

**For discussion
on 19 April 2013**

Legislative Council Panel on Transport

Tuen Mun - Chek Lap Kok Link – Construction Works

PURPOSE

This paper seeks Members' advice on the funding application¹ for the construction of Tuen Mun - Chek Lap Kok Link.

BACKGROUND

Tuen Mun - Chek Lap Kok Link (TM-CLKL)

2. In summary, TM-CLKL is divided into two (southern and northern) sections. Northern section is a road section of approximately 5.5 kilometres (km) long (including approximately 5 km of sub-sea tunnel) linking Tuen Mun Area 40 and the Hong Kong-Zhuhai-Macao-Bridge (HZMB) Hong Kong Boundary Crossing Facilities (HKBCF). Southern section is a road section of approximately 3.5 km long linking the HKBCF and the road network of North Lantau. The layout plan of the proposed project is enclosed at **Enclosure**.

3. The funding application² for the advance reclamation works for the southern landfall of the sub-sea tunnel section was approved by the Finance Committee of the LegCo in November 2011. The works are now being carried out together with the reclamation of the artificial island of HKBCF under the same contract as scheduled.

¹ We recommend upgrading part of PWP Item No. **825TH** (Tuen Mun - Chek Lap Kok Link and Tuen Mun Western Bypass) to Category A, namely "Tuen Mun - Chek Lap Kok Link – Construction Works".

² We upgraded part of **825TH** to Category A as "Tuen Mun - Chek Lap Kok Link – detailed design, site investigation and advance works" at an estimated cost of \$1,909.6 million in MOD prices.

4. The scope and nature of the project, together with the item proposed to be upgraded to Category A in this funding application are detailed as follows:-

Northern Connection (approximate 5.5 km long):

- (a) construction of a dual 2-lane sub-sea tunnel of approximately 5 km long linking Tuen Mun Area 40 and the HZMB HKBCF;
- (b) reclamation to form extra land of approximately 16.5 hectares (ha) at Tuen Mun Area 40 as the northern landfall of the TM-CLKL sub-sea tunnel³;
- (c) construction of a toll plaza of approximately 5.4 ha at Tuen Mun Area 40 (including 17 toll booths) and associated footbridge;
- (d) construction of associated approach roads including approximately 0.5 km of land viaducts and 230 metres (m) of vehicular underpass linking the TM-CLKL and the road network of Tuen Mun Area 40;
- (e) construction of approximately 1.3 km at-grade roads, administration building, ventilation buildings, and other ancillary buildings/facilities to serve the proposed road tunnel and toll plaza; and
- (f) re-provision of facilities for Customs and Excise Department and Fire Services Department at the northern landfall and construction of temporary pontoon.

Southern Connection (approximate 3.5 km long):

- (a) construction of a dual 2-lane sea viaduct of approximately 1.6 km long between the HZMB HKBCF and North Lantau;
- (b) construction of associated approach roads including approximately 1.9 km of land viaducts linking the sea viaduct and the North Lantau Highway (NLH) and the road network of HZMB HKBCF; and
- (c) modification and realignment of sections of Cheung Tung Road.

³ The southern landfall has already been included as advanced works under **846TH** “Tuen Mun - Chek Lap Kok Link – detailed design, site investigations and advance works”

Other Associated Works:

- (a) ancillary works including site formation, slope, natural terrain hazard mitigation, drainage, sewerage, water supplies, utilities, landscaping, electrical and mechanical (E&M) works, retaining walls, traffic and control surveillance system (TCSS); and
- (b) implementation of associated environmental protection works and mitigation measures.

STRATEGIC IMPORTANCE OF TM-CLKL

5. Upon the commissioning of TM-CLKL, it will demonstrate the following functions:-

- (a) Improvement of journey time and road capacity between NWNT and Lantau

The TM-CLKL will provide the most direct route between NWNT and Lantau, linking Tuen Mun, the HZMB, the Airport, North Lantau and Tung Chung. Upon commissioning, the new route will at most reduce the traveling distance and time between NWNT and Lantau by about 22 km and 20 minutes respectively, and also release certain capacity of some existing roads (e.g. Tuen Mun Road, Ting Kau Bridge, Lantau Link (LL) and NLH) to further improve the traffic condition.

- (b) Provision of an alternative route to the Airport

We need to construct an alternative route for the existing road corridor to the Hong Kong International Airport (HKIA). Currently, LL and NLH are the sole road corridor connecting the HKIA and North Lantau with the urban areas. If there is any traffic accident causing severe blockage of this road corridor, the Northern Connection of proposed TM-CLKL (from Tuen Mun to HKBCF and then HKIA) will be an alternative and emergency route of NLH to HKIA so as to help ensure the normal operation of HKIA. In June 2008, the landslide and flooding incident occurred at NLH blocked the route to HKIA. This incident also explains the

importance of constructing an alternative route to link HKIA and urban areas.

(c) Synergy with HZMB

The TM-CLKL is a strategic link connecting the HZMB with NWNT and North Lantau, which helps enhance the cross-boundary transportation. The TM-CLKL helps to improve the regional transport network of Hong Kong, Macao, Shenzhen and Zhuhai, and is important to the economic integration of Hong Kong and Pearl River Delta Region.

