

For information

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

**Funding Application –
Protection Works for Shatin to Central Link
in Wan Chai Development Phase II**

PURPOSE

This paper informs Members of our proposal to upgrade to Category A part of **58TR** relating to the protection works for Shatin to Central Link (SCL) in Wan Chai Development Phase II (WDII).

THE SCL PROJECT AND PROTECTION WORKS

2. The SCL consists of two parts (alignment is at **Annex 1**) –
- (a) Tai Wai to Hung Hom Section: this is the extension of Ma On Shan Line from Tai Wai to Hung Hom, via Southeast Kowloon and connects to the West Rail Line. It will increase the Shatin-Kowloon rail capacity and provide railway service to the new developments in Southeast Kowloon; and
 - (b) Hung Hom to Admiralty Section: this is an extension of the existing East Rail Line from Hung Hom across the Harbour to Hong Kong Island. It can interchange with the Tai Wai to Hung Hom Section at Hung Hom. It will increase the cross-harbour rail capacity and enhance the connectivity between the New Territories and Hong Kong Island.
3. We have carried out the preliminary design in parallel with public consultation for the SCL since late 2008. The public has raised different views on certain parts of the SCL alignment and also some concerns on the design that will need further public consultation. We intend to complete the public consultation on these issues within this year with a view to gazetting the SCL project under the Railways Ordinance in 2011.
4. Meanwhile, we have to make the necessary preparation for the

implementation of the project in relation to the programme of other interfacing projects, and in particular, the WDII project which is currently under construction. We have to implement protection works for the SCL under the WDII project in order to facilitate the future construction works of the SCL, minimise disturbance to public and save time and cost for the SCL project.

5. The proposed protection works for the SCL under the WDII comprises two rows of diaphragm walls, each about 70-metre long, supporting a concrete slab in between, running underground alongside the Convention Avenue in Wan Chai (the Protection Works). Layout plan showing the location of the Protection Works is at **Annex 2**.

6. We have completed the detailed design and working drawings for the Protection Works. Subject to the approval of the Finance Committee, we plan to commence the construction works in August 2010 for completion by end 2011. The Protection Works will be executed under the contracts in the WDII project.

JUSTIFICATION

7. Reclamation works at the Hong Kong Convention and Exhibition Centre (HKCEC) water channel under the WDII project commenced in December 2009. Two cross-harbour fresh water mains for the water supply to the whole of Hong Kong Island and nine cooling water mains serving major buildings in the surrounding area, including the HKCEC, would be affected and reprovisioned under the WDII project. These water mains are very large – the fresh water mains being 1 metre in diameter and the largest cooling water main being 0.9 metre in diameter – and they will intersect with the planned SCL tunnels underground. According to the current programme, the reprovisioning of these water mains is expected to be completed in early 2012 and the water mains will come into operation prior to the construction of SCL tunnels at that location at a later stage.

8. In the design process, different methods for constructing the SCL tunnels in question have been thoroughly considered with a view to ensuring proper interface with the water mains. The method of using tunnel boring machine (TBM) is technically not feasible because of the existence of many piles along the tunnel alignment and the close spacing between the two SCL

tunnels. The only alternative is to use cut-and-cover method for constructing the SCL tunnels. This will require the water mains to be temporarily diverted as construction of that section of the SCL tunnels will commence after the water mains are reprovisioned under the WDII project.

9. However, the risk of disrupting the fresh water supply to the Hong Kong Island and the cooling water supply for air conditioning in the related major buildings is of major concern. It is not feasible to devise a construction scheme that can ensure the safe integrity of the affected water mains and at the same time keep the nuisance and traffic congestion to an acceptable level. These considerations render the future construction of the SCL tunnels using the cut and cover method at that location not feasible as well. Apart from the above, given the site constraints in the area, the water mains, even if it is going to be diverted, can only be diverted bit by bit and the SCL tunnels have to be constructed in small individual sections to tally with the water mains diversion. This would mean a delay of three years to the SCL construction programme.

10. To address the above problems, we propose to implement the Protection Works under the WDII project before the reprovisioning of water mains. The Protection Works comprise two rows of diaphragm walls about 70-metre long each with a top slab. Such arrangement will protect the feasibility of constructing the SCL tunnels at a later stage underneath the water mains and avoid creating risks to the operation of the vital cross-harbour fresh water mains and cooling water mains.

11. To summarise, we intend to implement the Protection Works under the WDII project which is currently under construction. This would have the following major benefits –

- (a) Protecting the feasibility of the future SCL tunnel construction which will be confined inside the Protection Works without the need of ground opening at that location, thereby minimising nuisance to the public;
- (b) Avoiding disruptions to the road works construction under the WDII and CWB projects;
- (c) Avoiding risk to the operation of the vital cross-harbour fresh water mains and cooling water mains;
- (d) Avoiding the need of traffic diversions required for the temporary water mains diversion work;

- (e) Avoiding abortive works and associated construction waste due to temporary water mains diversion; and
- (f) Saving cost for implementing the temporary water mains diversion work.

