

**For discussion  
on 19 April 2013**

**Legislative Council Panel on Transport**

**Widening of Tolo Highway/Fanling Highway between  
Island House Interchange and Fanling – Stage 2**

**PURPOSE**

We propose the upgrading of **720TH** (Widening of Tolo Highway/Fanling Highway between Island House Interchange and Fanling – Stage 2) to Category A. This paper seeks Members' views on the proposal.

**PROJECT SCOPE AND NATURE**

2. The proposed scope of works of **720TH** (the Project) comprises –
  - (a) widening of a section of Fanling Highway between Tai Hang and Wo Hop Shek Interchange of about 3 kilometres (km) long from a dual 3-lane carriageway to a dual 4-lane carriageway, with standard hard shoulders added on both directions;
  - (b) widening of a slip road of about 250 metres (m) long connecting the Jockey Club Road to Fanling Highway southbound at Wo Hop Shek;

- (c) realignment of a section of Tai Wo Service Road West of about 1.2 km long between Tai Hang and Nam Wa Po;
- (d) realignment of a section of Tai Wo Service Road East of about 1 km long between Kiu Tau and Tong Hang Tung;
- (e) demolition of the existing Kiu Tau Vehicular Bridge and Nam Wa Po Footbridge;
- (f) construction of a vehicular bridge (cum walkway) of about 400 m long at Kau Lung Hang as reprovisioning of the existing bridges mentioned in (e) above;
- (g) demolition and reprovisioning of five existing footbridges at Tai Hang, Tai Wo, Kiu Tau, Ho Ka Yuen and Wo Hop Shek;
- (h) installation of noise barriers along the roads as follows—
  - (i) vertical noise barriers of about 5.1 km long (ranging from 3 m to 8 m high); and
  - (ii) single-leaf cantilever noise barriers of about 350 m long (6 m high with 3m or 4.5 m cantilever).
- (i) provision of a traffic control and surveillance system (TCSS); and
- (j) associated road, geotechnical, landscaping, drainage, watermains, road lighting, and electrical and mechanical

(E&M) works, traffic aids and environmental mitigation measures.

A plan showing the proposed works is at **Enclosure 1**.

3. We have completed the detailed design of the Project. Subject to the funding approval of the Finance Committee (FC) of the Legislative Council, we plan to commence the construction works of the Project in July 2013, and major works of the Project are anticipated to be completed by 2018.

## **JUSTIFICATION**

### Phased Improvement of Tolo Highway/Fanling Highway

4. Tolo Highway and Fanling Highway form a major trunk road serving the north New Territories. In recent years, traffic flow at some road sections of the two highways during peak hours has approached their design capacities. The Government has been progressively carrying out improvement works, implementing the concerned road widening projects in phases in order to mitigate congestion at present and cope with the anticipated increase in traffic flow in the future.

5. The section of Tolo Highway from Ma Liu Shui to Island House Interchange was widened to a dual 4-lane carriageway in 2003. Another phase of the widening programme, i.e. Widening of Tolo Highway/Fanling Highway – Stage 1 (covering the section of Tolo Highway between Island House Interchange and Tai Hang) to widen the concerned road section from dual 3-lane to dual 4-lane carriageway is now being carried out under PWP Item No. **6843TH** (Widening of

Tolo Highway between Island House Interchange and Tai Hang). FC approved funding of \$4,486.9 million in money-of-the-day (MOD) prices in February 2009 for the works. Up till now, the works has in general been progressing smoothly, and is scheduled for completion in 2014.

6. The “Widening of Tolo Highway/Fanling Highway - Stage 2” works we now propose is a continuation of the Stage 1 widening works (Item **6843TH**). The works mainly concern the widening of the Fanling Highway between Tai Hang and Wo Hop Shek Interchange which, together with the Stage 1 widening works, will form a continuous dual 4-lane major trunk road linking Sha Tin and Fanling to serve the north New Territories.

#### Linking with Liantang/Heung Yuen Wai Boundary Control Point

7. The proposed Stage 2 works will also match with the implementation of the Liantang/Heung Yuen Wai Boundary Control Point (LT/HYW BCP) project (Item **5019GB** undertaken by the Civil Engineering Development Department). The proposed Connecting Road<sup>1</sup> of the LT/HYW BCP project will link to the widened Fanling Highway via an interchange, connecting the BCP to the major road network and reaching out to the rest of Hong Kong, so as to cater for the traffic generated by the commissioning of the BCP. The two projects have to be carried out concurrently to ensure the smooth construction of the interchange between the two projects.