(d) Meeting the transportation demand between Lantau and NWNT

The TM-CLKL will help meet the rising transportation demand between Lantau and NWNT. Based on the latest forecast traffic flow, the projected volume to capacity (v/c) ratios⁴ of LL and NLH (Siu Ho Wan Section) during peak hours with and without TM-CLKL are shown in the following table:

Year/Road	2021	
	Forecast Volume/Capacity Ratio without TM – CLKL	Forecast Volume/Capacity Ratio with TM – CLKL
Lantau Link	0.90	0.77
North Lantau Highway (Siu Ho Wan Section)	0.81	0.68

⁴ Volume to capacity (v/c) ratio is an indicator which reflects the performance of a road. A v/c ratio equal to or less than 1.0 means that a road has sufficient capacity to cope with the volume of vehicular traffic under consideration and the resultant traffic will flow smoothly. A v/c ratio above 1.0 indicates the onset of congestion with traffic speeds deteriorating progressively.

6. If the Finance Committee approves the funding, we plan to commence the construction works within this year, for substantial completion of the Southern Connection by end of 2016 in tandem with the commissioning of HZMB and the completion of the Northern Connection by end of 2018 to satisfy the local traffic demand timely.

FINANCIAL IMPLICATIONS

7. We estimate the cost of this part of **825TH** to be \$44,798.4 million in MOD prices, with break-down as follows –

	\$ million
(a) Tunnels	16,171.5
(b) Viaducts	5,716.1
(i) sea viaduct of about 1.6 km long	3,692.1
(ii) land viaduct of about 2.4 km long	2,024.0
(c) Reclamation of about 16.5 ha at Tuen Mun Area 40	1,152.2
(d) At-grade roads	569.0
(e) Toll plaza	864.4
(f) Underpass connecting Lung Mun Road/Lung Fu Road roundabout	37.5
(g) Footbridge	89.8
(h) Site formation, slope works, retaining walls, utilities and natural terrain hazard mitigation measures	286.7
(i) Drainage and water works	468.2

	\$ million
(j) Structures and ventilation buildings	893.3
(k) E&M works	837.6
(l) TCSS	478.7
(m) Re-provisioning of Government facilities and berths	68.5
(n) Landscaping works	172.8
(o) Environmental mitigation measures including environmental monitoring and auditing	330.7
(p) Consultants' fees	224.9
(1) contract administration	90.5
(2) management of Resident Site Staff (RSS)	129.9
(3) Environmental Project Office (ENPO) and independent environmental checker services	4.5
(q) Remuneration of RSS	1,810.9
(r) Provision for Fire Services Department to establish a dedicated rescue team	30.7
(s) Electrical and Mechanical Services Trading Fund (EMSTF) charges	11.7
(t) Contingencies	3,021.5
Sub-total	<u>33,236.7</u> (in September

	\$ million	2012 prices)
(u) Provision for price adjustment	<u>11,561.7</u>	
	Total 44,798.4	(in MOD prices)
	<u> </u>	

PUBLIC CONSULTATIONS

8. On 23 November 2007, we consulted the LegCo Panel on Transport on the funding application for “TM-CLKL and Tuen Mun Western Bypass (TMWB) - investigation and preliminary design” and obtained its support. The Finance Committee approved the funding on 1 November 2008. Furthermore, on 26 October 2011, we consulted the LegCo Panel on Transport on the funding application for “TM-CLKL – detailed design, site investigation and advance works” and obtained its support. The Finance Committee approved the funding on 18 November 2011.

9. The Highways Department held a series of public engagements in 2008 for TM-CLKL, TMWB, HKBCF and Hong Kong Link Road (HKLR). The public engagements included the focus groups and workshops with various stakeholders. In 2009, we consulted the Islands District Council and Tuen Mun District Council on the proposed alignment of TM-CLKL and obtained their support.

10. In general, the public was supportive of the proposed project and urged for its early implementation. However, some residents in Tung Chung opined that the Southern Connection linking HKBCF and NLH should change from sea viaduct to tunnel. We had explained to the residents that the suggestion is infeasible⁵. Besides, we had relocated the northern landfall to the River Trade Terminal as far away from the Butterfly Beach as possible in response to some Tuen Mun residents’ concern over the close proximity of TM-CLKL to the beach.

⁵ If the Southern Connection of TM-CLKL (i.e. from Chek Lap Kok to North Lantau) is constructed in the form of tunnel, it would be necessary to increase the reclamation area at its ends (i.e. south of HKBCF and north of Tai Ho Wan) for provision of tunnel portals, construction of at-grade roads and protection of the tunnel structure. However, this would have impact on marine navigation and traffic, and also affect the environment and ecology at Tai Ho Wan.

11. We gazetted the draft Chek Lap Kok Outline Zoning Plan (OZP) No. S/I-CLK/11⁶ under the Town Planning Ordinance (Cap. 131) on 12 and 19 June 2009. We also gazetted the TM-CLKL road scheme and plans (covering both the road and reclamation works) on 21 and 28 August 2009 under the Roads (Works, Use and Compensation) Ordinance (Cap. 370). During the statutory period for objection, 789 representations on the draft Chek Lap Kok OZP and 313 objections to the road scheme were received. Most objectors expressed concern on the proposed works for their perceived negative impacts to Tung Chung residents, environment and ecology, and requested alternative solutions. Despite our efforts in resolving the objections, 285 objections to the road scheme still remain unresolved. In respect of the Chek Lap Kok OZP, after giving consideration to the valid representations under the Town Planning Ordinance on 13 November 2009, the Town Planning Board decided not to accept the representations under the Town Planning Ordinance.

