

## ITEM FOR PUBLIC WORKS SUBCOMMITTEE OF FINANCE COMMITTEE

### HEAD 706 – HIGHWAYS

#### Transport – Roads

#### **800TH – Retrofitting of noise barriers at Kwun Tong Bypass**

Members are invited to recommend to Finance Committee the upgrading of **800TH** to Category A at an estimated cost of \$87.2 million in money-of-the-day prices for the retrofitting of noise barriers at Kwun Tong Bypass.

### PROBLEM

The existing dwellings adjacent to the Kwun Tong Bypass near Laguna City in Kwun Tong are exposed to excessive road traffic noise.

### PROPOSAL

2. The Director of Highways, with the support of the Secretary for the Environment, proposes to upgrade **800TH** to Category A at an estimated cost of \$87.2 million in money-of-the-day (MOD) prices for the retrofitting of noise barriers at Kwun Tong Bypass near Laguna City.

### PROJECT SCOPE AND NATURE

3. The scope of **800TH** comprises –

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- (a) retrofitting of vertical noise barriers of about 210 metres (m) in length and four metres in height along the verge of the westbound slip road from Kwun Tong Bypass to Wai Fat Road near Laguna Park, Kwun Tong;
- (b) retrofitting of vertical noise barriers of about 260 m in length and four metres in height along the verge of the westbound carriageway of Kwun Tong Bypass near Laguna Park, Kwun Tong;
- (c) retrofitting of single-leaf cantilevered noise barriers of about 480 m in length and six metres in height along the central divider of Kwun Tong Bypass near Laguna Park, Kwun Tong;
- (d) associated road, drainage, geotechnical, street lighting and landscaping works; and
- (e) implementation of an environmental monitoring and audit (EM&A) programme for works mentioned in items 3(a) to (d) above.

Layout plans with cross sections of the proposed works under **800TH** are at Enclosure 1.

4. We plan to commence the construction works in June 2008 for completion in December 2010.

## JUSTIFICATION

5. In November 2000, the Administration promulgated a policy to address the noise impact of existing roads on neighbouring residents. Under this policy, direct engineering solutions by way of retrofitting of barriers and enclosures and resurfacing with low noise material will be implemented where practicable on existing roads with a traffic noise level exceeding the limit of 70 dB(A)  $L_{10}(1 \text{ hour})^1$ .

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<sup>1</sup>  $L_{10}(1 \text{ hour})$  is the noise level exceeded for 10% of a one-hour period, generally used for road noise at peak traffic flow. The noise limit of 70 dB(A) for residential premises as stipulated in the Hong Kong Planning Standards and Guidelines is adopted as the administrative guideline for retrofitting projects identified under the policy introduced in 2000.

6. At present, about 1 300 dwellings adjacent to the section of Kwun Tong Bypass near Laguna City in Kwun Tong are exposed to excessive traffic noise of up to 77 dB(A) L<sub>10</sub>(1 hour). In line with the policy, we propose to retrofit noise barriers on this road section in order to mitigate the noise impact. This project would reduce the existing traffic noise levels on the affected noise sensitive receivers by 1 to 4 dB(A) L<sub>10</sub> (1 hour) benefiting about 1 100 dwellings at Laguna City.

### FINANCIAL IMPLICATIONS

7. We estimate the cost of **800TH** to be \$87.2 million in MOD prices (see paragraph 8 below), made up as follows –

	<b>\$ million</b>
(a) Noise barriers	66.5
(i) vertical	23.5
(ii) single-leaf cantilevered	43.0
(b) Road and drainage works	2.9
(c) Landscaping works	0.9
(d) Consultants' fees	7.3
(i) construction supervision and contract administration	0.3
(ii) resident site staff cost	6.6
(iii) EM&A programme <sup>2</sup>	0.4
(e) Contingencies	7.9

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<sup>2</sup> We will engage a consultant to implement an EM&A programme at an estimated cost of \$400,000 for **800TH** to ensure timely and effective implementation of the recommended mitigation measures.

