

ITEM FOR PUBLIC WORKS SUBCOMMITTEE OF FINANCE COMMITTEE

HEAD 706 – HIGHWAYS

Transport – Railways

63TR – Shatin to Central Link — construction of railway works — advance works

Members are invited to recommend to Finance Committee to increase the approved project estimate of **63TR** by \$847.7 million from \$6,254.9 million to \$7,102.6 million in money-of-the-day prices.

PROBLEM

The approved project estimate (APE) of **63TR** is not sufficient to cover the cost of the works under the project.

PROPOSAL

2. The Director of Highways, with the support of the Secretary for Transport and Housing, proposes to increase the APE of **63TR** by \$847.7 million from \$6,254.9 million to \$7,102.6 million in money-of-the-day (MOD) prices.

/ **PROJECT**

PROJECT SCOPE AND NATURE

3. In February 2011, the Finance Committee (FC) of the Legislative Council (LegCo) approved the upgrading of the part involving Admiralty Station of South Island Line (East) (SIL(E)) and Ho Man Tin Station of Kwun Tong Line Extension, which are related to the Shatin to Central Link (SCL), of **61TR** “Shatin to Central Link — construction of railway works” to Category (Cat) A as **63TR**, entitled “Shatin to Central Link — construction of railway works — advance works”, at an estimated cost of \$6,254.9 million in MOD prices. The Shatin to Central Link (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.

SCL will have ten stations. Apart from bringing improvements to the existing Tai Wai Station, SCL project will involve construction of new stations or extension of existing stations at Hin Keng, Diamond Hill, Kai Tak, To Kwa Wan, Ma Tau Wai, Ho Man Tin, Hung Hom, the Hong Kong Convention and Exhibition Centre, and Admiralty. The alignment layout of SCL is at Enclosure 1.

4. The approved project scope of **63TR** comprises –

- (a) expansion of Admiralty Station to accommodate SCL railway facilities including overrun tunnel of approximately 200 metres long and ventilation facilities for the station; and
- (b) construction of the portion of Ho Man Tin Station for SCL.

Layout plans of advance railways works are at Enclosures 2 and 3.

JUSTIFICATION

5. Following a detailed review of the financial position, we consider it necessary to increase the APE of **63TR** by \$847.7 million from \$6,254.9 million to \$7,102.6 million (in MOD prices) to cover the additional expenses arising from the following –

/ (a)

- (a) unfavourable ground conditions;
- (b) modification of the construction schemes to suit the actual site conditions; and
- (c) increase in provision for price adjustments.

Details of the increase in APE are set out in paragraphs 6 to 25 below.

Unfavourable ground conditions

Excavation works for the expansion of Admiralty Station

6. The expansion works at Admiralty Station involves the construction of an underground six-storey structure at Harcourt Garden, which is to the east of the existing station. The works were conducted using the cut-and-cover method and were followed by the structural works of the station. There are many high-rise buildings in the vicinity of Admiralty Station and there is a lot of underground foundations and utilities, which impose constraints to the works. During construction, we had to take into account the impacts on the existing station and railway services, as well as the foundations of the nearby buildings and it caused great challenges to the works. Moreover, the mechanical drill-and-break method was adopted for the rock excavation works. If the natural joints of the rock are relatively more densely spaced, the drilling machines can break the rock more easily which will make the subsequent removal of the debris and thus the excavation works more efficient. The MTR Corporation Limited (MTRCL) followed the Geoguide compiled by the Geotechnical Engineering Office (GEO) to carry out the ground investigation and set the number of drill holes as recommended by the guide. Notwithstanding, it was found during construction that the actual properties of the rocks was different from the geological information obtained by ground investigations. The actual average spacing between the natural joints of the rocks was one metre, which was twice as the estimated half-metre spacing. This impaired the efficiency of the excavation works to a large extent.

7. To expedite the excavation progress under the unfavourable ground conditions, the construction team adopted mitigation measures as follows –

- (a) the works were conducted round the clock on weekdays and some public holidays. As a result,
 - (i) more acoustic covers were required to comply with the requirements stipulated in the Construction Noise Permits, (ii) the fallback support for the works site had to be rearranged, and (iii) the construction conditions and plans had to be modified;

/ (b)

- (b) the excavation of the station adopted a top-down approach. In general, when an appropriate depth was reached, concrete floor slabs (which form part of the station structure) would be constructed as temporary supports for the vertical excavated surfaces of the rocks. However, to avoid affecting the excavation procedures and causing further delay in the main excavation works of the station, the contractor needed to give up using concrete floor slabs for support purpose. Instead, a less time-consuming way of erecting temporary steel frames was adopted to serve the support purpose;
- (c) in order to avoid affecting the normal railway services, limited blasting was carried out at midnight out of the service hours of the Island Line, such that the mechanical drill-and-break excavation could be expedited; and
- (d) the number of excavators deployed has been increased from 24 to 55. Also, larger excavators were deployed.

8. Under such unfavourable ground conditions, for the purpose of expansion of Admiralty Station, the above measures have contributed to a cost increase of \$614.1 million.

Excavation works for the shaft of the Ventilation Building of the expanded Admiralty Station

9. Although MTRCL followed the Geoguide compiled by the GEO to carry out the ground investigation and set the number of drill holes as recommended by the guide, during the excavation works for the ventilation shaft, the construction team found that the actual bedrock surface was different from the geological information obtained by ground investigations.

10. As the actual bedrock surface encountered was shallower than expected, the construction team had to excavate more rocks in order to reach the depth required for the shaft. The excavation progress has been thereby compromised. Hence, the construction team has implemented mitigation measures, including deploying more machinery and manpower at a cost of \$51.3 million.

SCL overrun tunnel construction works at the expanded Admiralty Station

11. **63TR** included the construction of a 200 metres long overrun tunnel for the SCL at Admiralty Station. The overrun tunnel is very close to the tunnel of SIL(E). The overrun tunnel has to be constructed in advance of other SCL main works in order to tie in with the construction schedule of SIL(E), such that the blasting works for the overrun tunnel could avoid causing risks to the operation of SIL(E) after its commissioning and could be implemented with less restrictions on time window for construction.

12. One end of the overrun tunnel is connected to the Ventilation Building. Since there was disruption to the progress of works of the Ventilation Building as mentioned in paragraphs 9 and 10, the excavation works of the overrun tunnel had to be deferred. Eventually, these works and the tunnel excavation works for SIL(E) running underneath SCL had to be carried out concurrently. As the nearest distance between the tunnels of the two projects is less than 10 metres, simultaneous blasting could affect the stability of the rocks peripheral to the tunnels. Hence, it was necessary to stagger the blasting and excavation works of the two tunnels which are in close proximity, resulting in an increase in the construction time and resources required.

13. In view of the increase in construction time and resources required, the cost for the construction of SCL overrun tunnel mentioned above contributes an increase of \$136.7 million.

