as at 31 March 2018 submitted by MTRCL is at **Annex 2**. Our analysis and supplement on the progress report are provided below.

Tai Wai to Hung Hom Section

Shatin Section (Section of Railway between Tai Wai Station and Ma Chai Hang, Wong Tai Sin, including Hin Keng Station and Modification of Station Platforms of Ma On Shan Line)

11. Building services works and electrical and mechanical (E&M) works at Hin Keng Station and the connecting elevated and at grade tracks were completed and the relevant system testing and statutory inspections continue. Construction of the Emergency Vehicular Access outside the station, diversion works for the underground utilities and road reinstatement works at Che Kung Miu Road are underway. The progress is on schedule. Overhead lines at the track sections between Hin Keng and Hung Hom stations were energised in January 2018 and trial runs are being conducted for the dynamic tests of various systems.

Wong Tai Sin Section (Section of Railway between Ma Chai Hang, Wong Tai Sin and Kai Tak, including Diamond Hill Station)

12. Building services works and E&M works, in the Diamond Hill Station and underneath Lung Cheung Road, of the two pedestrian adits connecting SCL and the Kwun Tong Line are on schedule. Road reinstatement works at Lung Cheung Road is in progress. Besides, the construction of the emergency access point and the Public Transport Terminus at the junction of Wong Tai Sin Road

and Sha Tin Pass Road continues. The construction of the Ventilation Building at the former Ma Chai Hang Recreational Ground was substantially completed and the relevant system testing and statutory inspections are in progress.

Kowloon City Section (Section of Railway between Kai Tak Station to Ho Man Tin Station, including Sung Wong Toi Station (formerly named as To Kwa Wan Station) and To Kwa Wan Station (formerly named as Ma Tau Wai Station))

Kai Tak Station

13. The testing of the building services systems at Kai Tak Station continued. The progress is on schedule.

Sung Wong Toi Station

14. In accordance with the recommendation of the Environmental Impact Assessment Report of SCL, MTRCL carried out the archaeological work at the designated site area before the commencement of the construction of Sung Wong Toi Station. Under the close supervision of the Antiquities and Monuments Office (“AMO”), the independent archaeological team engaged by the contractor of the SCL carried out the archaeological work between November 2012 and December 2013. Over 500 coins mainly dated to the Song dynasty were discovered while piling works were carried out at the location of the launching shaft for tunnel boring machines. Upon the request and under the close supervision of AMO, the independent archaeological team carried out the expanded archaeological work at the launching shaft area in December 2013. A square-shaped stone well of the Song-Yuan period and stone building remnants (i.e. items 5 and 6 of the archaeological features at **Annex 3**) were discovered at the south-western corner of the TBM launching shaft. Upon the request of AMO, the archaeological work was further expanded to the entire works site of Sung Wong Toi Station, which was finally completed in September 2014.

15. To avoid affecting the archaeological works, MTRCL suspended the construction works in the area where archaeological work was ongoing, except for those relating to the archaeological excavation. It had caused a delay to the progress of works. As a result, some labour, machinery and equipment of the contractor had to be left idle. In order not to affect the remnants within the archaeological work area, MTRCL had to alter the design and re-sequence the construction of the launching shaft. HyD worked with MTRCL to explore

measures to adjust the construction sequence, modify the original construction method, and to devise a suitable revised scheme for the design of Sung Wong Toi Station with a view to preserving the discoveries while minimising the impact on the works.

16. The Antiquities Authority (i.e. the Secretary for Development), after considering the views of the Antiquities Advisory Board, the Legislative Council and the Kowloon City District Council, decided on the conservation options on 8 December 2014 with most of the archaeological discoveries preserved in-situ. The final report of the archaeological works for the SCL Sung Wong Toi Station works site was submitted to and accepted by AMO in late June 2017. MTRCL has handed over the archaeological findings to AMO progressively.

17. As we stated in the papers submitted to this Subcommittee and the Panel on Development in November 2014, due to the preservation in-situ of the remnants at and in the vicinity of Adit C connecting the station and Pak Tai Street (i.e. items 6 to 10 of the archaeological features at **Annex 3**), the entire alignment of the adit would be seriously affected. It would be necessary to find a suitable alternative alignment. MTRCL completed the demolition works of supporting facilities within the area around the adit, previously reserved as a temporary works site for the construction of the station and the railway tunnel, and is inviting tenders from qualified companies for the archaeological investigation works to facilitate the study for the alternative to Adit C and other feasible options for connection to the station. The archaeological investigation work is anticipated to commence in the third quarter of 2018 for the completion in the third quarter of 2019. In other words, Adit C connecting the station and Pak Tai Street would not be completed at the same time as Sung Wong Toi Station. A temporary access at grade would be required to connect the station entrance. In case no suitable and cost-effective alternative alignment could be constructed eventually as a result of further archaeological discoveries or other site constraints, residents in the vicinity of Pak Tai Street could still use the existing pedestrian crossing facilities at Sung Wong Toi Road to gain access to Sung Wong Toi Station (see **Annex 4**). MTRCL is discussing with relevant departments the feasibility of adding an at-grade crossing at a suitable location of Song Wong Toi Road for reducing the walking distance between Pak Tai Street and the station entrance. Upon completion of the preliminary study on the alignment and alternative scheme for the Adit C, MTRCL will consult the Kowloon City district council and relevant local community so as to ensure the alternative scheme is convenient and could meet the public needs.

18. The construction works of Sung Wong Toi Station fully resumed in March 2015. The structural works of the station roof was completed. The fitting out works, building services works and E&M works inside the station are in progress. The fitting out works at the station entrances is also in progress.

19. MTRCL previously estimated that the archaeological works would result in a minimum delay of at least 11 months and a minimum additional cost of about \$4.1 billion to the “Tai Wai to Hung Hom Section” of SCL. In this connection, HyD and its M&V consultant worked closely with MTRCL and provided suggestions to enhance the delay recovery measures proposed by MTRCL, with a view to mitigating part of the delay to the “Tai Wai to Hung Hom Section”. With the efforts of the construction team, the delay recovery measures implemented at the “Tai Wai to Hung Hom Section” is picking up the pace progressively.

To Kwa Wan Station

20. To Kwa Wan Station is an underground station beneath Ma Tau Wai Road. The station is being constructed by a top-down method. To cater for the construction of the station, the traffic diversion scheme implemented at a section of Ma Tau Wai Road between Chi Kiang Street and Sheung Heung Road continues. Since end 2016, phase 3 of the temporary diversion scheme commenced and two southbound traffic lanes and two northbound lanes are being provided in phases to replace the existing two southbound lanes and a single northbound lane arrangement. With the new phase of temporary traffic diversion implemented for the section of Ma Tau Wai Road between Lok Shan Road and Chi Kiang Street in mid-September 2017, most of the section of Ma Tau Wai Road affected by the SCL construction works are now operating in two-lane and two-way mode. The fitting out works, building services works and E&M works inside the station are in progress. Construction of the station entrances, ventilation shaft and the watermain laying works at Ma Tau Wai Road is generally on schedule.

Hung Hom Section (Section of Railway between Ho Man Tin Station and Hung Hom Station, including the modification works of Hung Hom Station and associated tunnelling works)

21. Regarding the temporary traffic diversions along Chatham Road North

implemented for the tunneling works at the Hung Hom Section, following the completion of the works, the eastbound and westbound carriageways, and other temporarily diverted slip roads have all been reinstated to its original alignment in the end of 2017. E&M installation works adjacent to the railway track in the tunnel of the section between Ho Man Tin Station and Hung Hom Station were completed. For the tunnel section near Princess Margaret Road connecting the East Rail Line and the new platforms of Hung Hom Station, track laying works continues. The progress of the above works is generally on schedule. Besides, construction of the SCL platform and structural works of the tunnel at Hung Hom Station was completed. Building services and E&M works inside the station is generally on schedule. System testing and statutory inspections by relevant departments will be conducted progressively.

22. Regarding the quality assurance problems for the tunnel joints at Hung Hom Station, although MTRCL indicated that the incident would neither affect the safety, integrity of the entire tunnel structure, nor affect the programme or cost of the whole project, we expressed concern about the incident. According to the Entrustment Agreements of the SCL project signed between the MTRCL and the Government, the MTRCL shall carry out the design, construction, testing and commissioning of the SCL, and ensure the tasks entrusted are conducted with skill and supervision reasonably expected of a professional, including the requirement to ensure that the quality of works meets the required standards. HyD requested MTRCL to take remedial measures to rectify the substandard works and instructed MTRCL to strengthen site supervision and monitor closely the progress of the remedial works. Since the incident is related to the quality of construction works, MTRCL and the contractor would handle compensation issue concerned according to the contract provisions.

Hung Hom to Admiralty Section

Cross Harbour Section (Section of the tunnel across Victoria Harbour)

23. The main works of the Cross Harbour Section continue. The construction of the ventilation building near the shore at Hung Hom was in progress. To facilitate the future placement of immersed tube tunnel (“IMT”) units, The trench dredging works at the seabed of Victoria Harbour and the Causeway Bay Typhoon Shelter (“CBTS”) was completed. The last immersed tube tunnel (IMT) unit was successfully installed at Victoria Harbour in April 2018. Connection works of

tunnel units at CBTS was in progress. The overall progress of the Cross Harbour Section is generally on schedule.

Hong Kong Island Section (Section of Railway between Wan Chai North and Admiralty Station, including Exhibition Centre Station(formerly named as Exhibition Station))

24. The excavation works of the TBM tunnels from CBTS to Exhibition Centre Station were completed by the end of 2016. The reinstatement works on the affected road sections and facilities, including the carriageway of Gloucester Road, were completed in April 2018. The underground box culvert reinstatement works was also completed in April 2018. The excavation of the up-track and down-track TBM tunnel from Fenwick Pier Street to Admiralty Station was successfully completed in May 2017 and November 2017 respectively. The connection works between Admiralty Station and the tunnel was in progress. For the cut and cover Western Approach Tunnels from the west of Exhibition Centre Station to Fenwick Pier Street, the construction of the diaphragm wall was completed in June 2017 and excavation works were in progress and the construction works for a part of tunnel structure was on-going.