		<u>\$ million</u>	
	Sub-total	85.5	(in September 2007 prices)
(f)	Provision for price adjustment	1.7	
	Total	<u>87.2</u>	(in MOD prices)

———— A breakdown of the estimated consultants' fees for **800TH** is at Enclosure 2.

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

Year	\$ million (Sept 2007)	Price adjustment factor	\$ million (MOD)
2008 – 2009	14.6	1.00750	14.7
2009 – 2010	41.2	1.01758	41.9
2010 – 2011	25.4	1.02775	26.1
2011 – 2012	4.3	1.03803	4.5
	<u>85.5</u>		<u>87.2</u>

9. We have derived the MOD estimate on the basis of the Government's latest forecast of trend rate of change in the prices of public sector building and construction output for the period 2008 to 2012. We will tender the proposed works under a lump sum contract as the scope of works can be clearly defined. We will allow for price adjustment in the contract as the construction period will exceed 21 months.

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10. We estimate the annual recurrent expenditure upon completion of the project to be \$158,000.

## PUBLIC CONSULTATION

11. We consulted the Traffic and Transport Committee of the Kwun Tong District Council on 19 October 2006. Members supported the project.

12. We consulted the Advisory Committee on the Appearance of Bridges and Associated Structures<sup>3</sup> (ACABAS) on the aesthetic design of the noise barriers for **800TH** on 19 December 2006 and 17 April 2007. The Committee supported the proposed aesthetic design.

13. We gazetted the road scheme of **800TH** under the Roads (Works, Use and Compensation) Ordinance (the Ordinance) on 17 November 2006 and received one objection. The objector queried the effectiveness of the proposed noise barriers at Kwun Tong Bypass in reducing the road traffic noise impact and raised concern on the possibility of view obstruction by the noise barriers to the residents of Laguna City. The objector considered that Highways Department should consult Laguna City residents for obtaining their consensus. We briefed the residents and the Estate Owners' Committee (EOC) of Laguna City on 9 March 2007 on the details of **800TH**, including the scope and design of the proposed noise barriers and the temporary traffic arrangement during construction. The EOC supported the project and asked for its early implementation. The objector withdrew his objection unconditionally after the above consultation. The then Permanent Secretary for the Environment, Transport and Works (Transport) authorised the road scheme of **800TH** under the Ordinance on 13 April 2007. The notice of authorisation was gazetted on 20 April 2007.

14. We consulted the Panel on Environmental Affairs of the Legislative Council on 25 June 2007 on **800TH** and Members supported the funding application for the proposed barrier scheme. Members were concerned about the temporary traffic diversion proposal of closing one traffic lane in the

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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, Architectural Services Department, Highways Department, Housing Department, Planning 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 enclosures, from the aesthetic and visual impact points of view.

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westbound carriageway at all times during construction and requested the Administration to review. We have re-evaluated the situation and revised the proposals. We shall be able to maintain the existing number of traffic lanes for public use in the westbound carriageway of Kwun Tong Bypass during rush hours. To achieve these, we shall erect falseworks at ground level to form the working platforms and provide adequate space under the revised temporary traffic proposal for construction activities along that section of Kwun Tong Bypass. We anticipate that this will likely extend the construction period by about six months but we would endeavour to take measures to minimize the extension period. In addition, we will request the Contractor to review the traffic conditions, before construction works commence, and devise detailed temporary traffic proposals to minimize any disturbance to traffic.

## ENVIRONMENTAL IMPLICATIONS

15. This is not a designated project under the Environmental Impact Assessment Ordinance. We completed the environmental study for the project in February 2007. We concluded that the project would not cause adverse long-term environmental impact.

16. For short-term construction impacts, we will control the noise, dust and site run-off nuisances to within the established standards and guidelines through the implementation of mitigation measures. We will also carry out the environmental monitoring and audit programme to ensure proper implementation of the recommendations of the environmental assessment.

