Legislative Council Panel on Transport Subcommittee on Matters Relating to Railways Progress update of the construction of the West Island Line, South Island Line (East) and Kwun Tong Line Extension

Introduction

This paper is to report the progress of the main construction works of the West Island Line ('WIL'), South Island Line (East) ('SIL(E)') and Kwun Tong Line Extension ('KTE'), and the monitoring works of the Highways Department ('HyD').

Background

The WIL

2. The WIL is a three-kilometre long railway extension of the existing Island Line from Sheung Wan Station to Kennedy Town with two intermediate underground stations at Sai Ying Pun and the University of Hong Kong [the alignment is at **Enclosure 1**]. According to the estimate in 2009, the estimated capital cost of the WIL is \$15,400 million (in December 2008 prices).

The SIL(E)

3. The SIL(E) is a new railway corridor from South to North of Hong Kong Island. It starts from South Horizons on Ap Lei Chau to Admiralty via Lei Tung, Wong Chuk Hang and Ocean Park. The overall length is about seven kilometres [the alignment is at **Enclosure 2**]. The SIL(E) will connect MTR Island Line, Tsuen Wan Line and the future Shatin to Central Link ('SCL') at Admiralty Station and the existing Admiralty Station will be expanded to form an integrated station for the four lines to provide seamless interchanges for passengers. According to the estimate in 2011, the estimated capital cost of the SIL(E) is \$12,400 million (in December 2009 prices).

The KTE

4. The KTE is a 2.6-kilometre long railway extension of the existing MTR Kwun Tong Line from Yau Ma Tei Station to the new Ho Man Tin Station and Whampoa Station [the alignment is at **Enclosure 3**]. According to the estimate

in 2011, the estimated capital cost of the KTE is \$5,300 million (in December 2009 prices).

Project Implementation and Funding Method

5. Under the terms of the Operating Agreement between the Government and the MTR Corporation Limited ('MTRCL') signed in 2007 upon implementation of the rail merger, either the 'ownership' approach or the 'concession' approach can be adopted for a new railway project. The WIL, SIL(E) and KTE, being the extensions of the existing railway networks owned by the MTRCL, are 'ownership' projects. Under the 'ownership' approach, the MTRCL will be responsible for the finance, design, construction, operation and maintenance of these railway projects and will own the railways.

6. As the construction cost of railways is so enormous that the WIL, SIL(E) and KTE are not considered financially viable based on their fare and non-fare revenues alone. Funding support to the MTRCL is required from the Government to bridge the funding gap^1 of the projects.

7. To implement the SIL(E) and KTE, the Government granted the property development rights under 'the Rail-plus-Property Model' to bridge the funding gaps of the projects with caution that the land to be granted to the MTRCL should not be more than what is required to bridge the funding gaps. As such, the Government, in 2011, granted the topside property development rights at Wong Chuk Hang Depot and Ho Man Tin Station for the implementation of the SIL(E) and KTE respectively.

8. With the granting of the property development rights to the MTRCL, the MTRCL is responsible for all the cost of the property development as well as the construction and operating costs of the railway projects. In addition, the MTRCL has to bear long term risks in financing the projects, operating the railways, and market fluctuations in rail and property developments. The design philosophy of the 'Rail-plus-Property Model' is to strike a fair balance of risks and benefits between the Government and the MTRCL.

¹ A railway is considered not financially viable if the present value of all its projected revenues net of projected expenditures falls short of the expected return on capital. During the initial public offering ('IPO') of the MTRCL in 2000, the Government acknowledged to investors through the IPO Prospectus that the return required by the MTRCL for any new railway project would ordinarily be between 1% and 3% above Weighted Average of Cost of Capital (WACC). This shortfall is known as the funding gap.

9. For the WIL, due to the lack of suitable sites along or adjacent to the alignment, the Government, in 2009, decided to provide a non-recurrent capital grant of \$12,700 million (Net Present Value at June 2009) as the funding support to bridge the funding gap of the project. Providing the non-recurrent capital grant is to lower the capital costs of the project payable by the MTRCL in order to provide the incentive for the MTRCL to embark on the project while the MTRCL has to bear the commercial risks in constructing and operating this railway. То ensure the proper use of public money and safeguard the Government's interest, a claw-back mechanism is introduced in the WIL project such that if the actual project $cost^2$ is lower than the estimated project cost, the difference will be reimbursed to the Government with interest. On the contrary, if the actual project cost is higher than the estimated project cost, the MTRCL will have to bear the additional cost. In other words, the non-recurrent capital grant represents the maximum commitment of the Government in the funding support to the MTRCL for the WIL project.

10. The Government and the MTRCL signed the Project Agreement for the WIL in July 2009 and the Project Agreements for the SIL(E) and KTE in May 2011. The target commissioning dates for the WIL, SIL(E) and KTE are August 2014, December 2015 and August 2015 respectively. For the WIL, the MTRCL informed the Government in writing on 27 May 2014 that the commissioning date of the WIL was amended to December 2014.

11. In order to cope with the commissioning of the railways, the Government also entrusted the implementation of the associated 'Essential Public Infrastructure Works' ('EPIW') to the MTRCL. These include construction and improvement of the pedestrian and linking facilities for providing safe, convenient and barrier-free accesses to the railway stations, such that the consequential social and economic benefits of each railway can be fully realized. The EPIW, which are constructed with the railway works, include: -

(a) the WIL (Item No. 55TR) – to construct a covered pedestrian link at Sands Street, including a lift at the junction of Sands Street and Rock Hill Street with two single-way escalators; a footbridge across Pok Fu Lam Road for connecting to the University of Hong Kong Centennial Campus; and a loading and unloading area for green minibuses ('GMB') at Kennedy Town Station. At

² The project cost includes the contract prices of the works and the payment by the MTRCL for compensation due to land resumption and the administrative costs for handling land resumption.

present, the pedestrian link at Sands Street has already been opened while the progress of works for the footbridge across Pok Fu Lam Road and the loading and unloading area for GMB at Kennedy Town Station is smooth for commissioning with the WIL;