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<sup>1</sup> The proposed Connecting Road of the LT/HYW BCP project (Item **5019GB**) is a 11km long trunk road linking the LT/HYW BCP project between Lin Ma Hang Road and Fanling Highway to Fanling Highway through the construction of an interchange near Wo Hop Shek.

## Coping with Future Traffic Growth

8. According to the traffic forecast, with the increase in traffic volume in the concerned districts, if the proposed Stage 2 widening works is not carried out, the traffic at the section of Fanling Highway between Tai Hang and Wo Hop Shek Interchange will be operating beyond capacity, leading to congestion. In view of that, it would be necessary to implement the proposed Project to provide adequate road capacity.

9. The projected traffic volume to capacity (v/c) ratios<sup>2</sup> of Fanling Highway between Tai Hang and Wo Hop Shek Interchange during peak hours without and with the proposed Project are shown in the following table respectively –

<b>Year</b>	<b>2011</b>	<b>2018</b>	<b>2021</b>
v/c ratio <u>without</u> the proposed Project	0.96	1.16	1.18
v/c ratio <u>with</u> the proposed Project	–	0.86	0.89

When v/c ratio is close to 1.2, travelling speed on the road would slow down and the traffic flow would become unstable. Under such circumstances, any minor traffic accidents may seriously affect the traffic condition. Hence, we need to implement the Stage 2 widening works as soon as possible.

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<sup>2</sup> 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

### Further Improvement Works

10. We propose to take the opportunity of the Stage 2 widening works to carry out further improvement works, so as to enhance road safety.

#### *Adding Hard Shoulders*

11. Hard shoulder was not a standard requirement in highway design when the Fanling Highway was constructed some 20 years ago. Similar to the Stage 1 works of the widening of Tolo Highway under construction, we plan to construct full-width hard shoulders up to current standard along Fanling Highway in the Stage 2 works to enhance road safety.

#### *Extension of the TCSS*

12. Fanling Highway forms part of the strategic Route 9 with heavy traffic. To ensure smooth traffic and road safety, we need to monitor road condition for timely actions in case of emergencies or traffic congestion. Therefore, we propose to extend the TCSS to cover this section of the highway in order to enhance the efficiency and effectiveness of traffic and incident management. The TCSS system includes the installation of variable message signs, closed circuit televisions, and variable speed limit signs, etc..

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above 1.0 indicates the onset of congestion; that above 1.2 indicates more serious congestion with traffic speeds deteriorating progressively as a result of further increase in traffic.

### *Reconstruction and Improvement of Vehicular Bridges*

13. The proposed Stage 2 works also include a new vehicular bridge (with walkway) at Kau Lung Hang, as a replacement to the existing Kiu Tau Vehicular Bridge and Nam Wa Po Footbridge to be demolished to make way for the road widening. The existing Kiu Tau Vehicular Bridge spans over Fanling Highway but does not continue to cross over East Rail. At present, local people living on the eastern side of East Rail have to cross under East Rail through an underpass with limited headroom in order to reach Fanling Highway. This renders the access of large vehicles impossible, causing inconvenience to the residents. The proposed new Kau Lung Hang Vehicular-cum-walkway Bridge will span over both Fanling Highway and East Rail, providing a standard vehicular and pedestrian connection to the areas east of East Rail, thus effectively resolving the traffic problem mentioned above.

### *Reconstruction and Improvement of Footbridges*

14. In addition, the five existing footbridges across Fanling Highway will be demolished and reconstructed due to their inadequate span to accommodate the widened road. Covers will be added to the new footbridges to provide the pedestrians a more comfortable walking environment.

15. Summing up the points stated in the above paragraphs 4 to 14, Stage 2 widening works of the Fanling Highway will widen and improve the highway in an all-round manner, thus forming a continuous dual 4-lane major trunk road linking Sha Tin and Fanling. Adequate traffic capacity in north New Territories will be provided in solving the foreseeable traffic congestion and meeting the need of future development. The Project will connect the LT/HYW BCP to the major road network to cater for the traffic flow generated after the commissioning of the BCP. Fanling

Highway will also be improved to meet with current road standards and strengthen the traffic control and surveillance. In response to the needs of the local residents, vehicular and pedestrian linkages between the highway and the rural roads in the vicinity will be increased and improved to facilitate the accessibility of the residents.