17. We have considered measures in the planning and design stages to reduce the generation of construction waste where possible. We have designed the noise barrier supports/foundations on bridge in order to minimise the quantity of inert construction materials generated from demolition of the existing structures. In addition, we will require the contractor to reuse inert construction waste (e.g. excavated soil and broken concrete as filling 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<sup>4</sup>. 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 minimise the generation of construction waste.

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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 license issued by the Director of Civil Engineering and Development.

18. We will also require the contractor to submit for approval a plan setting out the waste management measures, 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 whenever practicable 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.

19. We estimate that the project will generate in total about 1 900 tonnes of construction waste. Of these, we will reuse about 150 tonnes (7.9%) of inert construction waste on site, deliver 1 550 tonnes (81.6%) of inert construction waste to public fill reception facilities for subsequent reuse. In addition, we will dispose of 200 tonnes (10.5%) 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 \$66,850 for this project (based on a unit cost of \$27/tonne for disposal at public fill reception facilities and \$125/tonne<sup>5</sup> at landfills).

## HERITAGE IMPLICATIONS

20. This project will not affect any heritage site, i.e. all declared monuments, graded historic buildings and sites of archaeological interests.

## LAND ACQUISITION

21. The proposed works do not require any land acquisition.

## BACKGROUND INFORMATION

22. We upgraded **800TH** to Category B in January 2006. In June 2006, we engaged consultants to carry out a review and detailed design for the proposed works under 800TH at an estimated cost of \$730,000 under **Subhead 6100TX** "Highway works, studies and investigations for items in Category D of the Public Works Programme". The consultants have substantially completed the review and

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

the detailed design for **800TH**.

23. The aesthetic designs of the vertical type and cantilevered type noise barriers are compatible with the environment. The proposed noise barrier panels for the cantilevered type noise barriers are generally of the transparent type and non-transparent type at the upper and lower parts respectively. For vertical type noise barriers, the proposed noise barrier panels are generally of the transparent type. In line with the prevailing greening policy of the Government, we will enrich and plant more trees and shrubs in the existing planters adjacent to the slip road of Kwun Tong Bypass to enhance the landscape quality of the project. A drawing showing the perspective view of the proposed noise barriers is at Enclosure 3. As described in paragraphs 11 to 12 above, the Kwun Tong District Council and the ACABAS supported the aesthetic design.

24. The proposed retrofitting of noise barriers will involve the transplant of 22 trees, all of which are not important trees<sup>6</sup>. We will incorporate planting proposals as part of the project, including estimated quantities of 37 trees and 7 000 shrubs.

25. We estimate that the proposed works will create 69 jobs (13 for professional/technical staff and 56 for labourers) providing a total employment of 1 850 man-months.

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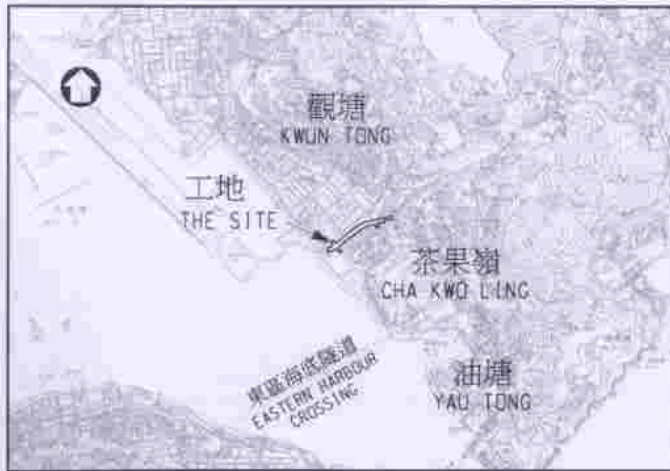
Environment Bureau  
November 2007

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<sup>6</sup> "Important trees" refer to trees on 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 event;
- (c) trees of precious or rare species;
- (d) trees of outstanding form (taking account of overall tree sizes, 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 metre (measured at 1.3 metre above ground level), or with height/canopy spread equal or exceeding 25 metres.