25. The main works of Exhibition Centre Station are not only highly complicated, but also involve a wide extent of sites. For instance, prior to the construction of Exhibition Centre Station at the ex-Wan Chai North public transport interchange, ex-Wan Chai swimming pool and the existing Harbour Road Sports Centre, the re-provisioning works of these facilities had to be completed before the demolition works take place. As there was a need to maintain the services of the above facilities at their original locations before they were re-provided at the new places, only limited site investigation works could be carried out and the detailed site investigation works could only be conducted after the new facilities are re-provided. As such, the geological conditions in these areas remain uncertain and may subsequently affect the progress and the cost of works. Furthermore, since parts of Exhibition Centre Station are located underneath the busy and narrow roads in Wan Chai North, large scale temporary traffic management schemes are required to be implemented in stages in order to make rooms for the construction of Exhibition Centre Station. The limited space has posed constraints on the planning of works, such as site arrangement, works sequence and the associated integrated temporary traffic management schemes etc. The diversion of Fleming Road box culvert and the congested underground

utilities will also be required to facilitate the construction of Exhibition Centre Station that runs across Fleming road. Prior to the works commencement, it was not possible to close the said road to carry out trial trenches for verifying the information provided by utility companies and relevant departments about the number and location of the underground utilities there. In addition, the current conditions of some of the utilities are unsatisfactory, hence repairing works are required prior to the excavation works. These have increased the construction difficulties and uncertainties, thereby posing certain risks to the works progress.

26. The new Harbour Road Sport Centre (“HRSC”) was completed and opened for public use in May 2017. After the demolition of the original HRSC, MTRCL completed the pipe piling works and is carrying out bulk excavation works. Results of the further ground investigation works at the original HRSC showed that the actual rockhead level was higher than anticipated, and more rock excavation was needed. MTRCL considered to change the rock excavation method to blasting in second half of 2018 in order to avoid affecting the progress of the works at Exhibition Centre Station. Blasting would commence only after the issue of a Blasting Permit by the Mines Division of Geotechnical Engineering Office. To reduce the impact of blasting on the surrounding areas, professional engineering officers should ensure the ground was covered and blasting was carried out under a confined environment.

27. MTRCL implemented a new temporary traffic management scheme in Wan Chai North in March 2018. The carriageway of Convention Avenue (eastbound) was shifted northward, the bus stop was relocated westward and the temporary footbridge at Convention Avenue connecting to Wan Chai Ferry Pier was extended northward. To facilitate the re-provisioning of the footbridge at Convention Avenue connecting to Wan Chai Ferry Pier, MTRCL was carrying out the foundation works for the central pier of the permanent footbridge at Convention Avenue. In order to facilitate the next stage of Exhibition Centre Station construction and the remaining construction works of the footbridge at Convention Avenue, the implementation of temporary traffic management measures in stages at Wan Chai North will be continued.

28. The bulk excavation at ex-Wan Chai North public transport interchange and ex-Wan Chai swimming pool commenced in July and August 2017 respectively. Furthermore, diversion works of the underground box culvert at Fleming Road completed in December 2017. The bulk excavation works for the Exhibition Centre Station were in full swing.

29. MTRCL discovered three wartime unexploded ordnance (“UXO”) at the works sites of the SCL project on 27 January, 31 January and 10 May 2018. The first two locations (two UXOs) and the third location are the works site of the former Wan Chai Swimming Pool and the former Harbour Road Sport Centre respectively. The three UXOs were discovered by engineering site staff during excavation works in accordance with the prudent works procedures. MTRCL would continue adopting the prudent approach in carrying out the excavation works to ensure the safety of the public and the engineering site staff. HyD requested MTRCL to assess the time and cost implications arising from the discovery of UXOs, and explore delay recovery measures to minimise the risk of project delays.

30. To allow flexibility for the construction of convention facilities above Exhibition Centre Station, additional foundation and facilities at the station have to be carried out. Hence, the construction of the station becomes more complicated. Based on the currently available information on the geological condition, it is initially estimated that this would result in a delay of at least 5 months for the construction of Exhibition Centre Station and an increase in construction cost accordingly.

31. Regarding the large metal object found on the seabed within the reclamation area under Wan Chai Development Phase II (“WDII”), the reclaimed land was originally planned to be handed over to the contractor of SCL at the end of December 2016. As the discovery of the metal object had affected the progress of reclamation works there, CEDD has endeavor to complete their works there and handed over the relevant work sites to the SCL contractor in January, February and July 2017 respectively. As compared with the original schedule, the handover date of part of work sites was deferred by 7 months due to the impact of the large metal object.

32. In addition, as mentioned in previous progress reports, CEDD estimated that the handover date of the associated critical work sites adjoining the junction of Expo Drive East and Convention Avenue would be deferred by about 6 months. CEDD had implemented measures to catch up with part of the works progress and most of the work sites were handed over to MTRCL in accordance with the original schedule. The original delay of 6 months for the handover dates of other critical work sites was also shortened. HyD and MTRCL together with CEDD have been exploring further measures to minimize the risk of delay to SCL as far

as possible. In July 2017, CEDD has handed over a majority of the remaining work site to the SCL contractor.

33. To deal with a left-in pipe pile located at Fenwick Pier Street, MTRCL's contractor had carried out grouting works in the vicinity of the abandoned pile to replace the construction of part of the diaphragm wall there. MTRCL completed the decking construction and is carrying out bulk excavation works there. MTRCL completed the construction of a flood protection wall at the western approach tunnel under the atrium of the convention centre to cope with possible flooding risk due to the changes in the continuous diaphragm walls as mentioned above.

34. MTRCL previously indicated that the "Hung Hom to Admiralty Section" would incur a further delay of three months due to the modification works as mentioned in paragraph 33 above and there would be an increase in construction cost. HyD has requested MTRCL to submit further detailed information and is working in collaboration with its M&V consultant to critically examine the impact assessment by MTRCL. HyD has also requested MTRCL to proactively explore measures to recover the progress so as to minimize the risks of construction delay.

35. The target commissioning date of the "Hung Hom to Admiralty Section" will remain in 2021. Besides, apart from the additional construction cost arising from the need to allow flexibility for the convention facilities above Exhibition Centre Station, the construction delay as a result of the deferred handover of work sites and the measures mentioned in paragraph 33 may also lead to additional construction cost.

Naming of railway lines after commissioning

36. The Tai Wai to Hung Hung Hom Section under the SCL project, when completed in mid-2019, will connect the existing West Rail Line ("WRL") and Ma On Shan Line ("MOL"). During the project implementation stage, this Section, WRL and MOL have been simply referred to as the "East West Corridor" ("EWC"). On the other hand, the Hung Hom to Admiralty Section under the SCL project, when completed in 2021, will extend the existing East Rail ("EAL") to Admiralty Station on Hong Kong Island. During the project implementation stage, this new Section has been referred to as the "North South Corridor" ("NSC") (see **Annex 5**).

37. However, both the east-west alignment and north-south alignment appear in a number of railway lines. The references to the EWC and the NSC will be confusing. Therefore, when the new railway sections are commissioned, it will be more convenient to the public to adopt shorter names that comply with the format of existing railway lines. Based on the characteristics of the railway line, the EWC linking Tuen Mun and Ma On Shan, upon commissioning, will be named as “Tuen Ma Line”, signifying the new railway connecting Tuen Mun and Ma On Shan. As the NSC is to extend the existing EAL to Hong Kong Island, the existing name of "East Rail Line" will continue for the entire railway line after its commissioning.

Conclusion

38. In view of the above assessments as mentioned in paragraphs 10 to 35 above, taking into account the delay of about 11 months to the “Tai Wai to Hung Hom Section” of SCL arising from the archaeological works, archaeological discoveries and conservation options for archaeological features at Sung Wong Toi Station earlier on, the commissioning date of “Tai Wai to Hung Hom Section” is deferred to end 2019. HyD has been coordinating and overseeing the construction of SCL so that MTRCL could try its best to recover some of the delay to the “Tai Wai to Hung Hom Section”. With the efforts of the construction team, the delay recovery measures implemented at the “Tai Wai to Hung Hom Section” is picking up the pace progressively. Hence, the target commissioning date of this section could be advanced to about mid-2019.

39. Due to the impact of site handover arrangement of WDII and the complicated underground condition at Exhibition Centre Station, as well as to allow flexibility for the construction of new convention facilities above Exhibition Centre Station, the target commissioning date of the “Hung Hom to Admiralty Section” remains in 2021. HyD has also requested MTRCL to proactively explore measures to recover the progress so as to minimize the risks on construction delay. We will continue to coordinate and oversee the construction of SCL so as to achieve the aforementioned revised target commissioning dates.

40. SCL is a major underground infrastructure project of a considerable scale. There are various difficulties and challenges encountered in the course of construction. It is unavoidable that there are deviations from the original plan for individual works contracts. MTRCL has adjusted its works procedures having regard to the actual situation of work sites. Additional manpower and machinery

have also been deployed in order to overcome the difficulties. The Government will closely monitor the progress of works and the construction. It will also assist MTRCL to resolve the problems encountered in the course of construction as early as possible and conduct timely reviews of the commissioning programme taking into account the latest situation of the works.