- (b) the SIL(E) (Item No. 56TR) – to construct a public transport interchange underneath the Wong Chuk Hang Station; to improve the road network in the vicinity of Ocean Park Station and Wong Chuk Hang Station; to modify a section of Wong Chuk Hang Nullah from Ocean Park Road to Nam Long Shan Road; to construct a covered footbridge connecting Wong Chuk Hang Station with the adjacent industrial area, a cover footbridge linking the western part of Ap Lei Chau Estate to Yi Nam Road near the Precious Blood Primary School, a pedestrian link to the Aberdeen Channel Promenade; and to improve the road junctions of Ap Lei Chau Drive and Ap Lei Chau Bridge Road. As at April 2014, about 70% of the above EPIW was completed. The EPIW are anticipated to be ready for public use with the SIL(E); and
- (c) the KTE (Item No. 60TR) to construct a pedestrian link system connecting Ho Man Tin Station to the Ho Man Tin Estate, Oi Man Estate and the Hung Hom area south of Chatham Road North, which includes covered footbridges, covered walkways and a subway; to construct a footbridge integrating with the existing footbridge across Chatham Road North and connecting Ho Man Tin Station to Wuhu Street; and to construct a public transport facility at Chung Hau Street near Ho Man Tin Station. As at April 2014, about 60% of the above EPIW was completed. The EPIW are anticipated to be ready for public use with the KTE.

12. The above EPIW are public works projects. The MTRCL was entrusted to design and construct the works for the Government. Upon completion, the facilities will be owned by the Government and handed over to the relevant Government departments for management and maintenance. Similar to other public works projects, the construction of the EPIW is funded by the capital works reserve fund.

The responsibility of the MTRCL

13. The WIL, SIL(E) and KTE, being implemented under 'ownership' approach, are owned by the MTRCL. The MTRCL is responsible for monitoring the expenditure of the construction works. The MTRCL submits the progress reports of the works and reports any issues that may seriously affect the progress of works to the HyD. According to the clauses in the Project Agreements, the MTRCL shall use its best endeavours to complete the railway projects in accordance with the Baseline Programme. The MTRCL shall also aim for early completion of the projects for revenue generation.

The co-ordinating and monitoring role of the HyD

The co-ordinating role

14. Regardless of the approach adopted in implementing the railway projects, the HyD endeavours to take up the co-ordination works. This includes setting up Site Liaison Groups ('SLGs') and sub-working groups with the relevant Government departments and the MTRCL for co-ordinating and approving temporary traffic management schemes ('TTMS'), i.e. proposals on temporary traffic diversions and road closure required by various construction works; and monitoring of traffic conditions upon implementation of TTMS. On a monthly basis, dedicated teams of the HyD hold SLG meetings with the relevant Government departments and the MTRCL. Furthermore, the HyD works with other Government departments including the Lands Department, Transport Department, Civil Engineering and Development Department ('CEDD'), Electrical and Mechanical Services Department ('EMSD'), Buildings Department ('BD') and Fire Services Department ('FSD') to approve proposals on works area, construction works and railway design. The HyD also facilitates the processing of the application for various permits required by the MTRCL to take forward the railway projects. For instance, the HyD has to follow up the approval of design for blasting works and application for blasting permits with the Mines Division of the CEDD and the BD, and has to follow up the applications submitted by the contractors of the MTRCL for extension of working hours for low-noise activities with the Environmental Protection Department. Moreover, the HyD conducts regular site inspections to monitor the progress of works. The HyD also discusses with the MTRCL and helps solving the problems encountered during the course of construction.

The Monitoring Role

15. Under the 'ownership' approach, the MTRCL takes up all the risks of railway construction. The HyD sets up dedicated teams each led by a Chief Engineer to co-ordinate and monitor the progress of these projects. The dedicated teams hold monthly progress meetings with the MTRCL and conduct site inspections to get hold of the progress of various works contracts, and to review the actual implementation progress of these projects.

16. The EPIW entrusted to the MTRCL by the Government are public works projects. Therefore, the MTRCL has to provide monthly reports on the progress and financial situations of these works, as well as other significant matters that require the attention of the Government. They are reviewed by the Government and the MTRCL at the monthly progress meetings. The HyD also conducts regular site visits to inspect the progress of these EPIW and other matters that require the attention of the Government.

Latest Progress of the Works

17. In view of the public concern over the commissioning of the new rail lines, the Transport and Housing Bureau ('THB') has requested the MTRCL to assess the latest progress of the three railway projects implemented under the 'ownership' approach, and to submit a report on the details of the progress of these projects. The report submitted by the MTRCL is at **Enclosure 4**. Based on the progress report of the three railway projects, the analysis and supplement by the HyD are provided below.

The WIL

18. As reported by the MTRCL, the overall works of the MTRCL is about to complete. The structural works for the three stations have been completed and the railway tunnel between Sheung Wan Station and Kennedy Town Station has been broken through. Currently, the electrical and mechanical ('E&M') works and test runs are underway. While the structural works for the entrances of Kennedy Town Station and HKU Station are almost completed, there is delay in the construction of the adit between Ki Ling Lane entrance and First Street and Second Street entrances of Sai Ying Pun Station ('the adit at Ki Ling Lane entrance.

19. In view of the delay caused by the ground freezing works in the construction of the adit at Ki Ling Lane entrance, the MTRCL undertook at the progress meeting held in March 2013 to provide the Government with a proposal on contingency measures to be adopted if Ki Ling Lane entrance could not be completed in time.

20. In the following months, the HyD repeatedly requested the MTRCL to give details of the delay and devise remedial measures to recover the delay for the early service of Ki Ling Lane entrance. The HyD also kept a close supervision on the progress of the relevant ground freezing works and conducted site visits The MTRCL said that it would discuss the delay recovery from time to time. proposal with the contractor but the expected completion date of the construction of Ki Ling Lane entrance could only be confirmed after the completion of the The MTRCL pointed out at the progress meeting in ground freezing work. November 2013 that the first phase of the ground freezing work at Ki Ling Lane entrance had been completed and that the excavation work had started. The MTRCL submitted a report to the Government in March 2014, revealing that the WIL could be commissioned at the end of 2014 but Ki Ling Lane entrance could only be ready for use in the second half of 2015. Apart from requesting the MTRCL to provide the latest programme regarding the WIL, the HyD also worked with other departments, including the EMSD, BD and FSD, to approve the relevant design of the above contingency measures and closely monitor the progress of the relevant works.