Ho Man Tin Station construction works

14. The design of Ho Man Tin Station was to found the station on solid rock mass. When the excavation for the station was carried out, the construction team found that the strength of the rock mass at the bottom was not as expected. Therefore, it is necessary to excavate to a deeper level until it reaches a solid rock mass and at the same time to build a thicker concrete base to support the station structure. When blasting of cavern of the station was carried out, the construction team found more faults than expected. As a result, more excavations are required in order to remove the loose rocks. Also, the tunnel wall structure has to be thickened to fill up the overbreak.

15. The above measures adopted in the construction of Ho Man Tin Station have contributed to a cost increase of \$47.4 million.

16. The unfavourable ground conditions mentioned in paragraphs 6 to 15 above have contributed to a total cost increase of \$849.5 million.

Modification of the construction schemes to suit the actual site conditionsExpanded Admiralty Station

17. When building the major structure of the expanded Admiralty Station, the existing rocks supporting the main tunnel structure of the Island Line had to be excavated. In order not to affect the operation of the Island Line, together with the fact that the underpinning works entail complicated work procedures, a number of technical reviews on the detailed design of the underpinning works have been conducted after awarding the tender. Having considered the views put forth by experts, the Buildings Department and the GEO, MTRCL has imposed additional stabilisation works and temporary propping works and adopted a more advanced propping installation with a view to monitoring and controlling the movements of the Island Line tunnel more effectively during the underpinning works. This could further reduce the risks posed to the railway operation and the passengers during the works period. Therefore, the cost for the underpinning works of the Island Line tunnel is higher than that of the original plan. Besides, the implementation time for the underpinning works has to be extended.

18. The above modification of construction schemes involves a cost increase of \$225.1 million.

Ho Man Tin Station

19. Ho Man Tin Station is situated at the vacant land lot of ex-Valley Road Estate. In view of the sloping ground of the land lot, MTRCL adopted the conventional open blasting method for excavation at rock hill at the design stage. After commencing the construction works, the contractor had to apply for the blasting permit from the authority. As the blasting sites are close to major trunk roads and residential buildings, MTRCL, its contractor, and the relevant government departments required a longer time to assess, design and re-examine the protective measures to be used during open blasting. Eventually, MTRCL adopted the authority's suggestions to provide additional protective measures on top of the conventional open blasting in order to obtain the blasting permit. Subsequently it was found that the above protective measures for the blasting works would affect the efficiency of the excavation. In order to expedite the progress, MTRCL used large steel mesh to cover the entire blasting site and proceeded with the remaining excavation works. Although the progress of excavation works was then improved, the overall excavation works timetable of the station had been delayed and it affected the programme of the subsequent structural, E&M, track laying and building services installation works. The construction team enhanced the number of work fronts and man hours to recover the delay. As a result, there was a corresponding increase in extra expenses for manpower and machinery.

20. The above modification of construction schemes at Ho Man Tin Station has contributed to a cost increase of \$175.3 million.

21. Owing to the factors mentioned in paragraphs 17 to 20 above, we estimate that the modification in design has contributed to a total cost increase of \$400.4 million.

Increase in provision for price adjustments

22. When preparing the project estimate in 2011, we reserved \$737 million as the provision for price adjustments based on the price adjustment factors and the cash flow model available at the time. Since the above factors have led to an increase in the project cost, coupled with changes in the work procedures, the actual cash flow is different from the original plan. Hence, we need to increase the provision for price adjustments. According to the latest project estimate, cash flow as well as the latest price adjustment factors compiled by the Government in September 2016, the provision for price adjustments should be increased by \$558.5 million, i.e. from \$737 million to \$1,295.5 million. Details of the latest cash flow and estimation of price adjustments for the project are at Enclosure 4.

Items involving savings

Adjustment of the on-cost payable to MTRCL

23. In the funding application for the advance works of SCL in 2011, \$710.5 million was temporarily reserved in **63TR** for paying MTRCL's project management cost¹. Subsequently, after the independent consultant appointed by the Highways Department has reviewed the construction estimate of SCL, the Government lowered the estimate of the project management cost by \$212 million to \$498.5 million.

Savings on works items

24. As the tender price for building services works and E&M works is lower than expected, the net saving is \$277.1 million.

/ Use

¹ The project management cost is payable to the MTRCL for undertaking technical studies, design, construction supervision and contract management during the design and construction stages.

Use of contingencies

25. Some of the contingencies (i.e. \$501.6 million) under the original APE have been committed to cater for the additional costs arising from the above factors. As a major part of the advance works have been substantially completed, the remaining provision on contingencies of \$30 million would be sufficient to serve as contingency.

SUMMARY OF FINANCIAL POSITION

26. All in all, a breakdown of the proposed increase of \$847.7 million is as follows –

Factors	Proposed increased amount/savings in MOD prices (\$ million)	Percentage of the increased amount/savings (%)
Increase due to –		
(a) unfavourable ground conditions	849.5	47.0
(i) excavation works for the expanded Admiralty Station	614.1	34.0
(ii) excavation works for the shaft of the Ventilation Building of Admiralty Station	51.3	2.8
(iii) construction of SCL overrun tunnel at the expanded Admiralty Station	136.7	7.6
(iv) construction works for Ho Man Tin Station	47.4	2.6
(b) modification of the construction schemes to suit the actual site conditions	400.4	22.1
(i) expanded Admiralty Station	225.1	12.4
(ii) Ho Man Tin Station	175.3	9.7

/ (c)

Factors	Proposed increased amount/savings in MOD prices (\$ million)	Percentage of the increased amount/savings (%)
(c) increase in provision for price adjustments	558.5	30.9
(d) Total increase (d) = (a) + (b) + (c)	1,808.4	100.0
Partly Offset by –		
(e) adjustment of the on-cost payable to MTRCL	212.0	43.3
(f) savings from other works items	277.1	56.7
(g) Total savings (g) = (e) + (f)	489.1	100.0
(h) Amount paid by contingencies	471.6	
(i) Proposed increase (i) = (d) – (g) – (h)	847.7	

———— A comparison of the cost breakdown of the original APE and the revised project estimate is at Enclosure 5.

FINANCIAL IMPLICATIONS

27. Subject to funding approval, we will revise the phased expenditure as follows –

Year	\$ million (in MOD prices)
Up to 31 March 2016	5,303.0
2016 – 17	932.7
2017 – 18	699.7
2018 – 19	167.2
	7,102.6

/ 28.

28. The proposed increase in APE will not give rise to any additional recurrent expenditure.

PUBLIC CONSULTATION

29. We consulted the Subcommittee on Matters relating to Railways (RSC) of the Panel on Transport of LegCo on the proposed increase in APE of **63TR** on 9 December 2016. The Subcommittee supported submitting the funding proposal to the Public Works Subcommittee (PWSC) for examination. The supplementary information required by the Members would be submitted to RSC before the PWSC meeting.

ENVIRONMENTAL IMPLICATIONS

30. The proposed increase in APE will not have any environmental implication.

ENERGY CONSERVATION MEASURES

31. The proposed increase in APE will not lead to any energy conservation measure.

HERITAGE IMPLICATIONS

32. The proposed increase in APE will not affect any heritage site, i.e. all declared monuments, proposed monuments, graded historic sites or buildings, sites of archaeological interest and government historic sites identified by the Antiquities and Monuments Office.

