For discussion **PWSC(2012-13)1**
on 18 April 2012

ITEM FOR PUBLIC WORKS SUBCOMMITTEE OF FINANCE COMMITTEE

HEAD 706 – HIGHWAYS
Transport – Railways
61TR – Shatin to Central Link – construction of railway works – remaining works

Members are invited to recommend to the Finance Committee the upgrading of the remainder of **61TR** to Category A at an estimated cost of $65,433.3 million in money-of-the-day prices for carrying out the remaining railway works of the Shatin to Central Link.

PROBLEM

We need to implement the remaining railway works of the Shatin to Central Link (SCL).

PROPOSAL

2. The Director of Highways, with the support of the Secretary for Transport and Housing, proposes to upgrade the remainder of **61TR** to Category A at an estimated cost of $65,433.3 million in money-of-the-day (MOD) prices for carrying out the remaining railway works of the SCL.

PROJECT SCOPE AND NATURE

3. The SCL, with a total length of 17 kilometres (km), consists of the following two sections –

/ (a) …..

(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.

4. The SCL will have ten stations. Apart from improvements to the existing Tai Wai Station, the SCL project will involve construction of new stations/expansion 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 (the Exhibition) and Admiralty. Construction/expansion of the Ho Man Tin Station and Admiralty Station were included as SCL advance works items for which funding was approved by the Finance Committee (FC) in February 2011. These advance works are being implemented in conjunction with the Kwun Tong Line Extension (KTE) and South Island Line (East) (SIL(E)) projects respectively. A plan showing the proposed alignment of the SCL is at Enclosure 1.

5. The scope of **61TR** comprises –

(a) construction of the SCL's main railway works, which includes –

(i) an 11 km railway line extending the Ma On Shan Line from the existing Tai Wai Station to Hung Hom where it will join the West Rail Line;

(ii) a 6 km railway line extending the East Rail Line from Hung Hom across the Victoria Harbour to Admiralty;

(iii) construction of new stations/expansion of existing stations, along the two railway lines described in (i) and (ii) above, at Hin Keng, Diamond Hill, Kai Tak, To Kwa Wan, Ma Tau Wai, Hung Hom and the Exhibition (the layout plans and cross-sections of the seven stations to be constructed/expanded are shown in Enclosure 2);

(iv) associated railway facilities at the new/expanded stations in (iii) above including station concourses, passenger waiting areas, platforms, etc.;

/(v) …..

(v) stabling sidings including modification of the existing Hung Hom railway freight yard which has ceased operation to provide stabling sidings and associated approach/departure tracks (the layout plan of the proposed stabling sidings is shown in Enclosure 3) and additional siding tracks at the Pat Heung depot;

(vi) bifurcation from the existing East Rail Line from Ho Man Tin to Hung Hom to form an underground section, to match with the vertical alignment of the SCL harbour-crossing section (the proposed alignment and cross-section of the bifurcation are shown in Enclosure 4);

(vii) associated ventilation facilities and emergency accesses for the railway tunnels;

(viii) building services works;

(ix) ancillary construction works (details of the relevant items are given in Enclosure 5);

(x) modification of existing railway facilities to cater for the operation of the SCL (details of the relevant items are given in Enclosure 6); and

(b) procurement of rolling stock, railway systems, as well as operation and maintenance equipment (details of the relevant items are shown in Enclosure 7).

6. We have substantially completed the detailed design of the railway works. Subject to the funding approval of the FC, we expect that the proposed railway works will commence in mid-2012 to enable completion of the Tai Wai to Hung Hom section in 2018 and the Hung Hom to Admiralty section in 2020. We will separately submit funding application for the construction of the remaining non-railway works (PWSC(2012-13)2).

/ **JUSTIFICATION**…..

JUSTIFICATION

Strategic Railway

7. The 17 km SCL is a territory-wide strategic railway project with ten stations. The SCL will be linked 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.

The alignments of the two corridors are at Enclosure 8.

8. Of the ten stations along the SCL, six will be interchange stations linking to a number of existing and future railway 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 "North South Corridor";

(b) Diamond Hill Station – interchange station for the Kwun Tong Line and SCL;

(c) Ho Man Tin Station – interchange station for the KTE and SCL;

(d) Hung Hom Station – interchange station for the "East West Corridor" and "North South Corridor";

/ (e)…..

(e) Exhibition Station – interchange station for the SCL and the future North Island Line; and

(f) Admiralty Station – interchange station for the SCL, Tsuen Wan Line, Island Line and SIL(E).

9. Upon completion, the SCL will expand the coverage of the railway network in Hong Kong to serve a vast number of passengers and will serve a wide catchment of 380 000 residential and 260 000 employment population. The SCL will –

(a) significantly reduce the journey time for passengers commuting between East Kowloon, East New Territories and Hong Kong Island;

(b) provide railway service 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 from Shatin to Kowloon and that across the Harbour to help discharge the flow of railway passengers, thus relieving the existing burden on the rail lines in urban Kowloon and Hong Kong Island;

(c) reduce the reliance on road-based public transport in existing developed areas, and alleviate the traffic congestion and environmental nuisance on existing road networks, including the demand on the Hung Hom Cross Harbour Tunnel;

(d) become an important component of the Kai Tak Development by providing public transport service not only to the proposed new commercial and residential developments in the area, but also to the government facilities at Kai Tak; and

(e) stimulate the rejuvenation of To Kwa Wan and Kowloon City.

/ *Project …..*

Project Benefits

10. According to the Government's estimation of the future population and employment situation in Hong Kong, the SCL will handle about 1.1 million passenger-trips per day in 2021. For an operation period of 50 years of the SCL, the average travelling time saving will reach 75 million hours per year. The direct economic benefits generated in 2021 in terms of time saving to passengers will reach $4.4 billion. Direct economic benefits mainly concern benefits to passengers in terms of savings in travelling time, without accounting for other indirect benefits to the economy, environment, etc. Based on the direct economic benefits generated from the SCL alone, we estimate that the economic internal rate of return (EIRR) of the SCL project will be 6%. For other railway projects that have been recently implemented, namely the KTE, SIL(E), Hong Kong section of the Guangzhou-Shenzhen-Hong Kong Express Rail Link (XRL) and West Island Line, their EIRRs are 7%, 6%, 6% and 5% respectively. The operation of the SCL is thus considered financially viable and comparable to other railway projects in terms of economic benefits to be brought about by the project.

11. In March 2008, the Executive Council decided to adopt the service concession approach to finance the SCL project. We have briefed Members on this financing approach[1] at a number of Legislative Council (LegCo) meetings. Under the service concession approach, the Government will fund the construction of the SCL and its ancillary infrastructure under the public works programme, and ultimately owns the railway. The MTR Corporation Limited (MTRCL) will be granted a service concession for the operation of the SCL upon the completion of its construction. The MTRCL will pay service concession payment accordingly, which is dependent on the fare prices, actual patronage and non-fare revenues after the SCL has come into operation. Based on the current assessment, the total service concession payment will amount to about $88 billion (in MOD prices) over the service concession period (50 years) of the SCL. Upon the end, expiry or termination of the service concession period, the MTRCL shall return the operating railway, which should still have substantial residual value, to the Government.

/ CONSTRUCTION …..

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[1] When reporting on the progress of the SCL project in 2008, the Administration explained to the Subcommittee on Matters Relating to Railways in detail the considerations for adopting the concession approach for implementing the project. In January 2011, upon the request of the Subcommittee, the Administration submitted a paper to explain again the considerations for adopting the concession approach as the financing mode.

CONSTRUCTION COST OF THE ENTIRE SCL PROJECT

12. In March 2008, based on the merger proposal jointly submitted by the MTRCL and the Kowloon-Canton Railway Corporation in 2005, we estimated that the total project cost of the SCL (including railway and non-railway works) would be $38.17 billion in April 2007 prices. At that time, the SCL project was at a conceptual stage, with the design and site investigation yet to commence, and no advance feasibility study had been conducted. Therefore, the estimated cost was only a crude preliminary estimate.

13. When we sought funding approval from the FC for the advance works of the SCL (including the construction of the Ho Man Tin Station and expansion of the Admiralty Station) in February 2011, we estimated in the paper submitted to the FC that the construction cost of the SCL would be over $60 billion (in September 2009 prices). Following the substantial completion of the detailed design of the SCL by the MTRCL, we appointed an independent consultant (IC) to scrutinize the estimated construction cost of the SCL based on the detailed design to ensure the reasonableness of the cost estimate. The IC has now completed the independent assessment. After careful cost control, including the effort in enhancing and streamlining the railway design at the design stage, the funding now applied for the construction of the main railway works is about $52.4 billion (in September 2011 prices) and that for the construction of the non-railway works via PWSC(2012-13)2 is about $4.9 billion (in September 2011 prices). Taking into account the various protection and advance works items, the funding of which were approved by the FC in 2010 and 2011, the total construction cost of the entire SCL project is estimated to be about $64.9 billion[2] (in September 2011 prices). A breakdown is shown in Table 1 below –

/ Table…..

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[2] In May 2008, we obtained FC's separate funding approval for the design and site investigation works for the project with an approved project estimate of $2,407.5 million (in MOD prices).

Table 1 – Estimated construction cost for the entire SCL project

	Description	Estimate ($ million) (in Sep 2011 prices)	Estimate ($ million) (in MOD prices)
(1)	Protection works with funding approved[3]	640	695
(2)	Advance works with funding approved[3] - **63TR** Construction of railway works – advance works - **64TR** Construction of non-railway works – advance works	6,969	7,703
(3)	**61TR** Construction of railway works – main works (funding application via this paper)	52,396	65,433
(4)	**62TR** Construction of non-railway works – main works (separate funding application via PWSC(2012-13)2)	4,904	5,983
	Total construction cost	64,909	79,814

As compared with the crude estimate for the SCL in April 2007 prices, the reasons for the increase in construction cost are as follows –

(a) Construction prices surged rapidly over the past four years or so. The construction cost of the SCL is no exception. The latest estimate on the construction cost of the SCL reflects an overall escalation of the project cost of some 47%[4] (around $17.9 billion) between 2007 and 2011, a magnitude in line with the increase of over 50% for general construction works over the same period.

/ (b) …..

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[3] Between June 2010 and June 2011, the FC approved the following estimated costs at then price levels –
Protection works
(a) The estimated cost of **59TR** at the sum of $146.1 million in September 2009 prices;
(b) The estimated cost of **58TR** at the sum of $478.5 million in September 2010 prices;
Advance works
(c) The estimated cost of **63TR** at the sum of $5,517.9 million in September 2010 prices; and
(d) The estimated cost of **64TR** at the sum of $1,305.8 million in September 2010 prices.

[4] According to Architectural Services Department's tender price index for building works and tender price index for building services as well as Highways Department's construction cost index, the construction price increased by 26.1% up to 59.4% in the past four years or so. Applying relevant index to the corresponding part of the works, we calculated that the overall construction costs for the project increased by 47% in the past four years or so.

(b) When the funding application for the advance works of the SCL was submitted in February 2011, we estimated an increase of $5 billion for incorporating suggestions and requests put forward by stakeholders. Having further considered the needs of the public and after detailed design, the cost for addressing the stakeholders' suggestions and requests has increased to $5.2 billion. The relevant details are at Enclosure 9.

(c) When the funding application for the advance works of the SCL was submitted in February 2011, we estimated an increase of $7 billion for the design changes in response to the actual site conditions and technical requirements. With stringent cost control and design enhancement and after detailed assessment of data obtained from field survey and ground investigation, we have reduced the additional cost incurred by the design changes for meeting the technical requirements to $3.6 billion. The relevant details are at Enclosure 9.

14. The IC has carefully studied the detailed design of the SCL and reviewed the works items and the cost accordingly. The IC has also checked the latest construction price trends and scale of the proposed works. Subsequent to the review, the IC considers the current estimated construction cost to be reasonable. Under the established project entrustment arrangement, the Government will pay for the actual cost of the construction works based on the prices established from appropriate tendering processes. During the construction period, the Government will engage an independent engineering consultant (IEC) to scrutinise the works undertaken by the MTRCL, including the expenditure on individual items, so as to closely monitor the payment procedures.

/ **WORKS** …..

WORKS TO BE ENTRUSTED TO THE MTRCL

15. Under the concession approach, the SCL project will be funded by the Government. We plan to entrust the construction works, and testing and commissioning of the proposed railway (including all civil works, building works, building services, fire safety, railway electrical and mechanical system, track works and procurement of rolling stock, equipment and systems) under **61TR** to the MTRCL. To ensure smooth interface of works and facilitate works arrangement for concurrent implementation at the same sites, we also plan to entrust the construction of the non-railway works of the SCL under **62TR** (funding application via PWSC(2012-13)2) to the MTRCL. As mentioned in paragraph 14 above, the Government will, in accordance with established project entrustment arrangement, pay for the actual cost of the construction works based on the prices established from appropriate tendering processes. The MTRCL, as the entrustee, will charge an on-cost as its project management cost[5] for the services it provides for the management and supervision of the project.

16. The funding applications for the advance works of the SCL under item (2) in Table 1 above (namely **63TR** and **64TR**) were submitted on the assumption that the project management cost will be 16.5% of the construction cost. As pointed out in the funding applications for **63TR** and **64TR** (via PWSC(2010-11)34 and PWSC(2010-11)35), the estimates for project management cost were only provisional figures. A specific funding proposal for the project management cost of the SCL can only be prepared after the IC has come up with a concrete estimate for the construction cost and project management cost based on the detailed design of the SCL. We may then adjust the provisional project management cost for the advance works in the funding applications for the SCL main works in one go.

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[5] The project management cost is payable to the MTRCL for undertaking technical studies, design implementation, construction supervision and contract management during construction.

17. According to the substantially completed detailed design of the SCL, the IC has conducted an in-depth study of the nature, scale, complexity and duration of the construction works of the project and accordingly assessed the risk management approach, technical requirements as well as professional and manpower resources of the MTRCL necessary for the supervision and management of the entire project. The IC has also made reference to the relevant information of other railway projects in their detailed analysis and assessment on the project management cost for the SCL. After a comprehensive assessment by the IC, the project management cost for the entire SCL project (including the advance works and the main works) is adjusted downwards from the provisional assumption of 16.5% as depicted in paragraph 16 above to 10.5% of the total construction cost estimate plus contingencies of works entrusted to the MTRCL. The sum concerned is estimated to be $6,097.2 million (in September 2011 prices), which includes the sum already approved by the FC for the advance works under **63TR** and **64TR** as per item (2) in Table 1 above as well as the sum for the main works under **61TR** and **62TR** as per item (3) and item (4) in Table 1 above of which the funding approval is being sought[6]. Such sum comprises $5,478.6 million (in September 2011 prices) for the railway works under **61TR** and **63TR** and $618.6 million (in September 2011 prices) for the non-railway works under **62TR** and **64TR**.

18. The IC estimates that the project management cost actually required for **61TR** will be $4,984.5 million (in September 2011 prices). After deducting the relevant part of the project management cost earmarked for the advance railway works of the SCL under **63TR**, the project management cost under this funding application becomes $4,755 million (in September 2011 prices). Under the same arrangement, the project management cost actually required for the non-railway works under **62TR** (via PWSC(2012-13)2) is $466.5 million (in September 2011 prices). After deducting the relevant part of the project management cost earmarked for the advance non-railway works of the SCL under **64TR**, the project management cost being sought via PWSC(2012-13)2 becomes $445 million (in September 2011 prices).

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[6] The protection works under item (1) in Table 1 have been separately undertaken by the Civil Engineering and Development Department and the Highways Department. No project management cost payable to the MTRCL is therefore required for such works. Separately, the project management cost for the design and site investigation works is $341 million (in MOD prices).

19. For other recent railway projects including the KTE, SIL(E), Hong Kong Section of the Guangzhou-Shenzhen-Hong Kong Express Railway and West Island Line, their rates of the project management costs range from 7.4% to 12.4%. Compared with these projects, the SCL is a large-scale project with a 17 km railway line with ten stations. In terms of construction, the SCL will involve construction of stations and railway tunnels in densely populated old districts. Coupled with the need to connect to a number of existing railway lines, operation of which must not be compromised during construction, the SCL works are very complex. Furthermore, construction of the SCL will involve closure of a number of main roads, as well as tens of reprovisioning and improvement items for the facilities affected by the works. The project management and supervision work for the SCL project is therefore more complicated in comparison with that for the other railway projects mentioned above. As such, the IC considers the rate of project management cost for the SCL (i.e. 10.5%) reasonable.

FINANCIAL IMPLICATIONS

20. We estimate that the cost of **61TR** is $65,433.3 million in MOD prices (please see paragraph 25 below), broken down as follows –

					$ million
(a)	Construction of railway works				38,843.6
	(I)	Civil works		26,099.6	
		1. New/expansion of stations	10,434.4		
		— Hin Keng	562.9		
		— Diamond Hill	1,402.0		
		— Kai Tak	699.5		
		— To Kwa Wan	1,699.5		
		— Ma Tau Wai	1,786.6		
		— Hung Hom	2,731.9		
		— Exhibition	1,552.0		
		2. Tunnels	14,249.0		
		— Underground tunnel	10,335.1		
		— Cross-harbour tunnel	2,859.1		
		— Tunnel-related structures	1,054.8		

/**$ million** …..

					$ million
		3. Stabling sidings		1,416.2	
		— structural works	1,274.8		
		— track works	141.4		
	(II)	Building works		1,421.0	
	(III)	Building services works		2,209.0	
	(IV)	Railway E&M works		5,246.2	
	(V)	Procurement of rolling stock		3,867.8	
(b)	Modifications of existing railway facilities				3,851.2
	(I)	Civil works		1,572.3	
	(II)	Building works		405.5	
	(III)	Building services works		252.4	
	(IV)	Railway E&M works		1,621.0	
(c)	Project management cost payable to MTRCL for planning, management and supervision of the project				4,755.0[7]
(d)	Fees for IEC appointed by the Government for monitoring and vetting MTRCL's work including cost of the project				182.9

/**$ million** …..

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[7] The IC estimates that the project management cost actually required for **61TR** will be $4,984.5 million (in September 2011 prices). After deducting the relevant part of the project management cost earmarked for the advance railway works of the SCL under **63TR**, the project management cost under this funding application becomes $4,755 million (in September 2011 prices).

			$ million	
(e)	Contingencies		4,763.3	
		Sub-total	52,396.0	(in September 2011 prices)
(f)	Provision for price adjustment		13,037.3	
		Total	65,433.3	(in MOD prices)

21. In respect of the items described in paragraph 20(a) above, the estimated cost is $38,843.6 million (in September 2011 prices), covering a 17-km-long rail line, seven new/expanded railway stations and stabling sidings. The rail line mainly comprises railway tunnels, of which about 2 km is a submerged railway tunnel. The cost will cover tunnel boring, laying of submerged tunnel, construction of ventilation facilities, foundation works, structural works for stations, building works, building services works, track works, railway E&M works, related ancillary and support works, etc. The cost will also cover the procurement of rolling stock for use on the SCL.

22. In respect of the items described in paragraph 20(b) above, the estimated cost of $3,851.2 million (in September 2011 prices) is required for modifying existing railway facilities to cater for the construction and operation of the SCL. Such facilities include station platforms on the East Rail Line and Ma On Shan Line; control and communication systems at operations control centres and stations on the East Rail Line, Ma On Shan Line and West Rail Line; existing signalling system of West Rail Line and Ma On Shan Line, Pat Heung Depot, Ho Tung Lau Depot, Lo Wu Marshalling Yard, Mong Kok Freight Terminal, Homantin siding and Hung Hom North track area to facilitate the setting up of railway facilities; existing tracks at Tai Wai and Hung Hom for connecting to the proposed railway sections; and existing ticketing system and passenger information system, etc..

23. In respect of the item described in paragraph 20(c) above, the estimated cost of $4,755 million (in September 2011 prices) is used for settling the project management cost. Please refer to paragraphs 16 to 19 above for details.

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24. In respect of the item described in paragraph 20(d) above, the estimated cost of $182.9 million (in September 2011 prices) is used for engaging an IEC to scrutinise the works conducted by the MTRCL during the construction stage of the project. Please refer to paragraph 14 above for details.

25. Subject to approval, we will phase the expenditure as follows –

Year	$ million (Sep 2011)	Price adjustment factor	$ million (MOD)
2012-2013	2,203.0	1.05325	2,320.3
2013-2014	9,029.1	1.11118	10,033.0
2014-2015	10,187.5	1.17229	11,942.7
2015-2016	10,503.7	1.23677	12,990.7
2016-2017	8,333.0	1.30479	10,872.8
2017-2018	7,188.8	1.37656	9,895.8
2018-2019	3,064.7	1.45227	4,450.8
2019-2020	1,469.9	1.53214	2,252.1
2020-2021	391.3	1.61641	632.5
2021-2022	25.0	1.70531	42.6
	52,396.0		65,433.3

26. We have derived the MOD estimates on the basis of the Government's latest set of assumptions on the trend rate of change in the prices of public sector building and construction output for the period from 2012 to 2022. The MTRCL will, where appropriate, include provision for price adjustment in contracts when inviting tenders for the proposed works. We will engage a consultant to undertake the service described in paragraph 24 above on a lump sum basis with provision for price adjustment.

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27. We estimate that the remaining railway works will incur an additional annual recurrent expenditure of $52.46 million.

PUBLIC CONSULTATION

28. Since mid-2008, the Government and the MTRCL have conducted extensive public consultation on the SCL scheme. We consulted 11 district councils along the railway alignment at more than 40 meetings by introducing the SCL project, reporting on the project progress and seeking their views on the railway scheme. We also made use of various channels, such as web pages, brochures, leaflets, digests and newsletters, to provide comprehensive information for the public. Community consultation activities, including site visits, roving exhibitions, public forums and school talks, were held to brief community groups and residents on the SCL scheme and collect their opinions that could help further improve the scheme.

29. The statutory consultation stage of the SCL project commenced when the railway scheme was gazetted on 26 November 2010 under the Railways Ordinance. During the statutory consultation period, we continued to collect valuable opinions from community stakeholders and residents, brief relevant stakeholders on the gazette content and amendments, and handle objections lodged by the public according to the statutory procedures. During the objection period, we received a total of 92 objection cases, which were mainly concerned with the overall planning of the SCL project; railway alignment; arrangements and locations of stations, entrances, pedestrian linkage facilities, ventilation facilities and stabling sidings; environmental impact; traffic and transport impact; impact on the existing buildings and structures; use of explosives; setting up of temporary works areas and works sites on Government land and facilities; resumption of underground strata; railway protection zone; and reprovisioning of public facilities and public areas.

30. Taking into consideration public concerns and views, we proceeded with two stages of scheme amendments gazetted on 15 July and 11 November 2011 respectively. The major amendments are shown as follows –

<u>First stage scheme amendments (15 July 2011)</u>

(a) to amend the proposed tunnel works near Harcourt Road; and

(b) to amend the temporary works area in Sha Tin.

/ <u>Second</u>…..

Second stage scheme amendments (11 November 2011)

(a) to cancel the proposed stabling sidings in Diamond Hill;

(b) to amend the alignment of the railway tunnel to reduce resumption of underground strata of buildings;

(c) to amend the layout of the proposed pedestrian facilities in Tsz Wan Shan;

(d) to cancel the proposed temporary concrete batching plant in Kai Tak;

(e) to add emergency accesses between the proposed Kai Tak Station and To Kwa Wan Station;

(f) to modify the existing freight yard in Hung Hom and the associated railway facilities for the SCL operation and stabling of trains; and

(g) to construct noise barriers to the north of the existing Hung Hom freight yard.

31. Subsequent to our detailed explanations, responses to public concerns and two rounds of amendments to the railway scheme, 12 objectors have withdrawn their objections[8] to the SCL scheme. No new objection case was received during the two stages of scheme amendments. This indicates that the amendments have responded to the aspirations of the public. As regards those objections not withdrawn, a total of 12 panel hearings were held in accordance with established administrative procedures between December 2011 and February 2012 to allow the objectors who had not withdrawn their objections to reflect their concerns and opinions to the hearing panel which was formed by non-official, independent members. The hearing panel was satisfied with the fair, open and highly transparent manner by which the Government handled the objection cases. The hearing panel also agreed that the objectors had been given ample opportunities to express their opinions, and that the Government, in response to the objectors' views, had reasonably reviewed the railway scheme and explained to the objectors why their opinions were not accepted. All the unresolved objections were subsequently submitted to the Chief Executive in Council for consideration. According to the Railways Ordinance, the Chief Executive in Council authorized the SCL railway scheme on 27 March 2012 without amendments.

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[8] Under the Railways Ordinance, objections unconditionally withdrawn will be deemed to have never been submitted by the objectors. Objections not withdrawn or conditionally withdrawn will be deemed to be objections unresolved and they will subsequently be submitted to the Chief Executive in Council for consideration.

32. We consulted the Subcommittee on Matters Relating to Railways under the Panel on Transport of the LegCo (the Subcommittee) on 27 March 2008, 31 March 2009, 4 November and 6 December 2010, 7 January 2011 and 6 May 2011 respectively.

33. We updated the Subcommittee on the progress of the railway scheme on 2 March 2012, and consulted it on the funding proposal of the SCL project on 23 and 30 March 2012. Members of the Subcommittee agreed that the SCL main works (including the railway works and non-railway works) may be submitted to the Public Works Subcommittee and the Finance Committee for funding approval. Some members requested the Administration to provide further information regarding project management cost, impacts on the East Rail Line and other railway lines, planning parameters for topside developments above the SCL railway stations, the principle in calculating concession payment, reception of radio broadcasting, art work in stations and provision of toilets etc.. We have provided the requested information to the Subcommittee. The information is at Enclosure 10 for reference.