21. On 22 May 2014, the MTRCL alerted the Government that in addition to Ki Ling Lane entrance, First Street and Second Street entrances were affected by the progress of the excavation and they were expected to be completed at the end Should there be any delay in the works, First Street and Second of this year. Street entrances would not be ready for use by the end of this year. Under such circumstances, Sai Ying Pun Station could not be commissioned in view of fire safety concerns. As a prudent measure, the MTRCL devised a backup plan for the situation where First Street and Second Street entrance could not be completed as scheduled. Under the backup plan devised by the MTRCL, when Sai Ying Pun Station cannot be opened for use, trains will not stop at this station. At that time, the trains of Island Line will run straight to HKU Station after passing Sheung Wan Station and terminate at Kennedy Town Station. If the above backup plan cannot be implemented, the commissioning for the entire WIL will have to defer to the first quarter of 2015. The MTRCL expected that it could

confirm in October this year the actual completion date of First Street and Second Street entrances as well as the arrangement for the opening of the WIL, including whether the backup plan had to be activated.

22. While the Government requested the MTRCL to recover the delay as far as possible for the commissioning of the WIL in December 2014, it agreed that the MTRCL had to devise a backup plan for the opening arrangements of the WIL. In this connection, the HyD held a meeting with the MTRCL and other departments on 5 June to discuss the backup plan proposed by the MTRCL. The HyD and relevant departments will continue their close supervision on the progress of the WIL works and devote their efforts in the inspection, testing and approval of the WIL facilities, aiming for the smooth opening of the entire WIL on time.

The SIL(E)

23. The expansion work at Admiralty Station for the SIL(E) involve the addition of three underground levels below Harcourt Garden east of the existing station, including one level for interchange and two levels for train platforms. The platforms for the SIL(E) is at the lowest level. The MTRCL has carried out excavation work for the expansion at Harcourt Garden site with cut-and-cover method before the commencement of the structural work for the station. When safety must be given the highest priority, it is a big challenge to carry out excavation underground where there are existing train station, tunnels in use and foundation of many buildings. In the process of excavation, it is found that the actual spacing of joints in rock is less than the estimation from ground In other words, the level of weathering of the rock is less investigation reports. This in effect makes the excavation more difficult. than that estimated. Furthermore, in order to connect the expansion part with the platforms of the SIL(E) and SCL, underpinning works for the existing Island line tunnel has to be carried out for excavation underneath.

24. Since March 2012, the HyD has noticed the delay in the expansion works of Admiralty Station and Nam Fung Tunnel. It has repeatedly expressed its concern at the monthly progress meetings. From March 2013 onward, the Hyd has repeatedly requested in writing the MTRCL to explain the delay recovery measures taken. The MTRCL repeated in the monthly progress meetings that it was discussing with the contractors and the delay recovery measures could only be implemented after MTRCL's examination. In February 2014, the MTRCL sent a

written reply to the HyD revealing that the MTRCL would take measures like fine-tuning work procedures, deploying additional manpower and machinery as well as adjusting E&M works and fitting-out works to recover the delay. То speed up the excavation work, contractors had started to adopt blasting instead of mechanical method for some of the excavation works at Harcourt Garden since December 2013. The HyD also issued letters to the MTRCL, repeating its request for the revised programme with project completion date. In May 2014, the MTRCL reiterated in its reply that it had been working on improving the work procedures at construction sites and that it aimed at completing the project at the end of 2015. Nevertheless, on 5 June 2014, MTRCL informed the THB and HyD that the expansion works of Admiralty Station was quite complicated and was suffering a delay of about six months. In addition, when conducting the underpinning works below the existing Island Line, safety was the number one priority and this limited the ability to recover the delay. The SIL(E) cannot be commissioned by end 2015 as originally scheduled. The MTRCL will further update on the progress of the project and the target commissioning timing at the end of this year when it is more certain on the progress of the works. The HyD would continue monitor the progress of the works.

25. In parallel to the above development, the HyD has been proactively working with other Government departments to help the MTRCL implement its delay recovery measures. This includes facilitating the Mines Division of the CEDD to deliver explosives to the shaft at Hong Kong Park and the construction site at Harcourt Garden at a timetable to facilitate the blasting works there.

The KTE

26. Since Ho Man Tin Station of the KTE is in close proximity to the main roads like Chatham Road North and residential blocks, in order to ensure public safety, the protection setup for open blasting works is more complicated than the traditional one. Hence, the excavation works at Ho Man Tin Station can only be completed in April this year. Regarding Whampoa Station, it is situated in an area with dense population, heavy traffic and congested underground utilities. In addition, there are varying geological conditions underground. In order to minimize the impacts to nearby residents and traffic, and address the concerns of local residents and stakeholders, it is necessary to implement sophisticated TTMS and install temporary supports to cater for the varying geological conditions. Works that generate too much noise have to be carried out only in day time. All these have resulted in longer construction period. To this end, the excavation for

both the East and West Concourses of Whampoa Station is anticipated for completion in the fourth quarter of this year, while the excavation for the platform tunnel between the concourses will commence in the third quarter of this year for completion in the first quarter next year.

27. Since December 2012, the HyD has noticed delays in the construction of During the monthly progress meetings and site inspections, the HyD the KTE. expressed concerns on the works progress of Ho Man Tin Station and Whampoa Station and requested the MTRCL to give details on the delay recovery measures. The MTRCL repeated in the monthly progress meetings that the MTRCL would recover the delay by fine-tuning the construction procedures, deploying additional manpower and machinery, and adjusting E&M works and fitting-out works to meet the target completion in 2015. As the delay persists, the HyD wrote to the MTRCL in April and May 2014, requesting the MTRCL again to give details of its delay recovery measures and the construction programme with completion date. The MTRCL replied in writing in mid-May 2014 that it was reviewing the construction programme with completion date and would provide the HyD with the relevant information of the work progress in due course. The target completion date remained to be 2015. Nevertheless, on 5 June 2014, MTRCL informed the THB and HyD that in view of the difficulties encountered at Whampoa Station, it was suffering a delay of about six months. The KTE cannot be commissioned by 2015 as originally scheduled. The MTRCL will further update on the progress of the project and the target commissioning timing at the end of the year when it is more certain on the progress of the works. The HyD will continue monitor the progress of the works.