FINANCIAL IMPLICATIONS

12. We estimate the cost of the Protection Works to be \$152.6 million in money-of-the-day (MOD) prices, made up as follows –

		\$ million	
(a)	Protection Works		
	(i) Diaphragm walls and a top slab	116.0	
	(ii) Consultants' fees	16.6	
(b)	Contingencies	13.5	
	Sub-total	146.1	(in September 2009 prices)
(c)	Provision for price adjustment	6.5	
	Total	152.6	(in MOD prices)

13. We estimate that the proposed works will create about 95 jobs (23 for professional/technical staff and 72 for labourers) providing a total employment of 1 380 man-months.

PUBLIC CONSULTATION

14. Extensive public consultation has been carried out on the SCL project since May 2009 including consultation with relevant District Councils, staging roving exhibitions and holding individual meetings, public forums and briefings with the local communities and concerned parties. The public is generally positive and supportive of the SCL. We have submitted an information paper on the Protection Works to the Wan Chai District Council on 11 May 2010 and have not received any adverse comments from it.

ENVIRONMENTAL IMPLICATIONS

15. The Protection Works is not by itself a designated project under the Environmental Impact Assessment (EIA) Ordinance. An environmental review (ER) for the Protection Works covering noise, air and water quality impacts during construction and waste management issues has been conducted. The ER concluded that the Protection Works is relatively small in scale when compared with the overall WDII works and that the environmental acceptability conclusions of the WDII and CWB EIA report (December 2007) are still valid.

16. We will incorporate the environmental mitigation measures recommended in the ER report to control environmental impacts arising from construction of the Protection Works to within the established standards and guidelines. We have included a sum of \$0.2 million for the environmental monitoring and audit (EM&A) programme for the Protection Works.

17. We will also work out the waste management measures, including appropriate mitigation means to avoid, reduce, reuse and recycle inert construction waste. We estimate that the Protection Works will generate about 21 000 tonnes of construction waste in total. Of these, we will re-use about 19 170 tonnes (91.3%) of inert construction waste in the WDII project and deliver 1 800 tonnes (8.6%) of inert construction waste to public fill reception facilities for subsequent reuse. In addition, we will dispose of the remaining 30 tonnes (0.1%) of non-inert construction waste at landfills. The total cost for accommodating construction waste at public fill reception facilities and landfill sites is estimated to be \$52,350 for the Protection Works.

OTHER IMPLICATIONS

18. The Protection Works will not affect any heritage sites identified by the Antiquities and Monuments Office. The Works do not require any land acquisition and will not involve any tree removal or planting proposals.

WAY FORWARD

19. We intend to submit a funding application for the Protection Works to the Public Works Sub-committee and the Finance Committee of the

Legislative Council on 9 June 2010 and 2 July 2010 respectively. A copy of the draft Public Works Sub-committee paper is at **Annex 3**.

ADVICE SOUGHT

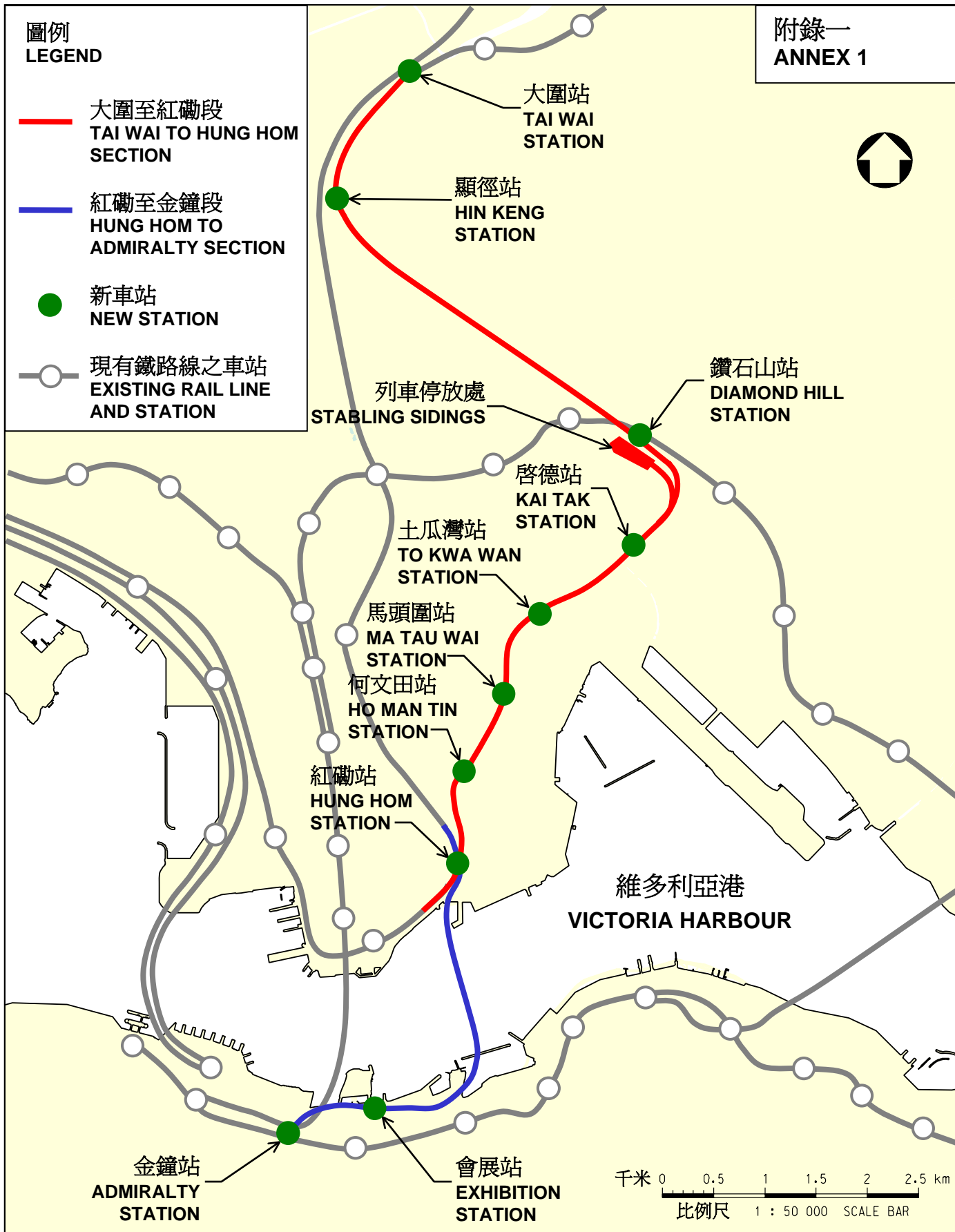
20. Members are invited to note the content of this paper.