ENVIRONMENTAL IMPLICATIONS

34. The SCL project is a designated project under Schedule 2 of the Environmental Impact Assessment Ordinance (EIAO) (Cap. 499), and Environmental Permits (EPs) are required for the construction and operation of the project. On 17 February 2012, the Director of Environmental Protection (DEP) approved the four Environmental Impact Assessment (EIA) Reports for the SCL project, which concluded that the environmental impacts of the proposed works under the SCL project could be controlled to within the criteria under the EIAO and the Technical Memorandum on EIA Process. Under the SCL project, the MTRCL will implement the environmental mitigation measures and environmental monitoring and audit (EM&A) programme recommended in the approved EIA Reports, and comply with relevant conditions under the EPs and other statutory requirements for environmental protection. The mitigation measures recommended for the construction phase mainly include the adoption of quieter equipment, movable noise barriers and noise insulating fabric to minimise construction noise impact; regular water spraying for dust control; and control of dredging and filling rates for marine construction with deployment of silt curtains to minimise water quality impact. For the operation phase, the mitigation measures include the construction of noise enclosures or barriers in Tai Wai, Ho Man Tin and Hung Hom; and tree planting and landscaping along the alignment of the SCL. We have included the cost, amounting to $750 million (in September 2011 prices), of implementing the related environmental mitigation measures and EM&A programme in paragraph 20 (a) above.

/ 35. …..

35. As regards the modification or ancillary works for other railway facilities to cater for the operation of the SCL (i.e. the works mentioned in paragraph 20 (b) above), the MTRCL will conduct the works in accordance with the requirements of the EIAO and other relevant anti-pollution legislation. Though the remaining works, the scale of which are relatively smaller, should not have significant impacts on the environment, the MTRCL will implement necessary measures during the works period to minimise any possible impact.

36. At the planning and design stages of the remaining railway works, the MTRCL has considered measures to reduce the generation of construction waste during construction where possible. Such measures include the use of bored/mined tunnelling method to reduce the amount of excavation works; reduction of the size and number of offline plant rooms; and minimisation of the overall size of the plant buildings and tunnel section through effective structural scheming for plant building and tunnel layout. In addition, the MTRCL will require contractors to reuse inert construction waste (e.g. excavated rock and soil materials) on site or in other suitable construction sites as far as possible, in order to minimise the disposal of inert construction waste to public fill reception facilities[9]. The MTRCL will encourage contractors to maximise the use of recycled or recyclable inert construction waste, as well as the use of non-timber formwork to further minimise the generation of construction waste.

37. At the construction stage, the MTRCL will also require contractors to submit for approval a plan setting out waste management measures, which will include appropriate mitigation means to avoid, reduce, reuse and recycle inert construction waste. The MTRCL will ensure that day-to-day operations on site comply with the approved plan. The MTRCL will require contractors to separate the inert portion from non-inert construction waste on site for disposal at appropriate facilities. The MTRCL will control the delivery of inert construction waste and non-inert construction waste to public fill reception facilities and landfills respectively for disposal through a trip-ticket system.

/ 38. …..

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[9] Public fill reception facilities are specified in Schedule 4 of the Waste Disposal (Charges for Disposal of Construction Waste) Regulation. Disposal of inert construction waste in public fill reception facilities requires a licence issued by the Director of Civil Engineering and Development.

38. The MTRCL estimates that the main SCL railway works will generate about 11 726 800 tonnes of construction waste in total. Of these, the MTRCL will reuse about 2 729 500 tonnes (23.3%) of inert construction waste on site and 6 722 700 tonnes (57.3%) of inert construction waste on other construction sites, and deliver 2 038 200 tonnes (17.4%) of inert construction waste to public fill reception facilities for subsequent reuse. In addition, the MTRCL will dispose of 236 400 tonnes (2%) of non-inert construction waste at landfills. The total cost for accommodating construction waste at public fill reception facilities and landfills is estimated to be $84.6 million for the project (based on a unit cost of $27 per tonne for disposal at public fill reception facilities and $125 per tonne at landfills[10]).

39. The MTRCL estimates that the project will generate about 2 430 000 tonnes of marine mud. The MTRCL will dispose of the dredged marine mud at respective designated disposal sites to be allocated by the Marine Fill Committee.

ENERGY SAVING MEASURES

40. The various energy-saving measures to be adopted for the SCL include –

(a) <u>High-efficiency lighting system</u>
A high-efficiency lighting system will be adopted in all new stations. The station lighting control system will also be improved to achieve energy saving with the aim of further reducing energy consumption.

(b) <u>High-efficiency air-conditioning system</u>
A fresh water-cooled type air-conditioning system, in place of the air-cooled type, will be installed in all possible areas of new stations to save air-conditioning energy consumption.

(c) <u>Utilisation of regenerated energy</u>
To achieve the objective of utilisation of regenerated energy, devices will be installed in the lifts and escalators of new stations to utilise energy regenerated by the downward movements of lifts and escalators.

/ (d) …..

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[10] This estimate has taken into account the cost for developing, operating and restoring the landfills after they are filled and the aftercare required. It does not include the land opportunity cost for existing landfill sites (which is estimated at $90 per m^3), nor the cost to provide new landfills (which is likely to be more expensive) when the existing ones are filled.

(d) Regenerative braking systems for trains
The braking of trains will convert their kinetic energy into electricity for use by other trains within the network.

(e) Use of natural light
Natural light will be used in new stations wherever possible as a green design.

41. The total estimated additional cost for adopting the above features is around $87.5 million, which has been incorporated into the cost estimate for the project. The energy efficient features will achieve 15% to 35% energy savings in the annual energy consumption. The payback period of individual systems is about 2 to 5 years.

HERITAGE IMPLICATIONS

42. The MTRCL has carried out the cultural heritage impact assessment for the SCL project in accordance with the EIAO. The report is included in the approved EIA report.

43. The MTRCL will assign a qualified archeologist to conduct further archaeological investigation at the ex-Tai Hom Village and To Kwa Wan Station in accordance with the recommendation of the EIA report. To conserve the remnants of the former Kowloon City Pier, the tunnel section beneath this works site will be constructed by underground excavation method. We understand the public's aspiration for the preservation of the historical structures. As regards the two historical structures located within the site of the proposed Diamond Hill Station, namely the Old Pillbox (declared as Grade 2) and the former Royal Airforce Hangar (declared as Grade 3), the MTRCL will submit a detailed conservation scheme of these historical structures during construction stage.

LAND ACQUISITION

44. About 1.8 hectares of underground strata of land will be resumed for the construction of the entire SCL project. We will also create rights of temporary occupation for about 0.9 hectares of land as well as easement and other permanent rights for about 6 square metres of air space. About 276 hectares of government land in the New Territories, Kowloon and Hong Kong Island will be affected. No private building is required to be resumed.

/45. …..

45. We have reviewed the design of the project to minimize land acquisition and clearance cost. The compensation cost for land acquisition and clearance for the SCL project is estimated to be around $9 million. Funds will be made available under **Head 701 – Land Acquisition** of the Capital Works Reserve Fund. A breakdown of the land acquisition and clearance costs is at Enclosure 11.

BACKGROUND INFORMATION

46. In March 2008, the Executive Council decided to adopt the service concession approach for financing the SCL project. Under the service concession approach, the Government will provide for the railway facilities of the new railway projects. The MTRCL will be granted service concession to operate the new facilities. We upgraded **51TR** – Shatin to Central Link – design and site investigation to Category A at an estimated cost of $2,407.5 million in MOD prices in May 2008 and commenced the preliminary design in November 2008.

47. We upgraded **58TR** to Category B in October 2009 and then part of **58TR** to Category A in July 2010 as **59TR** – Shatin to Central Link – construction of railway works – protection works in Wan Chai Development Phase II at an estimated construction cost of $152.6 million in MOD prices for the protection works of the SCL tunnel in Wan Chai Development Phase II. The works started in August 2010.

48. We upgraded **61TR** to Category B in September 2010 and then part of **61TR** to Category A in February 2011 as **63TR** "Shatin to Central Link – construction of railway works – advance works" at an estimated construction cost of $6,254.9 million in MOD prices for expanding the Admiralty Station and construction part of Ho Man Tin Station for accommodating SCL railway facilities. The works started in May 2011.

49. We upgraded **62TR** to Category B in September 2010 and then part of **62TR** to Category A in February 2011 as **64TR** – Shatin to Central Link – construction of non-railway works – advance works at an estimated construction cost of $1,448.2 million in MOD prices for the reprovisioning of the International Mail Centre in Hung Hom, Harcourt Garden and Hong Kong Park. The works started in May 2011.

50. We upgraded **58TR** – Shatin to Central Link – construction of railway works – protection works to Category A in June 2011 at an estimated construction cost of $541.6 million in MOD prices for the protection works of the SCL tunnel in Causeway Bay Typhoon Shelter. The works started in September 2011.

/51. …..

51. Of the 6 670 trees within the project boundary, 3 537 trees will be felled and 2 475 trees will be preserved. To carry out the proposed works, 658 trees will be transplanted elsewhere or within the works area of the project. All the said trees are not important trees[11]. We will incorporate planting proposals as part of the project, including no less that 3 618 new trees to be planted and around 3.3 hectares of grassed area to be provided.

52. The MTRCL estimates that **61TR** will create about 13 620 jobs (including 11 160 for labourers and another 2 460 for professional/technical staff), providing a total employment of 475 100 man-months.

Transport and Housing Bureau
April 2012

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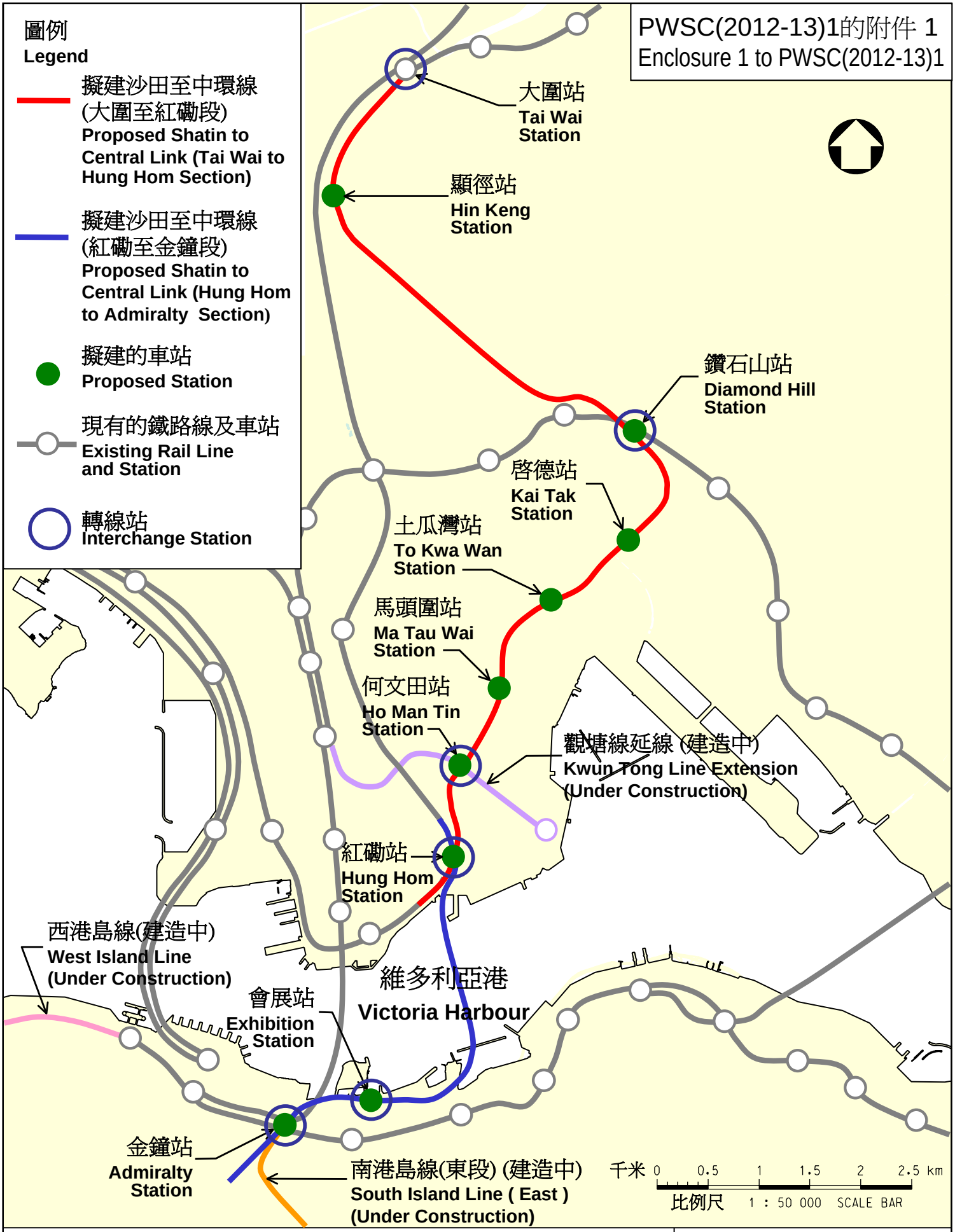
[11] "Important trees" refer to trees in the Register of Old and Valuable Trees, or any other trees that meet one or more of the following criteria –
(a) trees of 100 years old or above;
(b) trees of cultural, historical or memorable significance e.g. Fung Shui trees, trees as landmark of monastery or heritage monument and trees in memory of important persons or events;
(c) trees of precious or rare species;
(d) trees of outstanding form (taking account of overall tree size, shape and any special features) e.g. trees with curtain like aerial roots, trees growing in unusual habitat; or
(e) trees with trunk diameter equal or exceeding 1.0 m (measured at 1.3 m above ground level), or with height/canopy spread equal or exceeding 25 m.



圖則名稱 drawing title

工務計劃項目第61TR號 — 沙田至中環線 — 鐵路建造工程 — 餘下工程
擬建沙田至中環線的走線

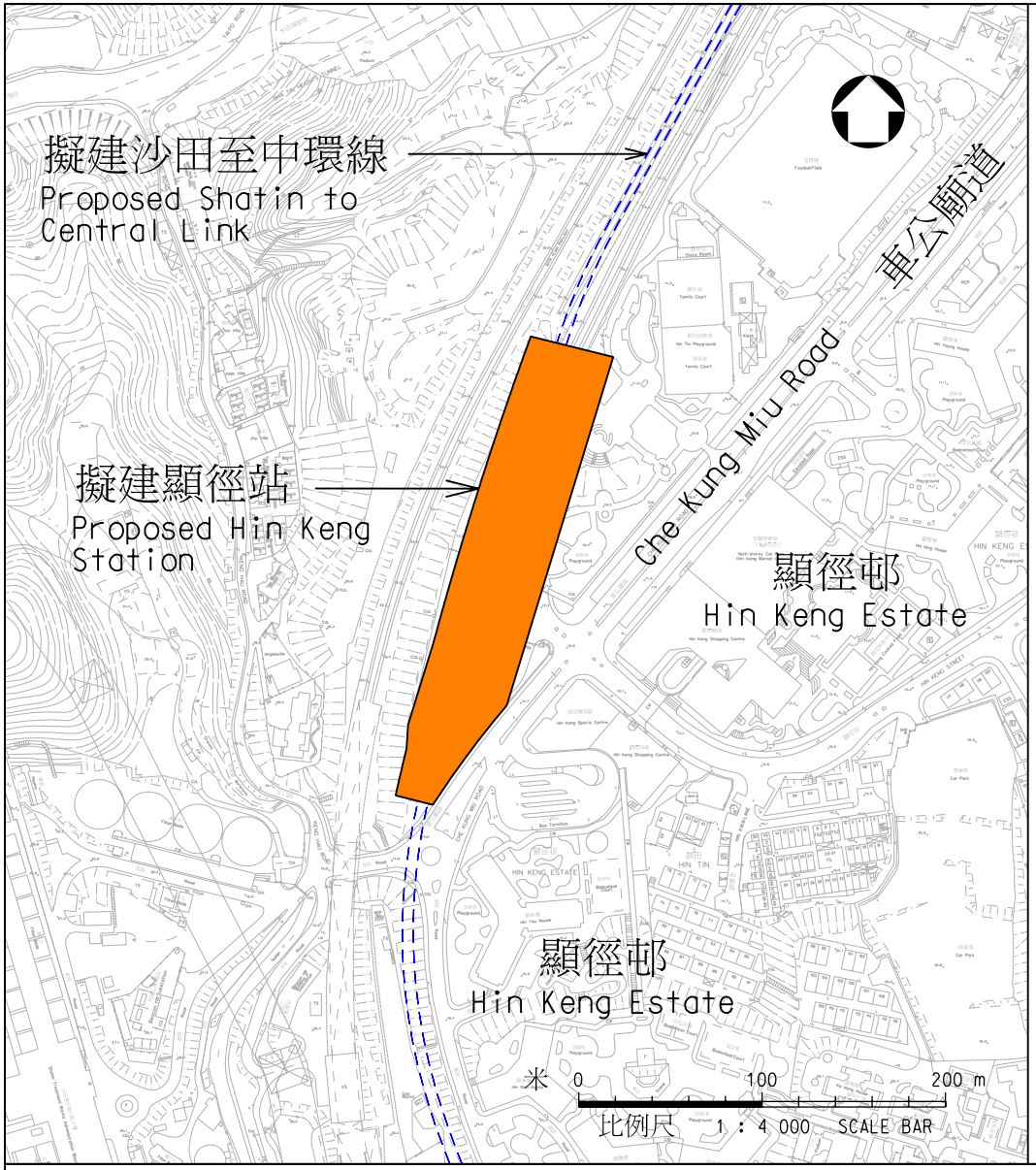
PWP Item No. 61TR – Shatin to Central Link – Construction of Railway Works - Remaining Works
Proposed Alignment of the Shatin to Central Link

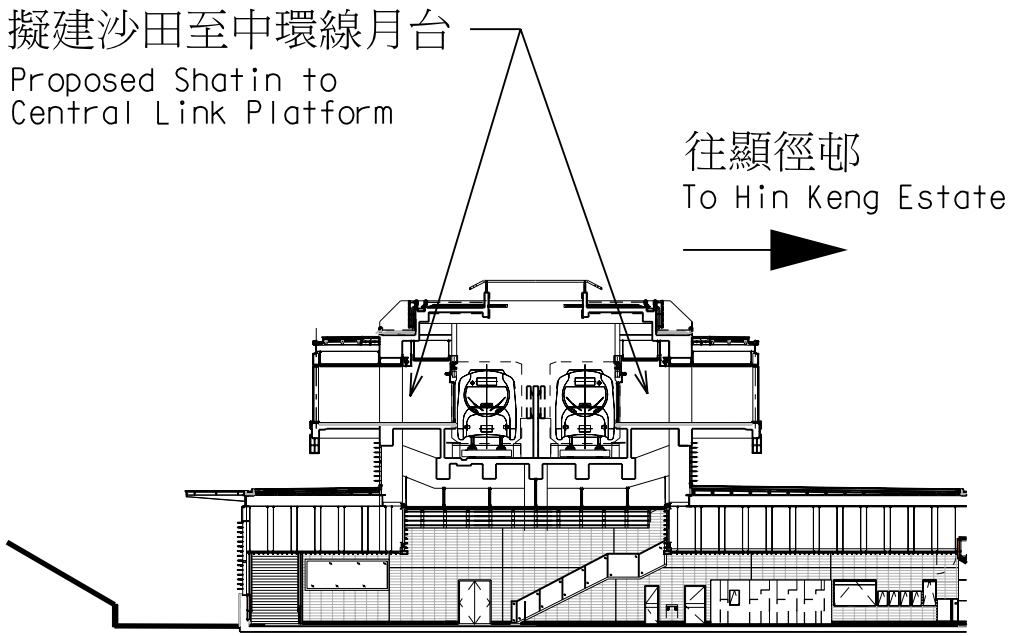
圖號 drawing no.
HRWSCL003-SK0270

鐵路拓展處 RAILWAY DEVELOPMENT OFFICE

路政署
HIGHWAYS DEPARTMENT

A4 210X297





典型切面圖
Typical Section
(不按比例 N.T.S.)

圖則名稱 drawing title

工務計劃項目第61TR號 - 沙田至中環線 - 鐵路建造工程 - 餘下工程
PWP Item No.61TR - Shatin to Central Link - Construction of Railway Works - Remaining Works

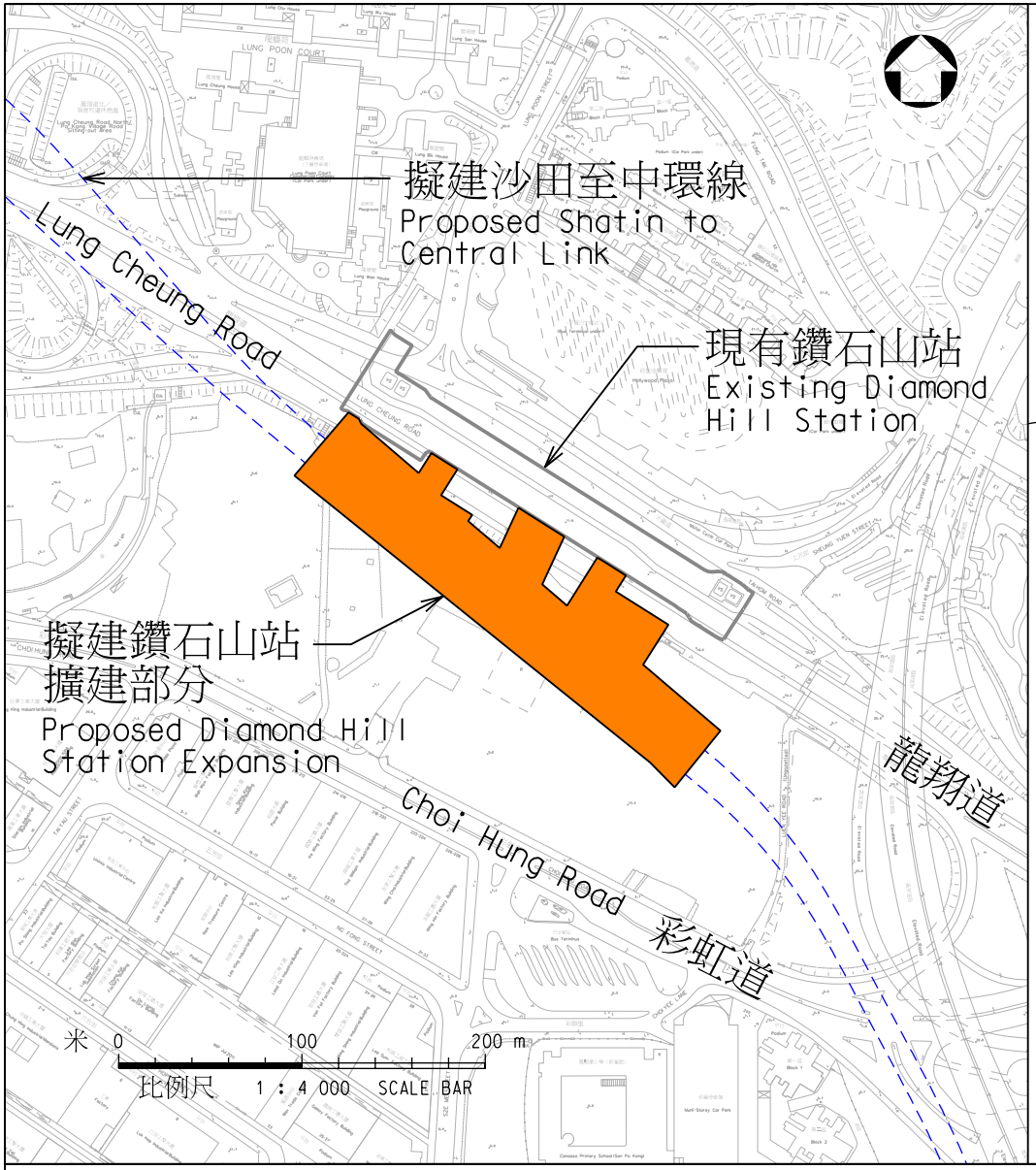
擬建顯徑站
Proposed Hin Keng Station

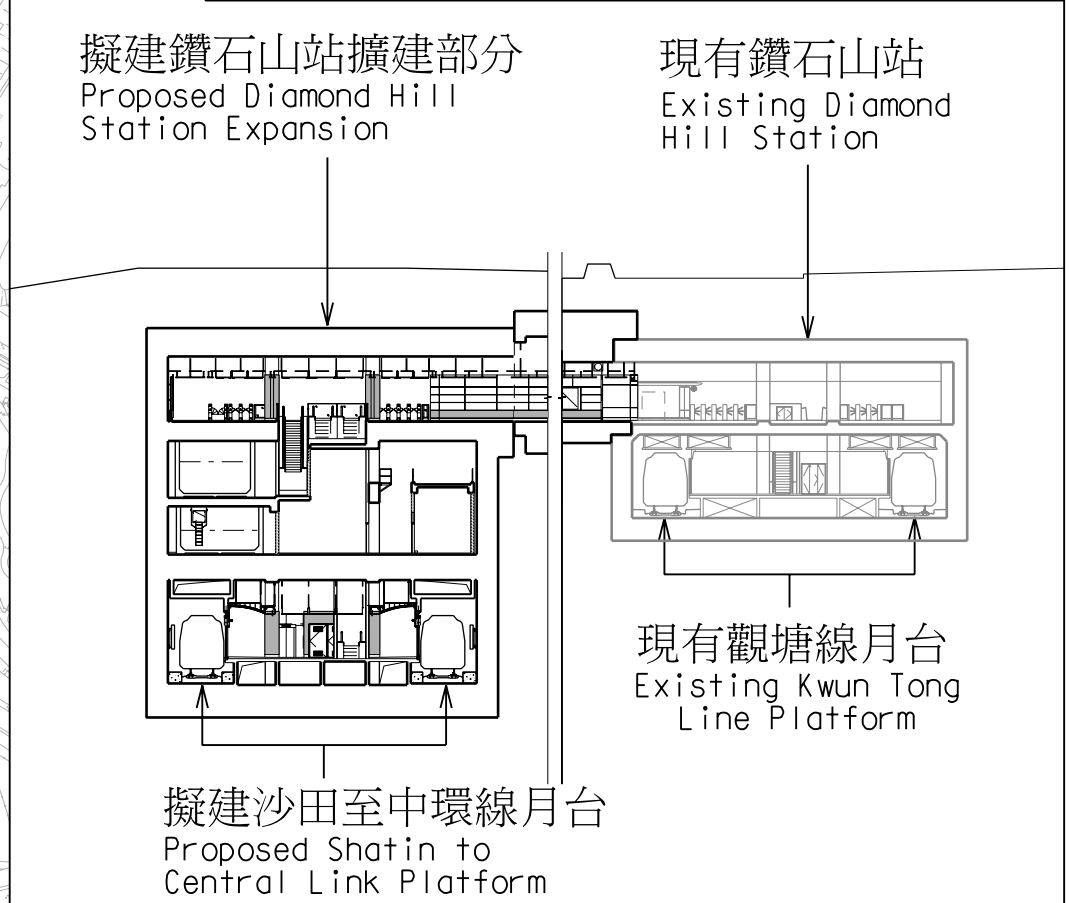
圖號 drawing no.
HRWSCL003-SK0324

鐵路拓展處 RAILWAY DEVELOPMENT OFFICE

路 政 署
HIGHWAYS DEPARTMENT

A4 210X297





典型切面圖
Typical Section
(不按比例 N.T.S.)