12. On 18 October 2011, after considering the representations and unresolved objections, the presentations under the Town Planning Ordinance and the decision of the Town Planning Board, CE-in-C approved the amendment of the Chek Lap Kok OZP under the Town Planning Ordinance and authorized the road scheme of the project under the Roads (Works, Use and Compensation) Ordinance. The notices of authorization for the road scheme of the TM-CLKL and the Chek Lap Kok OZP were gazetted on 21 October 2011.

ENVIRONMENTAL IMPLICATIONS

13. The TM-CLKL project is a designated project under Schedule 2 of the Environmental Impact Assessment Ordinance (Cap. 499) (EIAO). The Director of Environmental Protection issued the Environmental Permit (EP) for the construction and operation of TM-CLKL on 4 November 2009.

⁶ The major amendments incorporated in the draft Chek Lap Kok OZP No. S/I-CLK/11 are mainly to incorporate the transport infrastructures and land use proposals on the proposed reclamation areas for the HZMB HKBCF, HZMB HKLR, and the Southern Landfall of TM-CLKL.

14. The EIA Report concluded that the environmental impact due to the proposed road scheme would be acceptable with the implementation of the recommended mitigation measures. We will implement the environmental mitigation measures, and environmental monitoring and audit programme as recommended in the approved EIA Report for the TM-CLKL project and comply with relevant conditions under the EP and other statutory requirements for environmental protection.

15. At the planning and design stages, we have considered measures to reduce the generation of construction waste wherever possible. In addition, we will require the contractor to reuse inert construction waste as far as possible, in order to minimize the disposal of inert construction waste at public fill reception facilities. At the construction stage, we will require the contractor to submit for approval a plan setting out the waste management measures.

16. We estimate that the project will generate in total about 8.243 million tonnes of construction waste. Of these, we will reuse about 1.93 million tonnes (23.4%) of inert construction waste on site and about 1.53 million tonnes (18.6%) of inert construction waste on other construction site(s). About 4.76 million tonnes (57.7%) of inert construction waste will be delivered to public fill reception facilities for subsequent reuse. The remaining about 0.023 million tonnes (0.3%) of non-inert construction waste will be disposed of at landfills. The total cost for accommodating construction waste at public fill reception facilities and landfill sites is estimated to be \$131.4 million for this project (based on an unit cost of \$27 per tonne for disposal at public fill reception facilities and \$125 per tonne at landfills.)

17. We estimate that the construction works will generate about an in-situ volume of 0.84 million cubic metres (m³) of marine mud. We will dispose of the dredged marine mud at respective designated disposal sites to be allocated by the Marine Fill Committee or other disposal sites to be agreed by the Marine Fill Committee and the Environmental Protection Department.

18. We set up the ENPO in March 2012 to oversee the cumulative impacts arising from the construction works of HKBCF and HKLR projects and other concurrent projects in the adjoining areas and to liaise closely with the mainland project teams for the HZMB Main Bridge. Upon the funding approval

for the TM-CLKL construction works, we shall instruct ENPO to oversee the TM-CLKL project as well.

19. We have included the costs of implementing the environmental mitigation measures, including an environmental monitoring and audit programme (\$330.7 millions) in the overall project estimate.

20. Of the 5 730 trees within the project boundary, 2 554 trees will be preserved. The proposed construction works will involve the removal of 3 176 trees within the project site, including 701 dead trees to be removed, 2 293 trees to be felled and 182 trees to be transplanted within the project boundary. We will incorporate planting proposals as part of the project, including about 3 858 trees and 1 200 000 shrubs, as well as 87 000 m² of grassed area.

HERITAGE IMPLICATIONS

21. The Project 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

22. We have reviewed the design of the Project to minimize the extent of land acquisition. We will resume about 6 227.7 m² of private land; and create easements and other permanent rights of about 6 155.5 m² and rights of temporary occupation of about 3 826.4 m² of private land. The project will also clear about 512 318.2 m² of Government land. 15 domestic structures and 144 non-domestic structures will be affected due to land resumption and clearance. Ex-gratia allowance will also be paid where appropriate. Under the established policy, ex-gratia allowance will be offered to fishermen affected as a result of the loss of their habitual fishing ground caused by the Project. Based on the aforesaid items, we estimate to charge the cost of land resumption and clearance estimated at \$7.86M to Head 701 – Land Acquisition.