## **FINANCIAL IMPLICATIONS**

16. We estimate the cost of the proposed construction works of the Project to be \$4,320.0 million in Money of the Day (MOD) prices, made up as follows –

	<b>\$ million</b>
(a) Roads and drains	1,022.2
(i) construction of carriageway	674.0
(ii) drainage and waterworks	314.6
(iii) public lighting	33.6
(b) Geotechnical works	35.1
(i) retaining walls	19.7
(ii) slopeworks	15.4
(c) Vehicular bridges and footbridges	676.2



**\$ million**

(i) demolition of Kiu Tau Vehicular Bridge and Nam Wa Po Footbridge and construction of vehicular bridge at Kau Lung Hang (with walkway)	221.0	
(ii) demolition and re-provisioning of 5 footbridges	455.2	
(d) Noise barriers		973.6
(e) TCSS		87.5
(f) Landscaping works		50.7
(g) Consultants' fees		310.4
(i) construction supervision and contract administration	7.2	
(ii) resident site staff costs	301.6	
(iii) Environmental Monitoring and Audit (EM&A) programme	1.6	
(h) Electrical and Mechanical Services Trading Fund cost		1.3
(i) Contingencies		223.7
	Sub-total	<u>3,380.7</u>
		(in September 2012 prices)
(j) Provision for price adjustment		939.3

	<b>\$ million</b>
Total	4,320.0 (in MOD prices)

## **PUBLIC CONSULTATION**

17. The Highways Department (HyD) consulted the Traffic and Transport Committee (T&TC) of the North District Council (NDC) in 2008, and the T&TC of the Tai Po District Council (TPDC) in 2008 and 2009, and obtained their support of the proposed Project. Subsequently, HyD regularly reported to these District Councils the progress of the Project.

18. We gazetted the road scheme for the proposed works of the Project under the Roads (Works, Use and Compensation) Ordinance (Cap. 370) (the Ordinance) on 3 and 10 July 2009. During the statutory objection period, 130 objections were received. The concerns were mainly related to land resumption, reprovisioning of existing footbridges and the impact to the objectors' businesses. In response, we amended the works limit and the layout of the proposed footbridges/vehicular bridge to address the objections. We gazetted the amendment scheme on 28 May and 4 June 2010. We received 8 objections during the statutory objection period, in which similar concerns with those received during the first gazette were raised. We further modified the layout of the proposed vehicular bridge at Kau Lung Hang in response to the objections received.

19. Having considered the unresolved objections and the modification, the Chief Executive-in-Council authorised the proposed works of the Project under the

Ordinance on 5 July 2011. The authorization notice of the Project and its modification plan were gazetted on 29 July 2011.

20. We have consulted the Advisory Committee on the Appearance of Bridges and Associated Structures<sup>3</sup> on the proposed aesthetic design of the noise barriers, vehicular bridge, footbridges and retaining walls of the proposed project. The Committee accepted the proposed aesthetic design.

## **ENVIRONMENTAL IMPLICATIONS**

21. The Stage 2 project is a designated project under the Environmental Impact Assessment (EIA) Ordinance (Cap. 499). The Director of Environmental Protection approved the EIA report for the Project in July 2000, and issued the environmental permit for the construction and operation of the Project in December 2008.

22. According to the EIA report, the environmental impact of the Project can be controlled within the criteria under the EIA Ordinance. During construction, we will implement the mitigation measures and EM&A programme according to the requirements of the environmental permit.

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<sup>3</sup> The Advisory Committee on the Appearance of Bridges and Associated Structures, which comprises representatives of the Hong Kong Institute of Architects; the Hong Kong Institution of Engineers; the Hong Kong Institute of Planners; an academic institution; Architectural Services Department; Highways Department; Housing Department and Civil Engineering and Development Department, is responsible for vetting the design of bridges and other structures associated with the public highway system, including noise barriers and semi-enclosures, from the aesthetic and visual impact points of view.