圖則名稱 drawing title

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PWP Item No.61TR - Shatin to Central Link - Construction of Railway Works - Remaining Works

擬建鑽石山站擴建部分
Proposed Diamond Hill Station Expansion

圖號 drawing no.
HRWSCL003-SK0325

鐵路拓展處 RAILWAY DEVELOPMENT OFFICE

路 政 署
HIGHWAYS DEPARTMENT

A4 210X297

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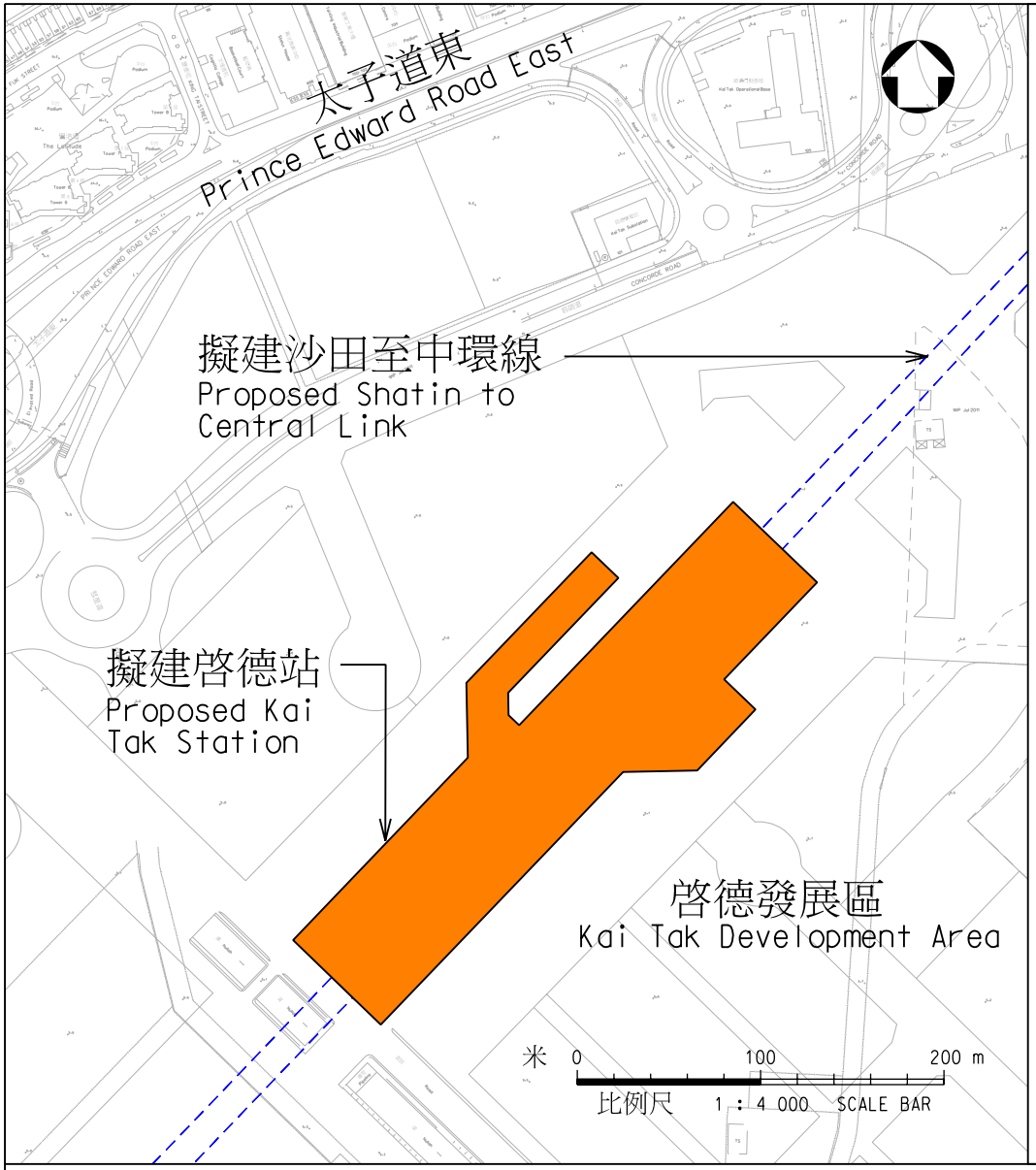
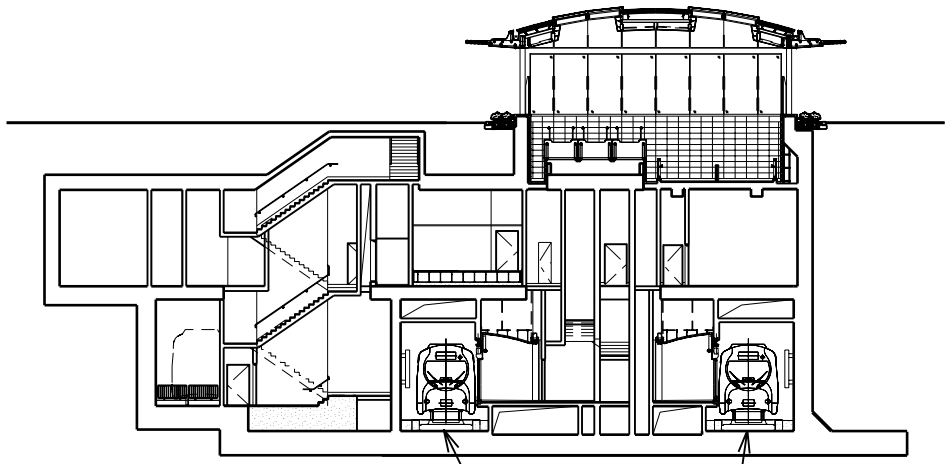
PWSC(2012-13)1的附件 2 (7張中第3張)
Enclosure 2 (Sheet 3 of 7) to PWSC(2012-13)1



往啓德發展區
To Kai Tak Development Area



擬建沙田至中環線月台
Proposed Shatin to Central Link Platform

典型切面圖
Typical Section
(不按比例 N.T.S.)

圖則名稱 drawing title

工務計劃項目第61TR號 - 沙田至中環線 - 鐵路建造工程 - 餘下工程
PWP Item No.61TR - Shatin to Central Link - Construction of Railway Works - Remaining Works

擬建啓德站
Proposed Kai Tak Station

圖號 drawing no.
HRWSCL003-SK0326

鐵路拓展處 RAILWAY DEVELOPMENT OFFICE

路政署 HIGHWAYS DEPARTMENT

A4 210X297

HRWSCL003-SK0326.dgn 28-03-2012

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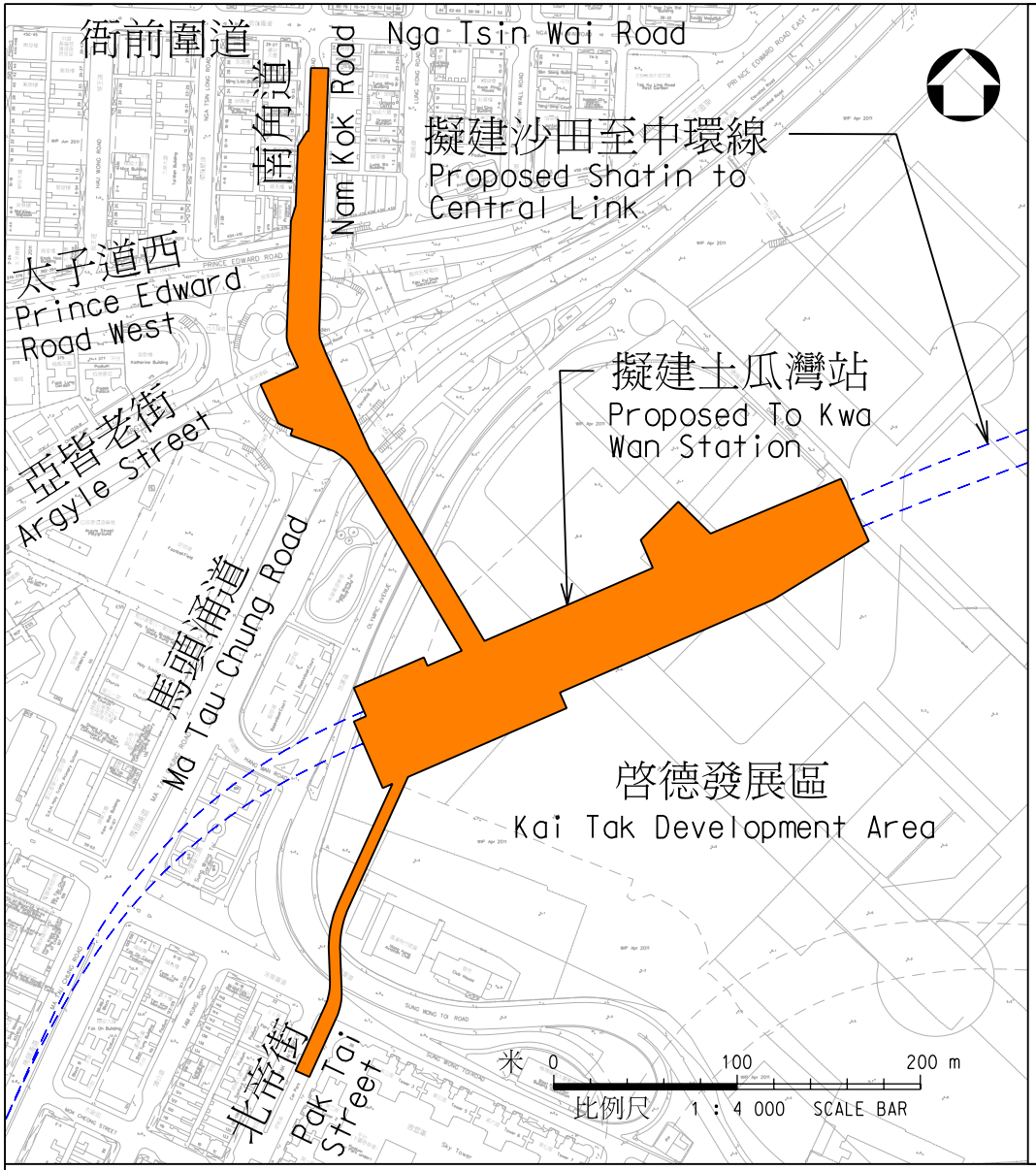
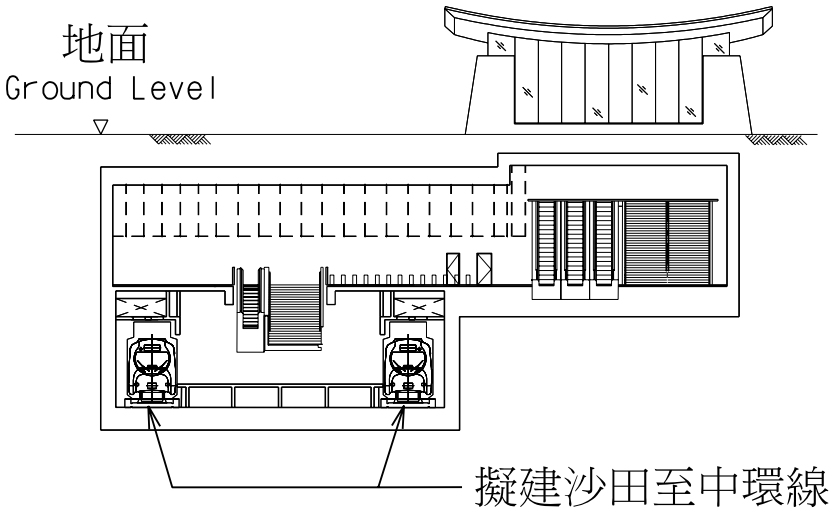
Enclosure 2 (Sheet 4 of 7) to PWSC(2012-13)1



往啓德發展區

To Kai Tak Development Area



擬建沙田至中環線月台

Proposed Shatin to Central Link Platform

典型切面圖

Typical Section

(不按比例 N.T.S.)

圖則名稱 drawing title

工務計劃項目第61TR號 - 沙田至中環線 - 鐵路建造工程 - 餘下工程

PWP Item No.61TR - Shatin to Central Link - Construction of Railway Works - Remaining Works

擬建土瓜灣站

Proposed To Kwa Wan Station

圖號 drawing no.

HRWSCL003-SK0327

鐵路拓展處 RAILWAY DEVELOPMENT OFFICE

路政署 HIGHWAYS DEPARTMENT

A4 210X297

HRWSCL003-SK0327.dgn 28-03-2012

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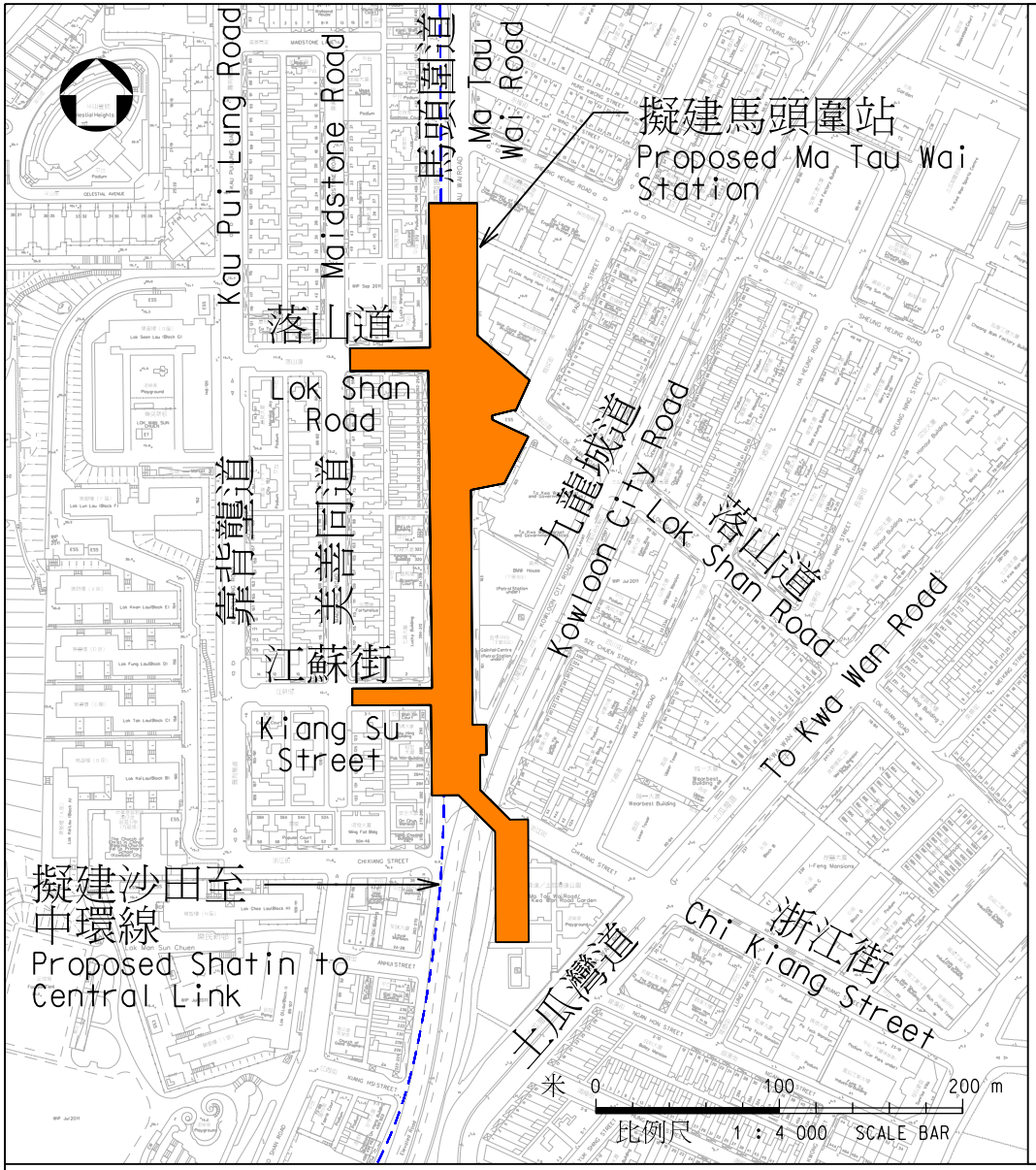
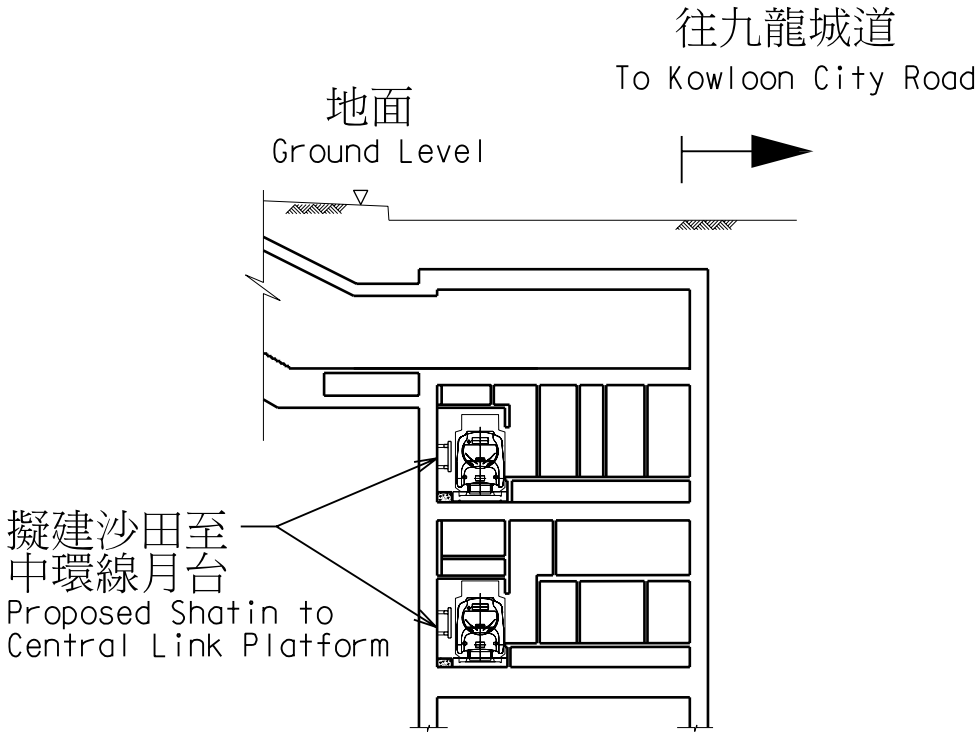
Enclosure 2 (Sheet 5 of 7) to PWSC(2012-13)1





典型切面圖
Typical Section
(不按比例 N.T.S.)

圖則名稱 drawing title

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PWP Item No.61TR - Shatin to Central Link - Construction of Railway Works - Remaining Works

擬建馬頭圍站
Proposed Ma Tau Wai Station

圖號 drawing no.
HRWSCL003-SK0328

鐵路拓展處 RAILWAY DEVELOPMENT OFFICE

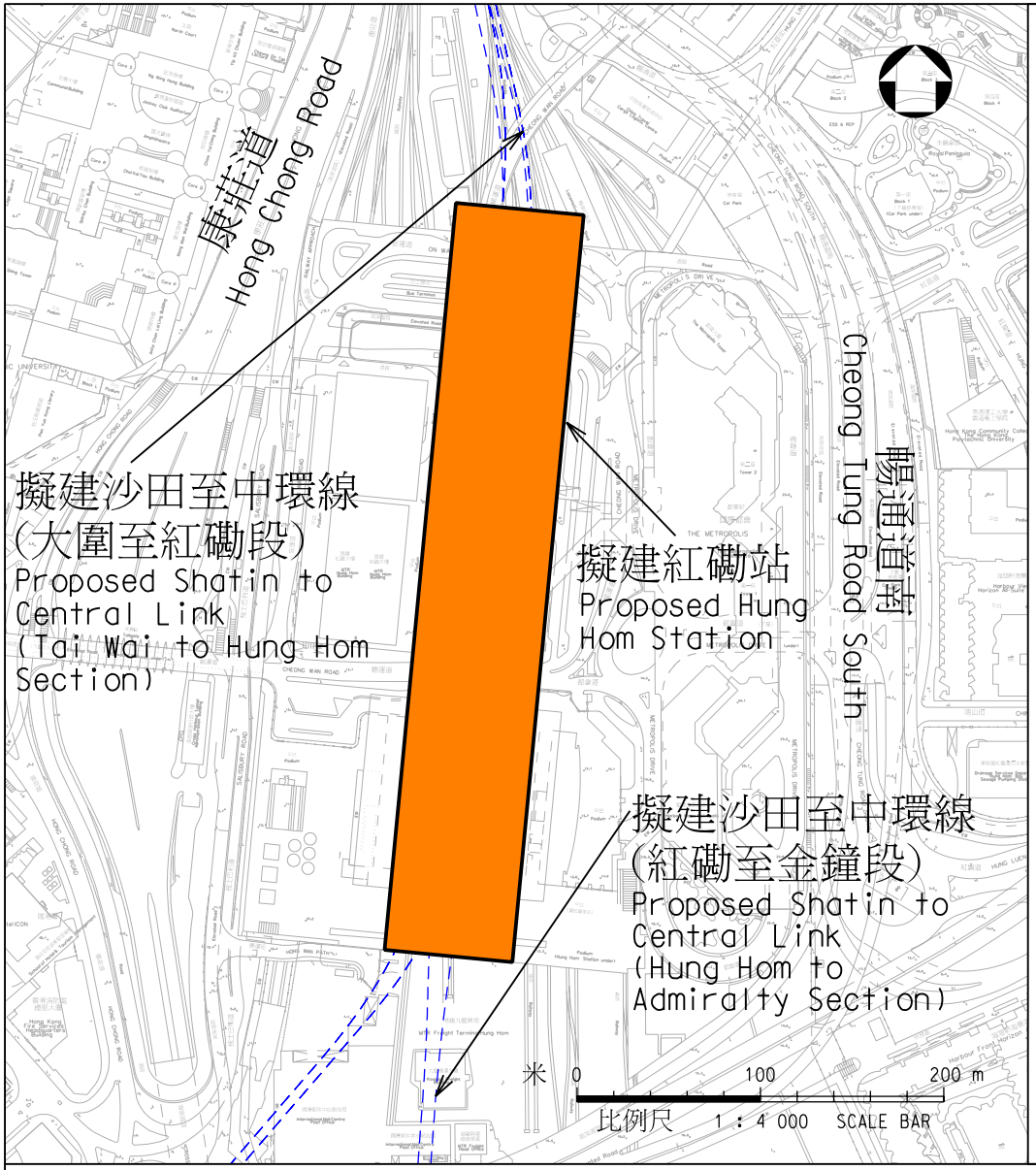
路政署 HIGHWAYS DEPARTMENT

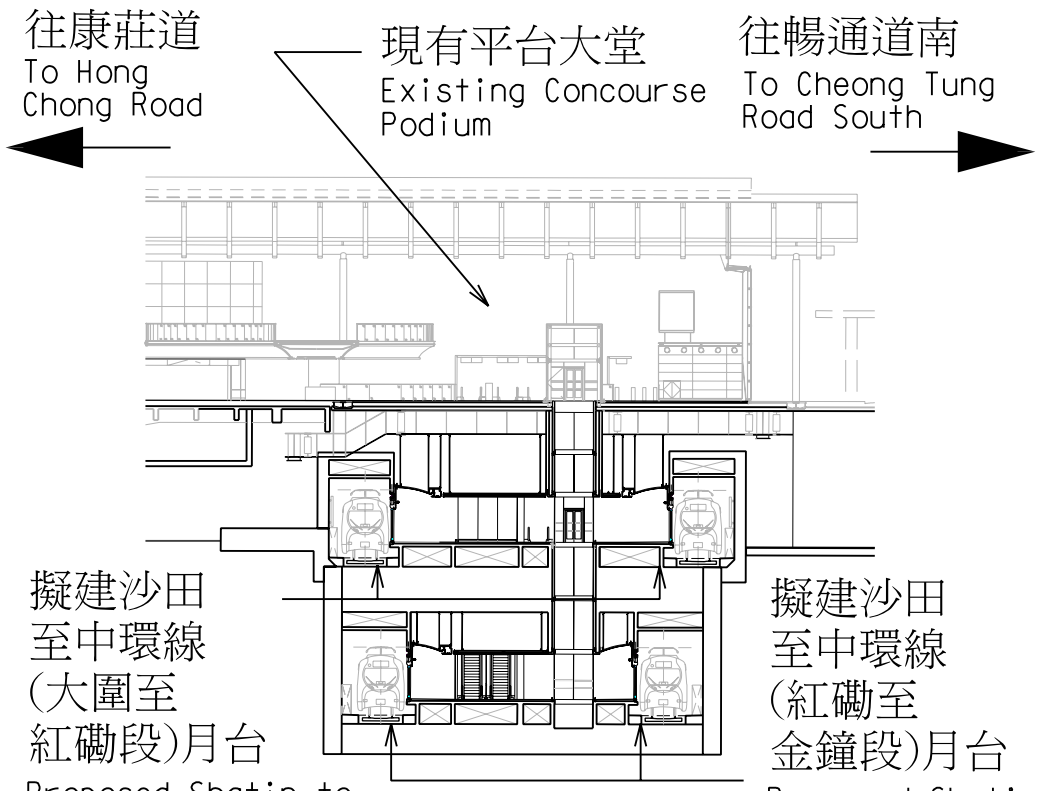
A4 210X297

HRWSCL003-SK0328.dgn 28-03-2012

PWSC(2012-13)1的附件 2 (7張中第6張)

Enclosure 2 (Sheet 6 of 7) to PWSC(2012-13)1





典型切面圖

Typical Section

(不按比例 N.T.S.)