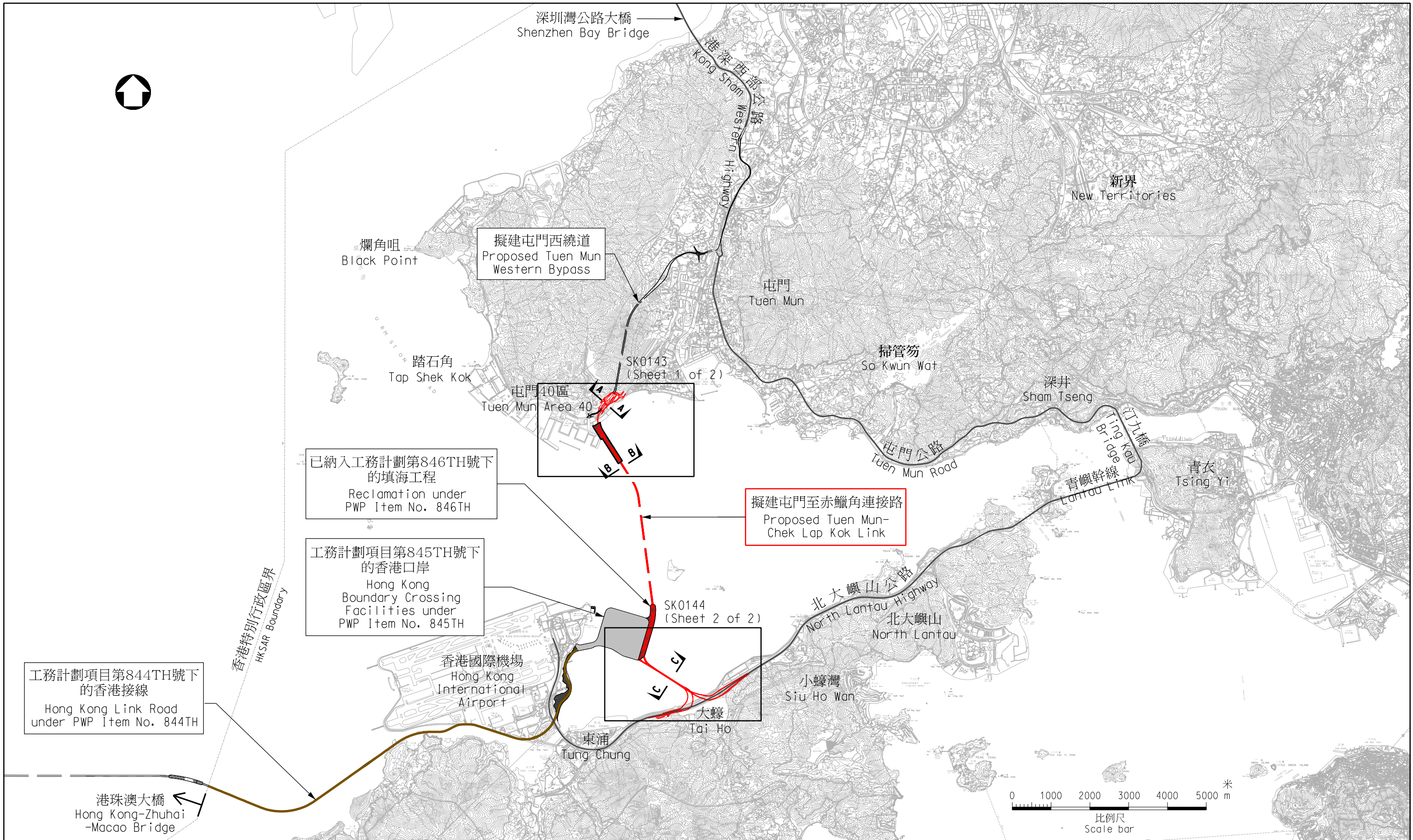
NEXT STEP

23. Subject to the support of the LegCo Panel on Transport, we will submit the proposal to PWSC on 8 May 2013. If the proposal is approved by PWSC, we will submit the funding proposal to the Finance Committee on 7 June 2013. If funding is approved, we will commence the construction of TM-CLKL within this year.

ADVICE SOUGHT

24. Members are invited to comment on and support the proposed funding application above.

Transport and Housing Bureau
April 2013



工務計劃項目第844TH號下的香港接線
Hong Kong Link Road under PWP Item No. 844TH

已納入工務計劃第846TH號下的填海工程
Reclamation under PWP Item No. 846TH

工務計劃項目第845TH號下的香港口岸
Hong Kong Boundary Crossing Facilities under PWP Item No. 845TH