Transport and Housing Bureau
May 2010

圖例
LEGEND

- 大圍至紅磡段
TAI WAI TO HUNG HOM
SECTION
- 紅磡至金鐘段
HUNG HOM TO
ADMIRALTY SECTION
- 新車站
NEW STATION
- 現有鐵路線之車站
EXISTING RAIL LINE
AND STATION

附錄一
ANNEX 1



圖則名稱 drawing title

擬建之沙田至中環線的走線
PROPOSED ALIGNMENT OF
THE SHATIN TO CENTRAL LINK

圖號 drawing no.

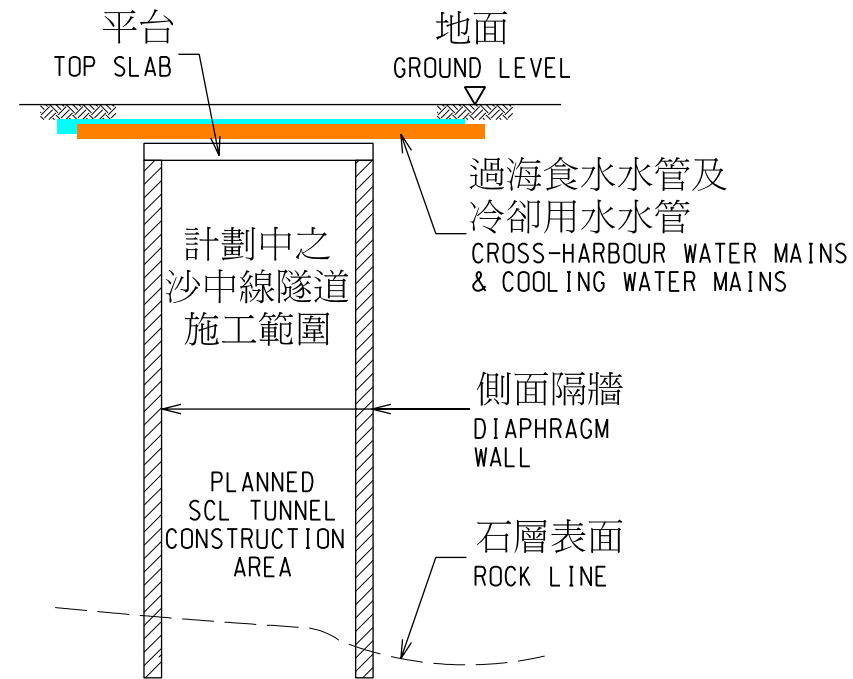
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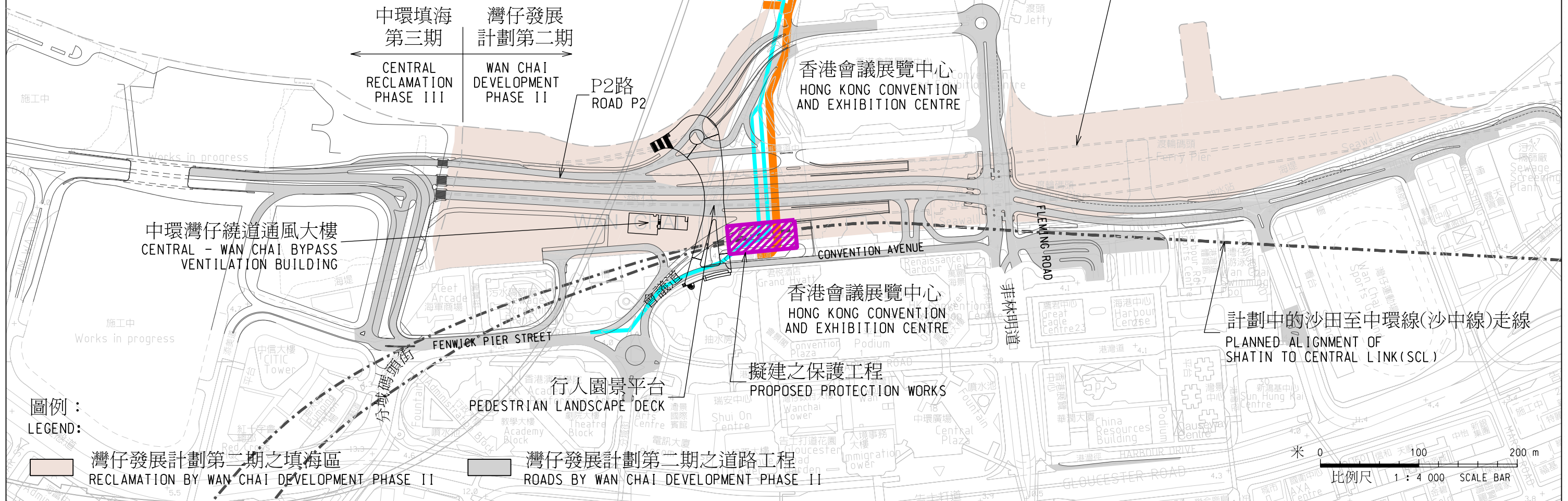
鐵路拓展處 RAILWAY DEVELOPMENT OFFICE