圖則名稱 drawing title

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PWP Item No.61TR - Shatin to Central Link - Construction of Railway Works - Remaining Works

擬建紅磡站

Proposed Hung Hom Station

圖號 drawing no.

HRWSCL003-SK0330

鐵路拓展處 RAILWAY DEVELOPMENT OFFICE

路政署 HIGHWAYS DEPARTMENT

A4 210X297

HRWSCL003-SK0330.dgn 28-03-2012

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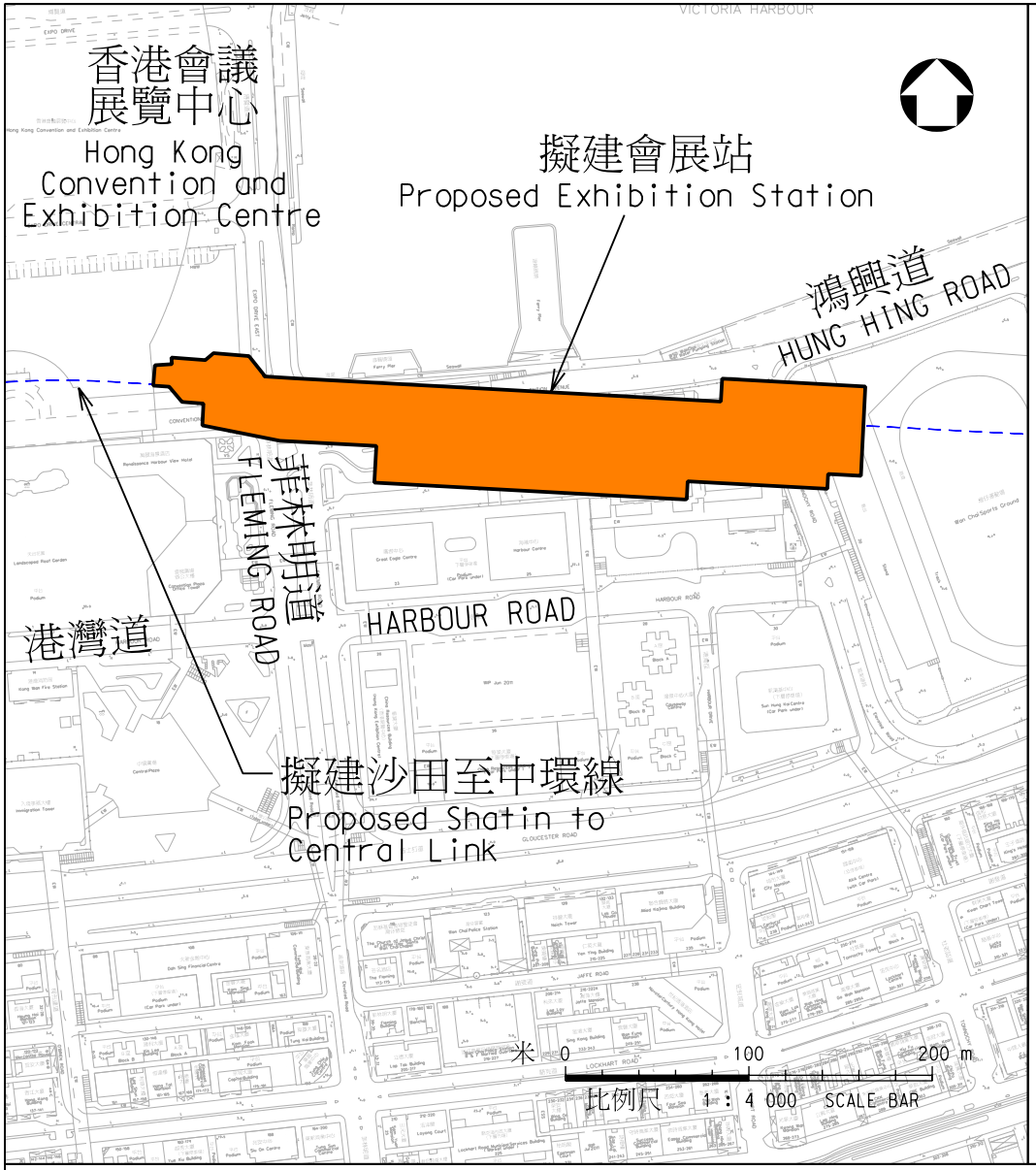
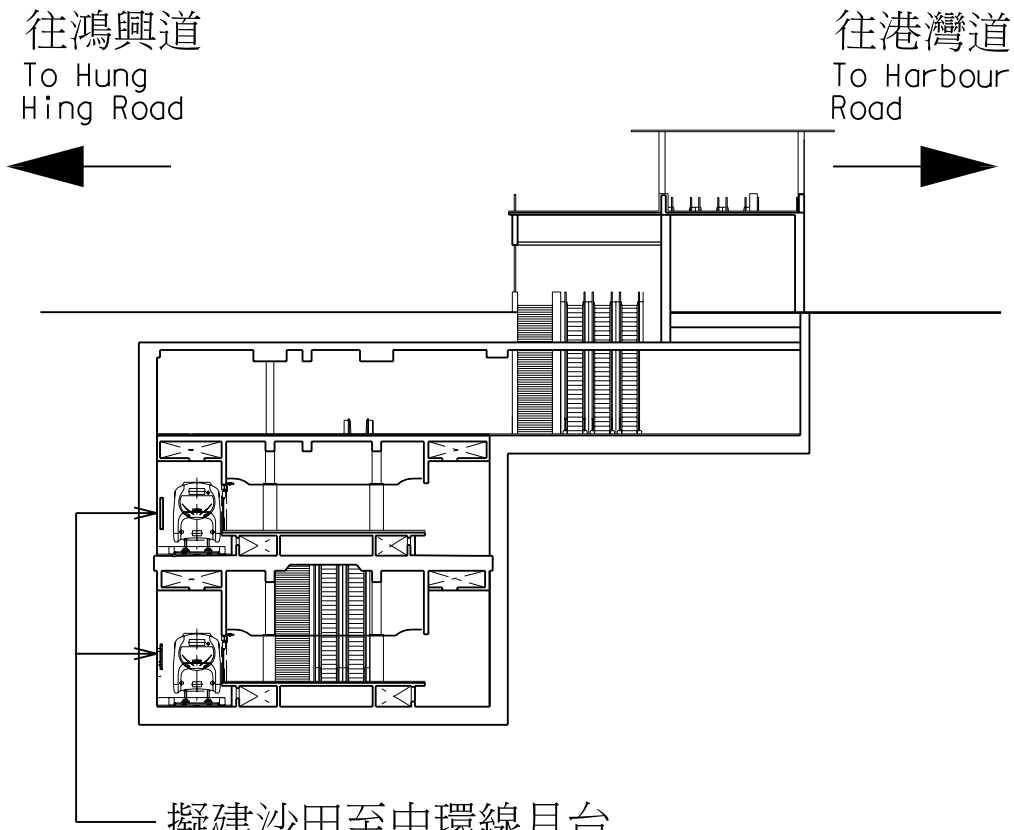




典型切面圖
Typical Section
(不按比例 N.T.S.)

圖則名稱 drawing title

工務計劃項目第61TR號 - 沙田至中環線 - 鐵路建造工程 - 餘下工程
PWP Item No.61TR - Shatin to Central Link - Construction of Railway Works - Remaining Works
擬建會展站
Proposed Exhibition Station

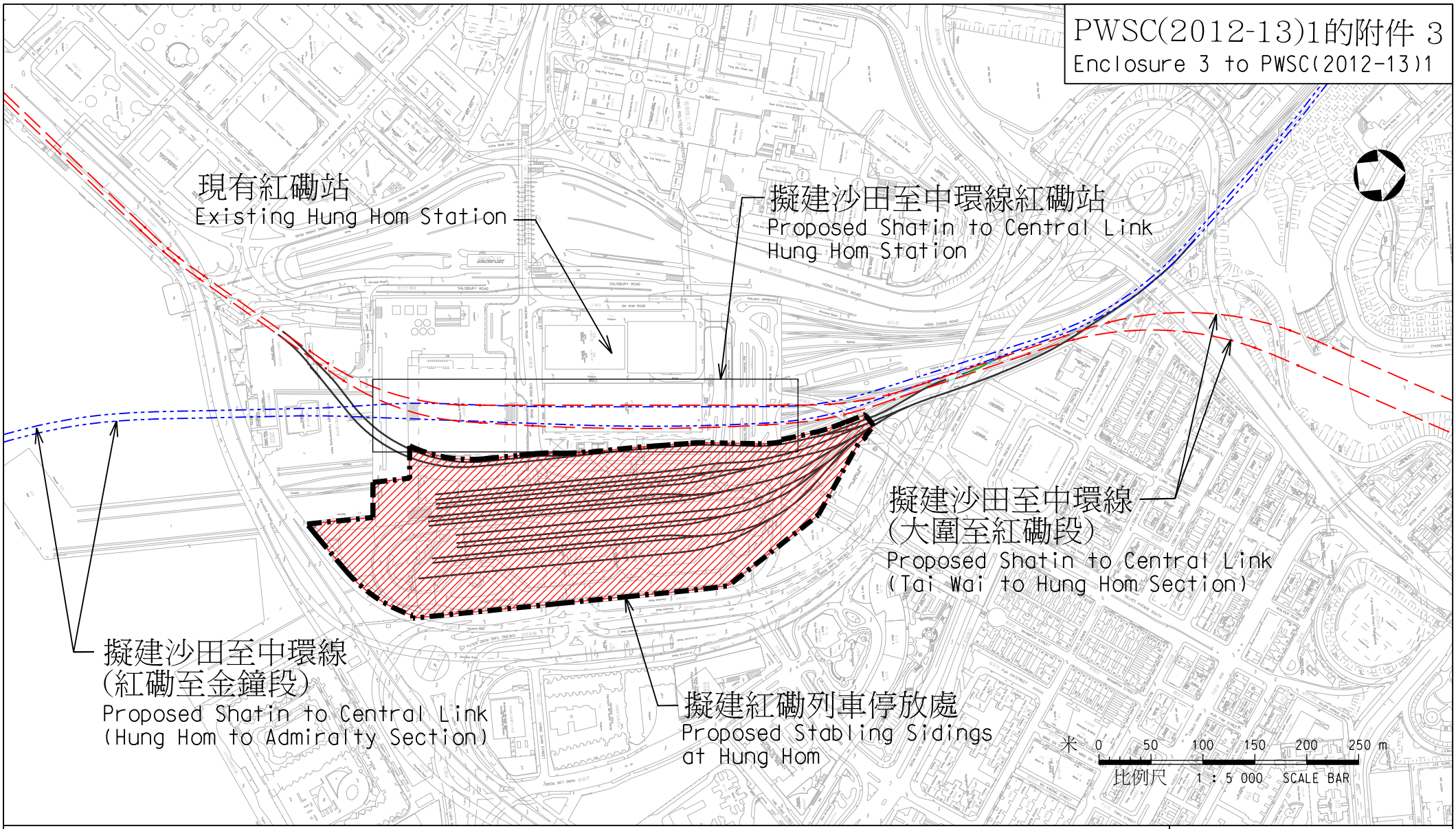
圖號 drawing no.
HRWSCL003-SK0331

鐵路拓展處 RAILWAY DEVELOPMENT OFFICE
路政署 HIGHWAYS DEPARTMENT

A4 210X297

HRWSCL003-SK0331.dgn 28-03-2012

PWSC(2012-13)1的附件 3
Enclosure 3 to PWSC(2012-13)1



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PWP Item No.61TR - Shatin to Central Link - Construction of Railway Works - Remaining Works

擬建紅磡列車停放處

Proposed Stabling Sidings at Hung Hom

圖號 drawing no.
HRWSCL003-SK0321

鐵路拓展處 RAILWAY DEVELOPMENT OFFICE

路 政 署
HIGHWAYS DEPARTMENT

A4 210X297

HRWSCL003-SK0321.dgn 28-03-2012

PWSC(2012-13)1的附件 4
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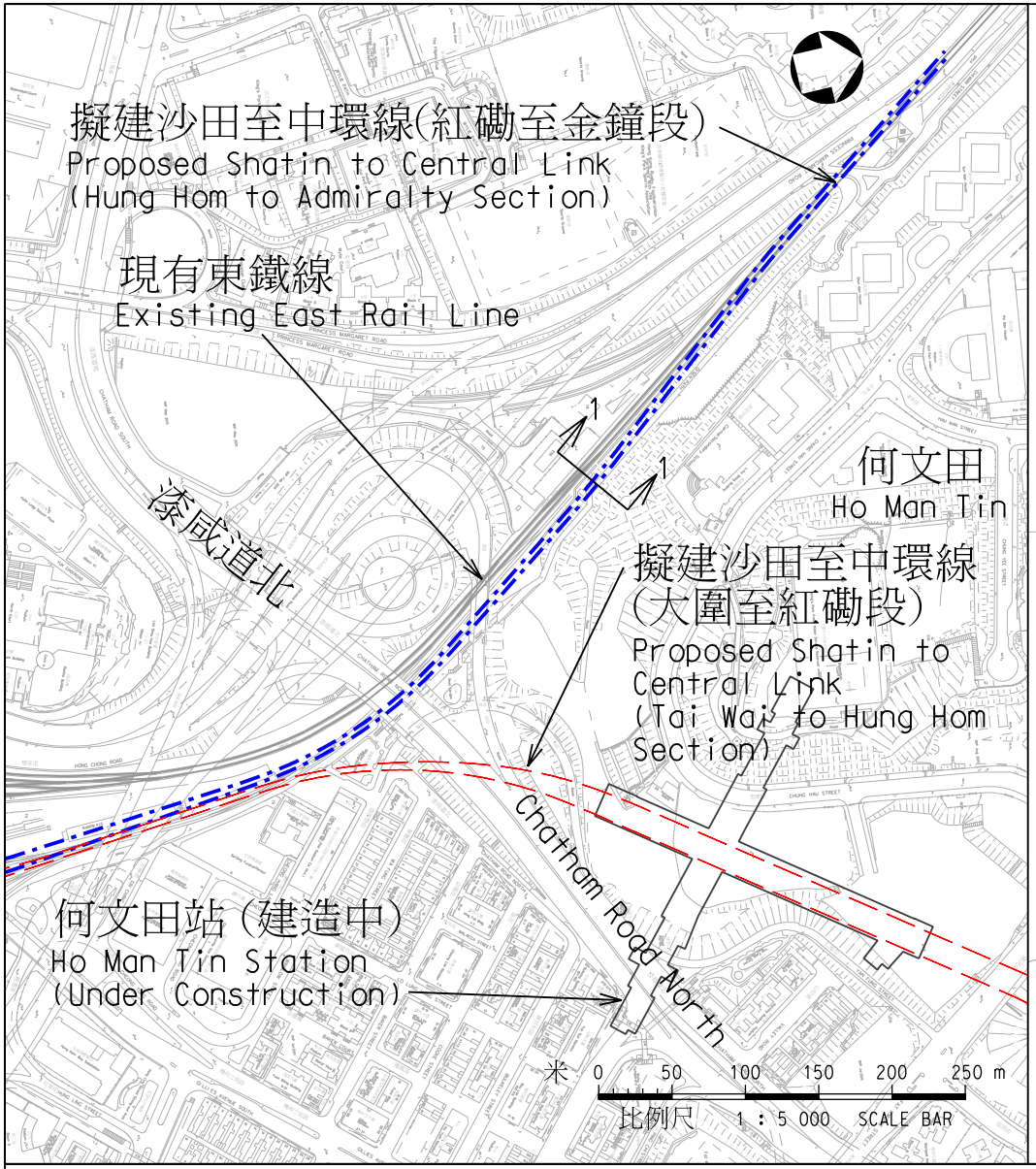
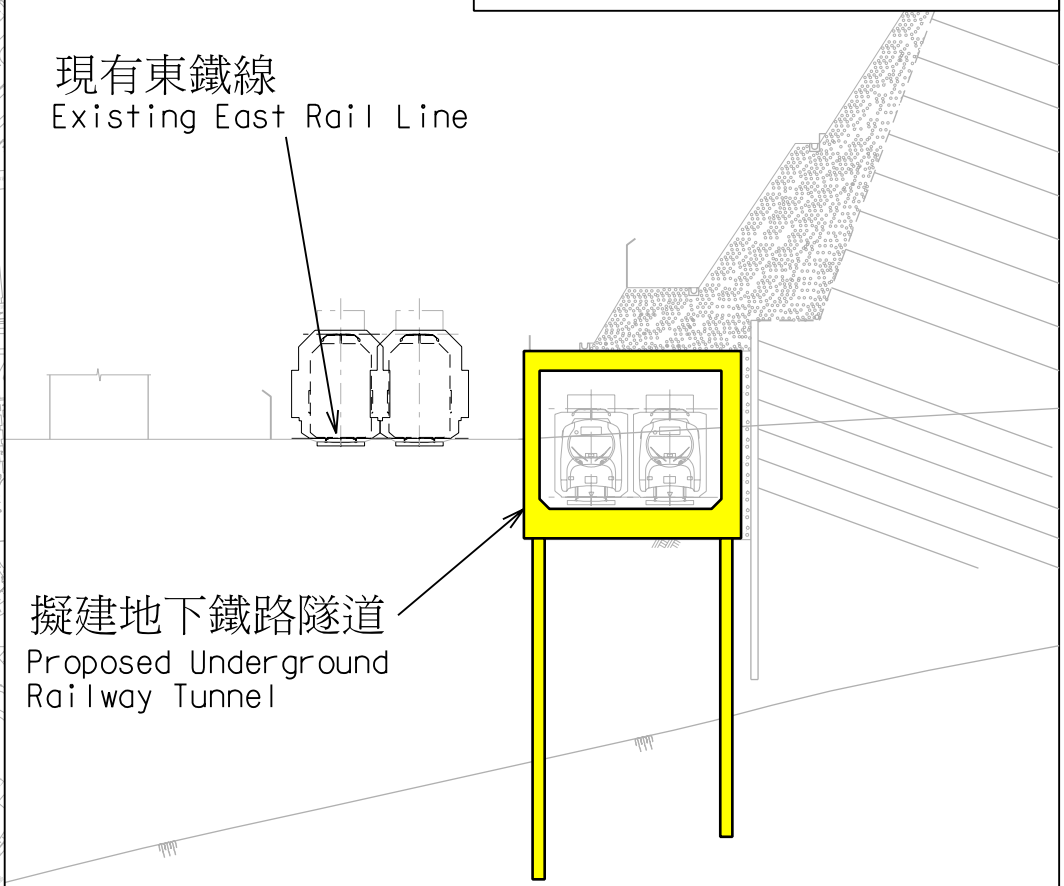




切面圖1-1
Section 1-1
(不按比例 N.T.S.)

圖則名稱 drawing title

工務計劃項目第61TR號 - 沙田至中環線 - 鐵路建造工程 - 餘下工程

PWP Item No.61TR - Shatin to Central Link - Construction of Railway Works - Remaining Works

為現有東鐵線建造一段地底鐵路支線

Bifurcation from the Existing East Rail Line to Form an Underground Railway Line

圖號 drawing no.
HRWSCL003-SK0323

鐵路拓展處 RAILWAY DEVELOPMENT OFFICE

路政署
HIGHWAYS DEPARTMENT

A4 210X297

HRWSCL003-SK0323.dgn 28-03-2012

61TR – Shatin to Central Link – construction of railway works – remaining works

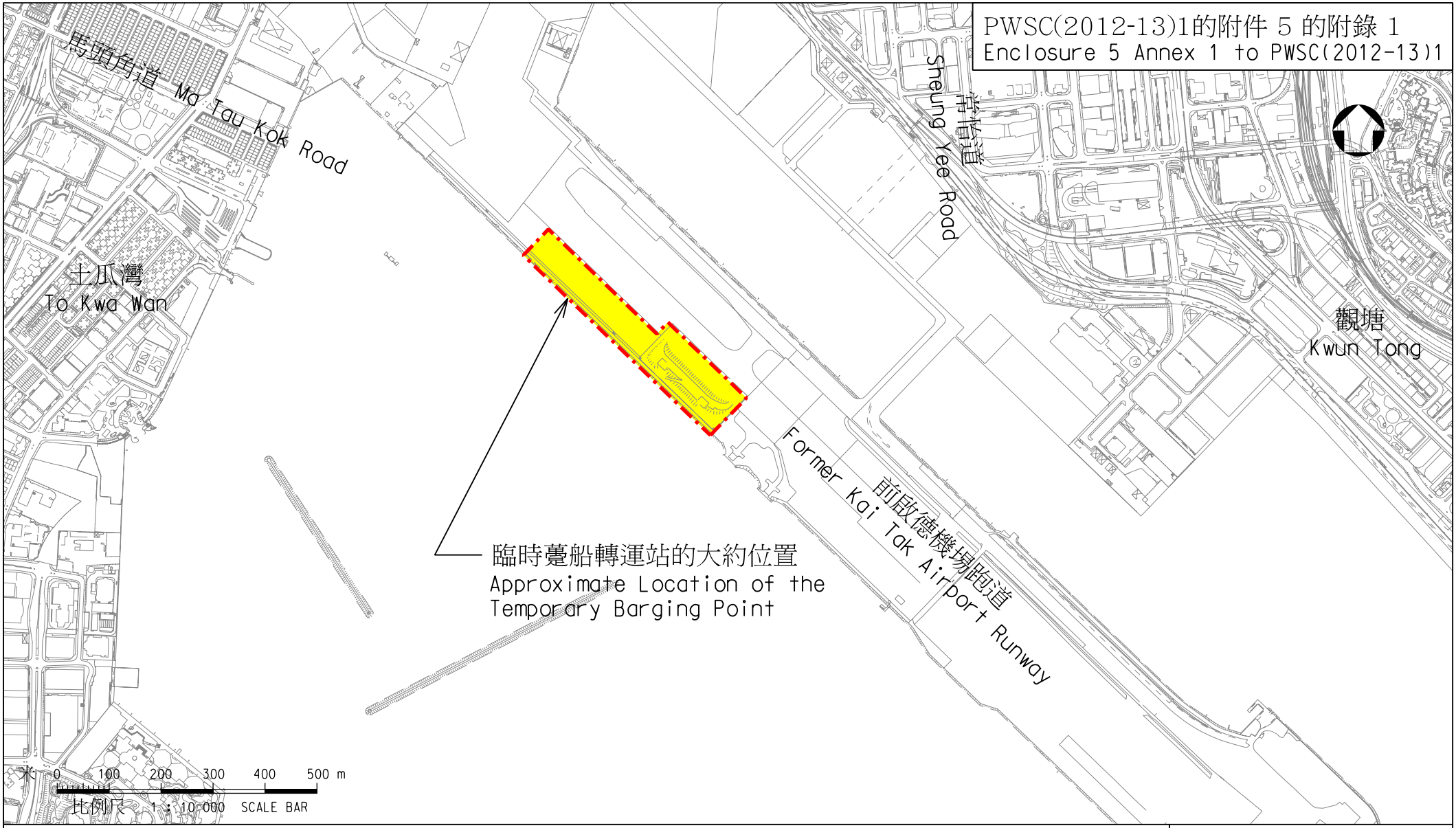
Ancillary Works for the Construction of the Shatin to Central Link

1. Setting up of temporary barging points at Kai Tak Development Area, Hung Hom and Wanchai. The location plans are at Annex 1, Annex 2 and Annex 3 respectively.

2. Construction of a temporary casting yard for submerged tube tunnel and a concrete batching plant at Shek O. The location plan is at Annex 4.