擬建屯門西繞道
Proposed Tuen Mun Western Bypass

擬建屯門至赤鱗角連接路
Proposed Tuen Mun-Chek Lap Kok Link

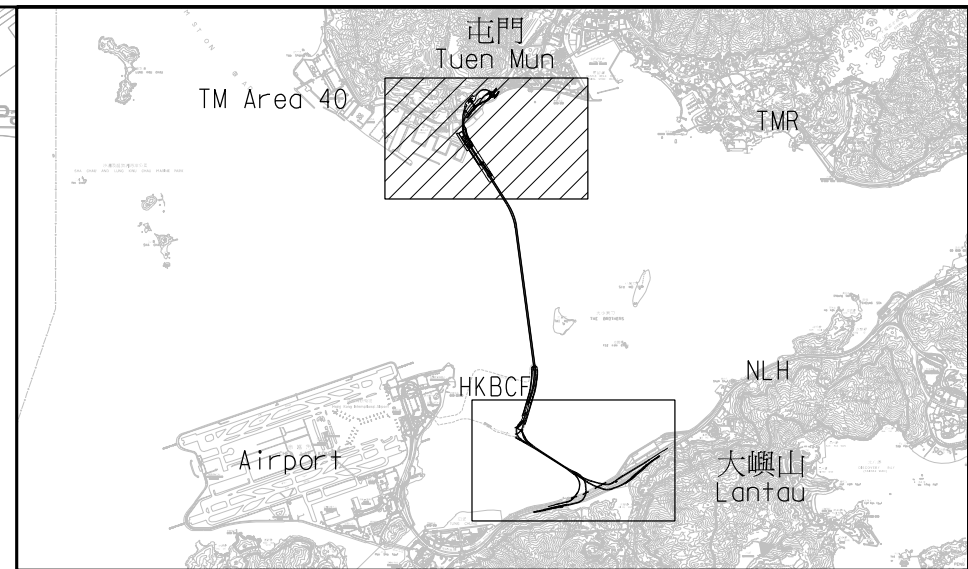
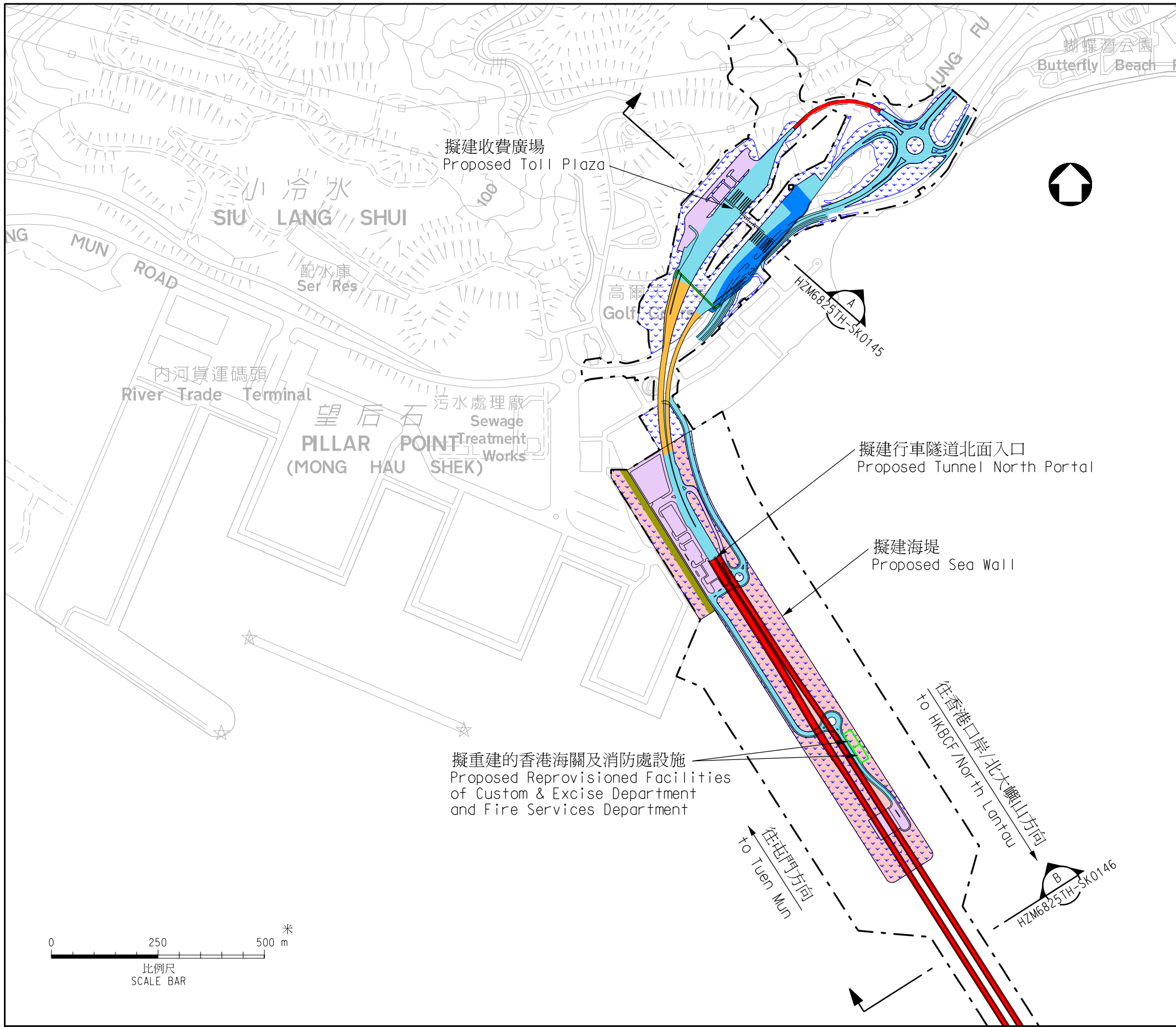
圖則名稱 plan title

工務計劃項目第825TH號 - 屯門至赤鱗角連接路及屯門西繞道
PWP Item No.825TH - Tuen Mun-Chek Lap Kok Link and Tuen Mun Western Bypass

圖則編號 plan no. HZM6825TH-SK0142 比例 scale 1:90000

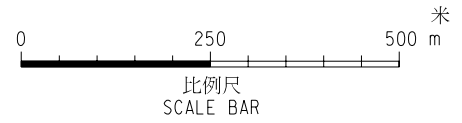
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位置圖
Location Plan
比例 Scale: 1:150000

- 圖例
Legend
- 施工區界限
Limit of works area
 - 擬建高架道路
Proposed Viaduct
 - 擬建地面道路
Proposed at-grade road
 - 擬建行車隧道
Proposed Road Tunnel
 - 擬建行政大樓、通風大樓及其他附屬建築物 / 設施
Proposed administration building, ventilation building and other ancillary buildings / facilities
 - 擬建填海
Proposed reclamation
 - 擬建高架行車道
Proposed elevated carriageway
 - 擬建行人天橋
Proposed footbridge
 - 擬建箱形暗渠延伸
Proposed box culvert extension
 - 擬建環境美化地帶
Proposed landscape area