LAND ACQUISITION

33. The proposed increase in APE will not require any land acquisition or clearance.

/ BACKGROUND

BACKGROUND INFORMATION

34. The FC approved the upgrading of part of **61TR** to Cat A in February 2011 as **63TR** “Shatin to Central Link — construction of railway works — advance works”, at an estimated cost of \$6,254.9 million. The construction works commenced in mid-2011 and have been substantially completed. Additional expenditure of the project mainly included the changes to the works and the claims from the contractors. After reviewing the substantiations submitted by the contractors, MTRCL calculated a more accurate amount of the increase in APE in mid-2016. The Government has completed scrutiny of MTRCL’s figures and is applying for additional funding from LegCo for the project. Detailed background of the construction works of SCL is at Enclosure 6. As SCL project is complicated and the construction of the main works is still in progress, MTRCL will not be able to conduct a more realistic assessment for the cost of the main works of SCL until the second half of 2017. After critically scrutinising MTRCL’s assessment, we will seek to apply for additional funding from FC in the 2017/18 legislative session with a view to continuing SCL main works.

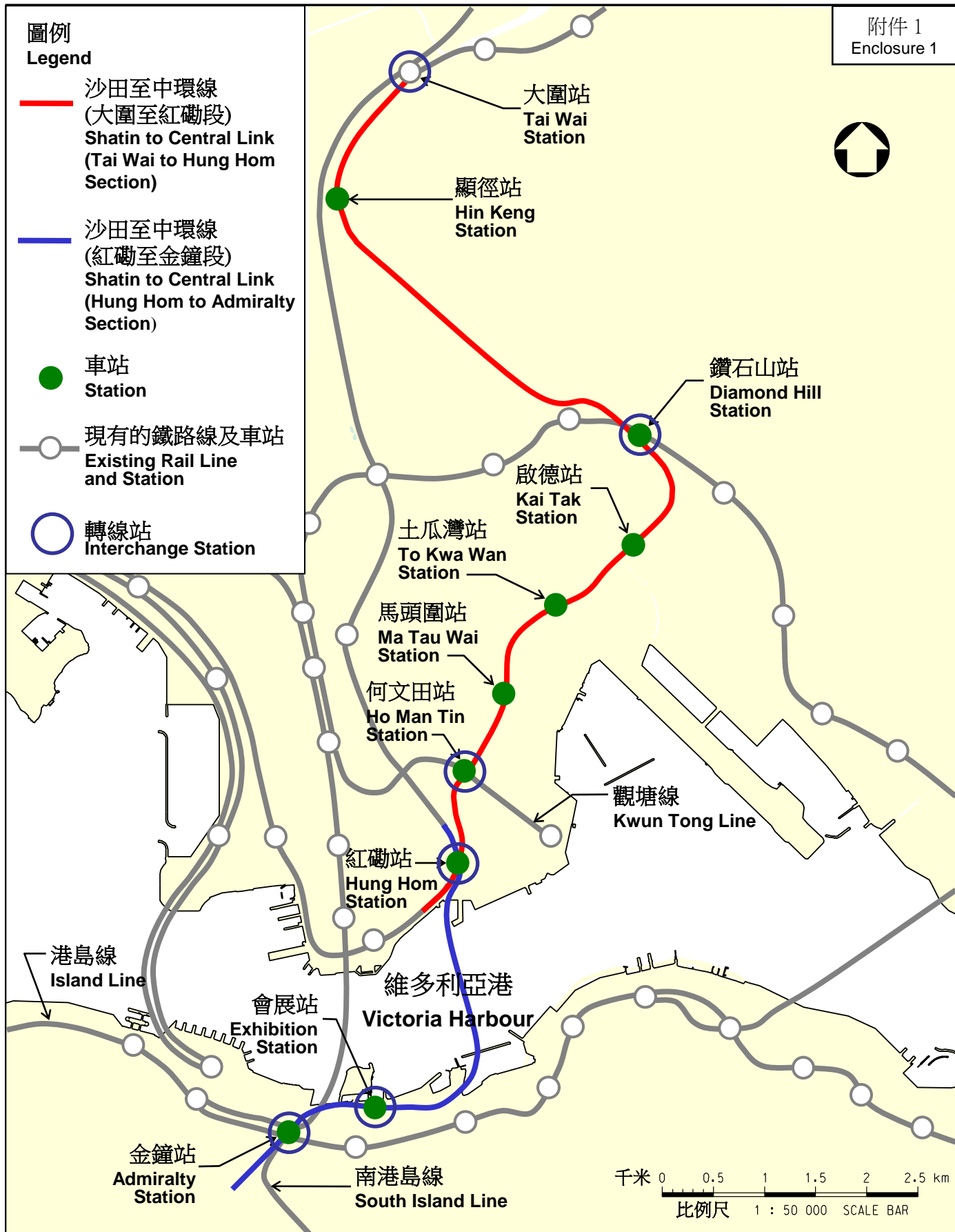
35. The proposed increase in APE will not involve any additional tree removal.

36. The proposed increase in APE will not involve the creation of any professional and technical post or job opportunity.

Transport and Housing Bureau
January 2017

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.