3. Setting up of a temporary magazine site at Tseung Kwan O. The location plan is at Annex 5.

PWSC(2012-13)1的附件 5 的附錄 1
Enclosure 5 Annex 1 to PWSC(2012-13)1



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PWP Item No.61TR - Shatin to Central Link - Construction of Railway Works - Remaining Works
位於啓德發展區的臨時躉船轉運站的位置圖
Location Plan of the Temporary Barging Point at Kai Tak Development Area

圖號 drawing no.
HRWSCL003-SK0364

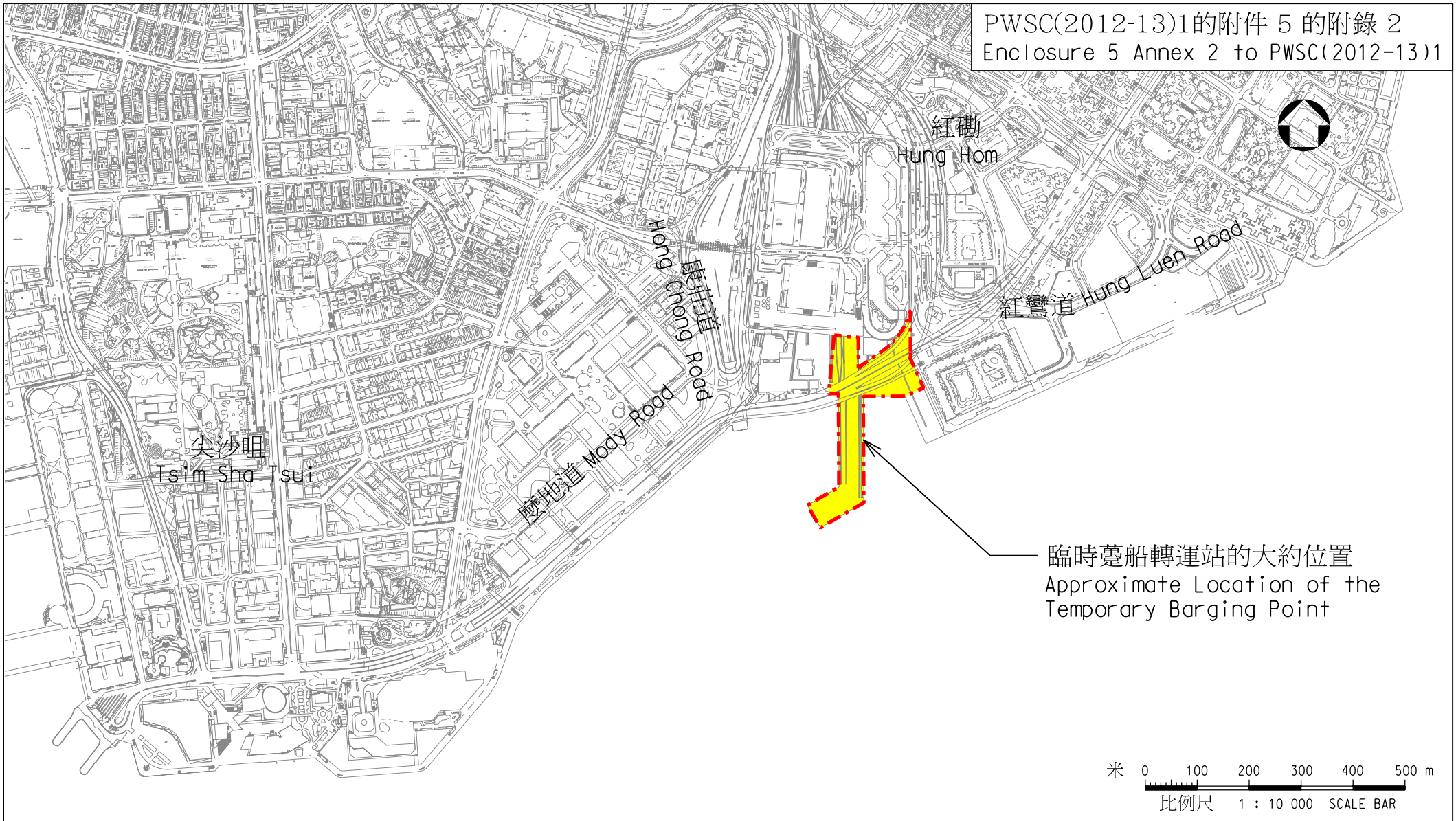
鐵路拓展處 RAILWAY DEVELOPMENT OFFICE

路 政 署
HIGHWAYS DEPARTMENT

A4 210X297

HRWSCL003-SK0364.dgn 28-03-2012

PWSC(2012-13)1的附件 5 的附錄 2
Enclosure 5 Annex 2 to PWSC(2012-13)1



圖則名稱 drawing title

工務計劃項目第61TR號 - 沙田至中環線 - 鐵路建造工程 - 餘下工程
PWP Item No.61TR - Shatin to Central Link - Construction of Railway Works - Remaining Works
位於紅磡的臨時躉船轉運站的位置圖
Location Plan of the Temporary Barging Point at Hung Hom

圖號 drawing no.
HRWSCL003-SK0365

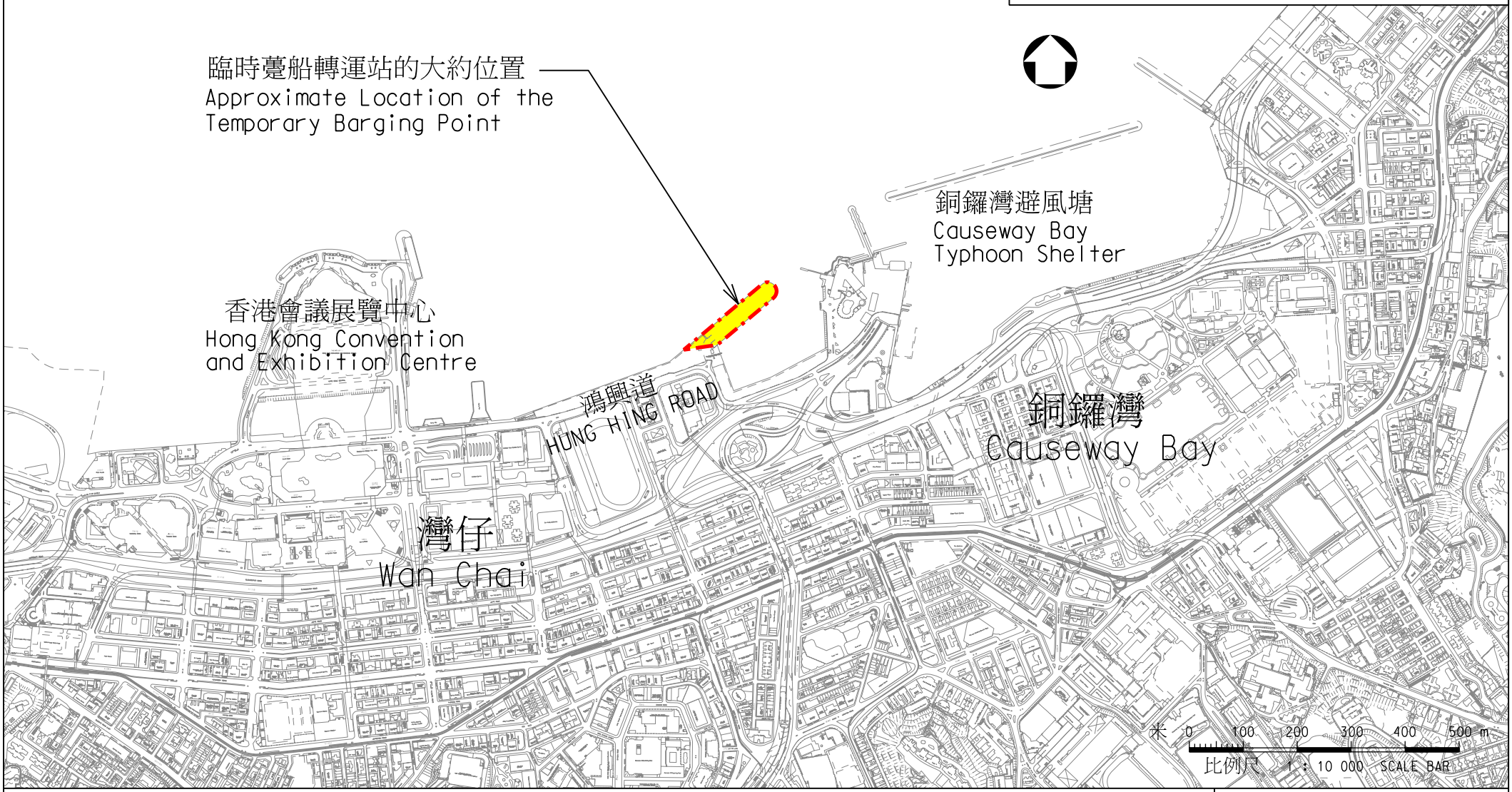
鐵路拓展處 RAILWAY DEVELOPMENT OFFICE

路 政 署
HIGHWAYS DEPARTMENT

A4 210X297

HRWSCL003-SK0365.dgn 28-03-2012

PWSC(2012-13)1的附件 5 的附錄 3
Enclosure 5 Annex 3 to PWSC(2012-13)1



圖則名稱 drawing title

工務計劃項目第61TR號 - 沙田至中環線 - 鐵路建造工程 - 餘下工程
PWP Item No.61TR - Shatin to Central Link - Construction of Railway Works - Remaining Works
位於灣仔的臨時躉船轉運站的位置圖
Location Plan of the Temporary Barging Point at Wan Chai

圖號 drawing no.
HRWSCL003-SK0366

鐵路拓展處 RAILWAY DEVELOPMENT OFFICE

路 政 署
HIGHWAYS DEPARTMENT

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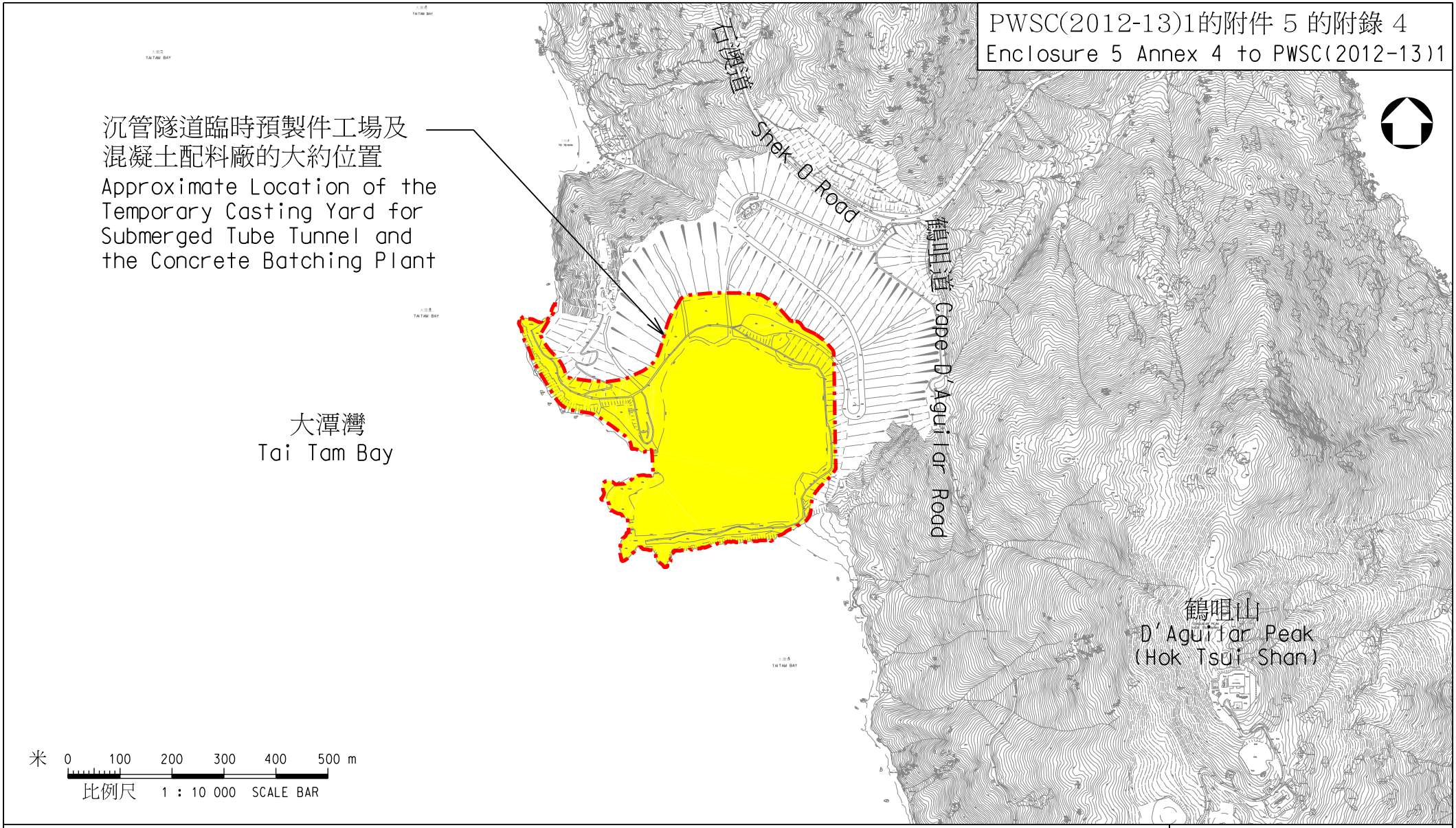
HRWSCL003-SK0366.dgn 28-03-2012

PWSC(2012-13)1的附件 5 的附錄 4
Enclosure 5 Annex 4 to PWSC(2012-13)1



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PWP Item No.61TR - Shatin to Central Link - Construction of Railway Works - Remaining Works
位於石澳的沉管隧道臨時預製件工場及混凝土配料廠的位置圖
Location Plan of the Temporary Casting Yard for Submerged Tube Tunnel and the Concrete Batching Plant at Shek O

圖號 drawing no.
HRWSCL003-SK0367

鐵路拓展處 RAILWAY DEVELOPMENT OFFICE

路 政 署
HIGHWAYS DEPARTMENT

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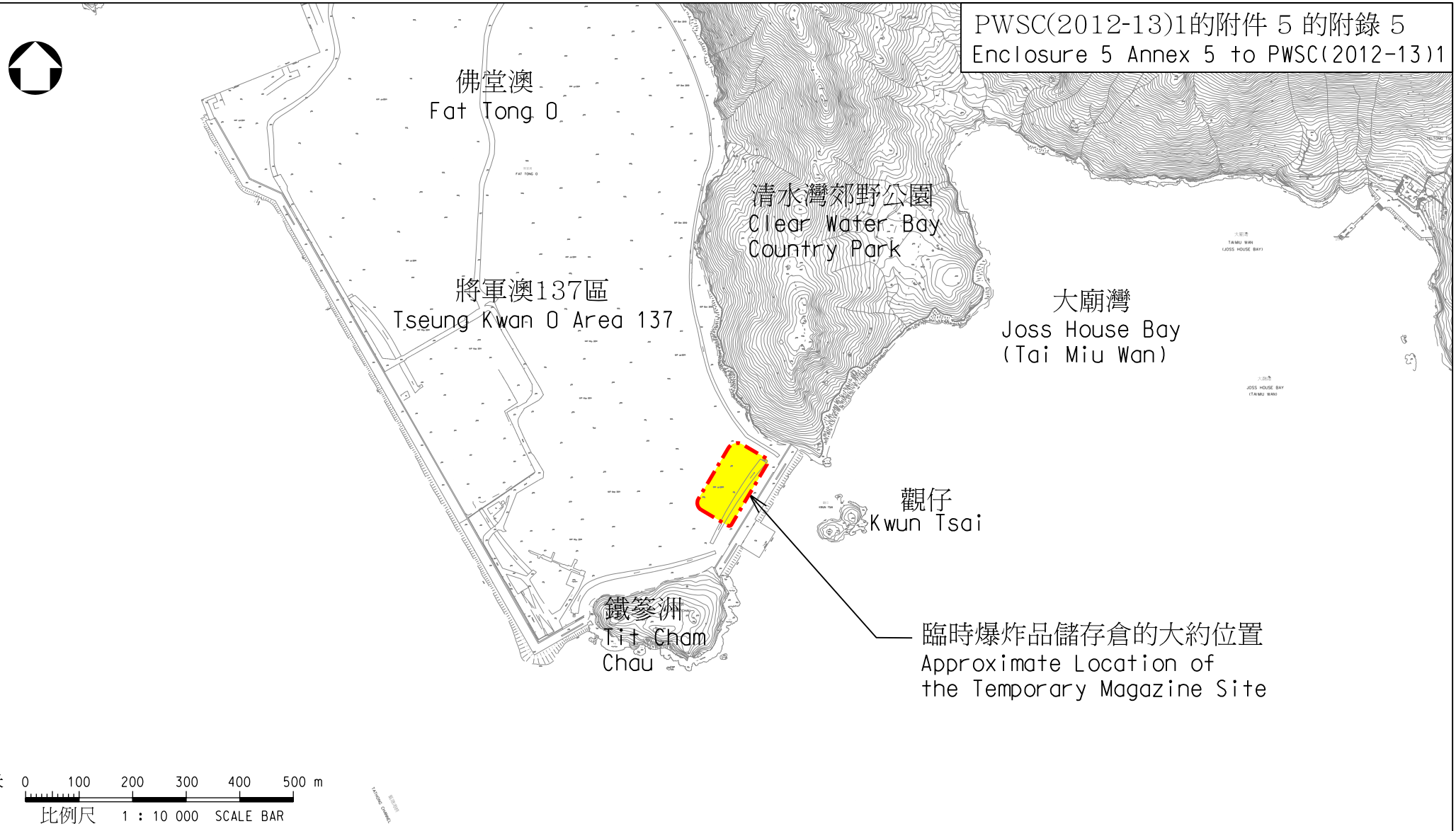
HRWSCL003-SK0367.dgn 28-03-2012

PWSC(2012-13)1的附件 5 的附錄 5
Enclosure 5 Annex 5 to PWSC(2012-13)1



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工務計劃項目第61TR號 - 沙田至中環線 - 鐵路建造工程 - 餘下工程

PWP Item No.61TR - Shatin to Central Link - Construction of Railway Works - Remaining Works

位於將軍澳137區的臨時爆炸品儲存倉的位置圖

Location Plan of the Temporary Magazine Site at Tseung Kwan O Area 137

圖號 drawing no.
HRWSCL003-SK0368

鐵路拓展處 RAILWAY DEVELOPMENT OFFICE

路 政 署
HIGHWAYS DEPARTMENT

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HRWSCL003-SK0368.dgn 29-03-2012

61TR – Shatin to Central Link – construction of railway works – remaining works

Modification of Existing Railway Facilities

1. Modification of station platforms of the East Rail Line to cater for the operation of the SCL (the alignment of the East Rail Line is shown at Annex 1).

2. Modification of station platforms of the Ma On Shan Line to cater for the operation of the SCL (the alignment of the Ma On Shan Line is shown at Annex 2).

3. Modification of control and communication systems of the operations control centres and the stations of East Rail Line, Ma On Shan Line and West Rail Line.

4. Modification of Pat Heung Depot to cater for the operation of the SCL.

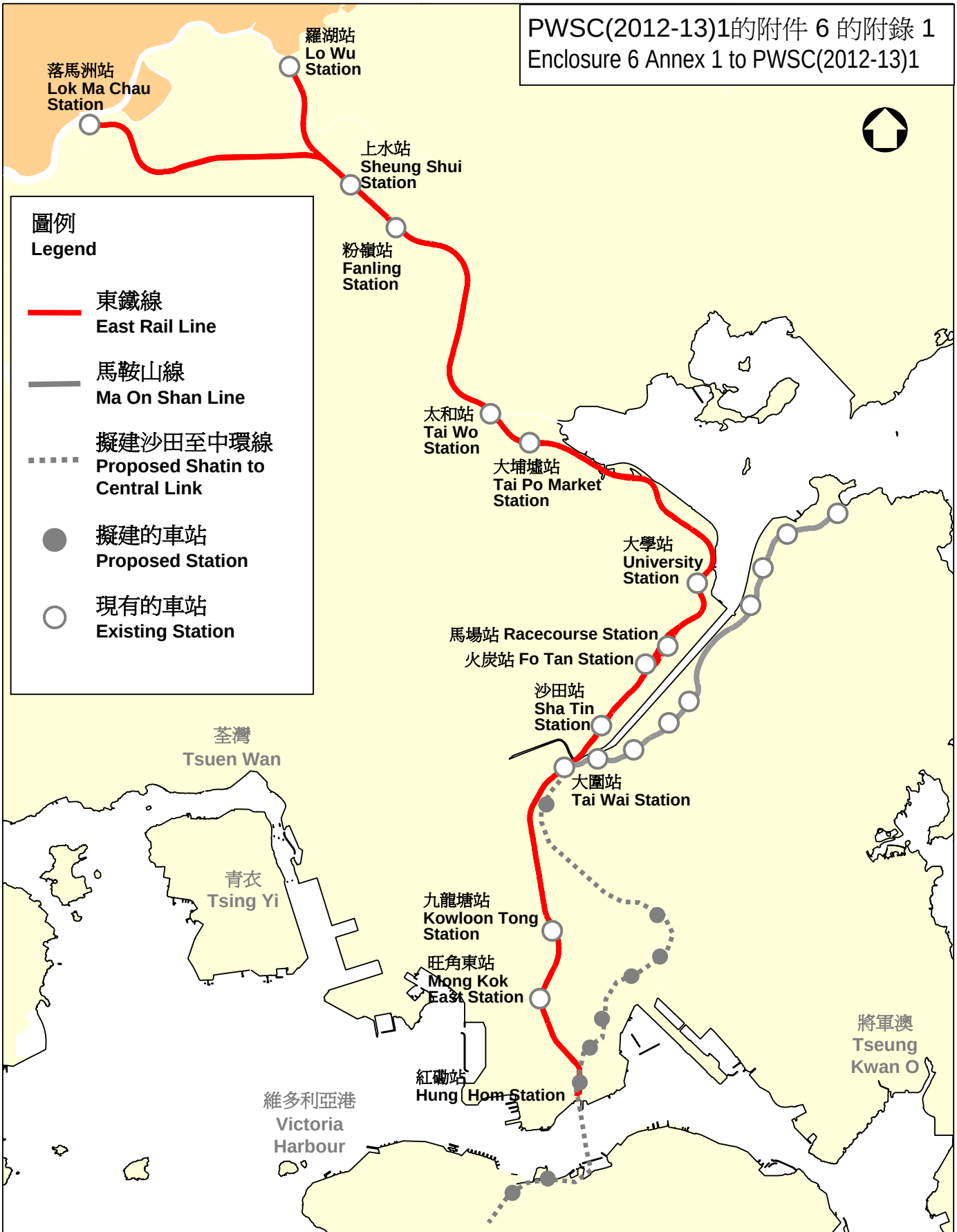
5. Modification of Lo Wu Marshalling Yard, Ho Tung Lau Depot, Mong Kok Freight Terminal, Homantin siding and Hung Hom North track area to facilitate the setting up of railway facilities.