路政署
HIGHWAYS DEPARTMENT



擬建保護工程之切面圖
CROSS SECTION OF PROPOSED PROTECTION WORKS (N.T.S.)



圖例：
LEGEND:

灣仔發展計劃第二期之填海區
RECLAMATION BY WAN CHAI DEVELOPMENT PHASE II

灣仔發展計劃第二期之道路工程
ROADS BY WAN CHAI DEVELOPMENT PHASE II

圖則名稱 drawing title

工務計劃項目第58TR號
沙田至中環線 — 鐵路工程 — 灣仔發展計劃第二期內的保護工程

PWP ITEM NO. 58TR
SHATIN TO CENTRAL LINK - CONSTRUCTION OF RAILWAY WORKS - PROTECTION WORKS IN WAN CHAI DEVELOPMENT PHASE II

圖號 drawing no.

HRWSCL003-SK0191

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HIGHWAYS DEPARTMENT

DRAFT

**For discussion
on 9 June 2010**

PWSC(2010-11)XX

ITEM FOR PUBLIC WORKS SUBCOMMITTEE OF FINANCE COMMITTEE

HEAD 706 – HIGHWAYS

Transport – Railways

58TR – Shatin to Central Link – construction of railway works – protection works

Members are invited to recommend to Finance Committee –

- (a) the upgrading of part of **58TR** relating to “Shatin to Central Link – construction of railway works – protection works in Wan Chai Development Phase II” to Category A, at an estimated cost of \$152.6 million in money-of-the-day prices; and
- (b) the retention of the remainder of **58TR** in Category B.

PROBLEM

The Shatin to Central Link (SCL) tunnels will run underneath the reclamation under the Wai Chai Development Phase II (WDII) project, which is currently under construction. Under the WDII project, a number of cross-harbour water mains and cooling water mains will be reprovisioned and the new water mains will be laid over the future SCL tunnels. It is necessary to implement under the WDII project protection works to ensure the feasibility of constructing that section of the SCL tunnels in the future.

PROPOSAL

2. The Director of Highways, with the support of the Secretary for Transport and Housing, proposes to upgrade part of **58TR** to Category A at an estimated cost of \$152.6 million in money-of-the-day (MOD) prices for the construction of protection works for a section of the SCL tunnels that intersects with water mains to be reprovisioned under the WDII project.

PROJECT SCOPE AND NATURE

3. The part of the project **58TR** we now propose to upgrade to Category A is the protection works at the underground intersection of the future SCL tunnels and the water mains to be laid under the WDII project. The protection works comprises two rows of diaphragm walls, each about 70-metre long, supporting a concrete slab in between, running underground alongside the Convention Avenue in Wan Chai (the Protection Works).

4. We have completed the detailed design and working drawings for the Protection Works. Subject to the approval of the Finance Committee, we plan to commence the construction works in August 2010 for completion by end 2011. The Protection Works will be executed under the contracts in the WDII project.

5. The remainder of the project **58TR** mainly comprises protection works at the underground intersection of future SCL tunnel and the Central Wan Chai Bypass (CWB) tunnels at the Causeway Bay Typhoon Shelter. Funding for this part of the project will be sought to dovetail with the programme of the CWB project.