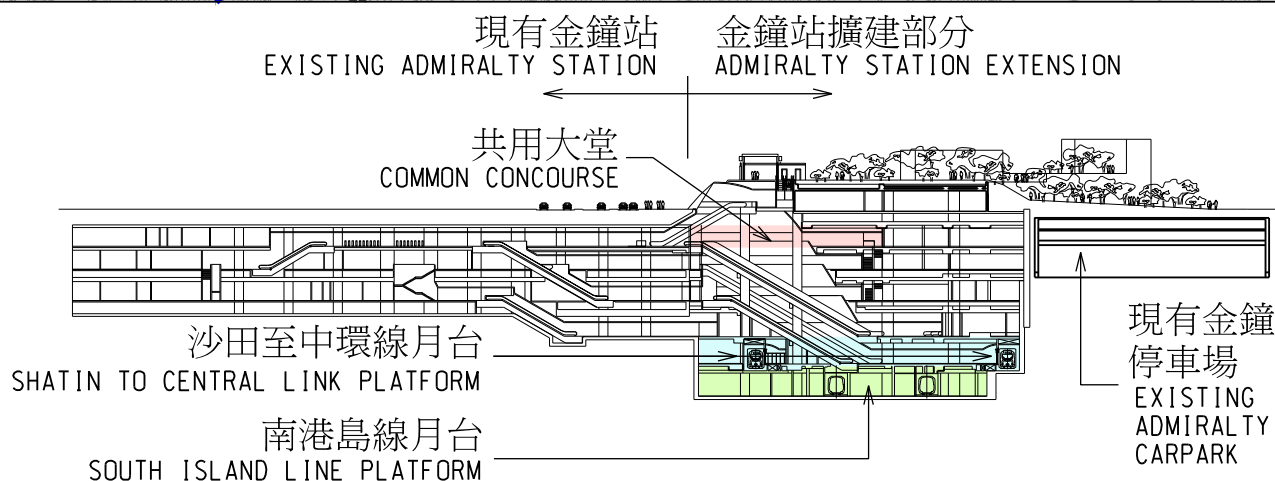
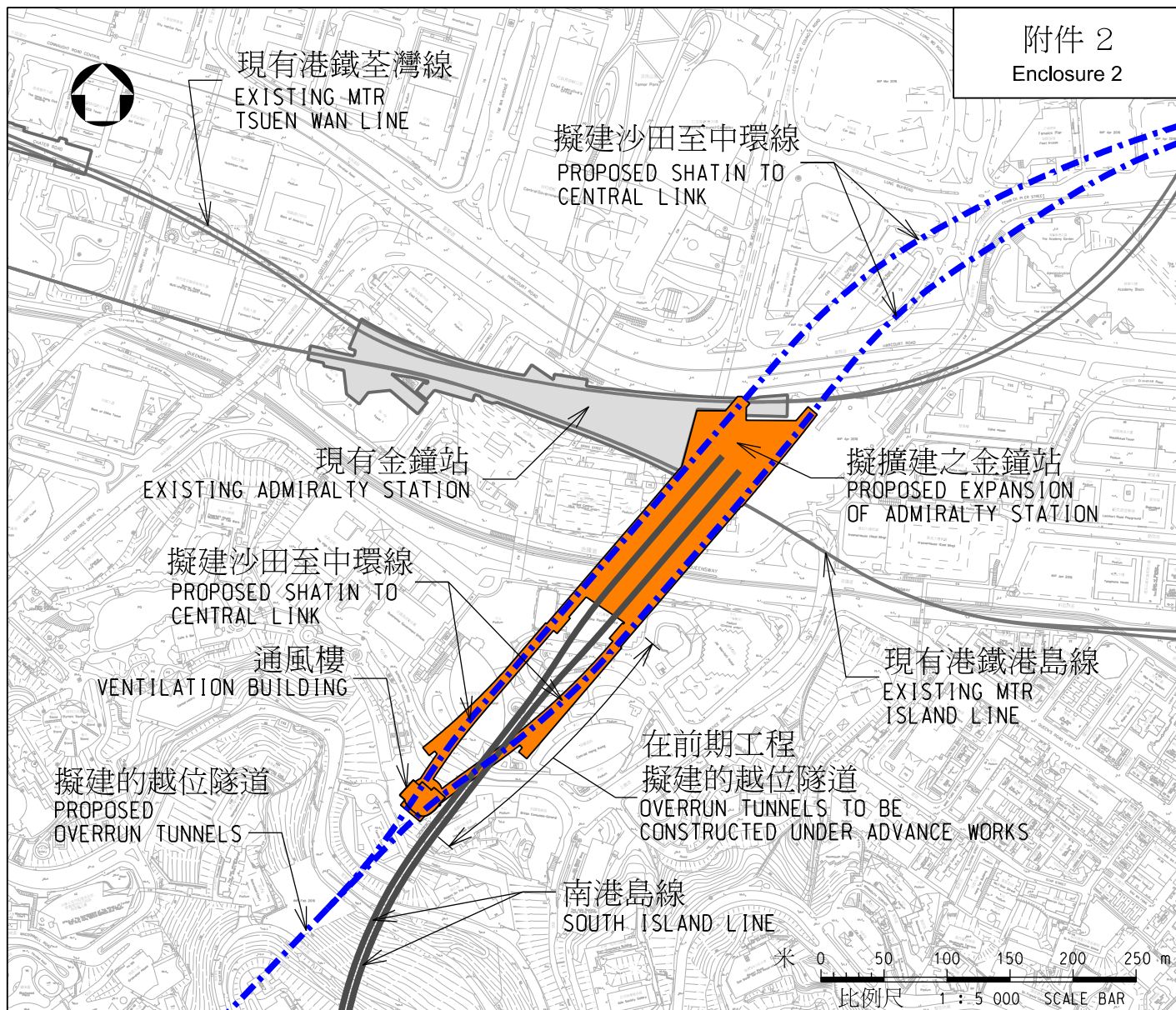
HRWSC003-SK0450

版權所有 COPYRIGHT RESERVED

鐵路拓展處 RAILWAY DEVELOPMENT OFFICE



路政署
HIGHWAYS DEPARTMENT



典型橫切面示意圖 (不按比例)
TYPICAL CROSS SECTION (N.T.S.)

圖則名稱 drawing title

工務計劃項目第63TR號
沙田至中環線 — 鐵路建造工程 — 前期工程
項目(a) — 金鐘站擴建工程

PWP ITEM NO. 63TR

SHATIN TO CENTRAL LINK - CONSTRUCTION OF RAILWAY WORKS - ADVANCE WORKS
ITEM (a) - EXPANSION OF ADMIRALTY STATION

圖號 drawing no.