6. Modification of existing tracks at Tai Wai and Hung Hom for connection with the new railway sections.

7. Modification of the signalling systems of the West Rail Line and Ma On Shan Line.

8. Modification of the existing ticketing system and passenger information system.

PWSC(2012-13)1的附件 6 的附錄 1
Enclosure 6 Annex 1 to PWSC(2012-13)1



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PWP Item No. 61TR – Shatin to Central Link – Construction of Railway Works - Remaining Works
東鐵線
East Rail Line

圖號 drawing no.
HRWSCL003-SK0333

鐵路拓展處 RAILWAY DEVELOPMENT OFFICE

路政署
HIGHWAYS DEPARTMENT

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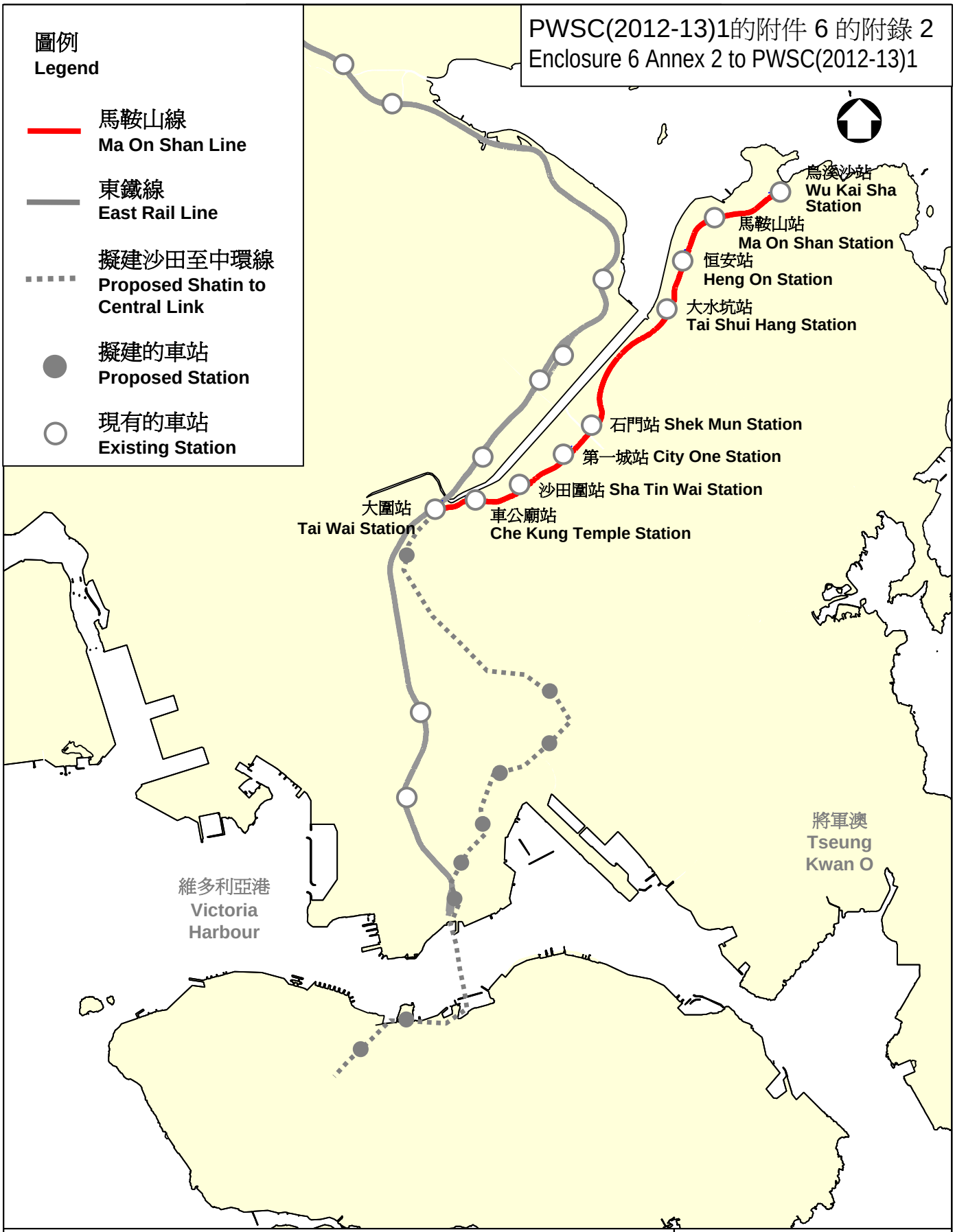

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PWP Item No. 61TR – Shatin to Central Link – Construction of Railway Works - Remaining Works
馬鞍山線
Ma On Shan Line

圖號 drawing no.
HRWSCL003-SK0334

鐵路拓展處 RAILWAY DEVELOPMENT OFFICE

路政署
HIGHWAYS DEPARTMENT

A4 210X297

61TR – Shatin to Central Link – construction of railway works – remaining works

Procurement of Rolling Stock, Railway Systems, Operation and Maintenance Equipment

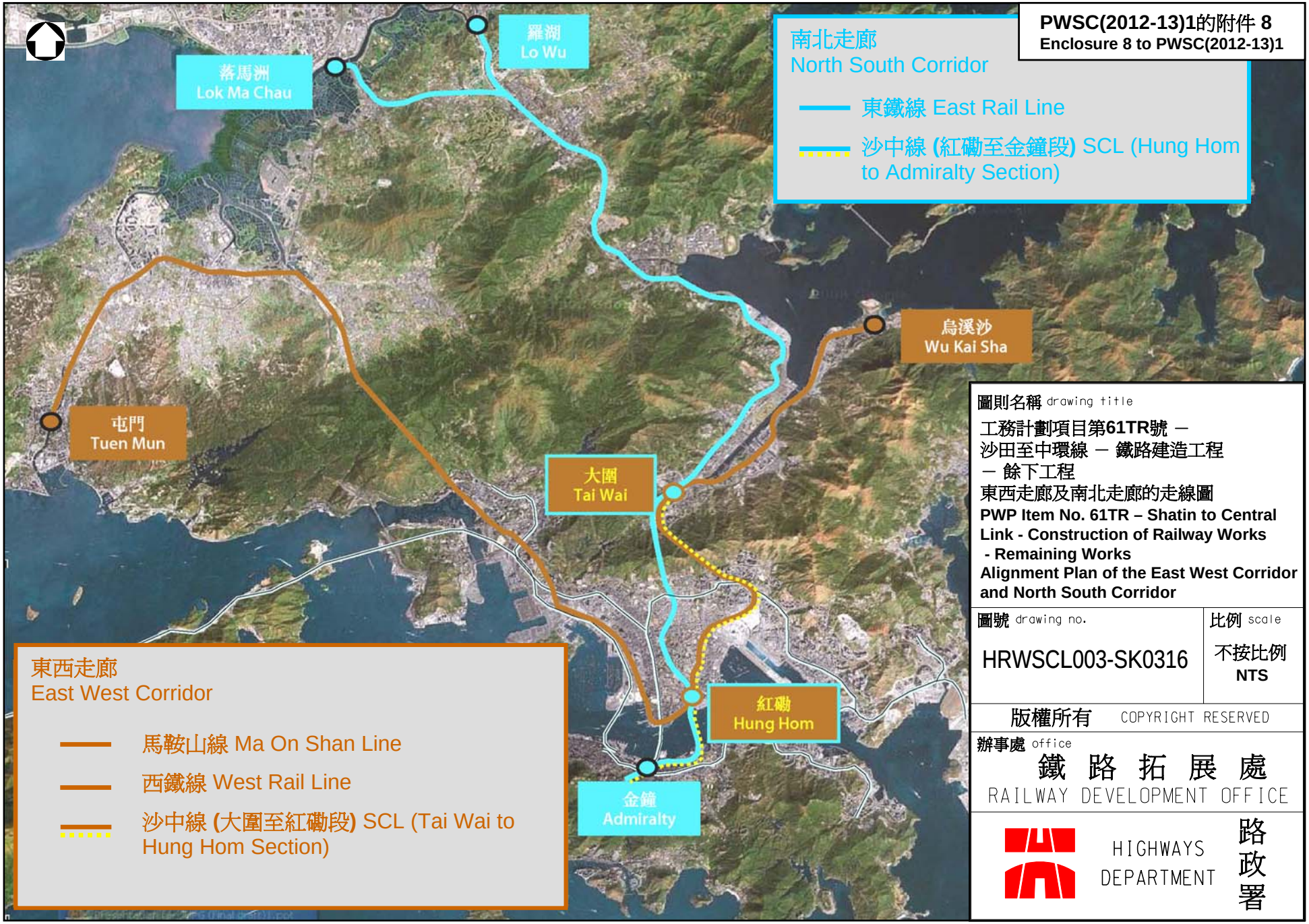
1. Procurement of new rolling stock for deployment at the proposed "East West Corridor" and "North South Corridor".

2. Provision of signalling system for the new railway sections.

3. Procurement of equipment for the new railway systems, including:-

   (a) station facilities;
   (b) environment control systems;
   (c) track works;
   (d) auxiliary siding facilities;
   (e) power supply systems; and
   (f) control and communication systems.

4. Procurement of new service vehicles and depot facilities to cater for the operation and maintenance of the SCL.



PWSC(2012-13)1的附件 8
Enclosure 8 to PWSC(2012-13)1

圖則名稱 drawing title

工務計劃項目第61TR號 －
沙田至中環線 － 鐵路建造工程
－ 餘下工程
東西走廊及南北走廊的走線圖
PWP Item No. 61TR – Shatin to Central Link - Construction of Railway Works - Remaining Works
Alignment Plan of the East West Corridor and North South Corridor

圖號 drawing no.	比例 scale
HRWSCL003-SK0316	不按比例 NTS

辦事處 office
鐵 路 拓 展 處
RAILWAY DEVELOPMENT OFFICE

HIGHWAYS DEPARTMENT 路政署

61TR – Shatin to Central Link – construction of railway works – remaining works

Factors and Information on Individual Items Leading to Increase in Cost Estimate of the SCL

Preliminary Estimate

In the paper [1] submitted to the Finance Committee (FC) of the Legislative Council in February 2011, we explained in detail to Members that, based on the proposal jointly submitted by the MTRCL and the KCRC in 2005, we had estimated that the total project cost of the Shatin to Central Link (SCL) was about $38.17 billion in April 2007 prices. At that time, the SCL project was at a conceptual stage, with its design and site investigation yet to commence, and no advance feasibility study had been conducted. The estimated cost was thus only a crude preliminary estimate.

Latest Estimate

2. In the above FC paper, we informed Members that the project cost of the SCL would be over $60 billion (in September 2009 prices). With the substantial completion of the detailed design of the SCL, our independent consultant has scrutinized the estimated construction cost in accordance with the detailed design. By exercising careful control over the cost, including optimizing and streamlining the design in the design process, the independent consultant estimates that the construction cost of the entire SCL project, including the advance works and protection works for which funding has been obtained, is about $64.9 billion [2] (in September 2011 prices). The construction cost has increased mainly because over the period of four years or so from April 2007 to September 2011, the overall construction cost has increased by about 47% (about $17.9 billion) due to the upsurge in the cost of construction. In addition, to cater for actual site conditions and needs, we have incorporated some of the suggestions and requests made by stakeholders in respect of the design. The estimated cost for these engineering changes is about $5.2 billion[3]. Furthermore, the MTRCL has to revise the design to cope with actual site conditions and technical requirements. The estimated cost for these changes is about $3.6 billion.

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1 Paper reference PWSC(20110-11)34.

2 In May 2008, we obtained FC's separate funding approval for the design and site investigation works for the project with an approved project estimate of $2,407.5 million (in money-of-the-day prices).

3 The additional cost includes project management cost and contingencies.

Changes requested/proposed by stakeholders

3. Since 2008, we commenced design works and conducted an extensive public consultation exercise for the project. The design works are now substantially completed. Having regard to the actual situation or needs, we have incorporated changes to engineering works as requested by some stakeholders and according to the development of the railway scheme. These engineering changes have increased the estimated cost by about $5.2 billion. The breakdown and detailed explanations are given below –

(a) Addition of Hin Keng Station (cost to be increased by about $1 billion)

At the strong request of the public, the Hin Keng Station will be added to the SCL to alleviate the congestion in the Tai Wai Station and facilitate access to railway services by local residents, thereby enhancing the transport and social linkage of the district. The construction cost of this station will be slightly higher than that of a typical above-ground station in general as the station will be built adjacent to a slope at the East Rail Line. During the construction stage, additional support and protection works will need to be provided to ensure that the operation of the East Rail Line will not be affected. Alterations to the turnaround tracks in the existing Tai Wai Depot will also be carried out to tie in with the works.

(b) Relocation of the International Mail Centre (IMC) from Hung Hom to Kowloon Bay (cost to be increased by about $1.2 billion) [4]

The relocation of the IMC from Hung Hom to Kowloon Bay was confirmed after the design works of the SCL commenced in late 2008. As the tunnel of the East West Corridor of the SCL will pass through the site of the existing IMC, it was confirmed after detailed investigation that the existing mail centre had to be demolished and re-provisioned. Through views collected during public consultation, we fully understand that the public expects that the services of the IMC should not be affected. Therefore, we must carefully plan the reprovisioning works, including the timetable. The new IMC at Wang Chin Street in Kowloon Bay will comprise six storeys with

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[4] The Finance Committee of the Legislative Council approved the funding application for the reprovisioning works of the IMC in February 2011.

a usable floor area of about 20 000 m^2. The design and standards of the facilities for the IMC will have to meet the requirements of the Hongkong Post. In addition to adopting a number of greening and energy efficient features, automatic mail sorting and related equipment with a daily handling capacity of 4.5 million items will be provided in the new IMC. The existing IMC will be demolished after the reprovisioning works are completed.

(c) Relocation of the Harbour Road Indoor Games Hall and Wan Chai Swimming Pool (cost to be increased by about $650 million)

The need to relocate the recreational facilities at Harbour Road was confirmed after the design works for the SCL commenced in late 2008. As the Exhibition Station of the SCL will be located under the existing Harbour Road Indoor Games Hall and Wan Chai Swimming Pool, both facilities will have to be relocated to the car park area south of their present site. The facilities to be re-provisioned include a swimming pool, a games hall, a gymnasium, multi-purpose rooms, squash courts, table tennis saloons, changing rooms, store rooms, first aid room, electrical and mechanical plant rooms and filtering facility for the swimming pool. As we fully understand that the public expects that the services of the indoor games hall and training pool at Wan Chai should not be affected, we will carefully plan the reprovisioning works, including the reprovisioning timetable of the relevant facilities. The new building will have a floor area of about 16 500 m^2 and the reprovisioned facilities will meet the latest standards. In particular, the Wan Chai Swimming Pool will become an indoor pool and be upgraded to a 50 m by 25 m pool meeting international standards for the training of athletes.

(d) Proposed walkway system near Tsz Wan Shan Estate Central Playground (cost to be increased by about $300 million)

We understand from the public consultation that there is a great demand for enhancement of the pedestrian walkway system in Tsz Wan Shan for the residents of the district. Residential developments in Tsz Wan Shan are built on undulated terrain, and it is exhausting for pedestrians, particularly the mobility-handicapped or elderly, to traverse long steep gradients. The proposed pedestrian walkway system aims to improve the pedestrian walkways

among the residential developments in the Tsz Wan Shan district (for example Tsz Oi Court, Tsz Lok Estate), provide safe and barrier-free access linking up the Diamond Hill Station of the SCL with the neighbouring residential developments, and encourage the local community to make use of the environmentally friendly railway services so as to improve the traffic condition in the Tsz Wan Shan district.

(e) Proposed walkway system at Yuk Wah Street (cost to be increased by about $250 million)

From the public consultation, there is a great demand for improving the pedestrian facilities between the residential developments at Yuk Wah Street, providing convenient access to the residents nearby to the SCL Diamond Hill Station. In view of the number of residential developments in the area and the busy traffic nearby, we propose to provide the pedestrian facilities (for example lifts and escalators) at suitable locations, encouraging the local residents to make use of the environmentally friendly railway services thus improving the traffic condition in the area.

(f) Proposed Fung Tak pedestrian walkway system (cost to be increased by about $50 million)

. To facilitate the use of SCL by residents in the vicinity of the Fung Tak Estate, we propose to provide convenient access in the area by installing additional pedestrian facilities (e.g. covered walkway and lifts) nearby.

(g) Reprovisioning and enhancement of the Harcourt Garden (cost to be increased by about $200 million)[5]

The design of the SCL in 2008 confirmed that the Admiralty Station would need to be expanded into an integrated station serving both the SCL and South Island Line (East). This proposal is more desirable than the original design of building two separate stations at Admiralty. To enable the construction of the integrated station, the MTRCL will need to make use of the Harcourt Garden as a works site. The garden will also be converted, elevated and reprovisioned to facilitate the construction of the underground station. The Harcourt Garden will be

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[5] The Finance Committee of the Legislative Council approved the funding application for reprovisioning and enhancement of the Harcourt Garden in February 2011.

redesigned and the works will be carried out and completed in tandem with the expansion works of the Admiralty Station. To tie in with the works of the underground station, the garden will be elevated by 5 to 6 metres to allow building of more open space and a landscape deck. The space enjoyed by the public will be increased from around 5 000 m^2 at present to around 9 000 m^2 afterwards. Lifts linking up the station concourse, ground level and the garden will be installed at the entrance to the garden to provide barrier-free access. The Harcourt Garden will be connected to the footbridges linking up the neighbouring commercial buildings to achieve pedestrian and vehicle segregation and provide comfortable and safe links for pedestrians to and from the station, the Harcourt Garden and neighbouring commercial buildings.

(h) Reprovisioning and enhancement of district sitting-out areas (cost to be increased by about $ 150 million)

Given the large scale of the SCL project whose alignments traverse many districts, it is necessary to designate certain district sitting-out areas as temporary works sites. After extensive discussions with the district councils concerned, we suggest enhancing and improving the affected sitting-out areas as part of the reprovisioning works where possible. Examples include sitting-out areas in Ma Tau Wai, the rest garden at the Cross Harbour Tunnel Hong Kong entrance, Ma Chai Hang Recreation Playground and Hin Tin Playground.

(i) Reprovisioning of affected facilities of the Police Force (cost to be increased by about $300 million)

The tunnel of the North South Corridor of the SCL will pass through the Police facilities next to the Causeway Bay Typhoon Shelter. Having considered the public concern on harbour protection, we should avoid unnecessary reclamation. It was confirmed after the preliminary design that the Police facilities will have to be entirely demolished to make way for the construction of this section of SCL tunnel and the ventilation facilities above the tunnel. Upon completion of the works, the area available for the reprovisioning of the Police facilities will be reduced thus increasing design complexity and construction difficulty. The construction cost will increase as a result.

(j) Additional disposal and import of fill materials due to proposed changes of stockpiling areas and barging point (to be increased by about $500 million)

From the extensive public consultation conducted, we were aware of the public's concern about the temporary storage of excavated materials at the Kai Tak area. We have therefore substantially reduced the storage area in the latest planning. As a result, one million cubic metres of excavated materials generated from the construction of the SCL tunnels and stations in Diamond Hill and Kowloon City could not be stored for the subsequent backfilling, leading to a considerable increase in cost for transporting the excavated material away and procuring material subsequently for backfilling purpose. As the barging point at Hoi Sham Park has been cancelled, the excavated materials generated in the vicinity will have to be transported to the barging point at Kai Tak, increasing the cost of transportation and handling of the excavated materials.

(k) Reduction of temporary works sites and cancellation of the temporary concrete batching plant in Kai Tak (cost to be increased by about $200 million)

In the extensive public consultation conducted, we were aware of the strong request of locals for reducing the temporary works sites and cancellation of the temporary concrete batching plant in Kai Tak for the SCL. After careful deliberation, we have reduced some temporary works sites in Sha Tin District and Kowloon City District and cancelled the temporary concrete batching plant in Kai Tak by making additional arrangements for working procedures and procurement of concrete. Such arrangement will increase the construction cost of the SCL.

(l) Construction of enabling works for the topside property developments above the stations and concrete block works for the future Sung Wong Toi Garden (cost to be increased by about $400 million)

To support the future development of the topside property developments above the stations, the foundation and structure frameworks of the stations have to be strengthened (e.g. the raft foundation of the To Kwa Wan Station has been changed to pile foundation). It is also necessary to provide additional supports for the concrete block works at the future Sung Wong Toi Garden.

Design Changes

4. In the course of design, the MTRCL has to revise the design to cope with actual site conditions and meet technical requirements. The estimated cost for these changes is about $3.6 billion, with breakdown and detailed explanations as shown below –

(a) Changes to the design of stations, e.g. revision of the design of stations to take into account the latest site investigation information (cost to be increased by about $600 million)

After conducting a series of site investigation along the alignment of the SCL, the MTRCL has confirmed that it is necessary to revise the design to take account of the information obtained, including –

- additional strengthening works for the external walls of the existing Diamond Hill Station to avoid implications on the safety of the station during the construction of the SCL;

- additional lateral diaphragm walls and related bracing structures to further reduce the impact on the neighbouring buildings during the construction of the Ma Tau Wai Station; the depth of the diaphragm walls has to increase because it has been found that the rock stratum in the vicinity of the Ma Tau Wai Station is deeper than expected.

- the large quantity of gravel found at the ex-Tai Hom Village site has to be crushed or removed before building the 600 m long diaphragm walls at the site; and

- the seawall and disused railway facility found at the old reclamation for the Hung Hom Station have to be removed before construction of the tunnel.

(b) Additional fire service provisions at stations to meet the latest fire safety requirements (cost to be increased by about $700 million)

Fire service equipment for railways is different from that of ordinary buildings, most of which cannot be finalised until the design stage and after deliberations with and analysis of risks by the Fire Services Department (FSD). As described in paragraph 1 above, the design for the SCL had not yet started when the preliminary cost estimate was submitted to the Legislative Council in March 2008. The rough estimated costs for stations, including fire safety facilities, were based on the typical design of previous stations. Since early 2010, the MTRCL and the FSD have been discussing the detailed design of most of the stations and the necessary fire safety facilities. Having received the detailed station design from the MTRCL and in view of the incidents in the past few years, the FSD has requested for enhancement of the protection for firemen entering the scene of incidents as well as means of escape for the public. Hence, the following additional facilities will be provided under the SCL to meet the prevailing fire services requirements –

- additional fire service lifts (9 in total) for the secondary fire service entrances at the stations;
- separate entrance for the underground CLP transformer room, hence an increase in the area of the stations;
- enhancement of stations backup fume extracting facilities, hence an increase in the area of the stations; and
- automatic sprinkler system for the stabling tracks of the stabling siding at Hung Hom, and automatic sprinkler and fume extracting systems for the sector tracks of the stabling siding.

(c) Additional emergency access and egress to meet the latest fire safety requirements (cost to be increased by $600 million)

After the MTRCL submitted the detailed design of the emergency access in early 2010, the FSD, in view of the incident in Tai Lam Tunnel of the West Rail on 14 February 2007, has requested for enhancement of the ventilation system for longer railway tunnels and protection for firemen entering the scene of incidents and means of escape for the public. Hence, the following additional facilities will be incorporated in the SCL –

- an additional ventilation building and emergency access at the Ma Chai Hang Playground;
- an additional emergency access at Tam Kung Road;

- an additional emergency access at the open space next to the Wong Tai Sin Temple; and

- additional ventilation ducts for the SCL Lion Rock Tunnel and cross harbour tunnel, hence an increase in the cross-sectional area of both tunnels.

(d) Additional ground strengthening works near the Ma Tau Wai Station (cost to be increased by about $300 million)

To further safeguard the smooth construction of the station and the railway tunnel along Ma Tau Wai Road, ground treatment works will be carried out in the vicinity of Ma Tau Wai Road and Chatham Road North to strengthen the soil. The MTRCL has also proposed the setting up of a monitoring system to ensure no excessive ground water loss along Ma Tau Wai Road. This would enhance construction safety.

(e) Optimisation of alignment to avoid land acquisition for private buildings and reduce disruption to the operation of the East Rail Line (cost to be increased by about $800 million)

In the course of design, the MTRCL has adopted the following measures to optimise the alignment of the SCL –

- The configuration of the tunnels at both ends of the Exhibition Station has been revised to allow cross platform interchange with the future North Island Line at the Exhibition Station, leading to an increase in the depth of the Exhibition Station and the SCL tunnel;

- The new alignment of the North South Corridor that bifurcates from the existing East Rail Line north of Hung Hom has been revised and it will not be necessary to build a tunnel under the tracks of the existing East Rail Line, reducing the construction risk and the threat to train safety substantially. However, the section of the existing slope at the East Rail Line has to be upgraded and the affected facilities of the East Rail Line reprovisioned; and

- After optimization of the alignment at Ma Tau Wai Road, the alignment will only run pass the buildings, avoiding resumption of land and buildings concerned.

(f) Implementation of traffic diversions at Lung Cheung Road, Ma Tau Wai Road and Chatham Road (cost to be increased by about $600 million)

In the course of detailed design, the MTRCL has confirmed that the following large-scale traffic diversion measures would need to be implemented during the construction of the SCL –

- Traffic diversions will be implemented in phases at Nam Kok Road, Kowloon City Interchange, Olympic Garden Roundabout, Olympic Avenue, Sung Wong Toi Road and Pak Tai Street in Kowloon City to facilitate the construction of two pedestrian subways connecting the To Kwa Wan Station to Nam Kok Road and Pak Tai Street. The two subways are provided to tie in with the revised To Kwa Wan Station;

- Temporary traffic diversions will be implemented at Ma Tau Wai Road and slip roads nearby to facilitate the construction of the Ma Tau Wai Station. Variable message traffic sign and closed circuit televisions will be used to help support the complex temporary traffic control scheme;

- The Cheong Wan Road Flyover will be modified permanently for the construction of the railway tunnel connecting the SCL to the Hung Hom Station;

- Temporary flyovers will be constructed at Chatham Road North to divert traffic on its existing seven lanes in phases for the construction of the cut-and-cover tunnels of the "North South Corridor" and the "East West Corridor". The existing flyover and pedestrian subways will be demolished and reprovisioned to suit the works; and

- Traffic diversion along Lung Cheung Road will be implemented in phases for the construction of the interchange passenger corridor between the SCL Diamond Hill Station and the existing Diamond Hill Station of Kwun Tong Line located underneath Lung Cheung Road.

Panel on Transport
Subcommittee on Matters Relating to Railways

Supplementary Information in respect of Funding Application for the Main Works of the Shatin to Central Link

This document lists out all the supplementary information provided by the Government in respect of the Shatin to Central Link (SCL) upon requests by members of the Subcommittee on Matters Relating to Railways in the meetings held on 2, 23 and 30 March 2012.

(I) SCL Project Management Cost

Scope of Project Management Cost

2. According to the service concession approach, the Government will fund the SCL project and we plan to entrust the project to the MTR Corporation Limited (MTRCL) for construction. The Government will follow the established entrustment arrangement, pay for the actual construction cost which is ascertained through proper tendering procedures. To implement the project, the MTRCL, being the project entrustee, will provide services on project management and construction supervision. The Government will pay the MTRCL for their expenses in providing the said services as project management cost (PMC)

3. PMC is mainly for meeting the salaries of staff employed for the project. During the construction stage, the SCL project, similar to other public works projects, requires huge inputs from a large number of professional and technical resident site staff, working together with other dedicated management and supporting teams, to discharge the responsibilities of site supervision, technical assessment, design implementation, contract management and community liaison. This not only ensures that the works will be completed in accordance with the required standards and in a timely manner, but also maintains close communication with the public during construction so that we can take care of their concerns.

Detailed Analysis of PMC of SCL

(A) Scale and complexity of the works

4. The SCL is a 17-kilometre railway line with ten stations, of which six are interchanging stations. A majority part of the SCL will go through a number of developed urban districts which are densely populated. The project is enormous in scale. With regard to the construction works, the SCL will entail stations and railway tunnels to be built in some densely populated old districts. Besides, it is necessary to build a railway tunnel at the seabed of the Victoria Harbour. Coupled with the need to

connect with a number of existing railway lines, the operation of which must not be disrupted by the construction, the works involved are extremely complicated. Furthermore, to facilitate the construction of the SCL, we need to temporarily close some trunk roads section by section, and to proceed with tens of works items on reprovisioning/improvement of existing facilities affected by the SCL. All the aforementioned reasons make the SCL project much more complicated than other railway projects in terms of project management and construction supervision, thus requiring more detailed planning. In this connection, we require more experienced professional and technical staff to take up project management and supervision work.