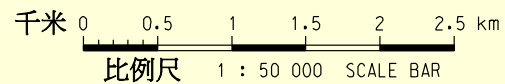
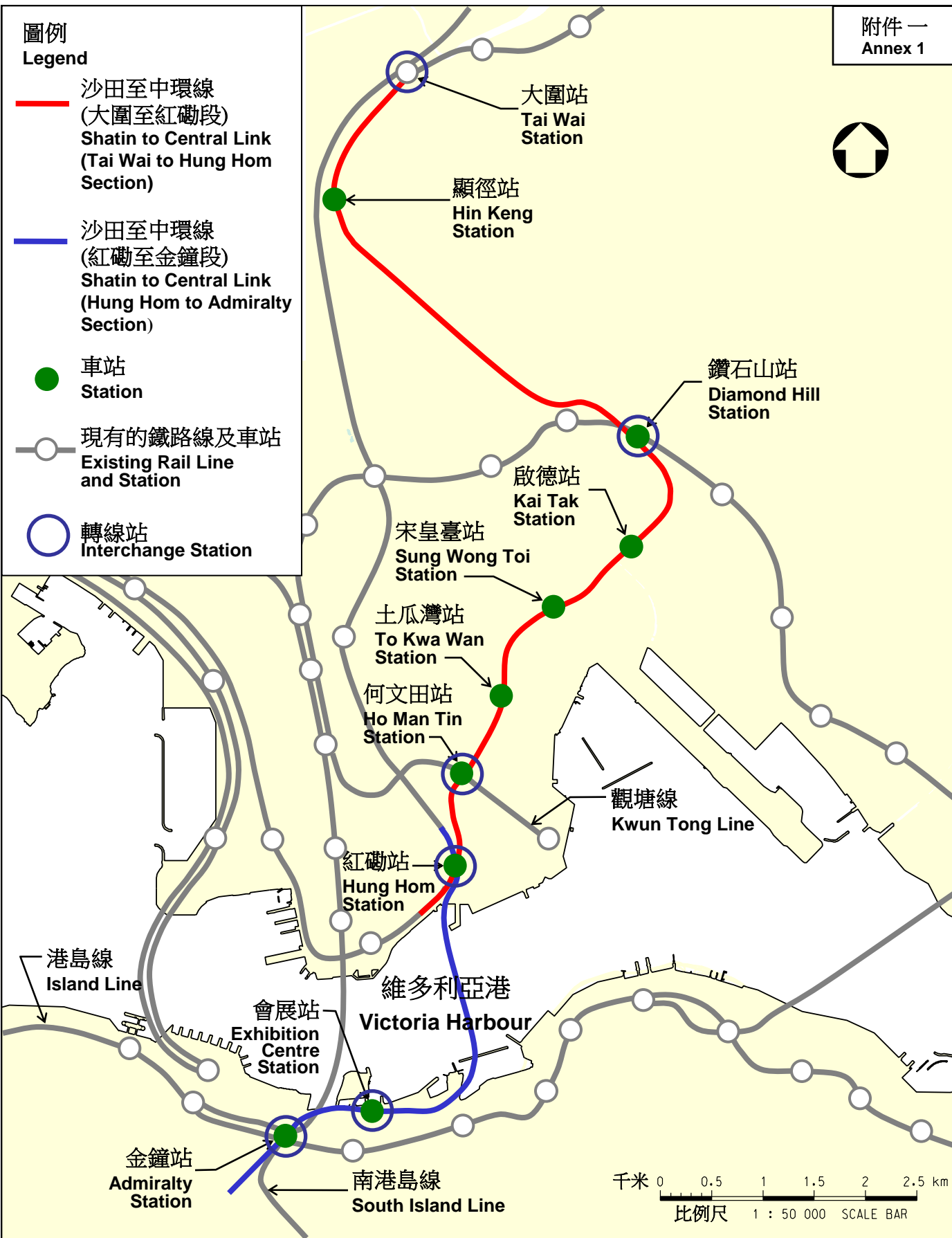
41. The latest cost review of the main works of the SCL project submitted by MTRCL in December 2017 indicated a need to increase the entrustment cost of the main works of SCL by about \$16.5 billion. HyD, in collaboration with the M&V consultant, requested MTRCL to provide more information and continue to critically scrutinise the estimate.

42. Given the large scale of the SCL project, the number of major civil and mechanical and electrical contracts exceeded 57. These contracts covered various aspects of engineering such as foundation, geotechnical, tunnel drilling, civil and structural engineering, electrical and mechanical as well as information technology. As such, it took time to review the cost estimate. In addition, as many contracts are still underway, it was necessary to assess the part of the cost not yet settled on the basis of the current information, including close scrutiny of the assumptions and background of the estimate concerned. HyD and its M&V consultants thus needed more time to complete the detailed review. As it is anticipated that the contingencies for the main works of the SCL would not be sufficient to meet the additional costs of the main works, upon completing the scrutiny of the additional costs, we will seek additional funding from the LegCo for the continuation of the SCL works.

**Transport and Housing Bureau
Highways Department
May 2018**

圖例
Legend

- 沙田至中環線
(大圍至紅磡段)
Shatin to Central Link
(Tai Wai to Hung Hom Section)
- 沙田至中環線
(紅磡至金鐘段)
Shatin to Central Link
(Hung Hom to Admiralty Section)
- 車站
Station
- 現有的鐵路線及車站
Existing Rail Line and Station
- 轉線站
Interchange Station



圖則名稱 drawing title

沙田至中環線的走線

Alignment of the Shatin to Central Link

圖號 drawing no.
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鐵路拓展處 Railways Development Centre

路政署
Infrastructure Department

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

**Progress Update of the Shatin to Central Link
(As at 31 March 2018)**

INTRODUCTION

This report updates Subcommittee members on the progress of Shatin to Central Link (“SCL”) as at 31 March 2018.

OVERVIEW OF THE SCL PROJECT

Cost and expenditure

2. Since mid-2012, 27 major civil and 30 major electrical & mechanical (“E&M”) contracts¹, together with other minor contracts, have been awarded with a total sum of \$57.660 billion. The contract sums for civil works and E&M works are about \$43.758 billion and \$13.902 billion respectively (Please refer to Enclosure I)

3. Under the Entrustment Agreement for the SCL, the Government of the Hong Kong Special Administrative Region (“the Government”) is responsible for funding the construction of the SCL. As previously reported, currently the Tai Wai to Hung Hom Section is expected to be completed in mid-2019 and the Hung Hom to Admiralty Section, is expected to be completed in 2021.

Cost control mechanism

4. The Corporation attaches great importance to the monitoring and cost control of railway projects. The Corporation has a robust governance framework and a set of stringent procedures governing procurement, contract administration and cost control of its projects, be it an ownership project or a concession project.

¹ Major civil contract/E&M contract refers to any individual contract with value above \$50 million, and includes Contract 11227 with a value of \$49.8 million.

5. Under the Entrustment Agreements for concession projects, the Corporation is obliged to use the same management system and procedures that are applicable to all other MTR projects. For concession projects like the SCL project, there is also an independent rigorous monitoring and verification system in place conducted by the concerned Government authority and its consultants in addition to the Corporation's contract management and control procedure.

6. To enhance the control of expenditure, the Corporation has set up the Project Control Group ("PCG") as a gate keeper, to scrutinise the assessments of variations and claims arising from consultancies and works contracts under the SCL project. Representatives from the Railways Development Office of Highways Department are invited to attend the PCG meetings.

7. Where the progress of works has been delayed, the Corporation would consider implementing delay recovery measures as appropriate. The proposals of delay recovery measures including the cost and benefits implications are required to be reviewed and approved by PCG.

Latest estimate of Cost to Complete ("CTC")

8. On 5 December 2017, the Corporation announced that the detailed review of the estimated CTC for the main construction works of SCL has completed. Taking into account a number of factors, and based on the revised programme to complete the "Tai Wai to Hung Hom Section" and "Hung Hom to Admiralty Section" in mid-2019 and 2021 respectively, the Corporation has increased the latest estimate of the entrustment cost of the main works by \$16.5 billion from \$70.8 billion to \$87.3 billion. The latest estimate and supplementary information were submitted to the Government for its review, while the Corporation will provide any further information required.

Works progress

Overall progress

9. As at 31 March 2018, the overall works for SCL were 84% complete compared to the planned completion rate of 87% against the original project completion target in 2018 for Tai Wai to Hung Hom Section and 2020 for Hung Hom to Admiralty Section respectively

(Please refer to Enclosure II for details). As reported before, the construction works were affected by various factors, including the archaeological works at Sung Wong Toi Station site, late land handover in Wan Chai North, and complicated underground conditions. With the mitigation measures being implemented, some of the delay caused by the above factors could be recovered.

10. With the continuous efforts of the construction team, around 96% of the works of the Tai Wai to Hung Hom Section have been completed as at 31 March 2018, compared to the originally planned completion rate of 98%. As at 31 March 2018, key progress include:

- a. Structural works for all stations of Tai Wai to Hung Hom Section have been substantially completed;**
- b. Dynamic train test has been progressively extended to the full length between Hin Keng and Hung Hom stations in May; and**
- c. Conversion process from 7-car trains to 8-car trains on the West Rail Line (“WRL”) has been completed in May.**

11. Hung Hom to Admiralty Section was 68% complete in overall terms as at 31 March 2018, compared to the originally planned completion rate of 73%. Key progress include:

- a. All Immersed Tube Tunnel (“IMT”) units have been successfully installed in the vicinity of Causeway Bay Typhoon Shelter (“CBTS”) in Victoria Harbour in April; and**
- b. The replacement works of new signalling system of the East Rail Line (“EAL”) has entered into the testing stage. Reliability test during non-service hours will start in the second half of 2018.**

Naming of the two railway lines

12. With the implementation of delay recovery measures, the current completion dates for SCL Tai Wai to Hung Hom Section and Hung Hom to Admiralty Section are in mid-2019 and 2021 respectively. To pave way for the upcoming commissioning of the two railway lines and for communication with the travelling public, the naming of the future Tai Wai to Hung Hom Section and Hung Hom to Admiralty Section is now finalised after taking into account the nature and characteristics of the railway lines, views of the local communities as well as from the perspective of passenger communications.