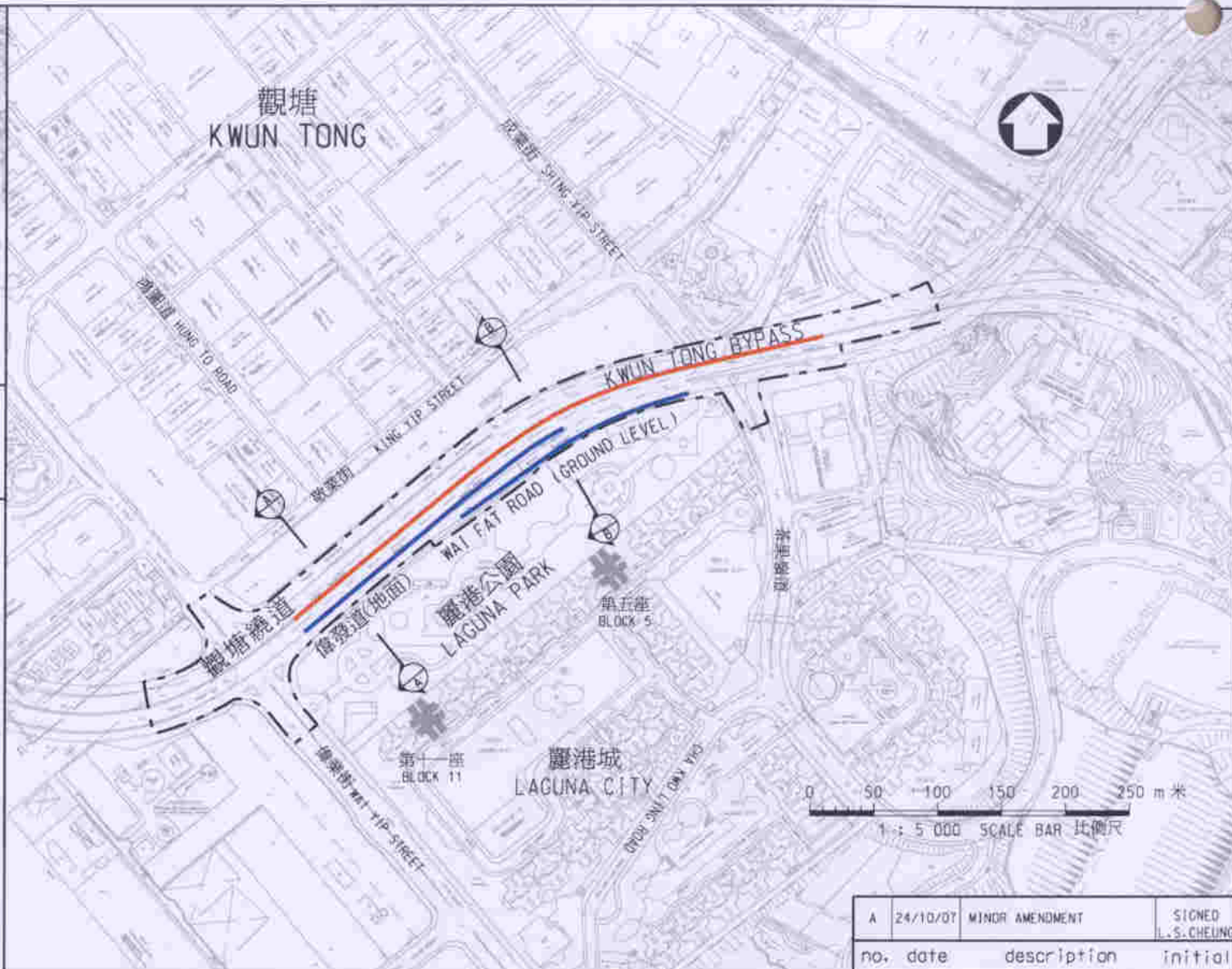


索引圖 KEY PLAN

比例 SCALE 1 : 75000

圖例 LEGEND :