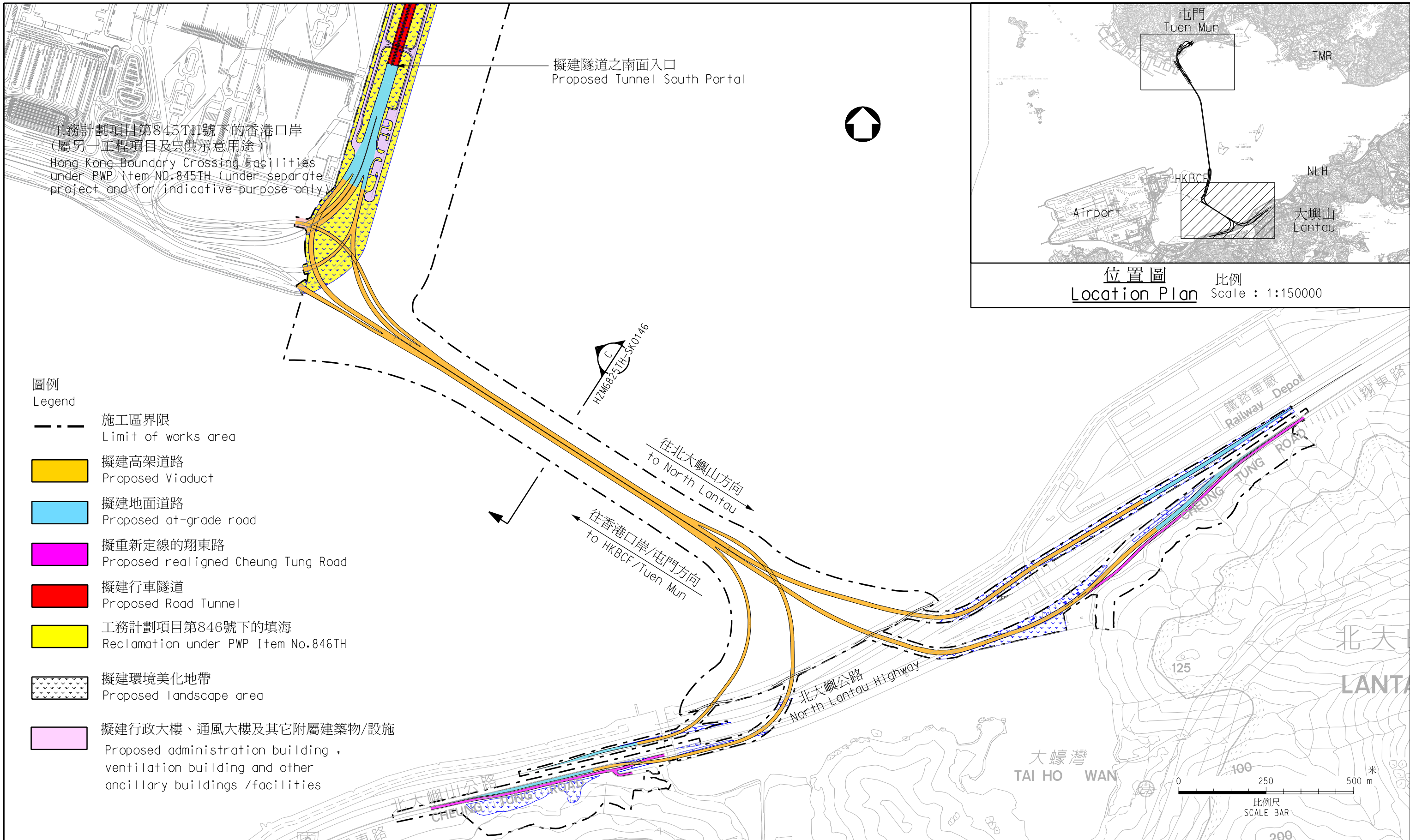
圖則名稱 plan title


工務計劃項目第825TH號 - 屯門至赤鱗角連接路及屯門西繞道 (2張中的第1張)
PWP Item No.825TH - Tuen Mun-Chek Lap Kok Link and Tuen Mun Western Bypass (Sheet 1 of 2)