28. The HyD has long been proactively working with other Government departments to help the MTRCL implement its delay recovery measures. This includes following up with the Mines Division of the CEDD and BD on the approval of the design for open blasts at Ho Man Tin Station and the progress of applying blasting permit such that the blasting and excavation works at Ho Man Tin Station can be completed in April this year. In considering the complexity and various limitations of constructing Whampoa Station, the HyD will continue to co-ordinate various departments allowing the MTRCL to have the flexibility in using traffic lanes for loading and unloading construction materials during off peak hours and without affecting road traffic, in order to facilitate the construction works of Whampoa Station. Furthermore, the HyD has also liaised with various departments, public transport operators and stakeholders for the implementation of TTMS in Whampoa area.

Conclusion

29. The three railway works above are all underground infrastructure projects with considerable scale. Different difficulties and challenges are encountered at the construction stage of these projects. For individual works contracts, there are unavoidable deviations from the original plan. The 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 various difficulties. We will closely monitor the progress of works and the HyD will continue paying regular site inspections and holding progress meetings to get hold of the actual implementation situation as well as to discuss and facilitate the MTRCL to early resolve the problems encountered in the construction works. We will actively follow up the latest situation of the WIL, SIL(E) and KTE such that the projects can be completed according to the programme at the earliest.

Transport and Housing Bureau Highways Department June 2014







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Legislative Council Panel on Transport Subcommittee on Matters Relating to Railways

Progress Update on West Island Line, South Island Line (East) and Kwun Tong Line Extension

Purpose

This paper aims to inform the Subcommittee on Matters Relating to Railways of the progress of the West Island Line ("WIL"), South Island Line (East) ("SIL(E)") and Kwun Tong Line Extension ("KTE") projects.

Executive Summary

2. The WIL project is 91% complete and the line is targeted to open in December 2014. Since April this year, non-passenger trains have been conducting test runs in the new tunnel section between Sheung Wan Station and Kennedy Town Station. The three new stations are at various stages of completion. At Sai Ying Pun Station, construction of some entrances and their connecting underground passageways are not as advanced as planned due mainly to the delicate ground condition in the area. At this point of the programme, the MTR Corporation ("the Corporation") believes it can complete the five entrances needed¹ to meet safety requirements for passenger operation which will enable the opening of Sai Ying Pun Station in December 2014.

3. However, the programme is very tight and there is no buffer time available. As a prudent measure, and in the event that the Sai Ying Pun Station cannot be opened in time, the Corporation is putting in place a back-up plan to open the West Island Line in December this year with trains not stopping at Sai Ying Pun Station. In this case, Sai Ying Pun Station will open in the first quarter of 2015. If both the Sai Ying Pun Station is not ready for December, and the back-up plan proves not to be feasible, then full opening of WIL will take place in the first quarter of 2015. An announcement will be made in October 2014 on the final opening arrangement for WIL.

4. The SIL(E) project is over 70% complete. While good progress has been achieved in the project's viaduct works and construction of the four

¹A sixth entrance at Ki Ling Lane will be opened at the end of 2015.

new stations, the original target for the opening of SIL(E) in 2015 cannot be achieved due to the complexity of the works at Admiralty Station, which has led to the programme falling behind by approximately 6 months. In conducting the underpinning structural works below the platforms of the running lines at Admiralty Station, safety of the passengers using the existing railway and occupants at the surrounding buildings continues to be the number one priority and this has limited the ability to catch up any time lost when more than expected difficulties have been encountered in the underpinning work. The Corporation will continue to strive to complete the project and open SIL(E) as soon as possible.

5. The KTE project is over 60% complete. Significant progress has been made at Ho Man Tin Station and the tunnels, and the most challenging part of the KTE project is works at Whampoa Station which is approximately 6 months behind schedule. In Whampoa area, extensive excavation works are carried out under a tight and congested footprint with a large amount of utilities and traffic diversions required. As a result, the original 2015 opening date cannot be met. Whilst the Corporation is striving to complete the construction works at Whampoa Station as soon as possible, safety remains its number one priority and it will continue to keep any impact to the community to the minimum possible level.

6. The Corporation will further update the progress and provide the opening arrangement of WIL in October. Further updates on SIL(E) and KTE and the opening arrangements of these two projects will be provided at the end of this year. The Corporation is committed to conducting regular briefings on the progress of all its projects to keep the public properly informed.

West Island Line

Background

7. The WIL project is a 3-kilometre underground extension of the existing MTR Island Line from Sheung Wan Station to three new stations, namely Sai Ying Pun Station, HKU Station and Kennedy Town Station. (The rail alignment of WIL is set out in <u>Annex 1</u>.)

8. In addition to the railway, the project also includes a number of community facilities such as the re-provisioning of the David Trench Rehabilitation Centre and the Kennedy Town Swimming Pool, both of

which were completed in 2011, as well as the provision of lifts and escalators on Sands Street (completed in 2012). In addition, there are footbridge connections to The University of Hong Kong.

9. As the new rail line runs below the densely populated areas in Western District, more than 90 percent of the residents in the District will be within walking distance of the railway.

10. The project commenced construction in July 2009 and is targeted for opening in December 2014. When it opens, WIL will serve about 230,000 people who live and work in Western District. The estimated journey time from Kennedy Town Station to Sheung Wan Station and Tsim Sha Tsui Station will be around 8 and 14 minutes respectively.

11. The Corporation will conduct regular briefings on the progress of the respective railway projects to keep the public properly informed. Another update will be provided in October this year to announce the opening arrangement of WIL.

Project Progress

12. As at the end of May 2014, the Civil and Electrical and Mechanical (E&M) works of WIL are 93% and 80% complete respectively. Overall works is 91% complete.

Track and train-related works

13. The railway tunnel between Sheung Wan and Kennedy Town Stations was broken through in November 2012. All track works were completed in July 2013. Installation of power supply system was completed in February 2014 with power turned on in the same month. WIL was connected to the Island Line in April 2014 when the bulkhead walls separating the old and new tunnels were removed.

14. Since April this year, non-passenger trains have been conducting test runs in the new tunnel section between Sheung Wan Station and Kennedy Town Station. Testing and commissioning of the new line include testing of the overhead line system, traction current system, signalling system, trains and platform screen door system is now ongoing during non-traffic hours.