-  施工範圍  
LIMIT OF WORKS AREA
-  擬建4米高垂直式隔音屏障  
PROPOSED 4m HIGH VERTICAL NOISE BARRIER
-  擬建6米高單懸臂式隔音屏障  
PROPOSED 6m HIGH SINGLE-LEAF CANTILEVERED NOISE BARRIER



圖則名稱 drawing title

工務計劃項目第800TH號 - 觀塘繞道加建隔音屏障工程 - 平面圖

PWP ITEM NO. 800TH - RETROFITTING OF NOISE BARRIERS AT KWUN TONG BYPASS - LAYOUT PLAN

設計 designed SIGNED S.M.CHUNG 14/05/07	繪圖 drawn SIGNED S.K.WONG 14/05/07
覆核 checked SIGNED K.T.CHEUNG 14/05/07	批准 approved SIGNED M.Y.MA 14/05/07
主要工程管理處 MAJOR WORKS PROJECT MANAGEMENT OFFICE	

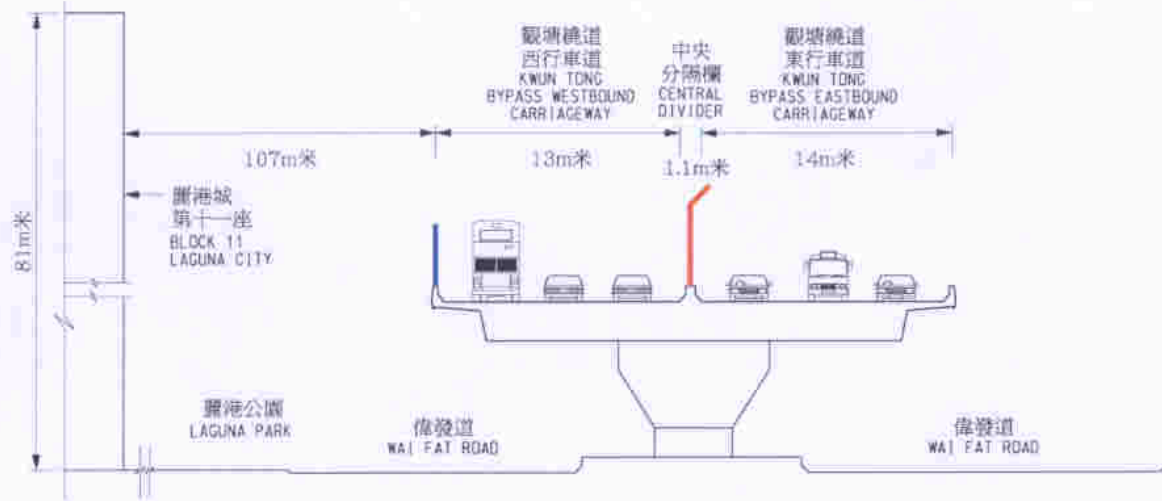
A	24/10/07	MINOR AMENDMENT	SIGNED L.S.CHEUNG
no.	date	description	initial