13. Since Hung Hom to Admiralty Section is the natural extension of EAL from Hung Hom Station across the harbour, it will continue to be named as East Rail Line (東鐵綫) for consistency and ease in communication. The Tai Wai to Hung Hom Section will connect two existing railway lines, i.e. WRL and MOL. Hence, it will be named as Tuen Ma Line (屯馬綫) (“TML”) to reflect the fact that it is a rail line linking Tuen Mun with Ma On Shan areas.

Progress in different sections

14. SCL comprises six sections according to geographical locations -

- (i) Sha Tin Section;
- (ii) Wong Tai Sin Section;
- (iii) Kowloon City Section;
- (iv) Hung Hom Section;
- (v) Cross Harbour Section; and
- (vi) Hong Kong Island Section.

(i) Sha Tin Section (Section of railway between Tai Wai Station and Ma Chai Hang in Wong Tai Sin)

15. Fitting out works, building services, electrical and mechanical (“E&M”) equipment installation have been substantially completed at Hin Keng Station. Inspection by the Fire Services Department (“FSD”) for the fire services installations and Buildings Department to ensure compliance with the relevant building regulations at Hin Keng Station were completed in December 2017. Other remaining system tests and statutory inspections are in progress. Meanwhile, the re-provisioning works for Hin Tin Playground are in progress.



Hin Keng Station

16. The viaduct and at-grade tunnel box connecting Hin Keng Station, drainage works and street lighting installation near the viaduct, as well as the related greening works have been completed. The carriageway and footpath reinstatement works near the viaduct and the erection of steel fences near the at-grade tunnel box have been substantially completed. Reinstatement works for Che Kung Miu Road are in progress.



Viaduct and at-grade tunnel box

17. For the tunnel section inside Lion Rock, overhead line fixing and E&M installation works have been completed. The reinstatement of the works site at Hin Keng portal area of Lion Rock tunnels was substantially completed while the tree transplanting works are in progress. As previously reported, because of the complicated geological conditions under the Hin Keng portal area of Lion Rock, the progress of tunnelling works was behind the original schedule. In this regard, a number of mitigation measures had been taken to facilitate the tunnel breakthrough in November 2015. The successful recovery of delay can be attributed to the effectiveness of mitigation measures such as increase of blasting charge, re-sequencing of works procedures and adoption of alternative tunnel lining formwork design which allow parallel activities to be carried out.

(ii) Wong Tai Sin Section (Section of railway between Ma Chai Hang and Kai Tak Station)

18. During the first Tunnel Boring Machine (“TBM”) drive from Diamond Hill to Ma Chai Hang, there has been substantial amount of mud encountered, which additional cleaning and maintenance of the cutter head of TBM and more frequent changes of disc cutters were required. Changes to the disc cutter design and modification of cutter head and ancillary facilities were adopted in the second drive which recovered some of the delay and the second TBM tunnel was broken through in April 2016. Following the completion of track-laying works in March 2017, overhead line fixing and E&M installation works have also been substantially completed in these tunnels. Overhead lines at the track sections between Hin Keng and Kai Tak stations have been energised since mid-October 2017. Dynamic tests of trains, signalling and various other railway systems have commenced.

19. At Ma Chai Hang, the structural works and architectural builder’s works and finishes (“ABWF”) for the ventilation building have been substantially completed. Building services installation works have also been completed and the inspection by FSD for the fire services installations was completed in March 2018.



Structural works for the ventilation building at Ma Chai Hang

20. The structural works for Fung Tak Emergency Access Point at the junction of Wong Tai Sin Road and Sha Tin Pass Road were substantially completed and the inspection by FSD for the fire services installation was completed in April 2018. The structural works for the adjacent Wong Tai Sin Public Transport Terminus (“PTT”) were substantially completed. The ABWF works, building services and installation of street furniture including directional signage are in progress. In view of the stakeholders’

concern about the design for the green minibus bay lanes at the ground level pavement of the PTT, the design was revised and the construction works resumed in January 2018. The design of the ground level entrance/exit on Sha Tin Pass Road was revised and the construction works will follow upon approval of the design.



Emergency Access Point at Fung Tak

21. At Diamond Hill Station Extension, the team has achieved an overall completion of over 70% for the ABWF. E&M and building services works have been substantially completed at platform level and are progressing well at concourse level.

22. The pedestrian subways connecting the existing Diamond Hill Station and its extension underneath Lung Cheung Road were broken through in November 2017, with E&M and building services works in full swing. The temporary traffic diversion on Lung Cheung Road will continue to facilitate the utility reinstatement and construction works of the Emergency Vehicular Access.



Expansion works for Diamond Hill Station

23. Modification works continue at the existing Diamond Hill Station

in its transformation into an interchange station for the existing Kwun Tong Line and the SCL. Pedestrian diversion is being implemented at the existing Entrance A2 in order to extend its structure to the SCL Diamond Hill Station. While the modification works to connect the current Entrance B with the station extension were completed in November 2017, the E&M and building services installation works for the new structure are in full swing. In addition, the Corporation was entrusted to carry out enabling works for the future development at the Diamond Hill Comprehensive Development Area site.

24. As part of the SCL, the Government has entrusted the Corporation with improvement works to enhance the connectivity of pedestrian facilities in Tsz Wan Shan area to Diamond Hill Station. This includes the provision of footbridges, covered walkways, lifts and escalators. Tsz Wan Shan is a densely populated area and works sites are close to residential blocks. The unexpected and complicated geological condition, as well as complications caused by underground utilities which had affected the original programme, have now been all overcome. All facilities were completed and opened for public use in October 2017.

25. For the tunnels between Diamond Hill and Kai Tak stations, trackside auxiliary and E&M installation works have been substantially completed.

(iii) Kowloon City Section (Section of railway between Kai Tak Station and Ho Man Tin Station)

26. Fitting out and E&M works at Kai Tak Station have been substantially completed while the FSD inspection on the fire services installations was completed in February 2018. Footpaths connecting Kai Tak Station and the public roads in the vicinity are expected to be completed in the second half of 2018. As for the remaining sections of public roads to be constructed by relevant government departments and organisations, they are targeted for completion by the commissioning of the Tai Wai to Hung Hom Section.

27. As mentioned in our previous reports, the archaeological works at Sung Wong Toi Station have caused a delay of 11 months to the original programme of the Tai Wai to Hung Hom Section. A number of delay recovery measures in Kowloon City area have been implemented to recover some of the delays. For example, by re-sequencing the works procedures and adjusted the site management, the construction of station structure and removal of TBM launching shaft were carried out in the

Sung Wong Toi Station site area simultaneously. The target commissioning date of the Tai Wai to Hung Hom Section is now advanced to mid-2019 with the recovery measures proved effective.

28. Structural works for Sung Wong Toi Station including the launching shaft area have been completed. Structural works for the adit connecting the entrance on Nam Kok Road with the station have also been completed, while construction of the entrances on Nam Kok Road is in progress. Building services installation works have commenced in both the station and the adit.

29. The alignment of the footpaths connecting Sung Wong Toi Station and the public roads in the vicinity has been confirmed after discussions with the relevant government departments, and construction works will commence in the second quarter of 2018.



Construction works of Sung Wong Toi Station

30. Trackside auxiliary and E&M installation works at the railway tunnels between Sung Wong Toi and Ho Man Tin stations have been substantially completed with overhead line energised.

31. Internal structural works at the emergency access shafts on Tam Kung Road and Chi Kiang Street are underway.

32. Inside To Kwa Wan Station, E&M, fitting out and building services works at all levels are in full swing. Steel roof and aluminium cladding installation for the four station entrances at To Kwa Wan Market, Lok Shan Road, Kiang Su Street and Chi Kiang Street are ongoing. Reinstatement of water mains, drainage and roads are being carried out on Ma Tau Wai Road in phases and is expected to be completed in the first half of 2019. Meanwhile, the sitting out area on Kowloon City Road has been reinstated and opened for public use in March 2018.



Construction works of To Kwa Wan Station

(iv) Hung Hom Section (Section of railway between Ho Man Tin Station and Hung Hom Station)

33. Under the SCL, two railway tunnels are being constructed north of Hung Hom Station to connect the existing EAL and WRL to form the cross-harbour EAL and TML respectively. For the future connection from Ho Man Tin Station to Hung Hom Station, structural works and track-laying works of the tunnel have been completed. For the tunnel connecting the existing EAL to the extension of Hung Hom Station to form the cross-harbour EAL, structural works were substantially completed and track works have commenced. Regarding the workmanship issue of the newly completed connection joints of North Approach Tunnel identified in February 2018, the Corporation and the contractor have taken a number of follow-up actions. Please refer to Enclosure III for details.

34. With the completion of all tunnel structures, all temporary traffic management schemes along Chatham Road North, Winslow Street underpass slip road, and Hong Chong Road slip road were completed and re-opened for use in mid-December 2017.



Temporary Traffic Management Schemes completed along Chatham Road North, Winslow Street underpass slip road and Hong Chong Road slip road

35. Following the completion of the installation works for the noise enclosures near the existing EAL and Oi Sen Path in April 2017, reinstatement of Oi Sen Path walkway was completed and opened for public use.

36. Hung Hom Station will become the interchange station of TML and the cross-harbour EAL of the SCL. To cater for the future railway services, two levels of new platforms designated for TML and the EAL have been built under the existing station podium. E&M works, building services and fitting out works for the new platforms are in full swing. To prepare for the future arrangements, modification works are now being carried out in stages. The modified northern and southern concourses have been re-opened in 2016 and 2017 respectively upon the completion of the first two stages of modifications. Stage three modification works including ABWF works, building services provisions, as well as new escalators and lifts installations are substantially complete.

37. Installation of lifts and escalators at Hung Hom Station is substantially complete while other E&M installation works are in progress. Statutory inspection is expected to be carried out at the new station extension by the second quarter of 2018. With additional manpower deployed and works re-sequencing implemented, all works fronts have been carried out in full swing to progressively recover the delay from the original schedule which arose due to the complicated geological conditions under the station podium, as well as the limited space and headroom available for construction works.