23. At the planning and design stages, we have minimised the generation of construction waste through the road alignment design. In addition, we will require the contractor to reuse inert construction waste as far as possible, in order to minimise the disposal of inert construction waste at public fill reception facilities<sup>4</sup>. At the construction stage, we will require the contractor to submit for approval a plan setting out the waste management measures.

24. We estimate that the proposed Project will generate in total about 377 140 tonnes of construction waste. Of these, we will reuse about 68 360 tonnes (18.1 %) of inert construction waste on site and deliver about 298 470 tonnes (79.2 %) of inert construction waste to public fill reception facilities for subsequent reuse. We will dispose of the remaining 10 310 tonnes (2.7 %) 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 \$9.35 million for this Project (based on a unit cost of \$27 per tonne for disposal at public fill reception facilities and \$125 per tonne<sup>5</sup> at landfills).

25. Of the about 2 070 trees within the project boundary of Stage 2, about 460 trees will be preserved. The proposed works will involve the removal of about 1 610 trees, including about 1 560 trees to be felled and about 50 trees to be transplanted within the project site. All trees to be removed are not trees of important species. We will incorporate planting proposals as part of the proposed works,

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<sup>4</sup> 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 Department.

<sup>5</sup> 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<sup>3</sup>), nor the cost to provide new landfills (which is likely to be more expensive) when the existing ones are filled.

including an estimated quantity of about 530 heavy standard trees, 350 seedlings and 32 100 shrubs which cover approximately 27 500 m<sup>2</sup> of planting area.

## **HERITAGE IMPLICATIONS**

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

## **LAND ACQUISITION**

27. We had reviewed the design of the Stage 2 works to minimise the resumption of land. However, we still need to resume about 18 611.9 and 579.56 square metres (sq. m.) of agricultural land and building land respectively for the proposed works. Acquisition and clearance of the required land will affect a “Chi Tong (祠堂)”, 8 village houses and 5 domestic structures, involving 79 persons. Eligible lot owners of the Chi Tong and village houses to be resumed will be offered compensation in accordance with the Village Removal Terms, while the remaining affected households will be offered public housing (including Interim Housing) or ex-gratia allowances, where eligible. There are 150 non-domestic structures on private land and 63 non-domestic structures on Government land to be cleared. We will deal with clearance issues arising from the clearance of these structures in accordance with the prevailing land policies. The proposed road works also require the clearance of shrine, crops, cultivation, miscellaneous permanent items (such as fences, walls and wells, etc.) on both agricultural land and Government land. Ex-gratia allowances will be paid to genuine cultivators. The land acquisition and clearance costs are estimated to be \$154.9 million, and will be charged to Head 701 - Land Acquisition.

## **TRAFFIC IMPLICATIONS**

28. We have conducted traffic impact assessment for the project, including the traffic impact during the construction period. According to the findings of the assessment, with the implementation of appropriate temporary traffic arrangements (TTAs), the project will not cause significant impact on the traffic network in the concerned area.

29. We will implement TTAs to facilitate the Stage 2 construction works, involving lane closures, traffic diversions and other arrangements. To minimise the adverse traffic impact on Tolo Highway and Fanling Highway caused by the works, we will maintain the same number of traffic lanes in each direction of the existing carriageway during peak hours during the construction period.

30. We will consult the relevant DCs prior to the implementation of major TTAs. HyD will regularly report to the relevant DCs the planning and operation of the TTAs.

## **WAY FORWARD**

31. Subject to the support of this Panel, we intend to seek the funding support of the Public Works Sub-committee and Finance Committee of the Legislative Council in May 2013 and June 2013 respectively to upgrade the construction works of **720TH** as described in paragraph 2 above to Category A.