Station Structural Works

15. The structural works at all three stations are completed. E&M and architectural fit-out works are in progress.

16. The fit-out works at Kennedy Town Station are well advanced and it is anticipated that this station will be the first to have its statutory inspection in July 2014. At HKU Station, the fit-out works are progressing smoothly with the key activity for station completion being the installation of lifts at the deep shaft entrances at the University of Hong Kong and Pok Fu Lam Road. It is anticipated that the statutory inspection of HKU Station will be in September 2014. (The progress of WIL is highlighted in <u>Annex 2</u>.)

Critical Challenge for Full Line Opening -Sai Ying Pun Station Entrances

17. The adit between the Ki Ling Lane entrance and the First Street/Second Street entrances of Sai Ying Pun Station is being constructed in mixed ground condition below the ground water table. The soft soil in the location requires special precautions to be taken during excavation. In addition, the buildings nearby are highly sensitive to ground movement. Ground freezing, which solidifies water in the soil and makes the ground hard for safe excavation, has been adopted for the excavation of this adit as it is considered to be the most appropriate and safest method. However, ground freezing is very time-consuming and requires extensive temporary support works to ensure a high level of safety.

18. As at May 2014, the below ground structure for the Ki Ling Lane entrance is substantially complete. About 80 metres of the 100-metre adit between Ki Ling Lane and the First Street/Second Street entrances have been excavated with the remaining 20 metres and following lining works, and E&M and architectural fit-out requiring another 12 months to complete. Therefore, it will be the end of 2015 before the Ki Ling Lane entrance is available for passenger service.

19. In the meantime, the works for the First Street/Second Street entrance structure are proceeding carefully to ensure there is no disturbance to nearby buildings. The First Street/Second Street entrances are located at the former Centre Street Food Market which required relocating some of the stalls prior to the commencement of the works. The time taken for re-locating the stalls, the limited space available at the site, coupled with the engineering requirements for the deep excavation, have been factors that have limited the rate of progress of these works. Although the Ki Ling Lane entrance is not required for the opening of Sai Ying Pun Station, both entrances at First Street and Second Street are required for the opening. (The layout of Sai Ying Pun Station and its entrances and adits is set out in <u>Annex 3</u>.)

20. Similar to the First Street/Second Street entrances, the structural works at the entrance on Bonham Road are progressing towards completion which is currently anticipated in July. The works at this entrance on Bonham Road are more straightforward than the works at the First Street/Second Street entrances and the associated risk of any delay is much less when compared to First Street/Second Street entrances.

21. After completing the civil works, a few months are needed to install lifts to the entrances at Sai Ying Pun Station. At this point of the programme, the Corporation believes it can complete the five entrances needed (with the sixth entrance at Ki Ling Lane to be opened at the end of 2015) to meet safety requirements for passenger operation which will enable the opening of Sai Ying Pun Station in December 2014. However, the programme is very tight and there is no buffer time available.

22. Given the tight construction programme, as a prudent measure, the Corporation is putting in place a back-up plan in the event that the First and Second Street entrances are not ready for WIL opening in December 2014. Under the back-up plan, only HKU and Kennedy Town Stations will open for passenger service and trains will not stop at Sai Ying Pun Station until the station is opened in the first quarter of 2015. The Corporation is discussing the back-up plan with the relevant government authorities. If Sai Ying Pun Station is not ready for December and the back-up plan proves not to be feasible, then full opening of WIL will take place in the first quarter of 2015.

23. As the Corporation continues to focus on completing WIL for a December 2014 opening, preparation of the back-up plan will be carried out concurrently to ensure that WIL can start serving the Western District community as early as possible, providing safe and smooth operations.

Operation Readiness

24. Train running tests between Kennedy Town Station and Sheung Wan Station in non-traffic hours commenced in April 2014 and trial

operations of train service including running trains on timetable will commence in October 2014. The operations of this new part of the railway and the new stations will be supported by a combination of experienced Operations staff transferred from existing rail lines and new recruits. The majority of the pre-operations station supervisory staff and maintenance staff have been appointed and mobilized to WIL. Training for operations and maintenance staff commenced in February this year.

25. The Corporation will work closely with the relevant government departments on the relevant safety inspections to ensure that all statutory requirements are in place prior to service commencement.

South Island Line (East)

Background

26. SIL(E) is a medium-capacity railway connecting the MTR network at Admiralty Station to the Southern District of Hong Kong. The 7kilometre railway line operates through tunnels and viaducts via stations at Ocean Park, Wong Chuk Hang, Lei Tung and South Horizons. A train stabling and maintenance depot is located in Wong Chuk Hang. (The rail alignment of SIL(E) is set out in <u>Annex 4</u>.)

27. To enhance convenience for residents, the project also includes a number of community facilities in addition to the railway. A public transport interchange will be provided under Wong Chuk Hang Station. There will also be improvement to the existing pedestrian network in the vicinity of Ocean Park Station and Wong Chuk Hang Station including a covered footbridge connecting Wong Chuk Hang Station with the adjacent industrial area, a covered footbridge crossing Ap Lei Chau Bridge Road to link the western part of Ap Lei Chau Estate to Yi Nam Road near the Precious Blood Primary School as well as a pedestrian link to the Aberdeen Channel Promenade.

28. Construction of SIL(E) commenced in 2011. When opened as the South Island Line, it will provide convenient and fast railway service for about 350,000 residents in the Southern District. The journey time from Admiralty Station to Ocean Park Station will be reduced from the current 25 minutes by road to just 4 minutes. The train ride from Admiralty Station to South Horizons Station will take approximately 11 minutes.

The frequency of train service will be about 3 minutes during peak periods.

Project Progress

29. Up to May 2014, over 70% of the works for the project has been completed. This includes 90% completion of the viaduct works and 87% of the drill and blast excavation works for the Nam Fung Tunnel. Excavation of the main running tunnel at Ap Lei Chau has been completed.

30. While good progress has been achieved in the project's viaduct works and construction of the four new stations, due to the complexity of the works at Admiralty Station, the project is approximately 6 months behind schedule and the original target opening of SIL(E) in 2015 cannot be achieved. An update on the programme to complete the project, with a time frame for the opening arrangement, will be available at the end of the year when the challenging works at Admiralty Station and Nam Fung Tunnel are more advanced.