5. In addition, the construction period of the SCL project will last for ten years. Whilst the advance works have commenced in 2011, the last part of the project, namely the section between Hung Hom and Admiralty, will not come into operation until 2020. During construction, there will be about 100 works and consultancy contracts to be managed and supervised (see Annex 1 for breakdowns). The works will straddle across more than ten districts. The ten-year construction period will require a huge amount of manpower input, with a peak lasting for five years between 2013 and 2017. Taking all these into consideration, we have to deploy a suitable number of supervision and management staff so as to effectively deal with the project requirements in both quality and programme.

(B) Method of estimation of PMC

6. In estimating the total amount of PMC, the independent consultant did not simply derive the amount based on a certain percentage of the construction cost. Instead, the independent consultant assessed the required need of manpower resources and related expenses. The independent consultant, based on the substantially completed detailed design of the SCL project, studied in detail the nature, scale and complexity of the works as well as the required construction period. He then looked into the need for the MTRCL on risk management, technical demands, professional support and human resources in managing and supervising the whole project. The independent consultant had assessed in detail the total number and grades of staff required for site supervision, management of some 100 contracts, and supporting activities (such as community liaison work) during the ten-year construction period. With the number and grades of staff, the independent consultant estimated the overall expenses on salaries and other related expenditures. The independent consultant also made reference to the related information of other railway projects in analysing and assessing the PMC of the SCL project.

(C) Estimation of resources

7. After the thorough assessment undertaken by the independent consultant, the total PMC of the SCL project (including advance works and main works) is estimated at $6,097.2 million (at September 2011 prices). This is equivalent to 10.5% of the construction cost and contingencies of the works entrusted to the MTRCL. The detailed breakdown of PMC are as follows:

Table 1

Items of staff deployment according to functions	**Percentage (approximate)**
Construction supervision	80%
Contract management and supports	15%
Other supports	5%

8. It is estimated that the item requiring the most manpower resources relates to site supervision and management. It shares almost 80% of the total manpower resources and requires about 1 000 personnel during the peak period of construction. All these staff are specifically deployed for implementing the SCL project, majority of them are to be stationed on site. As mentioned above, the SCL project is enormous in scale. It comprises not only construction of railways, stations and pedestrian linkage facilities, but also tens of reprovisioning and improvement works items. Throughout the process, measures regarding road closures and tree management will be required in various districts. All these works involve more than 300 working spots (for distribution, see Annex 2)

9. The SCL project is very complicated by nature, involving tunneling works, railway station construction, building services installation, railway works, system works, etc. It involves many types of works, requiring different kinds of professionals such as civil engineers, structural engineers, geotechnical engineers, geologists, architects, surveyors, building services engineers, environmental specialists, electrical and mechanical engineers, system engineers as well as professionals on railway works and other related professional and technical personnel (detailed breakdown in Annex 3). Apart from supervising works to achieve quality that meets statutory and professional standards/requirements and assessing impacts of construction options on nearby areas and residents, project management staff are also required to monitor progress of works, propose and implement effective measures to ensure work quality, timely completion and minimum impact on the community. In addition, they are required to study various technical proposals in implementing the design; and assess the risk of these proposals before selecting the most viable one. Also, they are required to monitor the impact on environment, ensuring that the works fulfill the requirements stipulated in the environmental permits and the relevant environmental protection ordinances.

10. About 15% of the required manpower resources is dedicated to contract management and providing support on contractual matters (such as procurement and cost control). As mentioned above, during the construction phase of the SCL project, there will be about 100 works and consultancy contracts. These contracts will cover various civil engineering works, electrical and mechanical works, building services, procurement of trains and facilities, and related works and consultancy contracts. The interface between contracts needs much coordination effort. Taking into account the whole ten-year construction period, the management of all these contracts will require huge professional and technical inputs to handle matters like procurement, contract management, contractual claims, etc. It is estimated that, at peak level, 180 staff are required.

11. The remaining 5% of manpower resources serves as supporting teams. The SCL project will cover the districts under Sha Tin, Wong Tai Sin, Kowloon City, Yau Tsim Mong, Eastern, Wanchai and Central and Western District Councils. Also, works sites will be set up in other districts. Upon commencement of works, the MTRCL is required to set up community liaison groups in the districts concerned to enhance communication with local communities and the media. This is to facilitate delivery of updated messages in line with progress of works as well as reception of public views and concerns. This will ensure the impacts on the local communities could be kept to a minimum. At peak level, the SCL project will require about 60 staff for performing these duties.

12. To conclude, it is anticipated that at the peak level there will be more than 1200 dedicated staff members deployed daily to manage, supervise and support the implementation of the SCL project. Throughout the ten-year construction period, on average there will be 800 staff members deployed for the project each day. They are mainly professional or technical staff. When the construction activities approach the peak level, there will be construction works concurrently in tens of busy locations spreading across Sha Tin, Tai Wai, Chuk Yuen, Wong Tai Sin, Tsz Wan Shan, Diamond Hill, Kai Tak, Kowloon City, To Kwa Wan, Ho Man Tin, Hung Hom, Wanchai and Admiralty. To ensure quality of works and meeting the programme, sufficient manpower resources are necessary to manage, supervise, coordinate and drive ahead such a mega project which is complicated in nature and requires works to be implemented in many different busy areas. In view of these, the independent consultant considers that the current estimate of PMC reasonable.

Impact of Reducing PMC

13. The proposed PMC is based on the independent consultant's assessment after studying thoroughly the detailed design of the whole project and assessing carefully the manpower resources requirement for the supervision and management of the project. The independent consultant estimated the total PMC for the whole project (including the advance works and main works) at $6,097.2 million (at September 2011 prices), which represents 10.5% of the total construction cost and contingencies for the works entrusted to the MTRCL. There is an opinion that the PMC should be reduced to a level of 7.5%.

14. We have elaborated in detail in the preceding paragraphs the different types and natures of works involved in the SCL project, thus the amount of manpower resources required for discharging the duties and requirements. The independent consultant has completed the detailed assessment on the needs of manpower resources. During the assessment process, the MTRCL agreed to the independent consultant's view regarding streamlining of some manpower input. The independent consultant therefore considers that the current level of 10.5% reasonable. If the current PMC level is further reduced from the level of 10.5% to 7.5%, it means a reduction of nearly 30% of the manpower resources. This will seriously affect the quality of works supervision and works progress. Regarding the suggested reduction of PMC level to 7.5%, we have consulted the independent consultant's advice. Taking the several years with peak work load as an example, if the number of staff for work supervision is reduced by 30%, i.e. from 1 000 staff trimmed down to 700 staff, it will create substantial pressure on these staff as they will be facing at least tens of works spots on site every day, including those items having higher risks (for example, tunnelling works at old districts, underwater laying of railway tunnel, etc). Inadequate supervision cannot guarantee quality of work, safe construction or timely completion of the works.

15. If we reduce the manpower resources on contract management and related supports by 30%, the work on contract procurement, contract management and cost control will be affected. It may even lead to problems in handling contractual matters in a timely manner, thus creating potential risk to the cost of the works. Similarly, if we choose to reduce the supporting staff, the liaison work with locals will be affected and this may not meet the aspiration of the public.

16. In light of the above, the independent consultant considers that reduction of manpower resources by 30% will affect the intensity and quality of supervision, and therefore will have an impact on works quality, site safety, cost control and works programme.

17. As individual large-scale project has its own needs, difficulties, requirements and scale, it is not feasible to apply a fixed percentage of the construction cost for determining the PMC. To ascertain whether the amount of PMC is reasonable, we have to assess the scale of the project, the degree of complexity, the potential risks, stakeholders' requirement, etc in the first place, then prepare a plan on manpower resources. After going through these steps, we will be able to accurately assess the PMC and its proportion against the cost of construction. The current level of PMC for the SCL project is determined by going through this process, together with an assessment conducted by an independent consultant before deriving at the ratio of 10.5%.

How to reduce the PMC from 16.5% to 10.5%

18. Before the Rail Merger, railway projects were all implemented by using the ownership approach. There was no precedent case on entrusting the main railway works of a Government-funded railway project to railway corporations. Therefore, all the railway works entrusted by the Government to the two railway corporations before the Rail Merger were limited to the essential public infrastructure works (EPIW), such as construction of pedestrian footbridges or subways connecting with railway stations, public transport interchanges and road works in the vicinity of railway stations. The rate of project management cost (PMC) payable by the Government to the two railway corporations were generally calculated on the basis of 16.5% of the construction cost of the works.

19. After the Rail Merger, four railway projects have commenced construction. They are the West Island Line, the Hong Kong section of the Guangzhou – Shenzhen - Hong Kong Express Rail Link, the South Island Line (East) and the Kwun Tong Line Extension. For these four projects, the Government had commissioned independent consultants to assess the project estimates including the PMC. Based upon the scale, characteristics and complexity of the projects concerned, the consultants estimated the manpower resources required which were then used to calculate the PMC required for the projects. The assessment indicated that the rates of PMC for these four projects ranged between 7.4% and 12.4% of the estimated construction cost. While the PMC rates for these projects are lower than the previously adopted rate of 16.5% as a result of economies of scale, the consultants' assessments on the PMC indicated that the manpower resources required for individual project were related to the characteristics and complexity of the project concerned. It is inappropriate to strictly adhere to a pre-set rate to calculate the PMC required for the project.

20. In the discussions with the MTR Corporation Limited (MTRCL) on the PMC of the SCL, we have requested the MTRCL to explore in great depth the scope of reducing the PMC without compromising supervision quality and management standard, having regard to the characteristics and scale of the project including considerations on the contractual planning and deployment of manpower resources. We have also requested the MTRCL to submit a manpower resources plan for the SCL in the light of this principle and with due consideration for streamlining the supervision hierarchy and cost control processes so that the rate of PMC can be compressed to below 16.5%.

21. After many rounds of discussion, the MTRCL put forward a manpower resources proposal with a PMC amounting to $6,612.2 million (at September 2011 prices). Comparing against the estimated construction cost of the whole project, this manpower resources proposal pitched at a PMC rate of 11.4%. This proposal was submitted to the independent consultant for scrutiny.

22. The independent consultant had carefully studied the detailed design of the SCL project and completed the assessment on the MTRCL's PMC proposal with due consideration given to technical requirements, complexity of works, construction risks and constraints, demand of manpower resources, etc. Reference was also made to the manpower and resource of other railway projects in the assessment process.

23. After the assessment, the independent consultant recommended to further streamline the supervision and management hierarchy of the SCL project. With such streamlining process, the PMC could be reduced by a total of $515 million. The PMC would be reduced to $6,097.2 million (at September 2011 prices) for the ten-year construction period of the SCL. This amount represents about 10.5% of the overall construction cost of the SCL project. The independent consultant considered such PMC level reasonable and recommended it to the Government. The PMC, after the independent consultant's assessment, was reduced by 7.8% in comparison with the original proposal of $6,612.2 million submitted by the MTRCL. Table 2 shows the details of the reduction.

Table 2

Item	**Reduction in cost of manpower resources in comparison with MTRCL's original proposal**	
	Amount ($ million)	**Percentage reduction**
Works under the "East West Corridor"	62	1.0%
Works under the "North South Corridor"	359.2	5.4%
Contract Management and Support	93.8	1.4%
Total	515	7.8%

24. There is an opinion that it would be more appropriate to introduce a sliding scale for determining the PMC, i.e. the higher the construction cost, the lower the PMC rate. As each large-scale project has its own needs, difficulties, requirements and scale, it is not feasible to apply a fixed percentage of the construction cost for determining the PMC. In order to derive a reasonable level of PMC, we have to assess the scale of the project, the degree of complexity, the potential risks, stakeholders' requirement, etc in the first place, then prepare a plan on manpower resources. After going through these steps, we will be able to accurately assess the PMC required. The assessed PMC rate for the SCL project is only presentational so that the public may compare the level of PMC for different projects. It should be noted that throughout the entire process of assessing the amount of PMC, the rate was not used as a basis of assessment. The PMC we are now applying for is a fixed sum. It will not fluctuate with the actual construction cost unless there are significant changes to the works.

(II) Calculation of Concession Payment and Treatment of Non-fare Revenue of the SCL

25. In March 2008, the Executive Council decided to adopt the service concession approach to finance the SCL project. Under this approach, the Government will fund the construction of the SCL and the related infrastructures under the public works projects and will ultimately own the railway. Upon the completion of the SCL, the Government will vest the SCL to the Kowloon Canton Railway Corporation (KCRC) such that the MTRCL will be granted a service concession to operate the SCL for a period of 50 years. During the 50-year service concession period, the MTRCL has to give concession payments to the KCRC. Under this arrangement, the KCRC retains the ownership of the SCL. Upon the expiry or termination of the service concession agreement, the MTRCL has to hand over the SCL to the KCRC.

26. According to the operation agreement between the two railway corporations, the revenue from the SCL will include fare revenue and non-fare revenue (which includes revenue from kiosk rental, advertising and display activities etc.). The concession payment payable by the MTRCL is based on the total revenue generated from the SCL, which is the difference in the total revenues of the entire railway network with and without the commissioning of the SCL.

27. According to the principles stipulated in the operation agreement, the profits from the SCL shall be calculated in a net present value basis, which equals to the net present values of the operating revenue less the operation cost and asset replacement cost of the related railway payable by the MTRCL. 90% of the profits from the SCL, in net present value term, shall be payable by the MTRCL to the KCRC, while the remaining 10% is regarded as the management fee to the MTRCL during the operation period of the SCL. Based on the mechanism of the operating agreement, the SCL service concession fee payable by the MTRCL is based on the 9:1 ratio regardless the fare or non-fare revenue.

28. The SCL concession payment is the receivable by the KCRC during the 50-year concession period. The actual amount of the concession payment depends on the actual patronage, fare levels and non-fare revenue during the 50-year operation period. The current estimate on the total concession payment received in 50 years is based on a host of assumptions, including population growth and distribution, asset maintenance and replacement cost, labour cost, inflation, fare and non-fare revenue throughout the operation period. These assumptions are volatile and dependent on the actual socio-economic environment. The actual revenue will be affected by the factors mentioned above, as the service concession period will last for 50 years. Based on the latest planning assumptions, the 9:1 ratio and the calculation mechanism for concession payment in the current service concession agreement, we have arrived at a rough estimation on the concession payment. During the 50-year operation period, the amount of concession payment payable by the MTRCL to the KCRC is about $88 billion (in money-of-the day prices).

(III) Planning Parameters for Topside Development above SCL Railway Stations

29. The proposed SCL will have new railway stations or expanded existing railway stations at Hin Keng, Diamond Hill, Kai Tak, To Kwa Wan, Ma Tau Wai, Ho Man Tin, Hung Hom, Wan Chai North and Admiralty. Since the SCL alignment passes through developed areas, a number of the proposed railway stations or expansion of stations are beneath existing roads or developments. At Ho Man Tin Station, the MTRCL has been authorized to develop the topside development of the station together with the Kwun Tong Line Extension under the rail plus property model. Among the SCL stations, the railway stations in Diamond Hill, Kai Tak, To Kwa Wan will have the potential for topside development, but the exact development purposes need to take into consideration the overall planning of the areas concerned.

30. Since the SCL will be implemented under the concession approach, the lands above these stations can be used for different forms of property development. These lands are owned by the Government and they are not part of the SCL railway project. The MTRCL will be commissioned to design, construct and operate the SCL but will not be granted the right to develop these lands. The associated development planning parameters of these lands are shown in Table 3 below -

Table 3

	Railway Station	**Development Planning Parameters**
1.	Diamond Hill	The station is part of the area zoned "Comprehensive Development Area" (CDA) in the approved "Tsz Wan Shan, Diamond Hill and San Po Kong Outline Zoning Plan No. S/K11/25", within the former Tai Hom Village. Apart from the underground part for the SCL railway station, the land has been planned for CDA purposes, including housing, commercial facilities, schools and other government agencies, organizations or community facilities. The Planning Department is reviewing the land use and development intensity of this CDA site with a view to determining an appropriate development plan. Among one of the initial planning options, one of them is a cultural corridor to connect the origin of Kai Tak River and the nearby cultural tourism spots. Part of the site may be used as low rise development. The Government will consult the relevant District Council and the local community to seek views on the development plan.
2.	Kai Tak	The station is within the Kai Tak Development Area. The site above the station is zoned "Other Specified Uses". It has a plot ratio of 0.5 and will be developed into a two-storey development. We have taken the planned development in Kai Tak into account in the detailed design of the SCL. The design of the station has already allowed for the planned development above.
3.	To Kwa Wan	The station is also within the Kai Tak Development Area. The land above the station is zoned "commercial" with a plot ratio of 4.5, allowing development to some 12-storey tall commercial buildings. This has been duly considered in the detailed design of the SCL.

(IV) Impact of SCL on Existing Railways

Impact on Carrying Capacity of the East Rail Line after Commissioning of SCL

31. The East Rail Line (EAL) is one of the busiest rail lines in the railway network of Hong Kong. The section between Tai Wai and Kowloon Tong is the busiest section of the EAL in the mornings, as the EAL and Ma On Shan Line passengers heading for the urban area have to travel through this section. As revealed from the latest statistics, the highest utilization rates of the EAL south and north of Tai Wai Station are about 68% and 52% respectively.

32. Upon commissioning, the SCL will be a new railway between the New Territories and urban area. It is anticipated that about 23% of the passengers (i.e. about 74 000 passenger daily) travelling from the New Territories to Kowloon (including the EAL and Ma On Shan Line) will use the East West Corridor for Kowloon East and Hong Kong East. It will divert the passenger flow on the EAL thus relieving the peak loading of Tai Wai to Kowloon Tong section during the morning peak.

33. Currently, trains run at a frequency of about 3 minutes at the EAL during peak hours. Upon commissioning of the SCL, the MTRCL will increase the train frequency to meet the demand. The train frequency will be increased to about 2 minutes. Although 9-car trains will be used instead of the existing 12-car trains, the overall capacity of the rail line will be increased. Currently, there are 20 trains an hour running at a frequency of 3 minutes, meaning an overall capacity of the rail line at 240 cars per hour. If 9-car trains are used, the train frequency will be increased to 27 trains in an hour, representing an overall capacity of 243 cars an hour. Therefore, the overall capacity of the rail line will not be reduced. Instead, the total train capacity will be increased by 12 000 passengers per day.

34. The diversion mentioned above will free up the line capacity by about 74 000 passengers per day. Together with the increase in daily capacity by 12 000 passengers due to the increased train frequency in 2020, this is equivalent to about 9% of the overall capacity of the 9-car train arrangement to be used in the SCL. The increase in capacity is sufficient to meet the projected population growth, which is estimated at 1.5% to 1.8% per annum before 2021, along the EAL and Ma On Shan Line and the anticipated cross-boundary passenger growth (estimated at 6 000 passengers per day).

35. As mentioned above, the congestion in the section south of Tai Wai Station of the EAL during peak hours will be relieved by the diversion brought about by the SCL. For the section north of Tai Wai Station, there is room to accommodate the passenger growth as the current utilization rate stands at around 52% only. However, Members have concern on the medium to long term passenger growth for this section, particularly the section between Tai Po Market and Tai Wai. According to the statistics (see Table 4), the maximum flow for this section is about 39 500 passengers per hour in 2011. This is equivalent to a utilization rate of about 52%. Based on an annual growth rate of 1.5%, the utilization rate will reach 59% upon the commissioning of the SCL in 2020. The utilization rate will rise to about 68% in 2030.

Table 4

Year	**Patronage of the busiest section north of Tai Wai during morning peak (southbound) (hourly flow)**	**Utilization rate**
2011	39 500 passengers	52% (based on 12-car trains)
2020 (Commissioning of the entire SCL)	45 000 passengers (Forecast)	59% (based on 9-car trains)
2030	52 000 passengers (Forecast)	68% (based on 9-car trains)

36. Depending on the actual circumstances, there is still room in the new signalling system of the EAL to provide a further 10% increase in capacity. Together with the passenger diversion mentioned above and the 9% of the passenger flow freed up by the increase in train frequency (a total of 86 000 passengers), both sections of the EAL at south and north of Tai Wai Station will be able to cope with the demand arising from the future population growth and increase in cross boundary demand. The MTRCL is committed to deploying more trains as necessary to meet passenger demands.

37. For the non-peak hours, the EAL is now running at a train frequency of about 4 minutes. As mentioned above, the train frequency would be increased, if necessary, to meet the patronage growth.

38. The MTRCL will closely monitor the situation and ensure the capacity of the EAL will meet the future demand.

Assessment of Passenger Flow in the East Rail Line

39. Some considered that the annual growth rate of 1.5% adopted to project the patronage growth of the East Rail Line after the operation of the SCL seems to be on the low side. Such projection may not match the future demand arising from the developments along the East Rail Line and the growth of cross boundary patronage.

40. In making a long term patronage forecast for a railway line, it is international common practice to adopt the "4-stage transport model". The estimation under this model will take into account different factors and forecasts including population and employment figures as well as the socio-economical parameters, the social and economic integration between Hong Kong and the Mainland, distribution of transport facilities, travelers, commuting habits, choice of different routes and interchanging arrangements. Through detailed assessment, a reasonable long term projection could then be derived. In making a patronage projection for the East Rail Line after the operation of the SCL, we have adopted the "4-stage transport model" as well.

41. In the past ten years, the busiest section of the East Rail Line recorded an average patronage growth of about 1%. In this regard, it is an optimistic estimation for the Government to adopt an annual growth rate of 1.5% for long term projection of patronage growth in the East Rail Line. In fact, the annual growth rate of 1.5% comprises a compound rate of growth. It represents a total growth of 14% in ten years' time and 32% in 20 years' time (Table 5). Such a long term growth is apparently on the high side for a mature railway with relatively stable developments along the route.

Table 5

Year	**Patronage of the busiest section north of Tai Wai during morning peak (southbound) (hourly flow)**	**Percentage growth comparing with 2011 patronage**
2011	39 500 passenger trips	-
2020 (commissioning of the SCL)	45 000 passenger trips (Forecast)	About 14%
2030	52 000 passenger trips (Forecast)	About 32%

Impact on Tsuen Wan Line prior to the Commissioning of the SCL Hung Hom to Admiralty Section

42. The SCL is the second railway corridor that connects Shatin with Kowloon, and also a railway bypass between Kowloon East and Kowloon West. It will effectively relieve the congestion on the existing railway network (such as the Tai Wai – Kowloon Tong section of the EAL).

43. At present, the Admiralty – Tsim Sha Tsui section of the Tsuen Wan Line is heavily used. In particular during the peak period, passengers may have to wait for more than a train before they are able to broad the train. Now, trains are running at a frequency of about 2 minutes and 8 seconds at the Tsuen Wan Line during peak hours. The MTRCL has increased its train fleet size through its recent procurement for new trains. After their delivery to Hong Kong from 2011 in phases, these new trains will be ready for service after testing. The MTRCL will deploy more trains to the Tsuen Wan Line strengthening the service there. This will help relieve the congestion during the morning and evening peak hours as well as some of the non-peak hours. This will also effectively relieve the current congestion of the Admiralty station.

44. As there is still room in the existing signalling system of the Tsuen Wan Line to accommodate a higher train frequency thus increasing the capacity by more than 10%, the growing passenger demand at the Tsim Sha Tsui – Admiralty section from now to 2020 could be met. The MTRCL will closely monitor the passenger growth at the Tsuen Wan Line and increase train frequency to meet the demand of passengers.

45. Regarding the congestion at the platforms of the Admiralty station, we have incorporated expansion for the Admiralty station in the South Island Line (East) (SIL(E)) and the SCL advance works projects. The expanded Admiralty station is at such a scale that can cope with the long term passenger growth and the interchange demands upon the commissioning of the SIL(E) and the SCL. Upon the completion of the works at the Admiralty station in 2015, the waiting areas of the existing platforms for the Tsuen Wan Line and Island Line will also be increased, improving the waiting environment for passengers and satisfying the future needs.

Utilization of the Tai Wai Station

46. The SCL Tai Wai to Hung Hom section is an extension of the Ma On Shan Line from Tai Wai station to Diamond Hill, Kai Tak, To Kwa Wan, Kowloon City, Ho Man Tin of Kowloon East and Hung Hom. Upon the commissioning of the SCL, we estimate that about 23% (74 000 passengers per day) southbound passengers from the New Territories (including the EAL and Ma On Shan Line) will change to the SCL for Kowloon East and Hong Kong Island. This will help relieve the loading of the southbound passengers of the EAL during peak hours, in particular relieving the bottleneck at the Tai Wai – Kowloon Tong section of the EAL.

47. From the perspective of the Ma On Shan Line alone, upon the commissioning of the SCL, some passengers from Ma On Shan going to Kowloon East or Hong Kong Island may choose to board the SCL trains for their destinations rather than interchanging at the Tai Wai station. We estimate that about 30% (6 000 passengers per hour) of the southbound passengers of the Ma On Shan Line will ride on the SCL for the urban area during peak hours. This will help relieve the passenger loading of the EAL. From the perspective of the EAL, some EAL passengers for Kowloon East will interchange to the SCL at the Tai Wai station after the commissioning of the SCL. It will further relieve the loading of the EAL. However, we estimate that the total interchange passenger flow at the Tai Wai station will be increased by about 25%.