HRWSCL003-SK0451

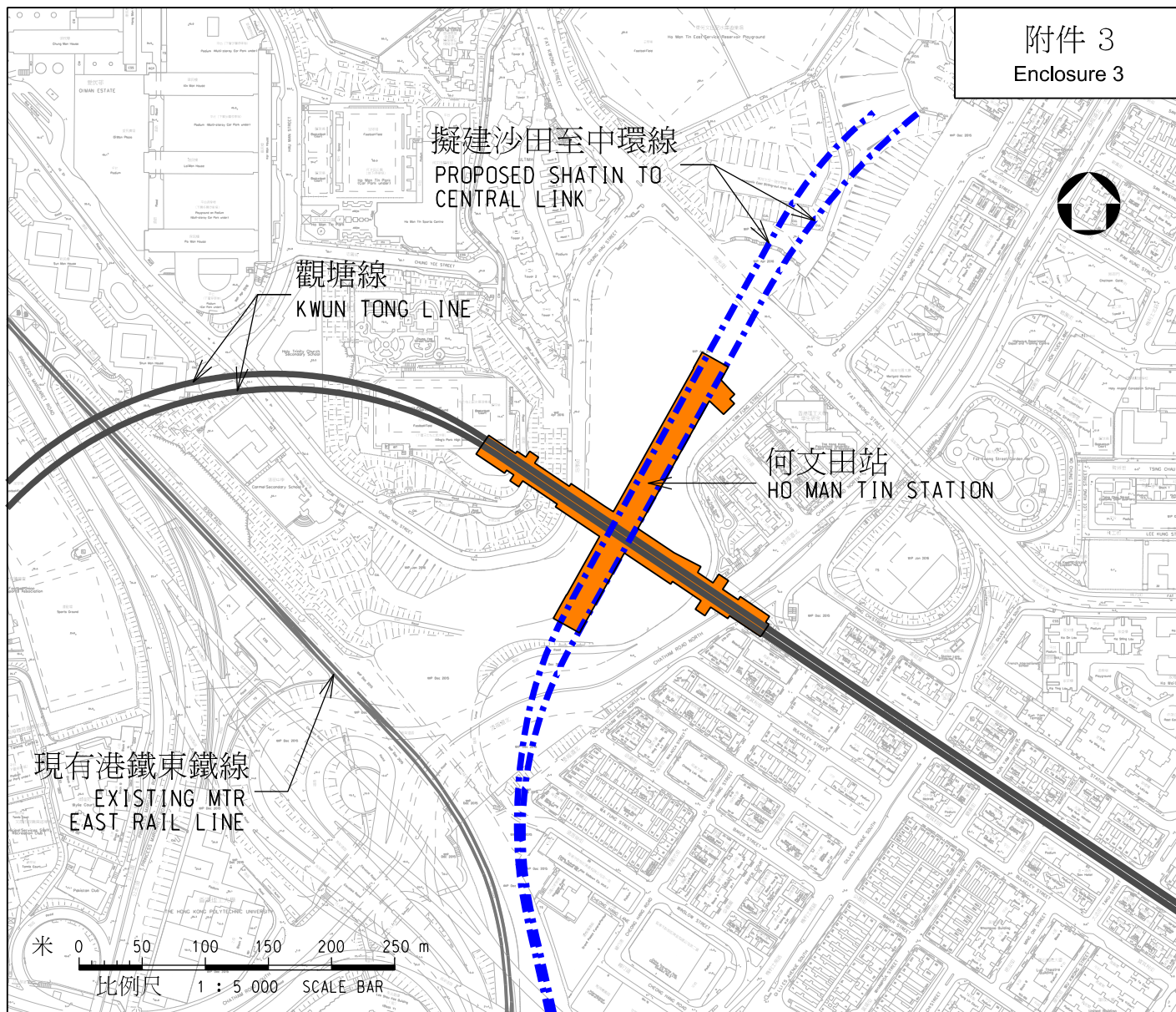
版權所有 COPYRIGHT RESERVED

鐵路拓展處 RAILWAY DEVELOPMENT OFFICE

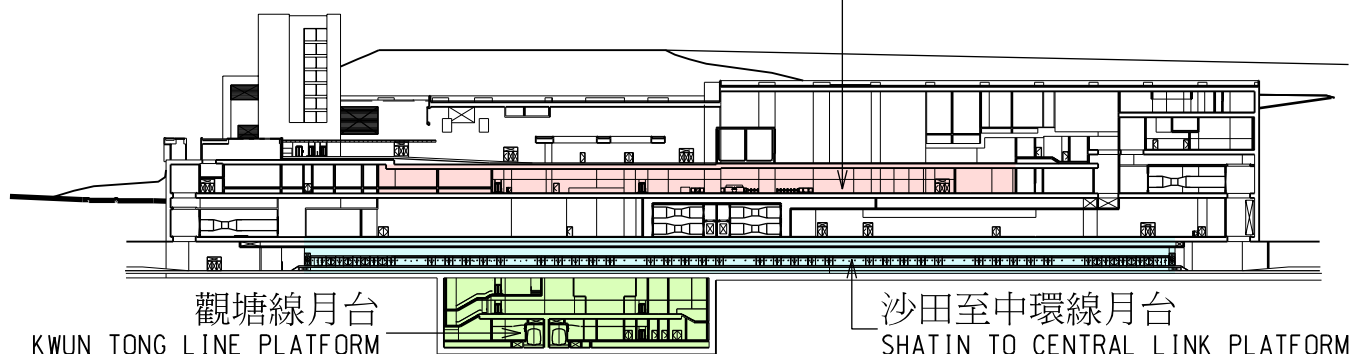


路政署
HIGHWAYS DEPARTMENT

A4 210X297



共用大堂
COMMON CONCOURSE



典型橫切面示意圖 (不按比例)
TYPICAL CROSS SECTION (N.T.S.)

圖則名稱 drawing title

工務計劃項目第63TR號
沙田至中環線 — 鐵路建造工程 — 前期工程
項目(b) — 何文田站建造工程

PWP ITEM NO. 63TR
SHATIN TO CENTRAL LINK - CONSTRUCTION OF RAILWAY WORKS - ADVANCE WORKS
ITEM (b) - CONSTRUCTION OF HO MAN TIN STATION

圖號 drawing no.

HRWSCL003-SK0452

版權所有 COPYRIGHT RESERVED

鐵路拓展處 RAILWAY DEVELOPMENT OFFICE



路政署
HIGHWAYS DEPARTMENT

A4 210X297

**63TR – Shatin to Central Link –
Construction of Railway Works – Advance Works**

Table 1 - Cash flow and provision for price adjustment in PWSC (2010-11)34

Year	Original project estimate (in September 2010 prices) (\$ million) X	Original price adjustment factors (October 2010) # Y	Approved project estimate (in MOD prices) (\$ million) Z	Provision for price adjustment (\$ million) A = Z - X
2011 - 2012	1,015.4	1.04250	1,058.6	43.2
2012 - 2013	1,656.5	1.09463	1,813.3	156.8
2013 - 2014	1,399.9	1.14936	1,609.0	209.1
2014 - 2015	1,002.0	1.20682	1,209.2	207.2
2015 - 2016	444.1	1.27169	564.8	120.7
Total	5,517.9		6,254.9	737.0

Table 2 – Latest cash flow and provision for price adjustment due to latest project estimate (PE) and latest price adjustment factors

Year	Latest Project Estimate (PE) (in September 2010 prices) (\$ million) a	Latest PE (in September 2016 prices) (\$ million) ^^ b	Latest price adjustment factors (September 2016) ## c	Latest PE (in MOD prices) (\$ million) d	Latest provision for price adjustment (\$ million) e	Net increase in provision for price adjustment (\$ million) f
Up to March 2016	4,530.1^	5,303.0^	1.00000	5,303.0	e = d - a	f = e - A
2016 - 2017	683.1	932.7^^	1.00000	932.7		
2017 - 2018	484.6	661.7^^	1.05750	699.7		
2018 - 2019	109.3	149.2^^	1.12095	167.2		
Total	5,807.1	7,046.6		7,102.6	1,295.5	558.5

Notes:

- # Price adjustment factors adopted in October 2010 were based on the projected movement of prices for public sector building and construction output at that time, which were assumed to increase by 2.0% per annum in 2010, 5.0% from 2011 to 2014 and 5.5% from 2015 onwards.
- ## Price adjustment factors adopted in September 2016 were based on the latest movement of prices for public sector building and construction output, which was assumed to increase by 6.0% per annum over the period from 2017 to 2019.
- ^ \$4,530.1 million was the actual expenditure (excluding price adjustment) up to March 2016; whereas \$5,303.0 million was the actual expenditure (including price adjustment).
- ^^ The September 2016 prices are converted by multiplying the latest project estimate (in September 2010 prices) by 1.36537. The figure of 1.36537 represents the changes in price movement for public sector building and construction output between September 2010 and September 2016.