JUSTIFICATION

6. While public consultation for the SCL project is underway with a view to gazetting the SCL scheme under the Railway Ordinance in 2011, we are also drawing up the construction programme of the SCL project, taking into account, amongst other things, the latest programme of other interfacing projects, in particular the WDII project which is currently under construction. Implementing the Protection Works under the WDII project would help ensure the feasibility of constructing that section of the SCL tunnels in the future. The justifications are set out in detail in paragraphs 7 to 11 below.

7. Reclamation works at the Hong Kong Convention and Exhibition Centre (HKCEC) water channel under the WDII project commenced in December 2009. Two cross-harbour fresh water mains for the water supply to the whole of Hong Kong Island and nine cooling water mains serving major buildings in the

surrounding area, including the HKCEC, would be affected and reprovisioned under the WDII project. These water mains are very large – the fresh water mains being 1 metre in diameter and the largest cooling water main being 0.9 metre in diameter – and they will intersect with the planned SCL tunnels underground. According to the current programme, the reprovisioning of these water mains is expected to be completed in early 2012 and the new water mains will come into operation prior to the construction of SCL tunnels at that location at a later stage.

8. In the design process, different methods for constructing the SCL tunnel in question have been thoroughly considered with a view to ensuring proper interface with the water mains. The method of using tunnel boring machine (TBM) is technically not feasible because of the existence of many piles along the tunnel alignment and the close spacing between the two SCL tunnels. The only alternative is to use the cut-and-cover method for constructing the SCL tunnels. This will require the water mains to be temporarily diverted as construction of that section of the SCL tunnels will commence after the water mains are reprovisioned under the WDII project.

9. However, the risk of disrupting the fresh water supply to the Hong Kong Island and the cooling water supply for air conditioning in the related major buildings is of major concern. It is not feasible to devise a construction scheme that can ensure the safe integrity of the affected water mains and at the same time keep the nuisance and traffic congestion to an acceptable level. These considerations render the future construction of the SCL tunnels using cut and cover method at that location not feasible as well. Apart from the above, given the site constraints in the area, the water mains, even if is going to be diverted, can only be diverted bit by bit and the SCL tunnels have to be constructed in small individual sections to tally with the water mains diversion. This would mean a delay of three years to the SCL construction programme.

10. To address the above problems, we propose to implement the Protection Works under the WDII project before the reprovisioning of the water mains. The Protection Works comprise two rows of diaphragm walls of about 70-metre long each with a top slab. The new water mains will then be laid over the supporting top slab. Such arrangement will protect the feasibility of constructing the SCL tunnels at a later stage underneath the water mains and avoid creating risks to the operation of the vital cross-harbour fresh water mains and cooling water mains. Layout plan showing the location of the Protection Works is at **Enclosure 1**.

11. To summarise, we intend to implement the Protection Works under the WDII project which is currently under construction. This would have the following major benefits –

- (a) Protecting the feasibility of the future SCL tunnel construction which will be confined inside the Protection Works without the need of ground opening at that location, thereby minimising nuisance to the public;
- (b) Avoiding disruptions to the road works construction under the WDII and CWB projects;
- (c) Avoiding risk to the operation of the vital cross-harbour fresh water mains and cooling water mains;
- (d) Avoiding the need of traffic diversions required for the temporary water mains diversion work;
- (e) Avoiding abortive works and associated construction waste due to temporary water mains diversion; and
- (f) Saving cost for implementing the temporary water mains diversion work.

12. We shall extend the environmental monitoring and audit (EM&A) programme of the WDII project for implementing the Protection Works. The cost of such an extension of services is \$0.2 million (please refer to item (a)(ii)(b) of the cost estimates in paragraph 13 below).

FINANCIAL IMPLICATIONS

13. We estimate the cost of the Protection Works to be \$152.6 million in money-of-the-day (MOD) prices, (see paragraph 14 below), made up as follows –

	\$ million
(a) Protection Works	
(i) Diaphragm walls and a top slab	116.0
(a) Diaphragm walls	112.6
(b) Top slab	3.4
(ii) Consultants' fees for	16.6
(a) construction stage	2.5
(b) EM&A programme	0.2

		\$ million	
(c) resident site staff		13.9	
(b) Contingencies		13.5	
	Sub-total	146.1	(in September 2009 prices)
(c) Provision for price adjustment		6.5	
	Total	152.6	(in MOD prices)

A breakdown by man-months of the estimates for consultants' fees is at **Enclosure 2**.

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

Year	\$ million (September 2009)	Price adjustment factor	\$ million (MOD)
2010 – 2011	79.3	1.02700	81.4
2011 – 2012	<u>66.8</u>	<u>1.06551</u>	<u>71.2</u>
	146.1		152.6

15. The Protection Works of the railway works for the SCL will not give rise to any recurrent expenditure.

PUBLIC CONSULTATION

16. Extensive public consultation has been carried out on the SCL project since May 2009 including consultation with relevant District Councils, staging roving exhibitions and holding individual meetings, public forums and briefings with the local communities and concerned parties. The public is generally positive and supportive of the SCL. We have submitted an information paper on the Protection Works to the Wan Chai District Council on 11 May 2010 and have not received any adverse comments from it.