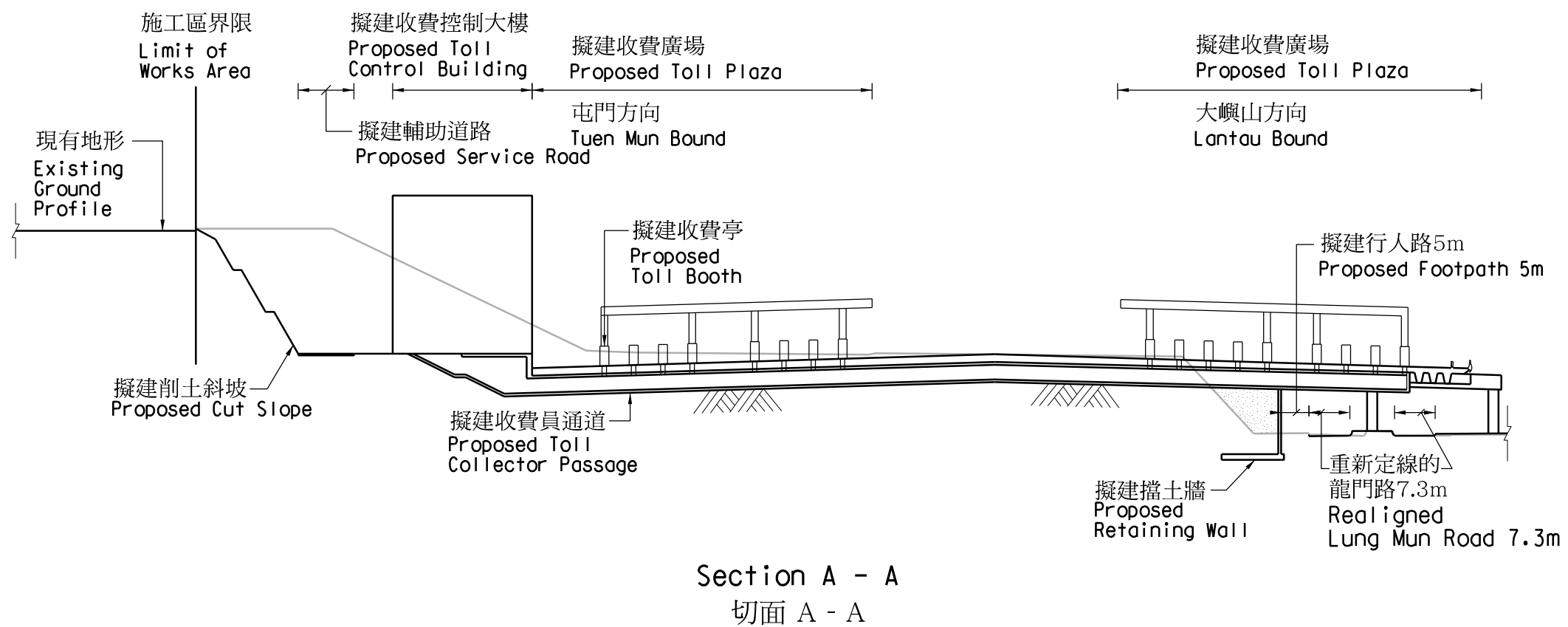
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比例 scale
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圖則名稱 plan title	圖則編號 plan no.	比例 scale
工務計劃項目第825TH號 - 屯門至赤鱗角連接路及屯門西繞道 (2張中的第2張)	HZM6825TH-SK0144	1:10000
PWP Item No.825TH - Tuen Mun-Chek Lap Kok Link and Tuen Mun Western Bypass (Sheet 2 of 2)	© 版權所有 COPYRIGHT RESERVED  HIGHWAYS DEPARTMENT HONG KONG 路政署 香港	



圖則名稱 plan title

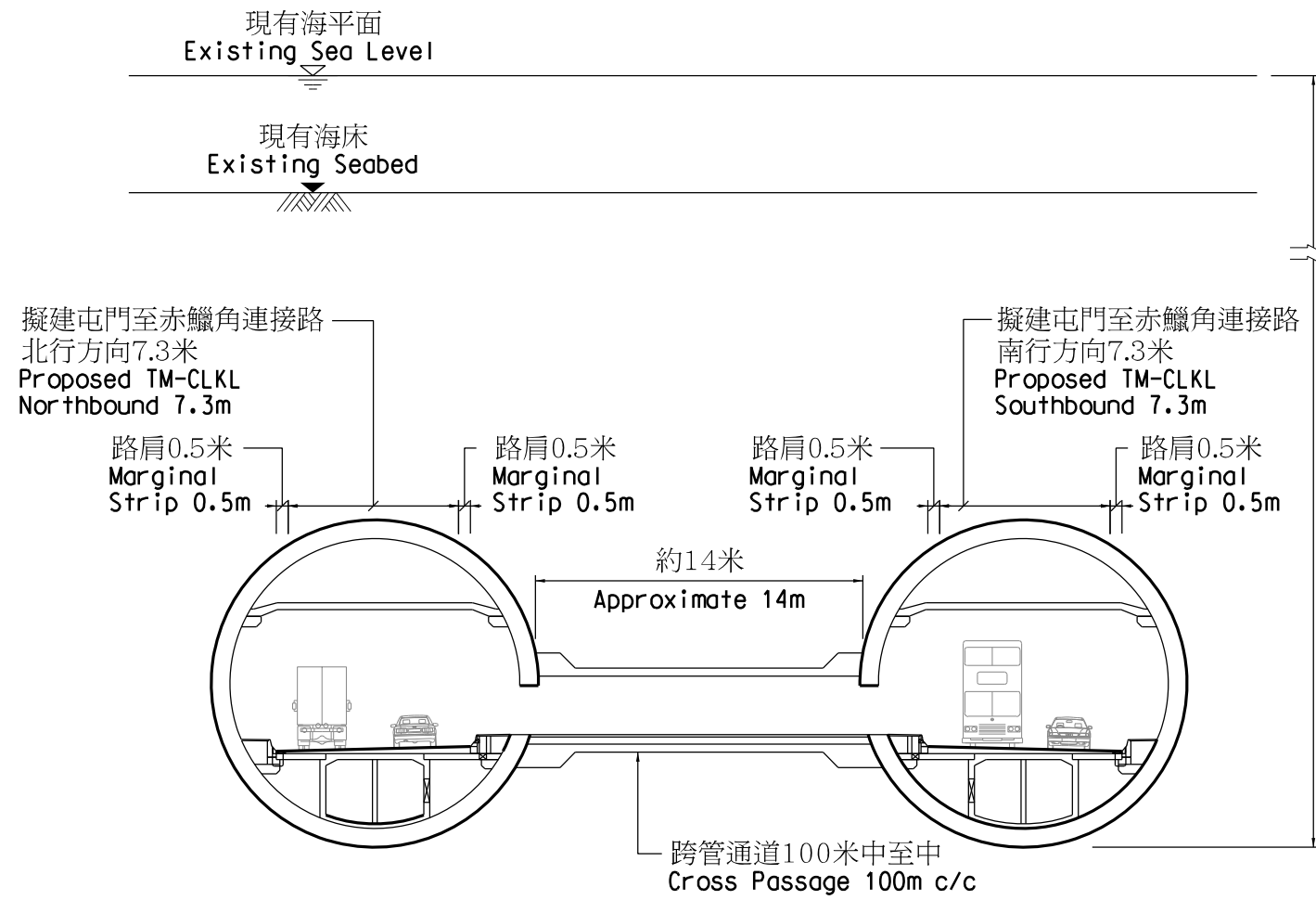
工務計劃項目第825TH號 - 屯門至赤鱸角連接路及屯門西繞道 (收費廣場的橫切面圖)
PWP Item No.825TH - Tuen Mun-Chek Lap Kok Link and Tuen Mun Western Bypass (Cross Section of Toll Plaza)