E&M installation in progress at Hung Hom Station

38. To facilitate future railway operations, the stabling sidings for the TML trains are now under construction at the former Hung Hom Freight Yard. Structural works, building services works, E&M works, track-

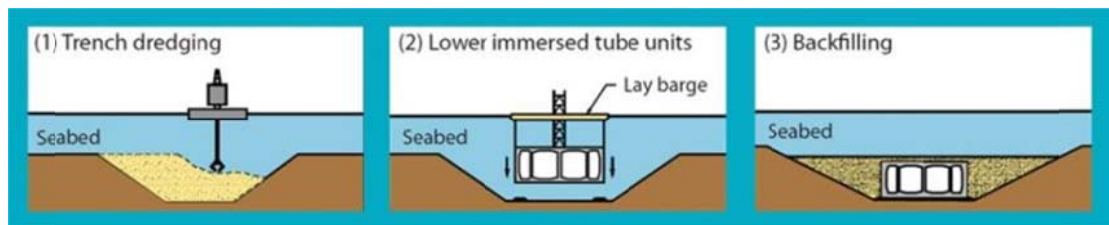
laying and overhead line installation works have been substantially completed and the inspection by FSD for the fire services installation has just been completed in mid-May 2018.



Installation of overhead lines substantially completed at Hung Hom stabling sidings

(v) Cross Harbour Section (Section of railway across Victoria Harbour)

39. To extend the existing EAL across Victoria Harbour to Hong Kong Island, a new cross-harbour rail tunnel is being built under the SCL project by the IMT method (See the diagram below).



40. The IMT units were fabricated in the ex-Shek O Quarry and the works have been completed in March 2017. Since the successful immersion and installation of the first IMT pre-cast unit in the vicinity of CBTS in June 2017, all 11 IMT pre-cast units have been progressively towed out to Victoria Harbour for immersion and installation by April 2018 and the final connection works are expected to be completed in early 2019.



All 11 IMT pre-cast units have been successfully installed in Victoria Harbour

41. With the anticipated completion of marine works in CBTS in the second half of 2018, moorings in CBTS will be reinstated progressively. The Corporation will continue to liaise with Marine Department and the stakeholders to ensure that the mooring arrangement is well coordinated.

42. To facilitate the seabed restoration works after the completion of IMT immersion and installation works, the existing fairway diversion within the Victoria Harbour which has been implemented from November 2017 to the third quarter of 2018.

(vi) Hong Kong Island Section (Section of railway on Hong Kong Island ending at Admiralty Station)

43. All TBM tunnelling works from CBTS to Exhibition Centre Station and construction of the walkways and track bed along both up-track and down-track tunnels are completed. Excavation of a sump pit in the up-track tunnel is in progress and is expected to be completed by the third quarter of 2018.

44. Meanwhile, the temporary reclaimed land at the western side of CBTS, which was the supporting works site for the tunnelling works, was released in February 2018. The footpath along the waterfront adjacent to the former Police Officers' Club ("POC") was reopened.

45. At the works site of the former POC, excavation works for constructing the ventilation building was completed and structural works for the building have been commenced. Foundation works of the POC was completed in February 2018 and the subsequent bulk excavation and the associated basement construction are targeted to commence in the second quarter of 2018.

46. At the Tunnel Approach Rest Garden near CBTS, reinstatement of the underground box culvert is on-going and underpinning of the Canal Road flyover has been completed. Reinstatement of the rest area and recreational facilities is targeted to commence in the fourth quarter of 2018.



Excavation of the tunnel ventilation building at the former Police Officers' Club works site

47. For the tunnel on the western side of Exhibition Centre Station, TBM “Athena” has completed the up-track and down-track tunnel boring drives between Fenwick Pier Street works site and Admiralty Station in 2017. During the course of works, “Athena” has successfully passed beneath the existing Tsuen Wan Line tunnels without any impact on the existing train service. Subsequent to the completion of TBM tunnelling works, the dismantling of the TBM was substantially completed in late March 2018. The breakthrough works between the TBM tunnels and the SCL platforms at Admiralty Station are in progress and targeted to be completed in mid-2018 and late 2018 for the up track tunnel and the down track tunnel respectively.

48. In Wan Chai North area, construction works for Exhibition Centre Station and the relevant railway facilities are underway. Bulk excavation is on-going. In view of the discovery of wartime bombs in January 2018, steps have been taken to enhance works safety for the controlled excavation process (Please refer to Enclosure IV for details).

49. At the original Sports Centre area, while the project team has continued the use of the particularised and controlled excavation with the additional precautionary measures, they have encountered the challenge of the shallower than expected bedrock stratum which might prolong the excavation programme. As a programme protection measure, after the excavation passed through the potential risk zone of discovering

unexploded bombs, drill and blast works will be carried out at rock layer to minimise the risk of prolonged excavation. Thorough and careful assessment to the drill and blast works has been conducted by the Corporation to ensure safety, and the works will be carried out under close supervision in a prudent manner and are expected to commence in the second half of 2018. Diaphragm wall construction was completed at the Fleming Road site. Due to limited space in Wan Chai North, temporary traffic management schemes are being implemented in phases in Wan Chai North to create works areas for the abovementioned works.



Temporary traffic management schemes are being implemented in phases in Wan Chai North

50. Regarding the large metal object found on the seabed within the reclamation area under the Wan Chai Development Phase II (“WDII”) project, the reclaimed land was planned to be handed over to the contractor of SCL at the end of December 2016. As the discovery of the metal object has affected the progress of reclamation works there, the Civil Engineering and Development Department handed over the relevant site by phases in January, February and July 2017, with the handover date of part of the works areas deferred by seven months.

51. As previously reported, the delayed handover of critical works areas and the need to allow flexibility for the convention facilities above Exhibition Centre Station has generated a delay of six months in the completion of Exhibition Centre Station and will bring the completion of the Hung Hom to Admiralty Section to 2021.

52. Apart from these, the handover date of a parcel of land under the WDII project near Fenwick Pier Street has also been deferred for about four to six months. The sites concerned were handed over to the Corporation in phases up to March 2017 for the purpose of interfacing works at the West Approach Tunnel of Exhibition Centre Station, as well as the tunnelling works to Admiralty Station.

53. As previously reported, a 40 meters long pipe pile was left on site underground within the parcel of land, which is in close proximity to other existing permanent foundation structures. In addition, the construction of the last section of a diaphragm wall cofferdam at this location which had been entrusted to WDII was not completed. As a result of these uncompleted works, the Corporation and its Contractor have to overcome these engineering challenges, which also entailed additional construction cost and a further delay of three months on top of the previously reported six months' delay.

54. After gaining access to the above-mentioned works site, the Corporation has carried out ground investigation works and detailed study on the construction method. As remedial measures, grouting works were carried out in the vicinity of the abandoned pile to replace the planned diaphragm wall, and further additional strengthening works will be required at a later stage. Excavation works for the area have commenced.

55. A 900-metre overrun tunnel will be extended southwards from the SCL platform at Admiralty Station for future train regulation. A 200-metre-long section of this overrun tunnel has been completed by the SIL (East) project in 2015. The remaining 700-metre-long section of the SCL overrun tunnel extending from Hong Kong Park was then constructed by drill and blast, and was completed in June 2017. Tunnel lining works for the overrun tunnel were completed in mid-March 2018 and the internal structure works for driver walkway and overhead slab, as well as E&M and building services works will continue.



Tunnel lining works for the overrun tunnel

56. Internal structural works, architectural finishes and building services installation works for the extended Admiralty Station are in progress. The relocation of Environmental Control System plant room and associated E&M facilities were completed in December 2017, and the existing plant room in the station will be dismantled.

NEW TRAINS

57. To facilitate the future operation of the extension of EAL to Hong Kong Island, 37 sets of new trains are being delivered to Hong Kong in batches. Stringent testing and commissioning for the delivered new trains are underway at Ho Tung Lau Depot, while some of them are temporarily stabled at Sha Tin Freight Terminal. Dynamic testing has been in progress at the existing EAL during non-service hours since December 2015. New trains are equipped with new features including dynamic route map and gangway end display system. The locations of the doors of the new trains are also improved by being evenly spaced along the trains, bringing more convenience to passengers when alighting and boarding.



Dynamic test of new trains on the EAL during non-service hours

58. On the other hand, 17 sets of new trains for TML are being delivered to Hong Kong in batches. Stringent testing and commissioning for the delivered new trains are underway at Pat Heung Depot and Tai Wai Depot. Dynamic test of the trains is underway at the existing WRL and MOL, as well as the section between Hin Keng and Hung Hom stations progressively upon the energisation of the overhead lines.

SERVICE ENHANCEMENT BY TRAIN CONVERSION

59. Apart from the procurement of new trains, some of the existing train compartments on MOL, WRL and EAL are also undergoing modification and reconfiguration, together with the newly procured train cars to form the converted 8-car trains for the TML. The full fleet of 15 4-car MOL trains have already been upgraded to 8-car trains in December 2017 and the overall carrying capacity on the MOL has been doubled. The conversion of 7-car WRL trains to 8-car trains has also been recently completed in May 2018.



WRL is served by 8-car trains since May 2018

IMPROVEMENT WORKS FOR THE OPERATING RAILWAY FACILITIES

60. The retrofitting works of a total of 720 pairs of Automatic Platform Gate (“APG”) at all 9 MOL stations were completed in December 2017, which is a year ahead of the original plan.