Track and Train-related Works

31. Excavation for the SIL(E) platforms and tunnels at Admiralty Station is expected to be completed at the end of 2014. Shaft blasting works at the Hong Kong Park Works Site have been completed while the tunnelling works next to Hong Kong Park are expected to be completed in the third quarter of 2014. Construction of the ventilation building at Hong Kong Park commenced in December 2013.

32. Tunnel blasting works for the Nam Fung section are targeted to be completed in the third quarter of 2014. Tunnel lining works and the construction of the transition structure that connects to the viaduct section are in progress and expected to be completed in the fourth quarter of 2014. The structural works for Nam Fung Ventilation Building are in progress and expected to be completed at the end of 2014.

33. The installation of noise barriers for the viaduct section near Aberdeen Tunnel leading to Ocean Park Station is substantially complete. Noise barrier installation alongside the Hong Kong Police College and the TWGHs Jockey Club Rehabilitation Centre is in progress and expected to be substantially completed by the second quarter of 2014. 34. Track construction commenced in November 2013 at the Aberdeen Channel Bridge section and is continuing at the Wong Chuk Hang Depot, the viaduct section between Ocean Park Station and Wong Chuk Hang Station and at the Ap Lei Chau Tunnel. With the exception of Admiralty Station, all track-laying works are expected to be completed in the second quarter of 2015.

35. The first three of the 10 SIL(E) trains have been delivered to MTR Siu Ho Wan Depot with the remaining fleet to be delivered gradually over the next few months. The train sets will undergo a series of initial tests at Siu Ho Wan Depot and will then be transported to Wong Chuk Hang Depot later this year for final testing and commissioning. Works trains for overhead line installation have arrived at the Depot and works will commence soon.

Station Structural Works

Admiralty Station is undergoing expansion to become 36. an interchange station for four railway lines including Island Line, Tsuen Wan Line, South Island Line (East) and Shatin to Central Link. There are three levels at the existing Admiralty Station including one concourse level and two platform levels serving passengers on the Tsuen Wan Line and Island Line. The Admiralty Station extension works are being carried out under Harcourt Garden, east of Admiralty Station with three additional levels being constructed below the existing station. The extended station will include one mezzanine level and two platform levels with the SIL(E) platforms located at the lowest level. Cut-and-cover excavation and construction of the station structures are now progressing at the Harcourt Garden works site. Currently the excavation has reached the fourth and fifth levels of the extended Admiralty Station. (The layout of Admiralty Station is set out in Annex 5.)

37. Underpinning of the existing Island Line tunnel is also in progress. The underpinning works require installation of temporary steel beams and columns to support the existing Island Line structure while the in-situ rock is excavated incrementally from beneath the structure. These works are being carried out right under the operating railway and great care is needed to maintain the safety of the railway and ensure that there is no impact to train services. Safety is always the number one priority for these works and international best practice for the engineering control of the works has been established. There are significant delays being experienced in this sensitive underpinning works. The excavation by drill

and blast for the cavern and platform tunnels that make up the southern part of the Admiralty Station extension has been substantially completed.

38. Structural works for Ocean Park Station and Wong Chuk Hang Station have been completed and fitting-out works have commenced.
39. For Lei Tung Station, construction at track level has been completed and the cavern crown lining works are in progress above the concourse slab. Drill and blast excavation for the Entrance B shaft and adit are in progress and expected to be completed in the second quarter of 2014. At Lei Tung Station Entrance A at Main Street, the station entrance and pedestrian adit construction is in progress and expected to be completed in fourth quarter 2014.

40. At South Horizons Station, major excavation works have been completed and construction of the station box and entrance structure under the temporary traffic deck is in progress. Superstructure construction for the footbridge connecting Ap Lei Chau Estate is in progress and expected to be completed by the end of 2014. Site formation works for the End Plant Building at Yuk Kwai Shan have been completed and the structural works have commenced. Construction of the ventilation building at Lee Wing Street is in progress. (The progress of SIL(E) is highlighted in Annex 6.)

Critical Challenges for Opening -Admiralty Station and Nam Fung Tunnel

Admiralty Station

41. To ensure that the existing train services at Admiralty Station, surrounding high-rise buildings, road traffic and pedestrian accesses are not affected by the blasting works for the station extension, great care is being taken during the implementation of these works. This has included careful design and planning, as well as review by relevant government departments before works commencement. During the works implementation, survey and monitoring of the surrounding buildings and structures is maintained, and vibrations induced by the blasting are monitored on a continual basis.

42. In particular, the underpinning works of the Island Line tunnel requires difficult and complex engineering works to support the existing railway structure while the new station extension is constructed. Before commencement of the excavation, extensive design assessment and review has been carried out and subsequently agreed with the relevant government departments. To control the works on site, work procedures have been established to ensure that each step of the work is carefully checked before progressing to the next stage. Monitoring instruments have been installed within the works area and the Island Line tunnels to enable continuous and real time monitoring to identify any movement that may occur during the excavation works and allow corrective action to be taken. Strict engineering control of the works is maintained with the safety of the railway structure as the primary objective.

43. The original target for the opening of SIL(E) in 2015 cannot be achieved due to the complexity of the works at Admiralty Station, which has led to the programme falling behind by approximately 6 months. In conducting the underpinning structural works below the platforms of the running lines at Admiralty Station, safety of the passengers using the existing railway and occupants at the surrounding buildings continues to be the number one priority and this has limited the Corporation's ability to catch up any time lost when more than expected difficulties are encountered in the underpinning work.

Nam Fung Tunnel

44. For the Nam Fung Tunnel, difficult and unstable ground conditions including two major fault zones along the tunnel alignment have dictated slow progress. Geological conditions at Wan Chai Gap Fault Zone and Magazine Gap Fault Zone are difficult with soft materials within the rock, and the unstable geological conditions require more strengthening during excavation and this has slowed the progress of the works. The water ingress into the tunnel also increased as the tunnel passes through the fault zones and this requires additional grouting works to be carried out. Throughout the excavation of Nam Fung Tunnel, safety of the drill and blast and other works operations is being held as the top priority. Nam Fung Tunnel is the last section of the SIL(E) tunnels to be completed and it is expected to break through in the third quarter this year. Any difficulties with the remaining excavation in this section will have an impact on the completion of the tunnels as a whole and the following track construction and E&M installations.