**63TR – Shatin to Central Link –
Construction of Railway Works – Advance Works**

Comparison between Approved Project Estimate and the latest project estimate

		(A) Approved Project Estimate (\$ million)	(B) Latest Project Estimate (\$ million)	(B) – (A) Difference (\$ million)
(a)	SCL portion at Admiralty Station	1,873.8	2,623.8	750.0
(i)	Station building works	1,351.4	2,190.6	839.2
(ii)	Building services works	172.8	162.5	(10.3)
(iii)	E&M works	349.6	270.7	(78.9)
(b)	SCL portion of ventilation facility for Admiralty Station	231.7	283.0	51.3
(i)	Building works	206.9	256.7	49.8
(ii)	Building services works	24.8	26.3	1.5
(c)	Overrun tunnel at Admiralty Station	199.0	335.7	136.7
(d)	SCL portion at Ho Man Tin Station	2,001.3	2,036.1	34.8
(i)	Station building works	1,496.3	1,695.8	199.5
(ii)	Building services works	399.5	211.6	(187.9)
(iii)	E&M works	105.5	128.7	23.2
(e)	On-cost payable to MTRCL	710.5	498.5	(212.0)
(f)	Contingencies	501.6	30.0	(471.6)
	Sub-total	5,517.9 (in Sept 2010 prices)	5,807.1 (in Sept 2010 prices)	289.2
(g)	Provision for price adjustment	737.0	1,295.5	558.5
	Total	6,254.9 (in MOD prices)	7,102.6 (in MOD prices)	847.7

As regards item **(a)(i) (station building works for SCL portion at Admiralty Station)**, the increase of \$839.2 million is mainly due to unfavourable ground conditions and changes in design to suit actual conditions.

2. As regards items **(a)(ii), a(iii) and d(ii) (building service works and E&M works for SCL portion at Admiralty Station, and building service works for SCL portion at Ho Man Tin Station)**, the total decrease of \$277.1 million is mainly due to the lower prices in the awarded contracts than expected.

3. As regards items **(b)(i) and b(ii) (building works and building service works for SCL portion of ventilation facility for Admiralty Station)**, the total increase of \$51.3 million is mainly due to unfavourable ground conditions.

4. As regards item **(c) (overrun tunnel at Admiralty Station)**, the increase of \$136.7 million is mainly due to unfavourable ground conditions.

5. As regards items **(d)(i) and (d)(iii) (station building works and E&M works for SCL portion at Ho Man Tin Station)**, the total increase of \$222.7 million is mainly due to unfavourable ground conditions and changes in design to suit actual conditions.

6. As regards item **(e) (on-cost payable to MTRCL)**, the decrease of \$212.0 million is mainly due to the adjustment based on the entrustment agreement of the main works.

7. As regards item **(f) (contingencies)**, the decrease of \$471.6 million is mainly due to offset part of the additional cost.

8. As regards item **(g) (provision for price adjustment)**, an increase of \$558.5 million is based on the latest increase in the price adjustment factors promulgated by the Government, as well as the latest anticipated cash flow of the project.

**63TR – Shatin to Central Link –
Construction of Railway Works – Advance Works**

Background Information of the Works

The Works of Shatin to Central Link (SCL)

The SCL is a territory-wide strategic railway project. It will link up with a number of existing rail lines, forming two strategic railway corridors, namely the “East West Corridor” and the “North South Corridor”.

- (a) The “East West Corridor” connects Tai Wai Station of the Ma On Shan Line with Hung Hom Station of the West Rail Line. It allows passengers to travel directly from Wu Kai Sha Station to East Kowloon, Hung Hom, West New Territories and Tuen Mun without interchanging, providing a more direct and convenient railway service for passengers commuting between East New Territories and West New Territories.
- (b) The “North South Corridor” extends the existing East Rail Line from Hung Hom Station across the Victoria Harbour to Admiralty Station, allowing passengers from Lo Wu (using the East Rail Line) and Huanggang (using the Lok Ma Chau Spur Line) to reach the heart of Hong Kong Island directly.

2. Of the ten stations along the SCL, six will be interchange stations linking to a number of existing and future rail lines. This will bring about further enhancements to the railway service in Hong Kong. The six interchange stations are –

- (a) Tai Wai Station – interchange station for the “East West Corridor” and the “North South Corridor”;
- (b) Diamond Hill Station – interchange station for the Kwun Tong Line and the SCL;
- (c) Ho Man Tin Station – interchange station for the Kwun Tong Line Extension (KTE) and the SCL;
- (d) Hung Hom Station – interchange station for the “East West Corridor” and the “North South Corridor”;

/ (e)

- (e) Exhibition Station – interchange station for the SCL and the proposed North Island Line; and
- (f) Admiralty Station – interchange station for the SCL, the Tsuen Wan Line, the Island Line and the South Island Line (East) (SIL(E)).

3. Upon completion, the SCL will help expand the coverage of the railway network in Hong Kong to serve a vast number of passengers. It will –

- (a) significantly reduce the journey time of passengers commuting between East Kowloon, East New Territories and Hong Kong Island;
- (b) provide railway services for various districts currently not provided with railway network connection, such as Hin Keng, Kai Tak, To Kwa Wan and Ma Tau Wai; and increase the capacity of the railway section between Shatin and Kowloon and that across the Harbour to help divert the flow of railway passengers, thus relieving the burden on the existing rail lines in urban Kowloon and on Hong Kong Island;
- (c) reduce the reliance on road-based public transport in existing developed areas, and alleviate the traffic congestion and environmental nuisance in the existing road networks, including the demand for Hung Hom Cross Harbour Tunnel;
- (d) become an important component of the Kai Tak Development by providing public transport services to the proposed new commercial and residential developments as well as other government facilities in the area; and
- (e) stimulate the rejuvenation of To Kwa Wan and Kowloon City.

4. On 11 March 2008, the Executive Council decided to adopt the “service concession” approach to implement the SCL project. Under the “service concession” approach, the Government will fund the construction of the SCL and its associated infrastructure under the public works programme, and ultimately own the railway. The Government and the MTR Corporation Limited (MTRCL) subsequently entered into agreements for entrusting to the latter the construction of the advance works as well as the construction, testing and commissioning of the main works of the SCL.

5. The construction of the SCL consists of two protection works, two advance works and two main works items, of which the funding applications were submitted to and approved by the Legislative Council (LegCo) at various stages of implementation –

	Description	APE (\$million) (in MOD prices)	Date of approval of funding application by the Finance Committee (FC) of the LegCo	Commencement date of the works	Actual / anticipated completion date
(1)	<u>Protection works</u>	695			
	59TR Protection Works in Wan Chai Development Phase II	153	Jul 2010	Aug 2010	Dec 2012
	58TR Protection Works at Causeway Bay Typhoon Shelter (CBTS)	542	Jun 2011	Sep 2011	Jun 2014

	Description	APE (\$million) (in MOD prices)	Date of approval of funding application by the Finance Committee (FC) of the LegCo	Commencement date of the works	Actual / anticipated completion date
(2)	<u>Advance works</u> 63TR Construction of Railway Works – Advance Works (application for additional funding under this paper) 64TR Construction of Non-railway Works – Advance Works	7,703 6,255 1,448	 Feb 2011 Feb 2011	 May 2011 Jul 2011	 2017 2017
(3)	<u>Main works</u> 61TR Construction of Railway Main Works 62TR Construction of Non-railway Main Works	71,416 65,433 5,983	 May 2012 May 2012	 Jul 2012 Jul 2012	 2021 2021
	Total APE	79,814			

6. On 2 July 2010 and 24 June 2011, the FC of the LegCo approved the funding applications for “**59TR** – Shatin to Central Link – construction of railway works – protection works in Wan Chai Development Phase II” (i.e. LegCo Paper No. PWSC(2010-11)11) and “**58TR** – Shatin to Central Link – construction of railway works – protection works” (i.e. LegCo Paper No. PWSC(2011-12)12) respectively with a total of about \$700 million (in MOD prices). For details of these two items of protection works, please refer to paragraphs 9 and 10. The above works, which are entrusted to the Civil Engineering Development Department and the Highways Department (HyD) under the Wan Chai Development Phase II project and the Central-Wan Chai Bypass (CWB) project respectively, have been completed.