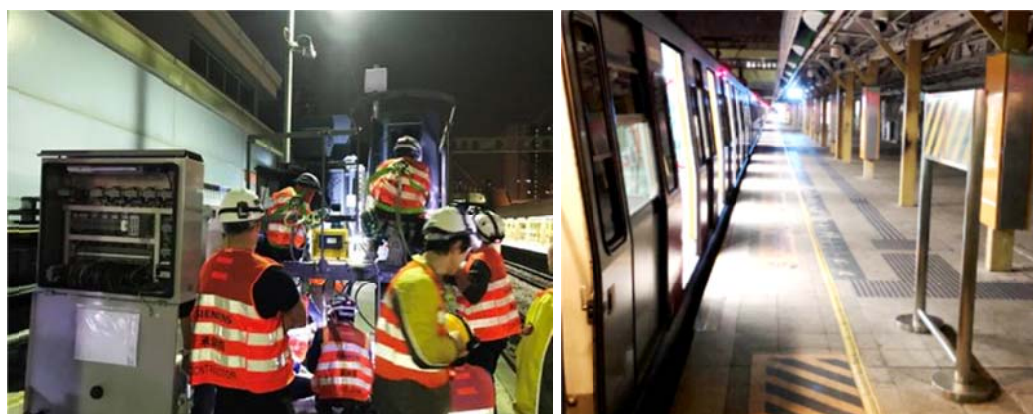


Retrofitting works of APGs at MOL stations completed

61. The retrofitting of APGs will also be carried out for the EAL. Before the commencement of the retrofitting works, platforms have to be strengthened in advance and equipment rooms for the relevant signalling system and facilities have to be constructed. To avoid interrupting normal train services, most of the works can only be carried out overnight after

normal train service hours. Platform strengthening works and construction of equipment rooms for the signalling and communication systems along the EAL have been substantially completed. Subsequent works including floor tiling and defect rectification are underway. On the other hand, the locations of the doors of the existing trains and the new trains are different. In order to make the APGs along the EAL match with the new locations of the train doors, the retrofitting works will commence after the EAL is entirely operated by new trains.

62. As regards the replacement of 12-car trains with 9-car trains on the EAL, in view of passengers' concern on the carrying capacity of new trains, the new trains will be progressively launched upon the commissioning of Tai Wai to Hung Hom Section which will generate diversion effect. Hence, the installation programme of APGs will be aligned accordingly. To facilitate the future operation of new trains and APGs, the existing signalling system of the EAL has to be upgraded. Please refer to Enclosure V for details.



Testing of signalling system along the existing EAL

STAKEHOLDER COMMUNICATION AND ENGAGEMENT

63. Most of the SCL works sites are in urban areas and close to local communities. We attach great importance to close communication and engagement with the local communities and relevant stakeholders, in order to keep them informed of the works progress and to listen to their views. Apart from the regular progress updates to the Subcommittee members and respective District Councils, Community Liaison Groups, which have been set up across districts is another major communication channel with the local communities where regular updates about SCL are provided. Newsletters, leaflets and notices about the works are distributed to the local communities, and dedicated MTR and Contractors' Hotlines are available for handling enquiries and complaints in relating to the

project. The SCL Information Centre in To Kwa Wan has also handled over 1,200 enquiries since October 2012.

EMPLOYMENT OPPORTUNITIES

64. As at 31 March 2018, about 5,796 construction workers and technical / professional staff members are employed for the SCL project. Labour shortage continues to pose challenges to the project – the project is short of around 799 construction workers. To attract new blood to join the construction industry, the Corporation has initiated the “SCL Contractors Cooperative Training Scheme” in 2012. Under the Scheme, all SCL civil works contracts require contractors to recruit a specified amount of trainees. Training and internship programmes are provided to the trainees by the contractors of SCL and the Construction Industry Council. After passing relevant trade tests, the graduates would be offered a minimum 12-month employment contracts on the SCL. So far, the scheme has provided training to 759 trainees with 497 having completed the trade test and continuing their careers in the field.

CONCLUSION

65. Members are invited to note the above information.

MTR Corporation Limited
May 2018

Expenditure report as at 31 March 2018

Table 1 – Situation of expenditure

	Awarded contract sum for the contracts (\$ million)	Cumulative expenditure of awarded contracts (\$ million)	Estimated amount of unresolved claims* (\$ million)
Civil works	43,758.2	41,261.9	1,472.6
E&M works	13,901.8	5,224.7	913.0
Total	57,660.0	46,486.6	2,385.6

* The estimated amount of unresolved claim: Amount claimed (\$3,225.5 million) – Interim award (\$839.9 million) = \$2,385.6 million (See Table 2)

Table 2 – Situation of substantiated claims

	Claims resolved			Claims unresolved		
	Number	Amount claimed (\$ million)	Amount awarded (\$ million)	Number	Amount claimed (\$ million)	Interim award (\$ million)
Civil works	263	2,892.1	1,742.7	435	2,181.1	708.5
E&M works	9*	0	0	125	1,044.4	131.4
Total	272	2,892.1	1,742.7	560	3,225.5	839.9

* The claims only involved extension of time without cost implication.

1. The Government and the Corporation conducted risk assessment at the planning and budgeting stages of the project to minimise claims arising from the works. Nevertheless, there were often unforeseeable situations in the course of works. For instance, the foundation or excavation works might come across a larger amount of or more complicated obstructions than expected. As this would add difficulties to the works, the contractors might have to use more machines or switch to other machines that were more suitable and employ more staff to cope with these situations. The contractors would submit claims in accordance with the contract terms to cover the additional expenditures. Upon receipt of claims from contractors, the corporation would examine such claims and assess the amount concerned based on the relevant contract terms, justifications, documents, records, etc.

2. As at 31 March 2018, the Corporation received 832 substantiated claims and the amount claimed in total was about \$6,117.6 million, representing 10.6% 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 2018, 272 cases were resolved and about \$1,742.7 million was

awarded, representing about 3.02% of the awarded contract sum for the contracts. Having regard to the needs of individual works and progress of the relevant assessment and discussion, interim award amounting to about \$839.9 million was made for some cases.

Overall works progress of the SCL as at 31 March 2018

Overall works completed : 84%

Percentage completed as originally planned ⁽¹⁾: 87%

(A) Cumulative progress of 27⁽²⁾ major civil contracts awarded :

Contract No.	Contract Name	Percentage completed
1101	Modification of Ma On Shan Line	100%
1102	Hin Keng Station and Approach Structures	100%
1103	Hin Keng to Diamond Hill Tunnels and Fung Tak Public Transport Interchange	100%
1106	Diamond Hill Station Extension	96%
1107	Diamond Hill to Kai Tak Tunnels	100%
1108	Kai Tak Station and Associated Tunnels	100%
1108A	Kai Tak Barging Point Facilities	100%
1109	Stations and Tunnels of Sung Wong Toi and To Kwa Wan stations	97%
1111	Hung Hom North Approach Tunnels	100%
1112	Hung Hom Station and Stabling Sidings	99%
1113	Reprovisioning of New Territories South Animal Management Centre and Shatin Plant Quarantine Station	100%
1114	Pedestrian Links at Tsz Wan Shan	100%
1117	Pat Heung Depot Modification Works	100%
1119	Trackwork and Overhead Line Modification Works at Lo Wu and PHD	100%
1120	Trackwork and Overhead Line for SCL Phase 1	99%
1120B	Trackwork and Overhead Line for SCL Phase 2	29%
1121	EAL Cross Harbour Tunnels	89%
1122	Admiralty South Overrun Tunnel	79%

1123	Exhibition Centre Station and Western Approach Tunnel	60%
1124	Admiralty SCL Related Works	28%
1125	Police Sports and Recreation Club Enhancement Works	100%
1126	Reprovisioning of Harbour Road Sports Centre and Wan Chai Swimming Pool	100%
1128	South Ventilation Building to Admiralty Tunnels	73%
1129	SCL - Advance Works for Cross-harbour EAL	100%
11209	Platform Modification and Associated Works at EAL	100%
11227	Advance Works for EAL Cross Harbour Tunnels	100%

Note:

- (1) The original programme is to commission the Tai Wai to Hung Hom Section and the Hung Hom to Admiralty Section in December 2018 and December 2020 respectively.
- (2) The 27 awarded major civil contracts as mentioned in Paragraph 2 of this report include Contract 11230, which is a tenancy agreement for the Joint Site Office for Contracts 1123 and 1128. This contract is part of the project cost for Contracts 1123 and 1128. As it involves no civil construction works, it is not included in the table above.

(B) Cumulative progress of 30 major E&M contracts awarded :

Contract No.	Contract Name	Percentage completed
1141A	New Rolling Stock for SCL Phase 1	95%
1141B	New Rolling Stock for SCL Phase 2	56%
1151	Rolling Stock Modification and New Train Cars for SCL Phase 1	91%
1152	Signalling System for SCL Phase 1 & Signalling System Modification for MOL and WRL	94%
1152B	Signalling System for SCL Phase 2	71%
1153	Tunnel ECS for SCL Phase 1	87%
1153B	Tunnel ECS for SCL Phase 2	34%
1154	Platform Screen Doors for SCL Phase 1 & APG Retrofit for MOL	96%
1154B	Platform Screen Doors for SCL Phase 2 & APG Retrofit for EAL	30%
1155	Power Supply System and Trackside Auxiliaries for SCL Phase 1	94%
1155B	Power Supply System and Trackside Auxiliaries for SCL Phase 2	34%
1159	Lifts for SCL Phase 1	83%
1162	TETRA System for SCL Phases 1 & 2	91%
1162B	Radio Distribution Network System for SCL Phases 1 & 2	55%
1163	AFC System and SAM System for SCL Phases 1 & 2	51%
1164	Building Services for Diamond Hill Station	88%
1164B	Building Services for SCL Hong Kong Island Section	13% ⁽³⁾
1165	Building Services for Hin Keng Station, Ma Chai Hang Ventilation Building and Fung Tak Emergency Access	98%
1166	Main Control System for SCL Phase 1	92%
1166B	Main Control System for SCL Phase 2	58%
1169	Communications System for SCL Phase 1	90%
1169B	Communications System for SCL Phase 2	19%

1172	Escalators for SCL Phase 1	84%
1172B	Lift and Escalators for SCL Phase 2	16%
1173	Building Services for Hung Hom Station and Hung Hom Stabling Sidings	81%
1175	Building Services for Kai Tak Station	99%
1176	Building Services for Sung Wong Toi Station and Ancillary Building	76%
1177	Building Services for To Kwa Wan Station and Ancillary Building	74%
1183	EAL Signalling System Modification	100%
1191	Floodgate System for SCL Phase 2	26%

Note:

(3) E&M Contract 1164B was awarded on 14 March 2017.