**ADVICE SOUGHT**

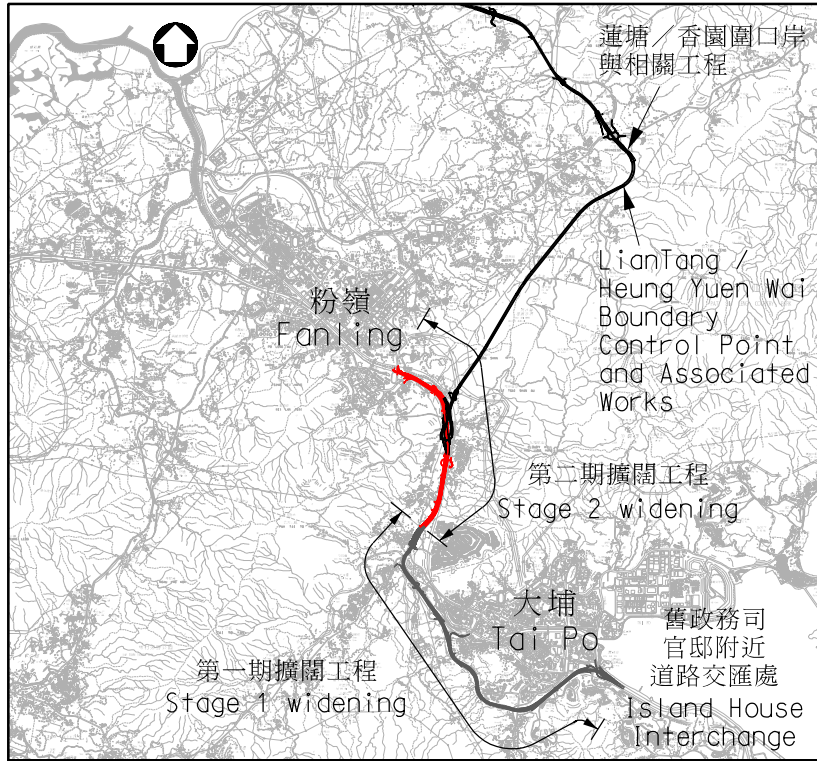
32. Members are invited to comment on and support our funding proposal.

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**Transport and Housing Bureau**

**April 2013**



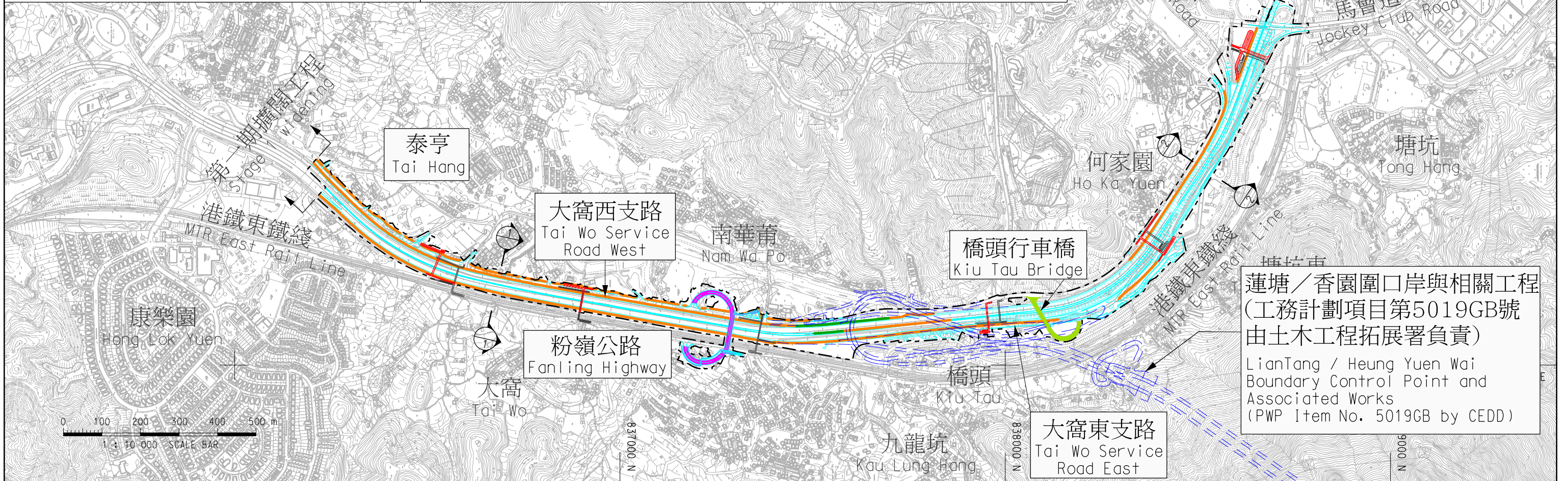


索引圖 Key Plan

比例 Scale 1:120000

圖例 Legend:

- 施工區界限  
Limit of works area
- 擬擴闊行車道/擬重新定線的現有行車道  
Proposed carriageway widening/existing carriageway to be realigned
- 擬建直立式隔音屏障 (3米至8米高)  
Proposed vertical noise barrier (3m to 8m High)
- 擬建懸臂式隔音屏障 (6米高及3米或4.5米懸臂)  
Proposed single-leaf cantilever noise barrier (6m high with 3m or 4.5m bend)
- 擬建行人天橋  
Proposed reprovisioning of footbridge
- 擬建行車橋連行人道  
Proposed Vehicular Bridge with Walkway
- 現有行人天橋將會拆卸  
Existing footbridge to be demolished
- 現有行車橋將會拆卸  
Existing vehicular bridge to be demolished

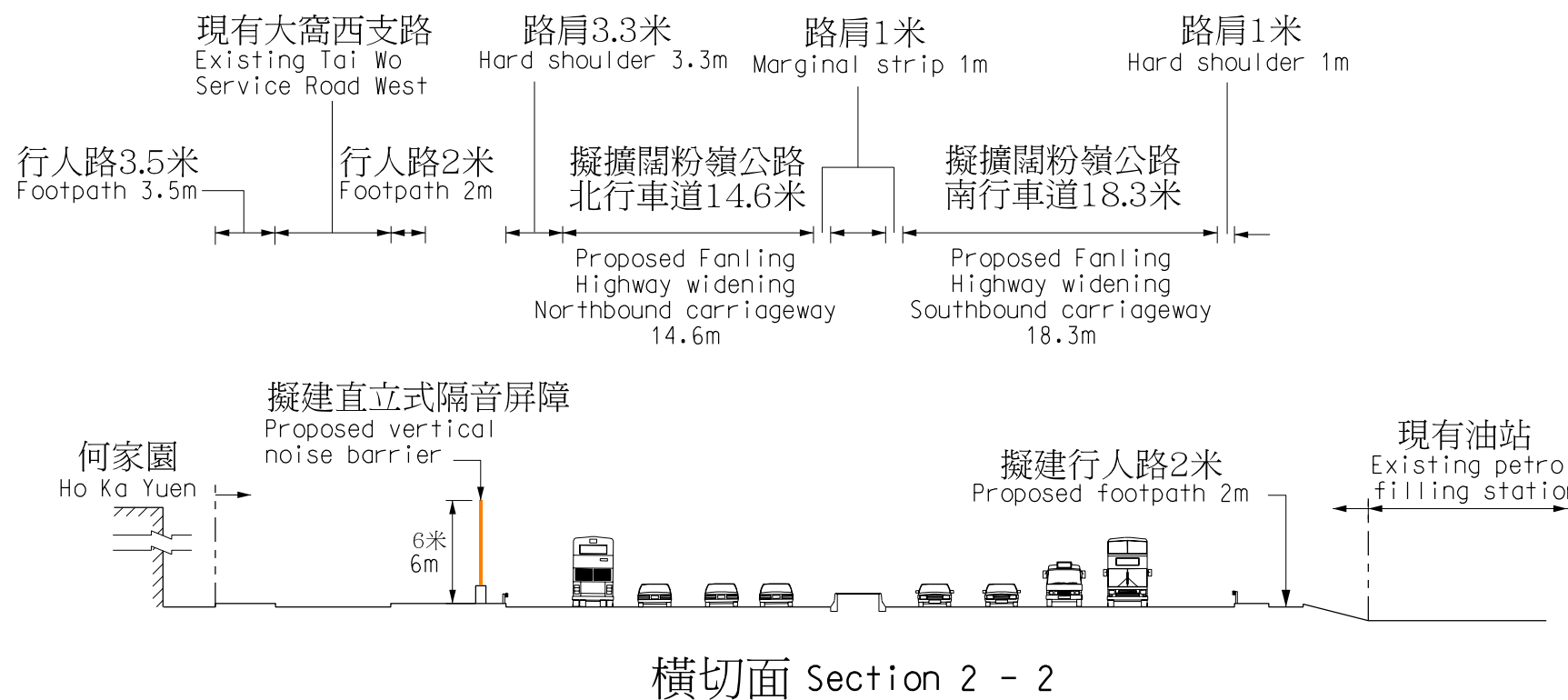
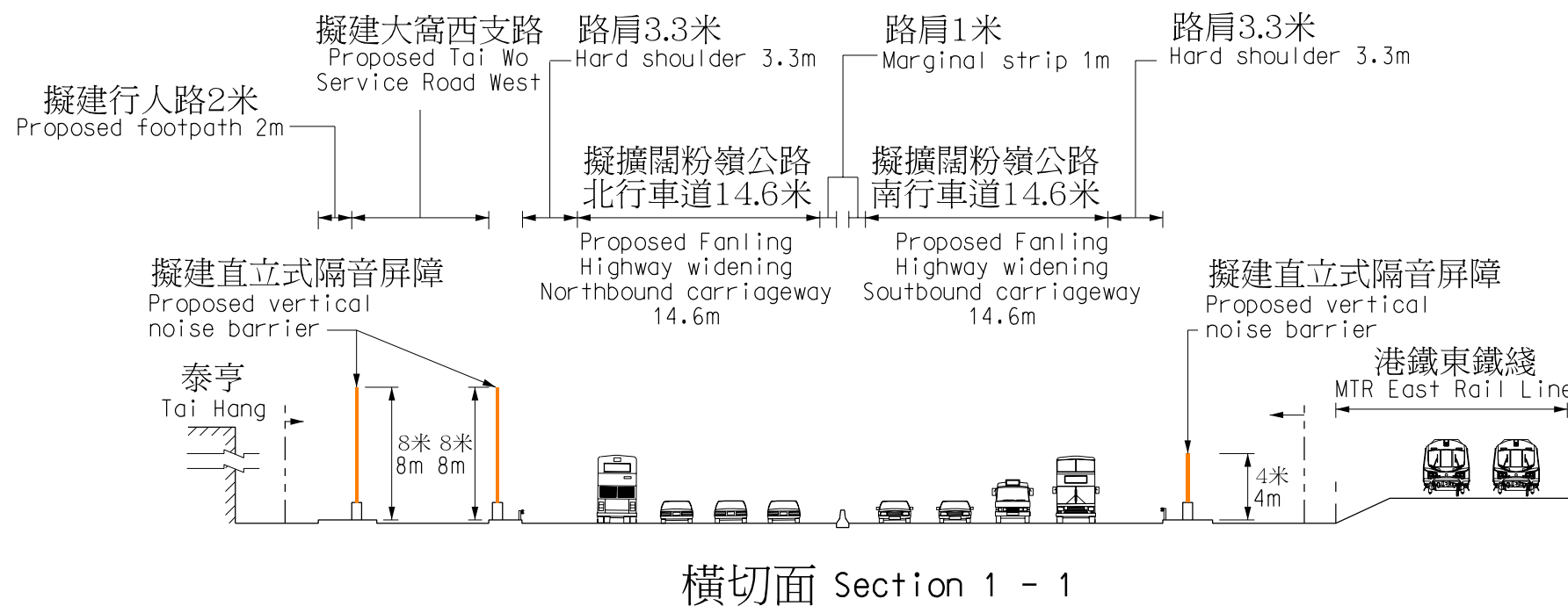
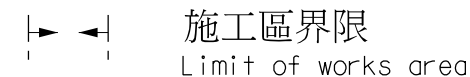


工務計劃項目第6720TH號  
 舊政務司官邸附近道路交匯處與粉嶺之間的吐露港公路 / 粉嶺公路擴闊工程 - 第二期 - 平面圖  
 PWP Item no. 6720TH  
 Widening of Tolo Highway / Fanling Highway between Island House Interchange and Fanling - Stage 2 - Layout Plan

圖則編號 drawing no. HMW6720TH-SK0325	比例 scale 1:10000 OR AS SHOWN
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圖例 Legend:



工務計劃項目第6720TH號  
舊政務司官邸附近道路交匯處與粉嶺之間的吐露港公路 / 粉嶺公路擴闊工程 - 第二期 - 切面圖

PWP Item no. 6720TH  
Widening of Tolo Highway / Fanling Highway between Island House Interchange and Fanling - Stage 2 - Sections

圖則編號 drawing no.  
HMW6720TH-SK0326

比例 scale  
示意圖  
DIAGRAMMATIC

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