17. We shall consult the Subcommittee of Matters relating to Railways of the Panel on Transport, Legislative Council on 4 June 2010, and invite Members to note our proposal to part upgrade the project in June 2010 for funding the Protection Works.

ENVIRONMENTAL IMPLICATIONS

18. The Protection Works is not by itself a designated project under the Environmental Impact Assessment (EIA) Ordinance. An environmental review (ER) for the Protection Works covering noise, air and water quality impacts during construction and waste management issues has been conducted. The ER concluded that the Protection Works is relatively small in scale when compared with the overall WDII works and the environmental acceptability conclusions of the WDII and CWB EIA report (December 2007) are still valid.

19. During the construction stage, we will incorporate the environmental mitigation measures recommended in the ER report to control environmental impacts arising from construction of the Protection Works to within the established standards and guidelines. We have included a sum of \$0.2 million for the EM&A programme for the Protection Works.

20. During the planning and design stages, we have considered all the proposed works and construction sequences in the planning and design stages to reduce the generation of construction waste where possible. In addition, we will require the contractor to reuse inert construction waste (e.g. excavated materials) on site or in other suitable sites as far as possible, in order to minimize the disposal of inert construction waste to public fill reception facilities¹. We will encourage the contractor to maximize the use of recycled or recyclable inert construction waste, as well as the use of non-timber formwork to further minimize the generation of construction waste.

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

22. We estimate that the Protection Works will generate in total about 21 000 tonnes of construction waste. Of these, we will reuse about 19 170 tonnes (91.3%) of inert construction waste in the WDII project and deliver 1 800 tonnes (8.6%) of inert construction waste to public fill reception facilities for subsequent

¹ 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 reception facilities requires a licence issued by the Director of Civil Engineering and Development.

reuse. In addition, we will dispose of 30 tonnes (0.1%) of non-inert construction waste at landfills. The total cost for accommodating construction waste at public fill reception facilities and landfill sites is estimated to be \$52,350 for the Protection Works (based on a unit cost of \$27 per tonne for disposal at public fill reception facilities and \$125 per tonne² at landfills).

HERITAGE IMPLICATIONS

23. The Protection Works will not affect any heritage site, i.e. all declared monuments, proposed monuments, graded historic sites/buildings, sites of archaeological interests and Government historic sites identified by the Antiquities and Monuments Office.

LAND ACQUISITION

24. The Protection Works do not require any land acquisition.

BACKGROUND INFORMATION

— 25. The SCL consists of two parts (alignment is at **Enclosure 3**) –

- (a) Tai Wai to Hung Hom Section: this is the extension of Ma On Shan Line from Tai Wai to Hung Hom, via Southeast Kowloon and connects to the West Rail Line. It will increase the Shatin-Kowloon rail capacity and provide railway service to the new developments in Southeast Kowloon; and
- (b) Hung Hom to Admiralty Section: this is an extension of the existing East Rail Line from Hung Hom across the Harbour to Hong Kong Island. It can interchange with the Tai Wai to Hung Hom Section at Hung Hom. It will increase the cross-harbour rail capacity and enhance the connectivity between the New Territories and Hong Kong Island.

26. We have carried out the preliminary design in parallel with public consultation for the SCL since late 2008. The public has raised different views on certain parts of the SCL alignment and also some concerns on the design that will need further consultation. We intend to complete the public consultation on these issues within this year with a view to gazetting the SCL project under the Railways Ordinance in 2011.

² 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 m³), nor the cost to provide new landfills (which is likely to be more expensive) when the existing ones are filled.

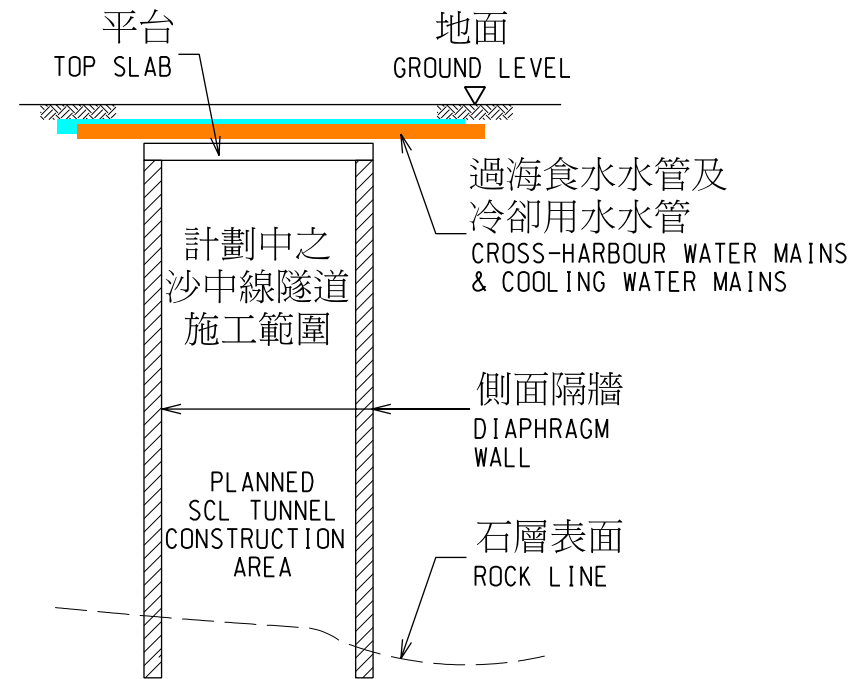
27. We upgraded **51TR** “Shatin to Central Link – design and site investigation” to Category A at an estimated cost of \$2,407.5 million in MOD prices in May 2008. We entrusted the design and site investigation works to MTR Corporation Limited and commenced the preliminary design in November 2008. We have substantially completed the preliminary design for the SCL project. The detailed design is in progress.