**SCL Hung Hom Station works site
Progress of improvement works at some tunnel connection joints**

In August 2017, MTR engineering staff identified water seepage at the newly completed concrete connection joints of the Hung Hom to Admiralty Section tunnel during a site inspection at the Hung Hom Station North Approach Tunnels. Whilst the Contractor was instructed to urgently follow up and complete the remedial works, a comprehensive investigation was conducted. This enclosure aims to brief members on the investigation results and progress of the improvement works.

Comprehensive investigation and check

2. The SCL Hung Hom Station North Approach Tunnels was constructed by the cut-and-cover method. The Contractor built the lower tunnel of the Hung Hom to Admiralty Section first, followed by the Tai Wai to Hung Hom open section above. As construction of the tunnels needs to follow the railway alignments to tie in with the track curvature, connection joints between bays of reinforced concrete are pre-determined taking works sequences into consideration. The two-metre long connection joints are the final sections of the tunnel to be constructed.

3. Having identified the water seepage problem since August 2017, thorough and continued investigations have been carried out. A number of mitigation measures including repeated polyurethane and cement grouting were applied by the Contractor in the following months to control the water seepage. As the seepage problem continued, detailed inspections were carried out in February 2018, during which a portion of the concrete on the surface of the tunnel connection joint was removed, revealing that the workmanship of the reinforced concrete did not meet the specifications and standards required.

4. A comprehensive inspection to other similar concrete connection joints at the same works site was conducted by our engineering staff. Similar issues at two other locations were identified. Inspections extended to other locations in the SCL tunnels, confirming that there is no similar quality issue.

Reinstatement works

5. From the Corporation's investigation, the defective workmanship was confined to three locations in the same section of Hung Hom Station North Approach Tunnels constructed by the same Contractor. The Corporation immediately instructed the Contractor to carry out remedial measures at the concerned locations, including demolishing the reinforced concrete and the concerned connection joints, followed by full reinstatement works. To facilitate the above improvement works, a 10-metre section of tracks for the Tai Wai to Hung Hom Section north of Hung Hom Station had to be temporarily removed. The remedial works are expected to be substantially completed in May 2018. As regards potential claims relating to the case which involve workmanship issues, the Corporation has informed the contractor to handle them in accordance with the established procedures set out in the contract.

Deployment of additional manpower to step up monitoring

6. The Corporation attaches great importance to the monitoring and quality control of railway projects. A robust project management framework and a set of stringent procedures for inspection, supervision and monitoring of contractors' works standard and safety are in place.

7. To ensure the materials used in new railway projects meet the specified requirements, an automated "Material Testing System" was developed by the Corporation to handle extensive testing of concrete cubes and reinforcement bars. All test results are automatically captured and transferred by computers, eliminating the chance of manual manipulation and ensuring accurate results. This proven system has been used in a number of new railway projects, including the SCL and the South Island Line. Besides, project teams from both the Corporation and Contractors also stepped up their supervision on site. They enhanced their monitoring measures on works progress, materials, works sequence and quality control, etc.

8. Regarding the reinstatement works, the project team has conducted comprehensive and detailed inspection on each and every works sequence. To ensure the quality of the remedial works, additional cross-checking inspections by engineering staff temporarily deployed from other teams were also introduced.

Enhanced measures

9. With the aim of ensuring works quality, the project team also enhanced its coordination with the Contractor. A joint task force has been set up to investigate the matter and keep track of the reinstatement works, such that connection works in tunnels meet the required works quality standard and avoid similar recurrence. In light of the incident, a discussion forum was conducted in April 2018 for all senior construction management team members involved in the construction works of similar construction joints.

10. In the management aspect, more frequent meetings with the senior management of the Contractor are also conducted. The Contractor is required to provide more frequent updates regarding the works by its teams and subcontractors. A toolbox experience sharing with other contractors' site staff to urge them to strictly meet the quality standard has been arranged.

Conclusion

11. Our inspection regime is effective as the water seepage problem has been identified at an early stage. Thorough follow-up measures and timely investigation were in place to confirm the root cause of the water seepage problem, followed by full reinstatement works. In addition, comprehensive improvement measures are implemented, including additional cross-checking inspections by engineering staff deployed from other teams, setting up a joint task force with the Contractor to investigate the matter and keep track of the reinstatement works, discussion forum for all senior construction management team members involved in the construction works of similar construction joints, more frequent meetings with the senior management of the Contractor, as well as toolbox experience sharing with other contractors' site staff. A subsequent thorough assessment has been conducted and the Corporation confirms that there is no impact on the overall structural integrity and safety of the tunnels. The incident does not affect the overall programme or cost of the project.

**SCL Exhibition Centre Station works site
Follow-up on discoveries of wartime bombs**

The Corporation understands the public's concerns on the recent wartime bomb discoveries. Safety is the Corporation's top priority in implementing all railway projects. We will never underestimate the risks and challenges presented by underground unexploded ordnance (UXO).

2. The possibility of discovering bombs in Wan Chai area in light of the air bombs history on the northern shore of Hong Kong Island during World War II has been taken into consideration before the commencement of construction. When the excavation reached closer to the former seabed level, where there is a potential risk of discovering unexploded bombs, a particularised and controlled excavation method has been adopted to allow the excavation works to be conducted in a strictly controlled manner to uphold safety and to minimise risks. For example, works sites are divided into smaller areas, smaller excavator plants are used, and excavations are conducted under supervision in a gradual and prudent manner.

3. The adoption of such a particularised and controlled excavation method is in accordance with the internationally recognized risk management principle of "As Low As Reasonably Practicable (ALARP)" approach.

4. Before the commencement of the excavation works at Exhibition Centre Station ("EXC") works sites in 2016, the Corporation has proactively communicated with police experts to provide a specific project briefing with the attendance of site staff from the Corporation and Contractors. At the briefing, the police experts have provided advice on suitable procedures in case of encountering any suspected explosive objects, e.g. to stop work immediately, evacuate the site and summon police attendance.

5. The excavation works for EXC have thus been carried out in a safe manner since the commencement of works in 2016. The effective handling of the wartime bombs' discoveries in January 2018 has proved the effectiveness of the above-mentioned approach and safety measures.

6. Continued risk assessments are made in accordance with the progress of the project and the actual situation. After the two wartime bombs discoveries at the former Wan Chai Swimming Pool works site in January, precaution measures were reviewed and further enhanced as follows:

- i. A seasoned UXO expert from the UK was engaged from February 2018 to review the situation and assess any further potential risk. The expert had 17 years of experience in a military career and has very solid international UXO disposal experience;
- ii. Since the possibility of encountering more unexploded bombs could not be ruled out, the UXO expert recommended to continue the particularised and controlled excavation method, with enhanced supervision by the UXO engineers. At each works area, excavation is being carried out with each excavator under the supervision of an UXO engineer. During the peak period in March 2018, three UXO engineers were working at three works areas simultaneously;
- iii. UXO risk zones were further reviewed by the UXO expert. The depth of the risk layer is updated such that the excavation could be supervised and executed in an even more prudent manner. Metal detection was adopted, despite its limitations, at one meter layer intervals when excavating in UXO risk zones i.e. within the former seabed; and
- iv. Proactive communications with police experts to conduct refresher briefing for the project team to enhance their safety awareness.

7. With the adoption of the above enhanced measures, excavation at the former Wan Chai Swimming Pool works site passed through the UXO risk zones in April 2018.

8. Subsequently, a third wartime bomb was found on 10 May 2018 at the construction site, which was formerly the Harbour Road Sports Centre adjacent to the former Wan Chai Swimming Pool site. This bomb is about 10 metres away from the previous two wartime bomb discoveries. It was located 12 metres below ground and at the former seabed level. The wartime bomb was discovered by the site staff during the excavation

in accordance with the above enhanced precautionary measures, which have been working effectively.

9. The project team and contractor have continued the use of the particularised and controlled excavation with the additional precautionary measures. The excavation works of SCL along the north shore of Hong Kong Island are expected to complete in the first quarter of 2019.

East Rail Line Signalling Replacement Works Full Line Train Test During Non-service Hours

This enclosure aims to brief members on the progress of signalling replacement works of the existing East Rail Line (“EAL”) and its testing arrangements.

Background

2. EAL has been serving Hong Kong people with over a hundred years of history. To keep up with the times, the railway system of EAL has been upgraded from time to time, including its electrification in 1980s.
3. EAL signalling system, trains and platforms facilities are now undergoing another round of major upgrading works. Despite the complexity of the works, our aim is to maintain EAL’s normal passenger service. To do so, these upgrading works can only be conducted during non-service hours within the “Golden 2-hour” window, which is highly challenging.

Signalling replacement works

4. EAL signalling replacement works commenced in 3rd quarter of 2015. The new system adopts a more advanced system with “Communication Based Train Control (CBTC)” technology, which allows instant data communication among the trains and the Operations Control Centre via radio transmission to facilitate smooth and frequent train service. Trackside equipment of the new system are simplified and better integrated, which could reduce routine maintenance time and recovery time.
5. It is expected that upon the completion of signalling replacement works, train frequency during peak hours can increase from around 3 minutes to around 2 minutes. On the other hand, the new trains were equipped with better noise-reduction features including use of noise absorption materials and installation of lower side panels. Upon commissioning of the new trains, the noise generated by the new trains is expected to be lower than the trains in the past.