Kwun Tong Line Extension

Background

45. The KTE project is a 2.6-kilometre underground extension of the existing Kwun Tong Line from Yau Ma Tei Station to Whampoa Station, with an intermediate station at Ho Man Tin, which will be an interchange station with the future Shatin to Central Link currently under construction. (The alignment of KTE is set out in <u>Annex 7</u>.)

46. To enhance convenience for commuters, essential public infrastructural works are being constructed in addition to the railway, which includes a walkway connection between Oi Man Estate, Ho Man Tin Estate and Ho Man Tin Station, a covered footbridge across Chatham Road North, and public transport facilities on Chung Hau Street.

47. Travelling by road-based transport between Whampoa and Mong Kok currently takes about 25 minutes during peak hours. With KTE, passengers from Whampoa and Ho Man Tin will be able to reach Mong Kok in about 5 minutes. KTE will serve the 146,000 people living in Whampoa and Ho Man Tin with convenient and efficient railway service.

Project Progress

48. As at the end of May 2014, the overall completion of KTE was over 60%. Despite challenges in various works fronts, construction of the civil works is progressing in parallel with E&M equipment fabrication and system modification works. Following the completion of the site formation excavation for Ho Man Tin Station in April 2014, station structure construction has commenced and reached concourse level. Whilst at Whampoa Station, the construction works are in progress within a densely populated community with busy traffic and complex underground utilities. Regular refinements to the Temporary Traffic Management Schemes ("TTMS") and construction sequence are implemented to address the challenges and stakeholders' concerns with a view to minimizing impact on the local community. With the difficulties at Whampoa Station, the project is approximately 6 months behind schedule and the targeted opening of KTE in 2015 cannot be achieved. The Corporation will further update the progress status and provide the time frame for the opening arrangement at the end of the year.

Railway Tunnelling Works

49. Tunnel excavation between Yau Ma Tei and Whampoa Stations is about 92% complete with over 2 kilometres of tunnel excavated. The remaining tunnel excavation between Wylie Road Ancillary Building and Ho Man Tin Station will be completed by the third quarter of 2014. 50. Construction for the section of tunnel between Wylie Road Ancillary Building and Yau Ma Tei Station is substantially complete. Preparations for track laying have commenced.

51. The tunnel excavation between Ho Man Tin and Whampoa Stations was completed in April 2014. Lining works is now in progress.

52. The programme and sequence of civil works, track work and E&M installations are being coordinated to maximise opportunities to progress the track side installations. The majority of the track laying and trackside installation works are expected to be completed in the first quarter of 2015.

Ho Man Tin Station and Essential Public Infrastructure Works

53. Serving as the future interchange station between Kwun Tong Line and the Shatin to Central Link, the excavation and construction works of Ho Man Tin Station have been particularly difficult due to proximity of the station location to major trunk roads and buildings. The 8 level basement station is located at the former Valley Road Housing Estate adjacent to Chatham Road and Fat Kwong Street. The station is a cruciform shape design with dedicated interchanging escalator connections, interchange concourse, entrance connections at different levels and related E&M facilities.

54. The excavation for Ho Man Tin Station was completed in April 2014. Excavation was carried out under heavy roof over blast protection with about 700,000 cubic metres of rock and soil removed. Structural works of the station commenced in the fourth quarter of 2013 and construction is now proceeding to concourse slab level with 20% completion. Building services works of the station has also commenced. Completion of Ho Man Tin Station structure is planned for early 2015 for E&M installation and fitting out works.

55. In addition to the railway, a pedestrian link system is being constructed in the Ho Man Tin area to provide convenient station access to nearby Ho Man Tin and Hung Hom communities. The covered footbridge under construction across Chatham Road North connecting to Ho Man Tin Station and Wuhu Street will replace the existing one with bigger pedestrian flow capacity. The works are being carried out in stages to maintain existing traffic flow and minimize impact on the local community. Installation of steel truss for the footbridge will be completed in June 2014 and structural works of the footbridge and connecting escalators are underway.

56. The steel truss installation for the footbridge across Hau Man Street, which will link up Oi Man Estate and Ho Man Tin Station, was completed in February this year. Structural works of the lift tower and fitting out works are in progress.

57. The public transport interchange of Ho Man Tin Station is located on a slope next to Chung Hau Street. Extensive slope protection works and utility diversion were required to facilitate the sub-structure works. Majority of the foundation piles were complete and construction was proceeding to deck structure.

Whampoa Station and Platform Tunnel Works

58. Whampoa Station is located in Tak Man Street and Tak On Street adjacent to Whampoa Garden. The station comprises of two satellite concourses connected by a platform tunnel with entrance connections to buildings nearby and at street level. To ensure safety and stability, the concourses were constructed by cut and cover method within a cofferdam made up with more than 1,000 pipe piles reaching 70 metres deep. Extensive TTMS and utility diversion were required to facilitate the piling and excavation works for Whampoa Station.

59. Excavation for both the East and West Concourses of the station is now in full swing with 45% completion. The concourse excavation is anticipated to complete in the fourth quarter of 2014 whilst the excavation for the platform tunnel will commence in the third quarter of this year when the excavation of both concourses reaches the platform tunnel.

60. Excavation of the platform tunnel will be conducted from the two ends of the concourses and completion of the platform tunnel is targeted for the first quarter of 2015.

61. Due to the constraints posed by the congested situation at site, sections of the Whampoa Station internal structures are planned as pre-fabricated components to save time on formworks and steel fixing on site. The station E&M installations and fitting out works are scheduled to commence in early 2015. Close liaison with the community on matters of concerns such as frequent traffic diversions have been maintained

throughout the planning and construction of the station works. (The progress of KTE is highlighted in <u>Annex 8</u>.)

Critical Challenge for Opening -Whampoa Station

62. The ground conditions in Whampoa have proved to be highly variable as excavation has revealed and substantial temporary supports have been required to stabilize excavation and ground support. The platform tunnel excavation between the East and West Concourses of Whampoa Station, due to commence in the third quarter of this year, is anticipated to be very complex as there are sensitive utilities and buildings adjacent to the excavation in addition to the geological challenges. Extensive monitoring and protection measures are in place for safe tunnel advancement.