28. We upgrade **58TR** to Category B in October 2009.

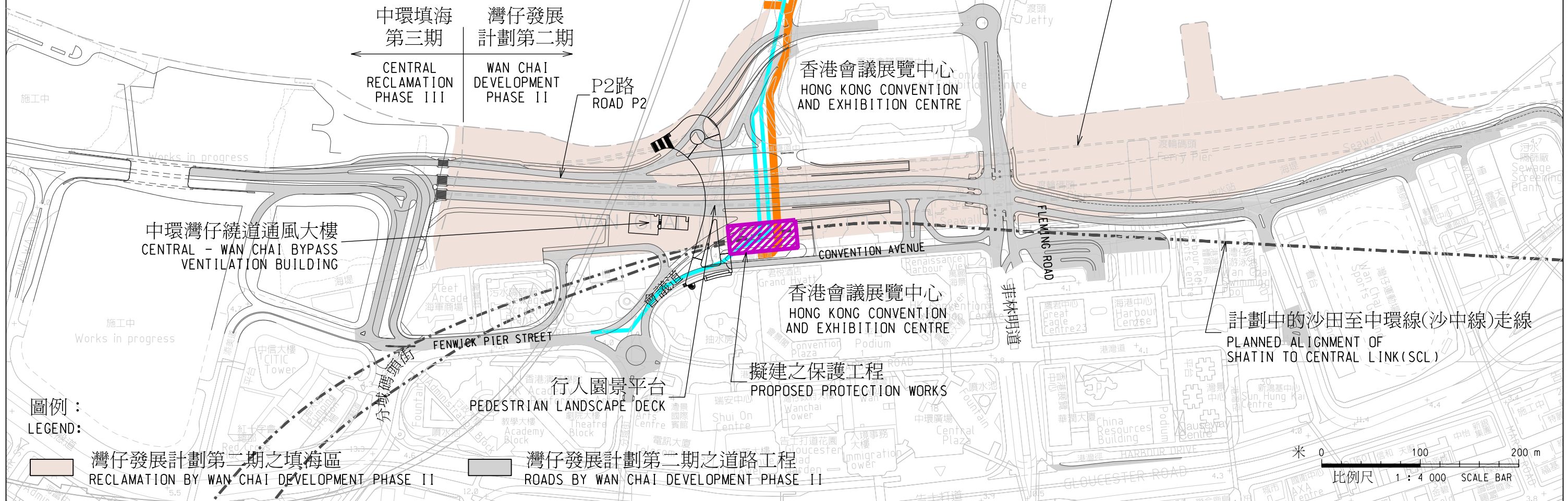
29. The proposed project will not involve any tree removal or planting proposals.

30. We estimate that the works in paragraph 3 will create about 95 jobs comprising 23 professional/technical staff and 72 labourers, providing a total employment of 1 380 man-months.

Transport and Housing Bureau
May 2010



擬建保護工程之切面圖
CROSS SECTION OF PROPOSED PROTECTION WORKS (N.T.S.)



圖則名稱 drawing title

工務計劃項目第58TR號
沙田至中環線 — 鐵路工程 — 灣仔發展計劃第二期內的保護工程

PWP ITEM NO. 58TR
SHATIN TO CENTRAL LINK - CONSTRUCTION OF RAILWAY WORKS - PROTECTION WORKS IN WAN CHAI DEVELOPMENT PHASE II

圖號 drawing no.

HRWSCL003-SK0196

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**58TR – Shatin to Central Link – construction of railway works
– protection works**

Breakdown of the estimates for consultants' fees for Protection Works in WDII

Consultants' staff costs		Estimated man- months	Average MPS* salary point	Multiplier (Note 1)	Estimated fee (\$ million)
(a) Consultants' fees for construction supervision and contract administration (Note 2)	Professional	--	--	--	1.6
	Technical	--	--	--	0.9
Sub-total					2.5
(b) Consultants' fees for EM&A programme	Professional	1	38	2.0	0.1
	Technical	2	14	2.0	0.1
Sub-total					0.2
(c) Resident site staff costs	Professional	70	38	1.6	6.4
	Technical	235	14	1.6	7.5
Sub-total					13.9
Comprising					
(i) Consultants' fees for management of resident site staff					0.3
(ii) Remuneration of resident site staff					13.6
Total					16.6