7. On 18 February 2011, the FC of the LegCo approved the funding applications for “**63TR** – Shatin to Central Link – construction of railway works – advance works” (i.e. LegCo Paper No. PWSC(2010-11)34) and “**64TR** – Shatin to Central Link – construction of non-railway works – advance works” (i.e. LegCo Paper No. PWSC(2010-11)35), totalling about \$7,700 million (in MOD prices). For details of these two items of advance works, please refer to paragraphs 11 and 12. The Government and the MTRCL thereafter entered into an agreement for entrusting to the latter the implementation of the advance works of the SCL at the expanded Admiralty Station and Ho Man Tin Station while constructing the SIL(E) and the KTE respectively. The advance works commenced in May 2011.

8. Subsequently, on 11 May 2012, the FC of the LegCo approved the funding applications for “**61TR** – Shatin to Central Link – construction of railway works – remaining works” (i.e. LegCo Paper No. PWSC(2012-13)1) and “**62TR** – Shatin to Central Link – construction of non-railway works – remaining works” (i.e. LegCo Paper No. PWSC(2012-13)2), totalling about \$71,400 million (in MOD prices). For details of these two items of main works, please refer to paragraph 13. The Government and the MTRCL entered into an agreement for entrusting to the latter the construction, testing and commissioning of the main works of the SCL. The MTRCL has been entrusted to provide management and monitoring services to the SCL project. The main works commenced in July 2012. According to the agreement for the main works of the SCL, the original target commissioning date for the Tai Wai to Hung Hom Section is December 2018 and that for the Hung Hom to Admiralty Section is December 2020.

/ **PROGRESS**

PROGRESS OF THE PROJECT

9. **59TR** involves the protection works of the SCL at Convention Avenue in Wan Chai. The works comprised the construction of two rows of diaphragm walls with an underground top slab alongside Convention Avenue. This was to facilitate the laying of the cross-harbour fresh water mains and cooling water mains above the top slab under the Wan Chai Development Phase II project, and the carrying out of the railway tunnelling works underneath the top slab under the SCL main works, thereby ensuring a better interface between the two projects. The protection works have been completed. It is expected that the final cost will be within the APE of this item.

10. **58TR** involves the protection works of the SCL at the CBTS. The works comprised the construction of a concrete tunnel box at the location where the SCL and the CWB projects overlapped when the construction of the CWB was underway, so as to facilitate the railway tunnelling works carried out under the SCL main works; the construction and removal of the temporary seawall and temporary reclamation; the dredging in an area of about one hectare at the southeast corner of the CBTS to provide a temporary anchorage area; and the construction of a temporary jetty for the Royal Hong Kong Yacht Club and subsequent reinstatement of the jetty after completion of the protection works. These works were conducted to ensure a better interface between the SCL and the CWB projects. The protection works have been completed. It is expected that the final cost will be within the APE of this item.

11. **63TR** (i.e. the item in relation to this funding application) involves the advance railway works of the SCL. The works comprise the expansion of Admiralty Station to accommodate the SCL railway facilities (including an overrun tunnel of approximately 200 metres in length) and the provision of ventilation facilities for the station, as well as the construction of the portion of Ho Man Tin Station for the SCL. The expanded portion of Admiralty Station will be connected with the existing Admiralty Station to form an integrated station. Works for certain parts of Admiralty Station for the SCL and the SIL(E) facilities should be constructed concurrently, so as to reduce the overall size of the station, reduce construction costs and time required, and minimise disruption to the public during construction. As such, the portion of Admiralty Station for the SCL had to be constructed in advance of other SCL main works to tie in with the schedule of the SIL(E) for which construction had to start earlier in May 2011 together with the portion of Admiralty Station for the SCL. The advance works for the SCL at Admiralty Station have been substantially completed and the remaining works mainly involve the construction of a supplementary emergency entrance for the rail line. Separately, Ho Man Tin Station is a newly constructed integrated station serving both the SCL and KTE, providing convenient interchange for passengers between these two rail lines. Ho Man Tin Station is designed as an integrated one to reduce the overall size of the station, reduce construction costs and time required, and minimise disruption to the public during / construction

construction. Similar to the expanded Admiralty Station, Ho Man Tin Station had to be constructed in advance of other SCL main works to tie in with the schedule of the KTE for which construction had to start earlier in May 2011 together with the portion of Ho Man Tin Station for the SCL. The advance works for the SCL at Ho Man Tin Station have been completed. This funding application involves increasing the APE for **63TR**.

12. **64TR** involves the advance non-railway works for the SCL. The works comprise the reprovisioning of the International Mail Centre in Hung Hom, as well as the reprovisioning of Harcourt Garden and Hong Kong Park. The works must get started before the commencement of the main works, so as to vacate the sites for the works of the SCL and the SIL(E). The new mail centre was completed and handed to Hongkong Post for operation in 2014. As for the reprovisioning of Harcourt Garden and Hong Kong Park, the works are still underway to tie in with the expansion works of Admiralty Station. It is expected that the reprovisioned facilities will be reopened in the end of 2017 and the final cost of the works will be within the APE of this item.

13. **61TR** and **62TR** respectively involve the main railway works and main non-railway works of the SCL. Most of the contracts have been awarded. As at 30 September 2016, the overall progress of the works was 63%. In the Progress Update (Paper No. CB(1)1722/13-14(03)) submitted to the Subcommittee on Matters Relating to Railways (RSC) of the LegCo Panel on Transport for discussion at the meeting on 4 July 2014, it was stated that the archaeological works, archaeological discoveries and conservation options for the archaeological features at To Kwa Wan Station had caused a delay of about 11 months to the Tai Wai to Hung Hom Section of the SCL. The HyD would therefore co-ordinate and oversee the construction of the SCL, with a view to making MTRCL try to recover some of the delay to the Tai Wai to Hung Hom Section so as to commission the Tai Wai to Hung Hom Section in 2019 as far as possible. Also, as mentioned in the Progress Update (Paper No. CB(4)954/14-15(03)) submitted to the RSC for discussion at the meeting on 19 May 2015, as affected by the handover of works sites for the Wan Chai Development project and to allow flexibility for the development of the convention centre atop Exhibition Station, the commissioning date of the Hung Hom to Admiralty Section of the SCL would be deferred to 2021. As regards the construction cost, it was stated in the Progress Update (Paper No. CB(1)260/14-15(03)) submitted to the RSC for discussion at the meeting on 24 November 2014 that the MTRCL would conduct a detailed cost review for the main works of SCL project in phases, including the additional cost caused by the archaeological works. The MTRCL pointed out in November 2016 that the SCL project was complicated and only about 40% of the Hung Hom to Admiralty Section had been completed, added that the remaining 60%

of the Section would still be affected by a number of factors. To provide a more accurate estimate for the cost of the main works, it would be necessary to wait until the second half of 2017 in order to have a more practical assessment. Since the contingencies for the main works of the SCL will not be sufficient to meet the additional cost of the main works, upon receiving and critically scrutinising the final assessment on the additional cost from the MTRCL, we will seek to apply for additional funding from LegCo in the 2017/18 legislative session for the continuation of the main works.