63. The construction of the station has been very challenging due to the station location in a densely-populated area with high-rise buildings and busy traffic. To minimize impact on residents and traffic, a long period of time has been spent on planning before the implementation of TTMS. Moreover, the implementation of protection works for underground utilities and overcoming the limited working space have prolonged the TTMS stages during the early stages of construction. To make room from traffic lanes and footpaths for construction works, more than 100 stages of TTMS were required to complete the cofferdam piling and utility works. The Corporation is grateful for the support of the stakeholders in the Whampoa area as the construction of the station would not have advanced to where it is today without the understanding and cooperation of the local community.

64. Due to proximity of Whampoa Station to the community, giving due consideration to stakeholder concerns is of high importance. Construction noise, TTMS and utility works have to be carefully planned and executed to minimise the impact on residents and community events. The unforeseen quantity of underground services and the poor state and conditions of the utility in Whampoa are adding difficulty and complexity in managing the works. Excavation works are often disrupted when uncharted utilities or corroded pipes are identified on site. Emergency repair including protection and diversion, after liaison with relevant department or utilities service providers, are implemented with temporary traffic management schemes prepared concurrently. Thus, prolonging the duration of excavation works. With the difficulties at Whampoa station, it

is running approximately 6 months late. The Corporation will strive to deliver KTE as soon as possible.

Conclusion

65. WIL, SIL(E) and KTE are all ownership railway projects being undertaken by the Corporation. Each of these projects have achieved substantial progress with critical areas now at Sai Yin Pun Station (WIL), Admiralty Station (SIL(E)) and Whampoa Station (KTE).

66. Progress of the three projects have been reported on an ongoing basis to the Department of Highways, relevant authorities and the community through various channels including District Council meetings, Community Liaison Groups and newsletters. Despite the challenges faced by the respective projects, the Corporation continues to work hard to overcome these challenges. The project teams are working pro-actively to find mitigation measures in order to deliver railway services to the relevant communities as early as possible. The Corporation will continue to report to the Subcommittee on Matters Relating to Railway on the progress of WIL, SIL(E) and KTE.

MTR Corporation Limited June 2014

Alignment of West Island Line



Progress of West Island Line

Track and train-related works	• Track work of WIL tunnels completed in July 2013	
	• Island Line and WIL tunnels officially connected in April 2014 with removal of bulkhead walls	

	• Platform screen doors installed at all station platforms	
Stations	• Installation of facilities underway at concourse of Kennedy Town Station	
	• Installation of escalators at HKU Station	

	• Platforms completed at Sai Ying Pun Station	
Pedestrian links	• Lift and escalators built on Sands Street opened for public use in December 2012	

Essential Public Infrastructure Works	• Footbridge under construction to connect to the University of Hong Kong	
	• Green minibus boarding and alighting area is being built at Kennedy Town Station	

Layout of Sai Ying Pun Station Entrances and Adits



Alignment of South Island Line (East)



Layout of Admiralty Station



<u>Annex 6</u>

Progress of South Island Line (East)

Track and Train- related Works	• Blasting works for platform tunnels and cavern at Admiralty Station are substantially complete	
	• Shaft blasting works at Hong Kong Park works site completed while tunnelling works next to Hong Kong Park are expected to break through into Admiralty Station in the third quarter of 2014	

• About 87% of the drill and blast excavation works for Nam Fung Tunnel have been completed and the works are expected to be completed in the third quarter of 2014

• Tunnel lining works and the construction of the transition structure that connects to the viaduct section are in progress and expected to be completed in the fourth quarter of 2014

• Drill and blast excavation works for Ap Lei Chau main tunnel is complete

• First three trains of SIL(E) have arrived at MTR Siu Ho Wan Depot to undergo a series of initial tests







	• About 90% of the overall viaduct works have been completed	
Station Structural Works	 Cut-and-cover excavation and construction of station structures is progressing at the Harcourt Garden works site Excavation works are now being carried out at the fourth and fifth levels of Admiralty Station Underpinning works of the Island Line running tunnels are also in progress 	

• Structural works for Ocean Park Station and
Wong Chuk Hang Station have been completed and
fitting-out works have commenced

• Construction of the building structure of Lei Tung Station Entrance A at Main Street, Ap Lei Chau and the pedestrian adit towards Lei Tung Station is in progress

• For South Horizons Station, major excavation works have been completed and construction of the station box and entrance structure under the temporary traffic deck is in progress



Essential Public	• Structural works of a covered footbridge	
Infrastructure	crossing Ap Lei Chau Bridge Road and linking the	
Works	western part of Ap Lei Chau Estate to Yi Nam Road near the Precious Blood Primary School is in progress and expected to be completed by the end of 2014	

Alignment of Kwun Tong Line Extension

Progress of Kwun Tong Line Extension

Railway Tunneling Works	 Overall tunnel excavation is about 92% complete while the tunnel structure is 38% complete Tunnel structure between Yau Ma Tei Station and Wylie Road Ancillary Building is 64% complete and track work commenced in April 2014 	
	• The remaining tunnel excavation between Wylie Road Ancillary Building and Ho Man Tin Station is expected to be completed in third quarter of 2014	
	• Tunnel structure between Ho Man Tin Station and Whampoa Station is 22% complete and is anticipated to be completed in third quarter of 2014	

Station Structural Works	• Open blast excavation at Ho Man Tin Station was completed in April 2014	
	 Structural works of station and platform has commenced in the fourth quarter of 2013 with 20% completion by the end of May 2014 Building service installation is now in progress 	
	• Excavation of East and West concourses of Whampoa Station is 45% complete with completion to be in the fourth quarter of 2014	

Essential Public Infrastructure Works	 Steel truss installation for the covered footbridge across Chatham Road North completed in June 2014 Structural works of the footbridge and connecting escalators to Wuhu Street are underway 	
	 Steel truss installation of footbridge across Hau Man Street, which will link up Oi Man Estate and Ho Man Tin Station, was completed in February 2014 Structural works of lift tower and fitting out works are in progress 	
	• Majority of the foundation piles for the public transport interchange of Ho Man Tin Station were complete and construction was proceeding to deck structure	