* MPS = Master Pay Scale

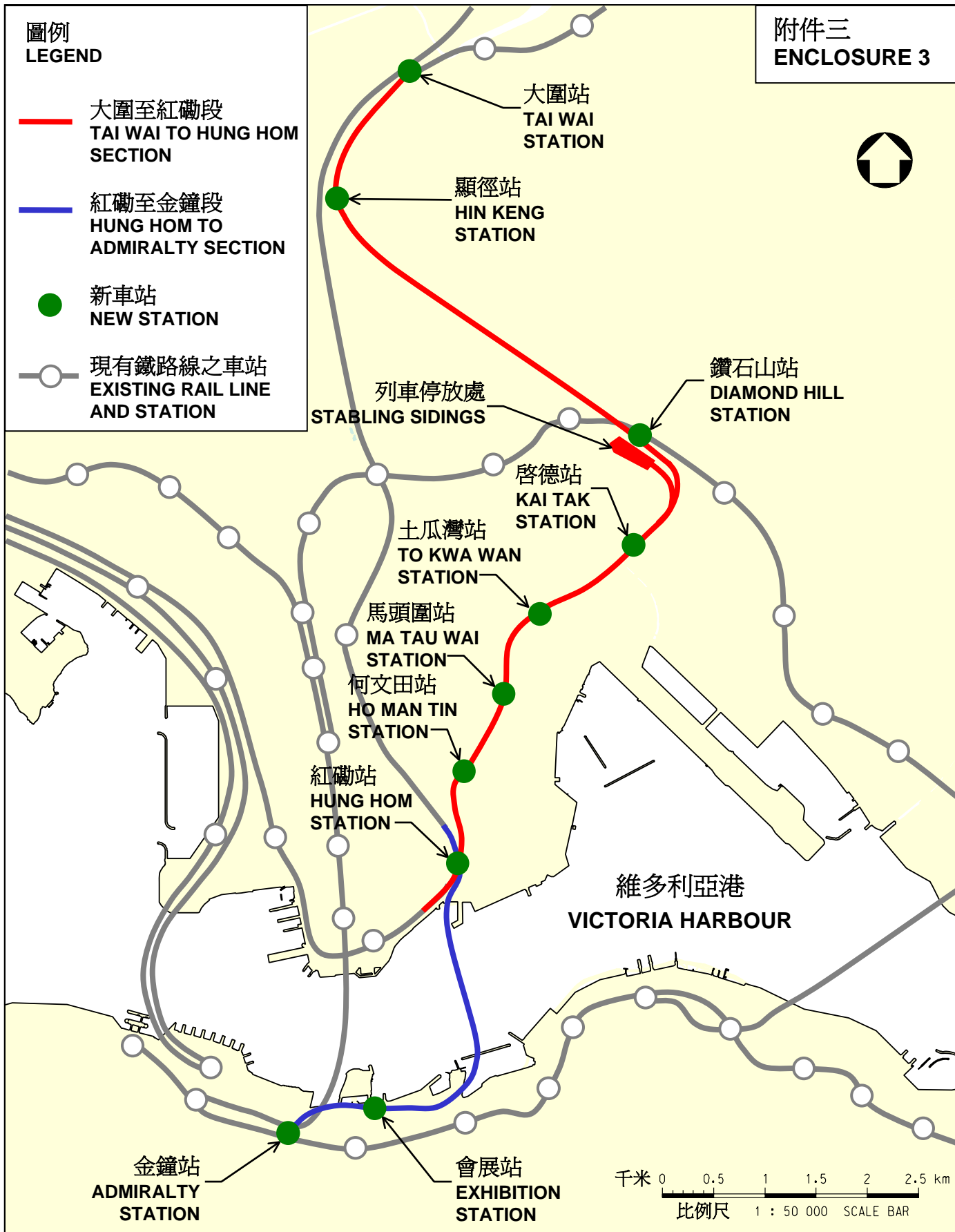
Notes

1. A multiplier of 2.0 is applied to the average MPS salary point to arrive at the full staff costs including the consultants' overheads and profits as the staff will be employed in the consultants' offices. A multiplier of 1.6 is applied to the average MPS salary point in the case of resident site staff supplied by the consultants. (As at now, MPS salary point 38 = \$57,280 per month and MPS salary point 14 = \$19,835 per month)
2. The consultants' fees for construction stage are estimated and will be controlled in accordance with the terms stipulated in Agreement No. CE 54/2001(CE) titled "Wan Chai Development Phase II – Design and Construction for Trunk Road Tunnel Option".

圖例
LEGEND

- 大圍至紅磡段
TAI WAI TO HUNG HOM
SECTION
- 紅磡至金鐘段
HUNG HOM TO
ADMIRALTY SECTION
- 新車站
NEW STATION
- 現有鐵路線之車站
EXISTING RAIL LINE
AND STATION

附件三
ENCLOSURE 3



圖則名稱 drawing title

擬建之沙田至中環線的走線
PROPOSED ALIGNMENT OF
THE SHATIN TO CENTRAL LINK

圖號 drawing no.

HRWSCL003-SK0197

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