Testing of new signalling system

6. To ensure the safety and reliability of the new signalling system, a comprehensive and thorough testing process is required prior to commissioning. Testing plan covers a wide range of railway operational needs, safety features and service functions, including E&M systems, radio and communication system, signal display system, air conditioning and lighting system, as well as more accurate stopping position, correct side for door opening and closing, correct station and in-train broadcast as well as accurate information shown on dynamic route map and passenger information display.

7. Dynamic test was commenced in October 2016 and has been conducted progressively by sections. Full line dynamic tests commenced in March 2018. It is expected that the reliability test will be carried out in the second half of 2018 and to complete in the first quarter of 2019. To allow time for the daily maintenance and inspection works, it is expected that these tests could only be carried out for two to three nights per week.

Impact on the local community

8. As aforementioned, the tests could only be conducted during non-service hours to avoid an impact on day time service. The Corporation understands that testing of trains at night time may have some noise impact on residents nearby. The Corporation will enhance the communication with relevant District Councils and local community. Notices will be served to residents along the EAL to provide update information about such tests including the dates and time to the local community. A 24-hour hotline will also be available during the testing period for enquiries and to provide instant response. Such testing is a vital and necessary process before the new signalling system can be put into use. We appeal for the community's understanding if there is some noise impact during the interim period.

9. The new trains were equipped with better noise-reduction features. During the tests, mitigation measures would also be in place to minimise the possible noise impacts as far as possible, for example, the number of trains involved in night test will be strictly controlled.

Conclusion

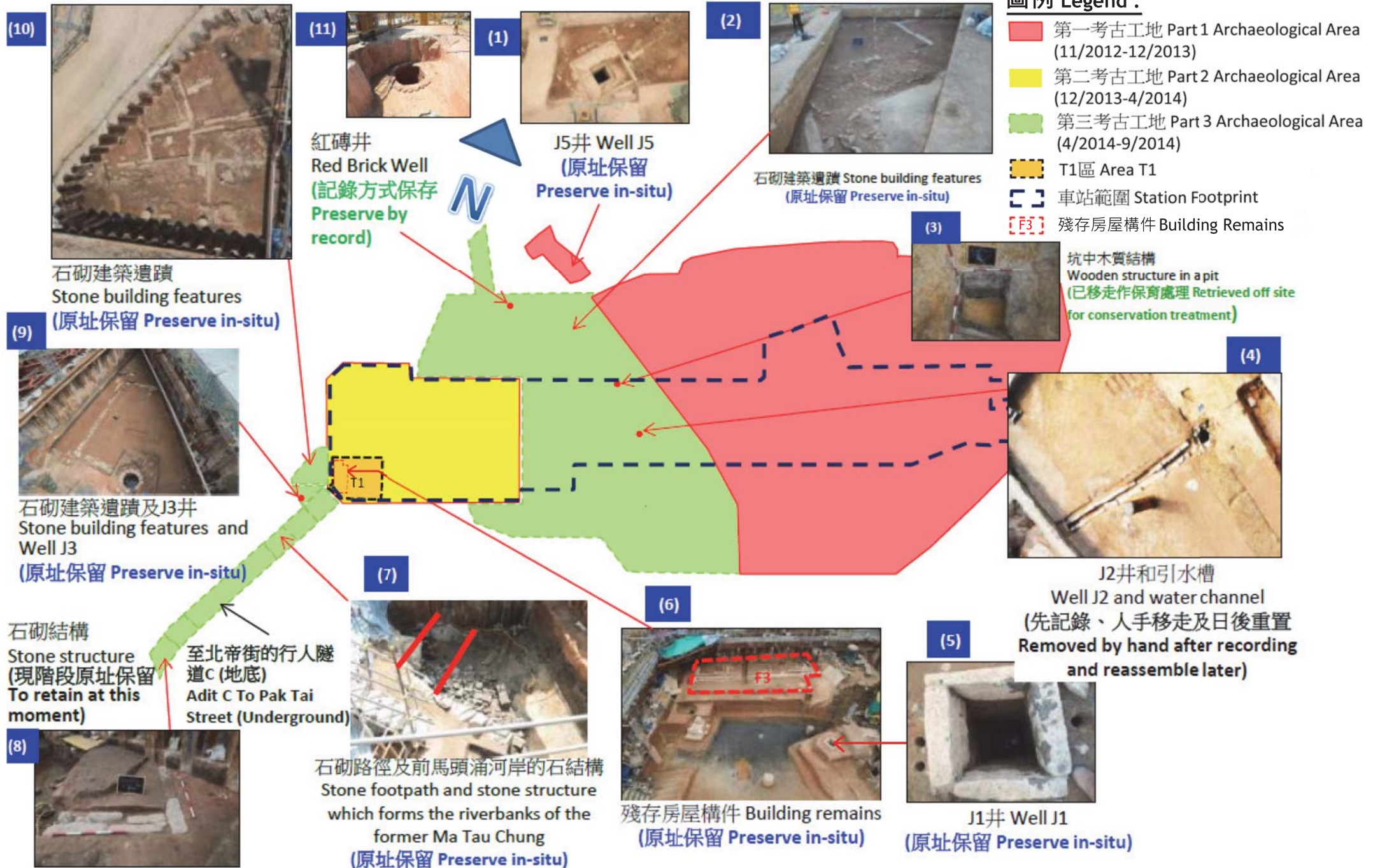
10. The EAL signalling replacement works are in full swing and the testing process will enter the final stage in the second half of 2018 and is

expected to complete in the first quarter of 2019. Passengers can then enjoy a more comfortable travelling environment.

土瓜灣站工地考古文物保育方案

附件三 Annex 3

Conservation Options for Archaeological Features Discovered at To Kwa Wan Station



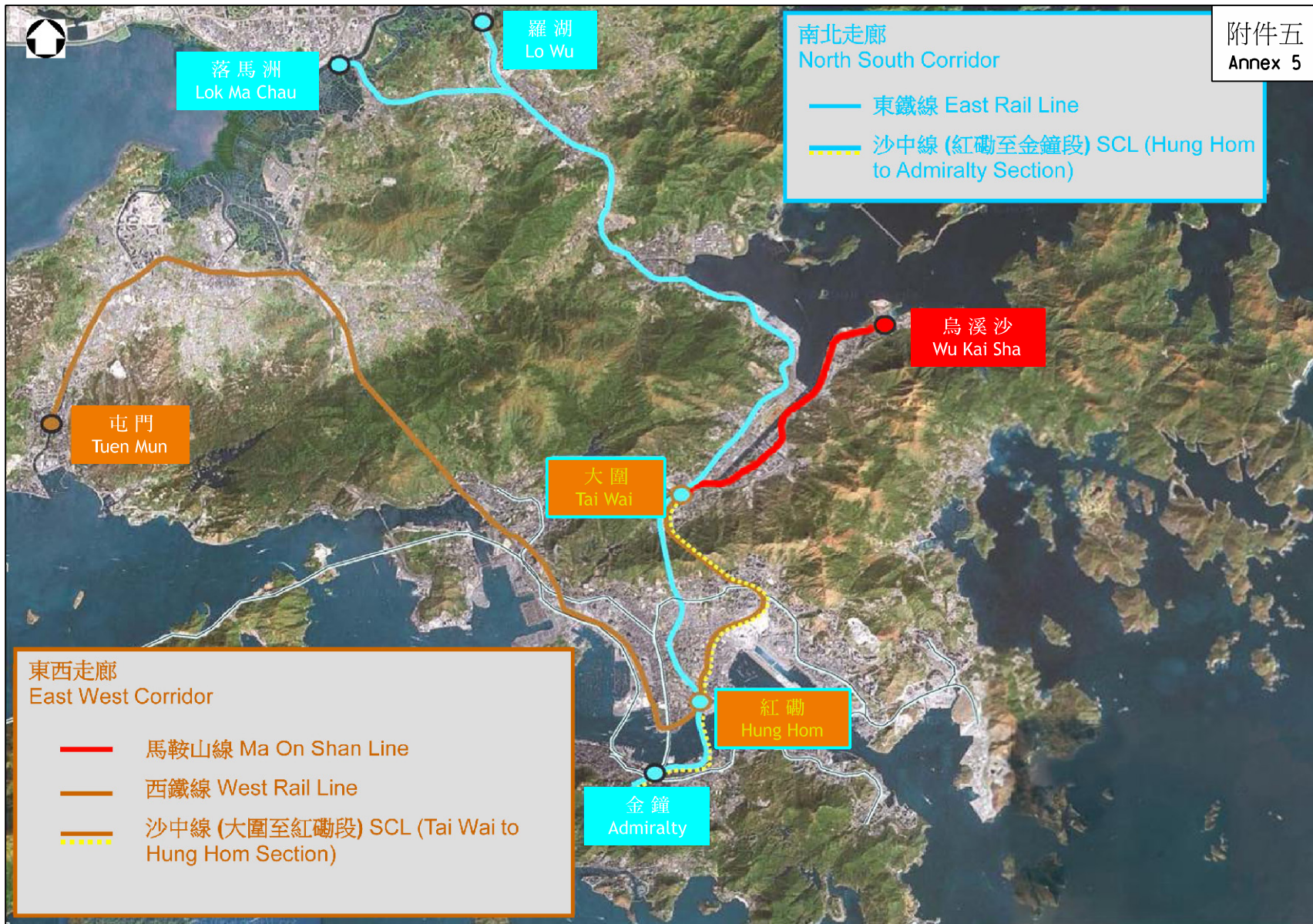
行人隧道 C 的走線 Alignment of Adit C



Existing pedestrian crossing
原有行人過路處



KEY PLAN



圖則名稱 drawing title

東西走廊及南北走廊

East West Corridor and North South Corridor

圖號 drawing no.

HRWSCL003-SK0538

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