MONITORING MECHANISM OF THE GOVERNMENT AND ITS EFFECTIVENESS

14. The MTRCL, entrusted with the construction works of the SCL, 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. The MTRCL has to submit monthly progress reports to the HyD to report the latest progress and financial position of the SCL project.

15. Moreover, an officer at Assistant Director level of the HyD holds monthly Project Coordination Meetings with the general managers and project managers of the MTRCL to monitor different aspects of the implementation of the SCL project, including the timely completion of land-related matters, the handling of issues in relation to the design, construction and environmental fronts that may have potential impact on the progress and programme of the SCL project, as well as the handling of interfacing issues with other projects.

16. Meanwhile, two officers at Chief Engineer level from the HyD hold monthly Project Progress Meetings with the site supervision staff of the MTRCL on major civil and E&M works. In case of delays, the MTRCL will report delay recovery measures at such meetings.

17. The HyD has also employed a monitoring and verification (M&V) consultant to assist in the monitoring work and undertake regular audits. The M&V consultant will review the works progress and advise the HyD of any potential risk of delay. It will also advise the HyD on the appropriateness of MTRCL's proposed delay recovery measures.

18. 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.

19. The HyD closely monitors the work of the MTRCL through the above measures, striving to complete the SCL project as early as possible and provide the railway service to the public. In its previous reports submitted to the RSC, the MTRCL pointed out that circumstances causing delays to the works arose in different time periods and mitigation measures were required to recover the delays. If it was expected that the commissioning schedule would be affected due to the delays, the HyD would liaise with the MTRCL through the above mechanism and require the latter to examine and draw up appropriate delay recovery measures. To maximise the effectiveness of these measures and ensure the timely completion of the project, the HyD would advise on the measures and help coordinate the relevant government departments when necessary. For example, during the construction of the advance railway works, the works for the shaft of the Ventilation Building of the expanded Admiralty Station encountered the problem of unfavourable ground conditions. To minimise the impact of the problem, the MTRCL conducted the works at the shaft round the clock between May 2013 and December 2014. More machinery and manpower were deployed, the fallback support for the works site had to be rearranged, and the construction conditions and plans had to be modified. The above mitigation measures eventually helped recover the delay of around one year, avoiding further delay in the shaft works and any relevant increase in additional cost.

20. In view of the delay of 11 months arising from the archaeological discoveries and other factors encountered during construction, there is about a year delay in commissioning the project, i.e. the “Tai Wai to Hung Hom Section” deferred to end 2019 and the “Hung Hom to Admiralty Section” deferred to 2021. At present, with the efforts of the construction team, the delay recovery measures implemented at the “Tai Wai to Hung Hom Section” take effects progressively. Hence, the target commissioning date of this section is advanced to about mid-2019, while that of the “Hung Hom to Admiralty Section” remains at 2021. We will continue to coordinate and oversee the construction of the SCL, with a view to commissioning the project in accordance with the above revised targets.

/ FINANCIAL

FINANCIAL ARRANGEMENT FOR THE CONSTRUCTION OF ADVANCE RAILWAY WORKS OF THE SCL (ITEM NO. 63TR)

21. The advance railway works of the SCL include the expansion of the existing Admiralty Station and the construction of Ho Man Tin Station to accommodate the railway facilities of the SCL. Upon expansion, Admiralty Station will become an integrated station serving passengers of the SCL and the SIL(E) concurrently. Hence, except that the construction cost (about \$300 million) of the overrun tunnel of the SCL, which would be fully absorbed by the SCL project, the construction cost of the expansion works of Admiralty Station will be apportioned between the SCL and the SIL(E) projects at a ratio of 70:30 in accordance with the estimated patronage at peak hours at the station. According to the cost estimate in 2011, the SCL project has to share about \$2,700 million for the costs of building works, building services works and E&M works for the SCL at Admiralty Station. Besides, the SCL project has to share about \$350 million for the cost of the ventilation facilities for the SCL at Admiralty Station. Hence, the SCL will have to share an overall cost of about \$3,350 million for the advance works at Admiralty Station. The MTRCL advised the HyD in August 2015 that the completed cost estimate review of the expansion works of Admiralty Station for the SIL(E) indicated an upward adjustment of the relevant cost of expansion works of Admiralty Station to be shared by the SCL. According to the apportionment ratio of 70:30 above, the cost shared by the SCL has to be adjusted upward by \$1,300 million from about \$3,350 million to about \$4,650 million. According to the cost estimate and the information provided by the MTRCL, the HyD has carried out rigorous examination with the assistance of its M&V consultant and considered that the cost to be shared by the SCL for the expansion of Admiralty Station is about \$4,330 million, representing an increase of around \$980 million as compared with the original estimate of \$3,350 million. The increase in cost is mainly attributable to the unfavourable ground conditions, modification of the design to suit the actual site conditions, and additional funding required for price adjustment.

22. Ho Man Tin Station is another integrated station serving passengers of the SCL and the KTE. The construction cost of Ho Man Tin Station is therefore also apportioned between the SCL and the KTE projects at a ratio of about 74:26 in accordance with the estimated patronage at peak hours at the station. According to the cost estimate in 2011, the SCL project has to share about \$2,900 million for the advance works of Ho Man Tin Station, in order to meet the costs of building works, building services works and E&M works for the SCL at Ho Man Tin Station. According to the information provided by the MTRCL to the HyD in August 2015, the construction cost of Ho Man Tin Station to be shared by the SCL is still within the

/ estimate

estimate. The HyD has examined the latest cost estimate with the assistance of its M&V consultant and considered that although the construction costs of individual items for Ho Man Tin Station have exceeded the relevant estimates under the APE, those additional costs can be met using the relevant contingencies and the overall cost is still within the estimate. The cost to be shared by the SCL for the construction of Ho Man Tin Station is about \$2,770 million, representing a decrease of about \$130 million as compared with the original estimate of \$2,900 million.

23. Taking the latest cost estimates of Admiralty Station and Ho Man Tin Station as a whole, the APE for **63TR** should be increased by \$847.7 million, i.e. from \$6,254.9 million to \$7,102.6 million. The HyD and its M&V consultant have reviewed the estimated construction cost of the advance railway works of the SCL and verified the latest trend of construction prices. It is considered that the current estimated construction cost is reasonable. Since the contingencies for the advance railway works of the SCL under **63TR** are not sufficient to meet the additional costs incurred, we have to seek additional funding from the LegCo in order to meet the payment of the additional costs for the advance railway works.