48. Although the total interchange passenger flow at the Tai Wai station will increase after the commissioning of the SCL, the interchange facilities at the Tai Wai station are sufficient to accommodate the demand of passengers in view of the passenger diversion after the opening of the SCL. At present, passengers to and from the urban area using the Ma On Shan Line have to change to the EAL at the Tai Wai station which is the terminus of the Ma On Shan Line. During the morning peak hours, a large number of passengers from the Ma On Shan Line change to the EAL for the urban area. This passenger interchange flow during the morning peak hours is a single flow towards the EAL southbound platform, thus resulting in a high utilization of that platform. After the opening of the SCL, while there will be an overall increase in the total interchange passenger volume, the passenger flow to the EAL for the urban area will reduce. The passenger flow will no longer be a single flow concentrating at the southbound platform of the EAL. A significant number of the EAL passengers will change to the southbound platform of the SCL. As mentioned above, the SCL helps divert EAL passengers to and from Kowloon East and Hong Kong Island, thereby relieving the congestion in the train compartments of the EAL during peak hours. The waiting time of interchange passengers for the EAL at the Tai Wai station will also be reduced. This would substantially improve the congestion of the southbound platform of the EAL at the Tai Wai station during peak hours. Therefore, the interchange facilities at the Tai Wai Station will be sufficient for accommodating the demand of passengers upon the commissioning of SCL.

Seating Layout in Train Compartments of Hong Kong Railways

49. Mass transit system not only provides safe, reliable, convenient and speedy service, but also carries a large number of passengers to help reduce road traffic and exhaust emissions. In 2011, the railway lines (light rail transit not included) in Hong Kong on average handled over 4 million passenger trips per day. The railway service shares about 37% of the local market on public transport, performing the role as the backbone of the transportation system in Hong Kong.

50. To make better use of mass transit system, railway lines (in particular urban lines) are provided with more stations and more frequent train services for the passengers' convenience. Especially during rush hours, railway lines provide reliable and speedy service to take care of a huge number of people rushing to work and school. At the moment, for the most congested section of the railway system, such as the Island Line, the Tsuen Wan Line and the East Rail Line, each rail handles a patronage as high as 50 000 in the busiest hour of the day. To take care of such a big volume of passenger flow, the MTRCL has to arrange very frequent train service for the passengers. Currently, the most frequent train service is at an interval of about 2 minutes to meet the passenger demand. In fact, internationally, it is uncommon for the peak demand of railways to exceed 50 000 passengers. For example, in Paris, its busiest line, route no. 1, has a capacity of about 33 000 per hour. In Singapore, its railway has a maximum capacity of about 40 000 per hour. Some metro lines in Tokyo, like Tozai, Yurakucho and Chiyoda, have a peak patronage exceeding 50 000 per hour. The train frequency for these railway lines at rush hours is also at about 2 minutes, which is comparable with that of the Hong Kong railways.

51. At present, the train compartments of the urban railway lines in Hong Kong adopt the side-bench configuration for seating arrangement (like the design in the Island Line). This is to allow space to accommodate a large volume of passengers, and make it more convenient for passengers to get on/off the train. To increase the number of seats inside train compartments, it may have to switch to the row configuration for seating arrangement (like the design in the inter-city service in the East Rail Line). Comparing with the row configuration, side-bench configuration allows greater capacity for carrying passengers and facilitates more effective passenger movement. This is more suitable for handling the current situation in which the patronage exceeds 50 000 per hour during the peak period. As constrained by the limited platform length that can be constructed in congested urban areas, urban railway lines in Hong Kong in general operate a 8-car train configuration. With the given platform length, the possibility of adding additional cars is very low. In addition, to maintain a safe distance between trains, the room for increasing train frequency during rush hours is limited as the trains are already running at an interval of 2 minutes. If we switch to the row configuration from the current side-bench seating configuration, it may experience difficulties in handling the peak patronage of over 50 000 per hour.

52. Furthermore, the number of doors at each train compartment will affect the provision of seats. In fact, the number of train doors and distribution of seats within train compartments are among the factors that contribute to how frequent that the trains can operate. In general, sub-urban railway lines (such as the Kowloon-Canton Railway prior to electrification) and intercity lines (such as the existing East Rail Line inter-city service) provide less frequent services and serve longer journeys. The distance between stations is longer and passengers will stay in the train for a longer period of time. The patronage in general is not very high. In this regard, each train compartment may have fewer doors to provide more space for seats to be arranged in rows. However, the situation for urban lines is very different. Worldwide, urban lines have the common characteristics of high patronage, short stay of passengers, frequent train service and short distance between stations. In order to provide frequent train service at rush hours, the dwell time for trains needs to be shortened. To meet this requirement, urban lines usually have more doors which are distributed evenly, together with the side-bench seating arrangement, to allow more circulation areas for passengers so that the train frequency can be increased to as close as 2 minutes. As a result, many countries adopt side-bench configuration for seat arrangement in their busy urban railway lines.

53. Hong Kong railways are no exception. In the 1980s, the East Rail Line still adopted the 3-door configuration. Afterwards, because of the growing passenger demand, the 3-door configuration could not meet the requirement for boarding/alighting movement of passengers. Thus, the design switched to the 5-door configuration. At the moment, the MTRCL adopts the 5-door configuration for all its trains. Besides, in the recent two to three years, to address the special needs of wheelchair and baby stroller users, the MTRCL re-configured the train compartments to allow for multi-purpose areas for these passengers. After various trials, the MTRCL has made effort to provide as many seats as possible in the train compartments while balancing the different needs of passengers. At present, Hong Kong railways offer 45 to 50 seats in each train compartment. This is comparable with those recently built railway lines in other places worldwide serving similar level of patronage. For example, the number of seats offered in Hong Kong railways is similar to that in Singapore, Tokyo, Beijing and Shanghai.

(V) Park and Ride Arrangement

54. The Park & Ride (P&R) scheme aims to provide incentives to motorists living in remote areas to drive to and park at carparks near railway stations where they could board the trains heading towards their destinations rather than driving direct to and from the urban areas. This helps reduce both the road traffic and the demand for urban parking spaces. It is also in line with the overall transport policy of using railways as the backbone of our transport system. At present, the P&R scheme has been implemented at the MTR stations near the urban fringe, both entrances of the Cross Harbour Tunnel, connecting to the airport and cross-boundary services, including the Sheung Shui station, Kam Sheung Road station, Kowloon station, Hong Kong station and Hung Hom station. Concessionary parking fares are offered by the

MTRCL and carpark operators to attract motorists to use their P&R facilities and interchange services. From the perspective of reducing traffic loading and environmental protection, we do not encourage people living in the urban area to drive to the vicinity of railway stations for interchanging with railways.

55. The alignment of the SCL passes through densely populated urban areas and the stations are strategically located in areas where the pedestrian flows are heavy in order to serve more people. The entrances and exits of the stations as well as the pedestrian links are designed to allow pedestrians to walk to the stations conveniently. For residential developments or offices located more than 500 metres away from railway stations, we will carefully plan to provide short distance feeder services to facilitate people to make use of public transport to interchange with the SCL.

56. Among the ten stations along the SCL, Tai Wai station and Hin Keng station are located outside the urban areas. Diamond Hill station is near the entrance of the Tate's Cain Tunnel. Only these three SCL stations have the potential need for the P&R service. Operationally, implementation of the P&R scheme does not necessarily mean the need to provide designated parking facilities. Existing parking facilities near railway stations can well serve the purpose. Ample parking spaces are available in the existing public carparks near these three stations. Upon the commissioning of the SCL, the MTRCL will closely monitor the mode of interchange for passengers and conduct timely studies of the provision of P&R services to facilitate passengers to make use of the railway service.

(VI) Installation of Facilities in SCL for Passengers to Listen to Radio Broadcasting

57. We and the MTRCL aim to offer quality services to passengers. This is borne in mind when devising the services to be provided at SCL stations. We understand that passengers want to listen to radio broadcasting when travelling with railways, the MTRCL has all along been studying its feasibility.

58. The MTRCL and the related service operators commenced testing of digital broadcasting in the railway network in March last year. Test results are not satisfactory. The digital broadcast signal can only be received at the station concourse, the signal receiving level at locations away from the signal source at the concourse (e.g. platform) are far from satisfactory. No signals can be received inside railway tunnels.

59. As regards the FM broadcasting system, apart from the technical problems relating to signal reception within the MTR network which is yet to be resolved, complex planning will also be required for the allocation of frequency as different frequencies are adopted in different districts of Hong Kong. A new

frequency may even have to be dedicated to the MTR network to avoid interferences to terrestrial broadcasting signals, otherwise, MTR passengers will have to keep re-tuning the radio channels when travelling in different districts.

60. The MTRCL will continue to work with the broadcasting service operators to further test and study the feasibility of installation of FM and digital broadcasting system in the railway network. If technically stable broadcast signals can be provided in railway stations and trains, the MTRCL will actively cope with the installation of radio broadcasting system in the SCL to serve passengers.

(VII) Estimated Cost of Art Work in SCL Stations

61. We very much agree that SCL stations need to strengthen artistic and cultural elements. The design theme of SCL stations will primarily showcase the history, culture and life characteristics of the district concerned. For instance, the preliminary design for the artworks at the Ma Tau Wai station will show a comparison of the traditional Chinese tenement buildings with the new developments and changes in the district. As Kai Tak is the former site of the old airport, the preliminary design for the artworks at the Kai Tak station will reflect Hong Kong people's collective memories of the Kai Tak Airport. The history of Sung Wong Toi will be a main theme for the artworks at the To Kwa Wan station.

62. The MTRCL has begun the artistic design work of SCL stations, which includes the following three aspects -

(a) to allow participation of the community, to organize district activities and to strengthen links with the district, to collect the views of the district, to fusion the cultural characteristics into the design of stations;

(b) to hold an open competition to capture design. On one hand, this will encourage creativity and promote the development of community art; on the other hand, we can select suitable design from the entries as part of the design of SCL stations;

(c) to contact with local arts organizations, to discuss the artistic design concept of SCL stations and to explore the possibility of joint work to further improve participation of local artists.

According to the preliminary assessment made by the MTRCL, the station artistic design work and artistic furnishings are expected to cost about $41 million (at September 2011 prices). As the design theme of SCL stations is still in its infancy, we will have a specific budget cost only after the entire artistic design concept is set out.

(VIII) Provision of Toilet Facilities in the SCL

63. The MTRCL will provide public toilet facilities in the proposed SCL railway stations for use of passengers.

64. The MTRCL appreciates the passengers' need on public toilet facilities in railway stations, especially the number of female toilet facilities. Unless limited by site constraints, the MTRCL will follow the latest provisions in the Building Regulations in regard to the proportion of male and female toilet facilities in arranging public toilet facilities in SCL stations, thereby improving the standard on the number of female toilet facilities.

(IX) Proposals raised by District Councils/Public and the Government's Response

65. Since mid 2008, Government and the MTRCL have launched an extensive consultation exercise for the SCL scheme. We consulted 11 District Councils along the SCL and attended more than 40 District Council meetings to brief them on the SCL project, report the project progress and solicit their views on the SCL. In addition, we provided with the public a wide range of information and organized district consultation activities through various channels. These include launching of a website; distributing pamphlets, leaflets, fact sheets and communications; arranging site visits, roving exhibitions, public consultation meetings and school talks etc so as to brief and collect views from the local organizations and residents. All these enable us to improve the railway scheme.

66. In our communication with the District Councils, we listened to the views of the Councils and the concerns of the public on the project. We have also endeavored, where possible, to adopt the views put forward by the public to optimize the SCL scheme so as to entertain their requests and meet their expectations. The optimization include amendments to the railway tunnel alignment to reduce the extent of strata resumption, provision of pedestrian connection facilities, reprovisioning of recreational areas, reducing the size of temporary works area and cancellation of the stabling sidings at Diamond Hill, etc so as to respond to the public concerns and requests. In the two gazette amendment exercises made in July and November last year, we have incorporated a series of responses to the public's requests. No objection to the amendments was received from the public. This shows that the amendments made by us can meet the requirements of the public.

67. We have accepted tens of views of the District Councils and local communities including cancellation of the stabling sidings in Diamond Hill, reduction/ cancellation of various works areas in Sha Tin, To Kwa Wan, Wong Tai Sin and Kai Tak and works not supported by the public, providing a station at Hin Keng and construction of pedestrian walkway systems and public transport interchange in various districts, accepting the views of the communities in reprovisioning of recreational and sports areas in Wanchai, Admiralty, Sha Tin, To Kwa Wan and Wong Tai Sin, and, where practicable, reduction of strata resumption. These items are listed in Annex 4.

68. Although we have tried our best to respond to the concerns of the public by making adjustments to the SCL scheme, we could not adopt all suggestions raised by the public for the SCL. Such suggestions mainly include: the addition of Chuk Yuen Station as there are already three railway stations in Wong Tai Sin thus there is insufficient ground to support a new station; the request for pedestrian connections to Hin Keng Station and Tai Shui Hang Station due to the lack of justifications for providing a particular walkway system to adjacent areas and the nuisances brought about by road closures; the request to provide additional entrances to Ma Tau Wai Station should be further examined before reaching consensus; it is not possible to adjust the SCL alignment to further reduce the extent of strata resumption. These items are detailed in Annex 4.

(X) Affected Trees by Districts

69. Among the 7 144 trees covered by the main works of the SCL, 2 679 trees will be preserved, 678 trees will be transplanted and the remaining 3 787 trees will have to be felled. All trees to be transplanted or felled are not important trees. Meanwhile, about 3 860 trees will be planted and about 3.3 hectares of grassed area will be provided during the implementation of the SCL project as compensation. The distribution of trees by district within the project area is shown in Table 6 below.

Table 6

District	**Number of trees within the works area**	**Number of trees to be preserved**	**Number of trees to be transplanted**	**Number of trees to be felled**	**New trees/ grassed land to be provided**
New Territories	2 439	721	247	1 471	Distribution to be confirmed with relevant departments
Kowloon	3 462	1 652	193	1 617	
Hong Kong Island	1 243	306	238	699	
Total	7 144	2 679	678	3 787	3 860 trees and 3.3 hectares of grassed area to be provided

(XI) Timeframe for SCL Non-railway Works

70. We expect that construction of the non-railway works of the SCL will commence in mid-2012 progressively. The actual commencement dates for the various works items will have to tie in with the contractors' works programmes as well as the progress of the SCL railway works. As the tendering exercise has just begun, the actual commencement dates for the various works items are not available at this stage. Once the contractors' works programmes are known, we will consult the relevant District Councils and local communities with a view to minimising the impact of the works on the local communities. We will then be able to confirm the specific works schedule.

71. In a nutshell, among the various non-railway works items, we will require the contractors to complete those reprovisioning works involving demolition of existing facilities for the implementation of SCL railway works as early as possible. Examples include the reprovisioning of the Wan Chai Swimming Pool, Harbour Road Sports Centre and portions of the facilities of the Wan Chai Sports Ground. When the reprovisioning works are underway, the existing facilities will remain open to the public. They will only be demolished upon the new reprovisioned facilities start operation to ensure that members of the public who use these facilities will not be affected by the reprovisioning works. Early completion of these reprovisioning works will also ensure the timely implementation of the SCL project.

72. Regarding the use of open space in some districts for use as temporary work sites of the SCL project, we will commence reprovisioning of the affected recreation facilities as soon as the relevant works are completed to minimise the duration of such temporary use. We are aware of the public's expectation for temporary open space during the construction period. As most of the SCL works are carried out in areas with dense developments, it is not easy to identify suitable vacant sites for use as temporary open space. We are still discussing this issue with the local communities and will work with the relevant departments to provide temporary recreation facilities as far as possible. We will provide such facilities as soon as possible after suitable site has been identified.

73. In addition, the non-railway works also include construction of new complementary facilities to allow the public to use SCL services conveniently. For those facilities that are not directly connected to the station facilities of the SCL and are not under the constraints of the SCL works, we plan to complete the relevant works as soon as possible so that the public can enjoy the earlier use of these facilities. For facilities that are connected to SCL stations or are under the constraints of the SCL works, such as covered walkways or pedestrian subways and footbridges adjacent to SCL stations, the relevant works will be completed in tandem with the SCL works.

74. The works schedule for some non-railway works items to be completed earlier is set out at Annex 5. We expect that the remaining non-railway works items will be completed broadly in tandem with the SCL works.

Numbers of Works and Consultancy Contracts of SCL

Contracts Items	**Numbers**	**Total**
Civil Engineering		36
Station Construction	8	
Tunnel Construction	6	
Others	22	
Architectural Works		5
Mechanical and Electrical Works		30
Tunnels	6	
Signaling	4	
Rolling stock	5	
Others	15	
Consultancy Services (including environmental audit, implementation of the design-related items and others)		30
	Total	101

Distribution of the Works Locations during the SCL construction period

Works Locations	Distribution	Numbers
New Territories	Shatin	58
	Others	13
Kowloon	Wong Tai Sin	60
	Kowloon City	80
	Yau Tsim Mong	40
Hong Kong Island	Wan Chai	36
	Other	15
	Total	302

Estimate of manpower required during the SCL peak construction period

Site Supervision and Management			
1.	Engineers (Civil, Structural, Mechanical and Electrical, Building Services, Geotechnical, Geological, Environmental and other professions)		
	East West Corridor	439 persons	
	North South Corridor	179 persons	
	Total	618 persons	
2.	Architect		
	East West Corridor	28 persons	
	North South Corridor	12 persons	
	Total	40 persons	
3.	Site Supervision Technical Staff		
	East West Corridor	293 persons	
	North South Corridor	95 persons	
	Total	388 persons	
		Total	1046 persons
Contract Management and Supports			
1.	Contract Management	114 persons	
2.	Procurement and Cost Control	64 persons	
		Total	178 persons
Other Supporting Works (mainly community liaison officers)			
1.	New Territories	16 persons	
2.	Kowloon	40 persons	
3.	Hong Kong Island	12 persons	
		Total	68 persons
		Grand Total	1292 persons

Proposals raised by District Council and Local Community

(I) For requests made by the District Councils and the public in the past, the following are the items that we have accepted and will be implemented –

Work Site and Project Facilities

(a) Reduce the scale of supporting work sites in Kai Tak
(b) Reduce temporary works areas in Sha Tin District
(c) Cancel the proposed temporary barging point near Hoi Sham Park in To Kwa Wan
(d) Cancel the temporary concrete batching plant at Kai Tak
(e) Cancel temporary supporting works sites
  (i) at Sai Sha Road and Ma On Shan Road (the Green Home)
  (ii) at Mei Tin Road
(f) Reduce the size of the works area at Ma Chai Hang Recreation Ground
(g) Modify the design so as to reduce the footprint of the ventilation facilities and emergency access at Ma Chai Hang Recreation Ground

Station and Connecting Facilities

(h) Provide a station at Hin Keng Estate
(i) Construct the pedestrian walkway system near Tsz Wan Shan Estate Central Playground
(j) Construct the pedestrian facilities at Yuk Wah Street
(k) Provide connections to the existing pedestrian facilities in Fung Tak Estate

Stabling Sidings

(l) Cancel the stabling sidings in Diamond Hill

Strata Resumption

(m) Avoid strata resumption or reduce the extent of strata resumption, such as at Tropicana Gardens in Wong Tai Sin and the Hong Kong Academy for Performing Art

Sports and Recreation facilities

(n) Upgrade facilities of Wan Chai Swimming Pool
(o) Enhance the design, size and facilities of Harcourt Garden
(p) Build an indoor game hall in Ma Chai Hang Recreation Ground
(q) Reprovision of recreational areas at Ma Tau Wai
(r) Reprovision of recreational areas near the Hong Kong Island entrance of the Cross Harbour Tunnel
(s) Reprovison of Hin Tin Playground
(t) Supporting works for the artificial hill at the future Sung Wong Toi Park

Public Transport Interchange

(u) Construct a public transport interchange at Fung Tak

Conservation Facilities

(v) Conserve the old structures at the former Tai Hom Village – Pillbox and the former Royal Air Force Hangar

(II) The communities still have views on the following areas. The areas that we still cannot accept their views are –

Item	Reason
Additional Chuk Yuen Station	● At present, the service area of the three MTR stations in Wong Tai Sin District: Lok Fu, Wong Tai Sin and Diamond Hill cover most areas of the district and should be able to meet the current and future passenger demand. The service area of the proposed Chuk Yuen Station overlaps with these stations.
Station Entrances and Pedestrian Connection to Neighboring Area	
(a) Pedestrian connection facilities at Hin Keng	● In the design of such facilities, we must consider a number of objective factors including traffic conditions, existing pedestrian network and facilities, pedestrian usage, geographical environment, disturbances to residents brought about by construction works and technical feasibility, etc. Under the objective conditions that at-grade pedestrian walkway system is able to provide an appropriate environment for walking, safe and appropriate crossing facilities are available for the residents to reach the station entrances and the width of the crossing facilities can meet the future growth of pedestrian flow, we will recommend passengers making use of these at-grade facilities to walk to and from the entrances of railway station, which will make the best use of existing pedestrian facilities as well as ensure proper use of public resources. We will closely monitor the local traffic situation and review the arrangement when necessary. ● Some requested that a footbridge system across Che Kung Miu Road linking the proposed railway station in Hin Keng to the nearby Hin Keng Estate Shopping Centre be constructed. Che Kung Miu Road is not busy and making adjustments to the existing crossing facilities will be able to cope with the pedestrian flow between the railway station and nearby Hin Keng Estate after the opening of the

Item	Reason
	SCL. Hence, there are insufficient grounds to support the request.
(b) Addition of Entrance to Tai Shui Hang Station	● The design of Ma On Shan Line has reserved sufficient capacity for the operation of using eight-car trains. Hence there is no need to add station entrance. ● The proposed construction of entrance to Tai Shui Hang Station and Heng On Station will involve pedestrian connection facilities (such as footbridge or tunnel) across Ma On Shan Road and Sai Sha Road. The associated works will require temporary partial closure of traffic lane(s). They will greatly affect the traffic on Ma On Shan Road and Sai Sha Road and bring inconvenience to the community.
(c) Adding Pedestrian Subway from Ma Tau Wai Station to the east of To Kwa Wan Road	● We agree that the proposal will provide residents with convenience to cross the busy To Kwa Wan Road, reduce vehicle-pedestrian conflicts and enhance traffic safety. ● Since cut and cover method will be used for the construction of the SCL Ma Tau Wai Station, it is necessary to carry out the phased closure of traffic lanes of Ma Tau Wai Road and temporary traffic diversions. Construction of the connecting pedestrian subway to To Kwa Wan Road will require partial closure of To Kwa Wan Road, Kowloon City Road and nearby roads. If it is to be carried out at the same time with the construction of Ma Tau Wai Station, it will pose serious impact to the ground floor shops in the district, pedestrian access network nearby and the traffic. Hence, from engineering point of view, the construction of the connecting pedestrian subway to cross To Kwa Wan Road should not be carried out at the same time with the SCL Ma Tau Wai Station construction. Not until the SCL Ma Tau Wai Station works are completed, there is no scope to consider construction of these pedestrian facilities. ● After the commencement of the SCL construction, we will carry out further study on the pedestrian subway alignment options and consultation. This will facilitate consensus to be reached and will cope better with the long-term planning and development of To Kwa Wan.

Item	Reason
Reduce strata resumption	● The SCL is 17 km in length. The major portion of alignment runs across many developed areas. The current scheme completely avoids resumption of private land and buildings, but inevitably has to resume underground strata of some buildings. ● We have thoroughly examined the alignment to reduce the required strata resumption and such was reflected in the amendment exercise, but we still need to resume the underground strata of some buildings in Wong Tai Sin, Kowloon City and Hong Kong Island for tunnel construction purposes. ● We have explained to the concerned households that strata resumption will not affect the development potential of their lots. We have also provided them with information of strata resumption and briefed them of their rights under the Railways Ordinance, with a view of easing their concerns on the subject.

Table 1: Items expected to be completed before the commissioning of the Tai Wai to Hung Hom Section of the Shatin to Central Link

1.	Reprovisioning of portions of the facilities of the Wan Chai Sports Ground (temporary reprovisioning expected to be completed in 2015)
2.	Reprovisioning of the Wai Chai Swimming Pool and Harbour Road Sports Centre (expected to be completed in 2017)
3.	Proposed walkway systems at Fung Tak, Yuk Wah Street and near Tsz Wan Shan Estate Central Playground (expected to be completed in phases between 2014 and 2016)
4.	Preservation of the Old Pillbox and former Royal Airforce Hangar at the former Tai Hom Village (expected to be completed in 2013)
5.	Reprovisioning of the New Territories South Animal Management Centre and Sha Tin Plant Quarantine Station (expected to be completed in 2014)
6.	Improvements to the Police Sports and Recreation Club at Boundary Street (expected to be completed in 2015)
7.	Reprovisioning of portions of the Cheong Wan Road Flyover (expected to be completed in 2015)
8.	Proposed Hin Kwai Lane Playground and Shek Mun Playground (expected to be completed in 2013 and 2014)

Table 2: Reprovisioning/Strengthening works to be completed before commencement of tunnel and station works

(Actual schedule to be worked out upon consultation with District Councils and local communities after confirmation of contractors' works programmes)

9.	Foundation underpinning for flyovers
10.	Reprovisioning of culverts
11.	Underpinning for base columns of the podium of the Hong Kong Coliseum

61TR – Shatin to Central Link – construction of railway works – remaining works

Breakdown of the Estimated Land Resumption and Clearance Costs [Note 1]

			$ million
(I)	**Estimated Resumption Cost**		0.5
(II)	**Estimated Clearance Cost**		1.41
(a)	Ex-gratia allowance for crop and fruit trees compensation	0.36	
(b)	Ex-gratia allowance for farm structures and miscellaneous permanent improvements to farms	0.03	
(c)	Ex-gratia allowances for miscellaneous indigenous villager matters (e.g. Tun Fun ceremonies)	0.10	
(d)	Ex-gratia allowance for fishery undertakings	0.92	
(III)	**Compensation for Creation of Rights of Temporary Occupation of Land** [Note 2]		5.74
(IV)	**Contingency**		1.39
		Total	9.04
		Say	9.00

Notes

1. This is a provisional estimate based on current information available and subject to valid statutory claims being received.
2. Rights of temporary occupation will be created for about 8 774 m^2 of private land.