圖則編號 plan no.
HZM6825TH-SK0145

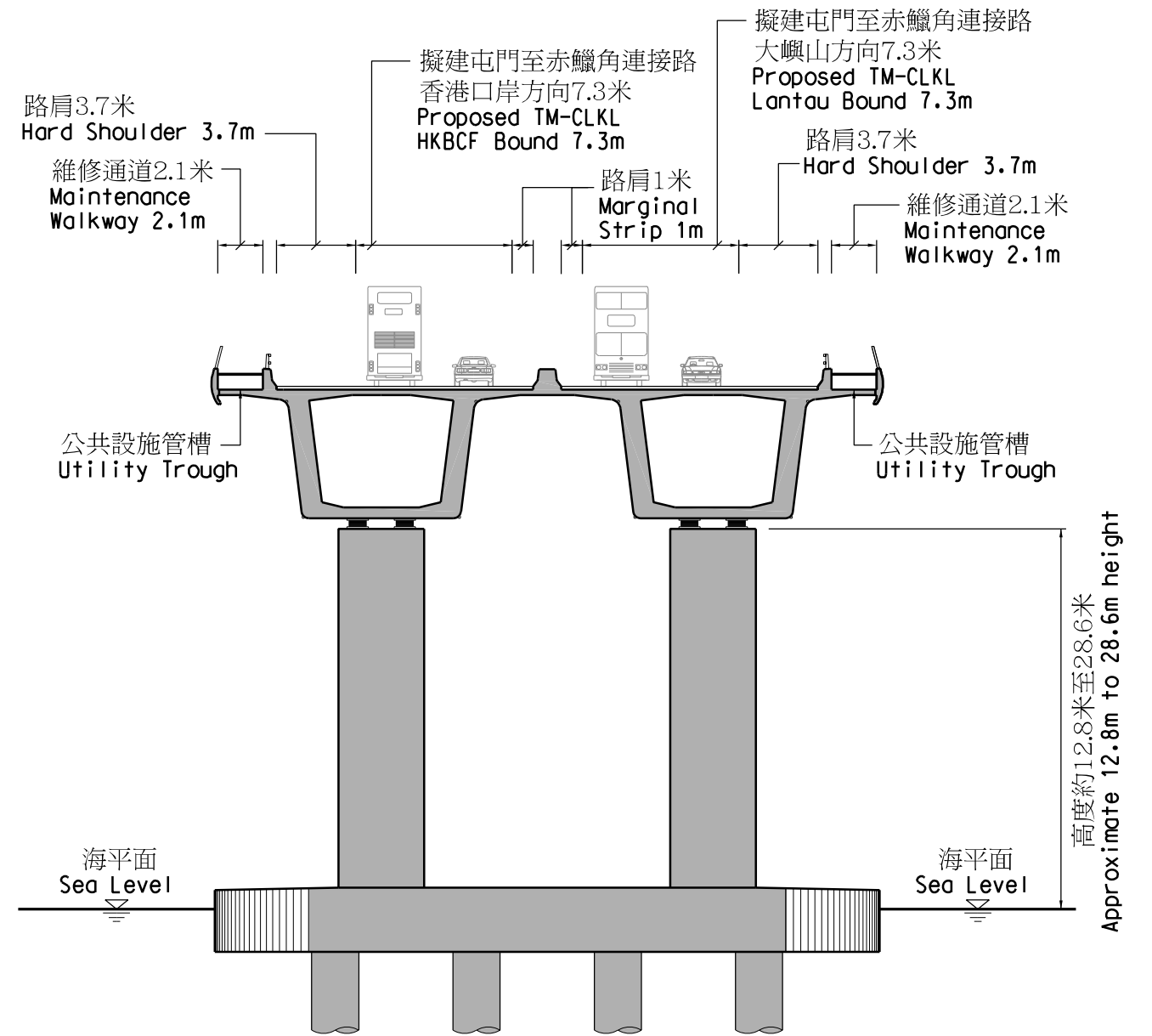
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Section B - B
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Section C - C
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圖則名稱 plan title

工務計劃項目第825 TH號 - 屯門至赤鱸角連接路及屯門西繞道 (海底隧道及高架道路的橫切面圖)
PWP Item No.825TH - Tuen Mun-Chek Lap Kok Link and Tuen Mun Western Bypass
(Cross Sections of Sub-sea Tunnel and Viaducts)

圖則編號 plan no.
HZM6825TH-SK0146

比例 scale
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