圖則編號 drawing no.	比例 scale
HMW6800TH-SP0004-A	1:5000 OR AS SHOWN

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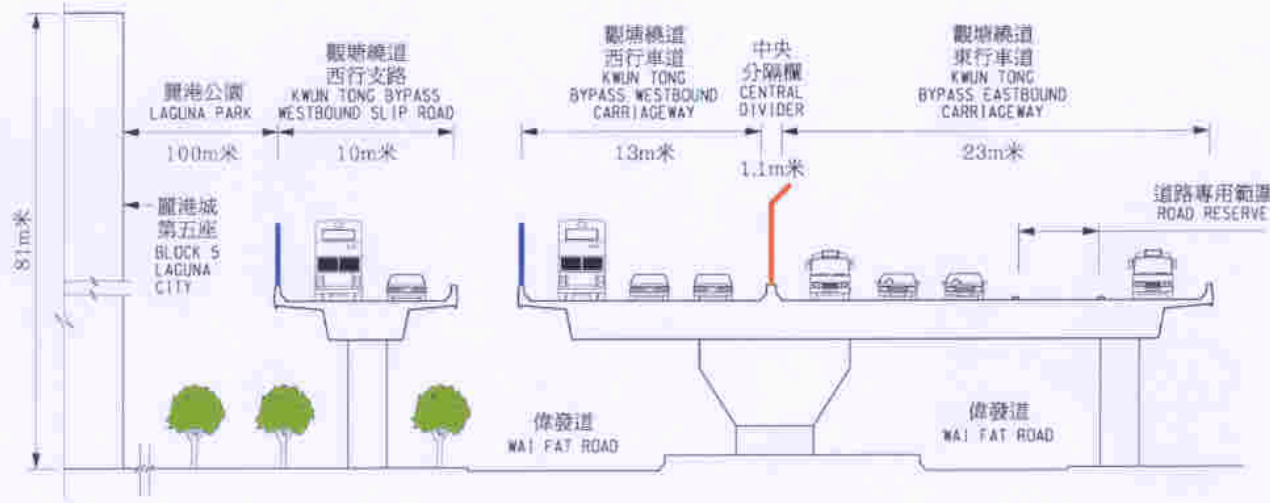
**HIGHWAYS DEPARTMENT HONG KONG** 路政署 香港



切面 SECTION A-A

圖例  
LEGEND :

-  擬建4米高垂直式隔音屏障  
PROPOSED 4m HIGH VERTICAL NOISE BARRIER
-  擬建6米高單懸臂式隔音屏障  
PROPOSED 6m HIGH SINGLE-LEAF CANTILEVERED NOISE BARRIER
-  擬種植樹木  
PROPOSED TREES



切面 SECTION B-B

圖則名稱 drawing title

工務計劃項目第800TH號 - 觀塘繞道加建隔音屏障工程 - 切面圖

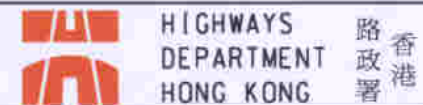
PWP ITEM NO. 800TH - RETROFITTING OF NOISE BARRIERS AT KWUN TONG BYPASS - SECTIONS

設計 designed SIGNED S.M.CHUNG 14/05/07	繪圖 drawn SIGNED Y.L.LAW 14/05/07
覆核 checked SIGNED K.T.CHEUNG 14/05/07	批准 approved SIGNED M.Y.MA 14/05/07
主要工程管理處 MAJOR WORKS PROJECT MANAGEMENT OFFICE	

A	24/10/07	MINOR AMENDMENT	SIGNED L.S.CHEUNG
no.	date	description	initial

圖則編號 drawing no. HMW6800TH-CS0003-A	比例 scale 示意圖 DIAGRAMMATIC
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**800TH – Retrofitting of noise barriers at Kwun Tong Bypass**

**Breakdown of the estimates for consultants’ fees (in September 2007 prices)**

Consultants’ staff costs		Estimated man-months	Average MPS* salary point	Multiplier (Note 1)	Estimated fee (\$million)
(a) Construction supervision and contract administration (Note 2)	Professional	–	–	–	0.2
	Technical	–	–	–	0.1
(b) Resident site Staff	Professional	30	38	1.6	2.7
	Technical	129	14	1.6	3.9
(c) EM&A programme	Professional	2	38	2.0	0.2
	Technical	4	14	2.0	0.2
				Total	7.3

\*MPS = Master Pay Scale

**Notes**

1. A multiplier of 2.0 is applied to the average MPS point to arrive at the full staff costs including the consultants’ overheads and profit as the staff will be employed in the consultants’ offices. A multiplier of 1.6 is applied to the average MPS point in the case of resident site staff supplied by the consultants. (At 1 April 2007, MPS pt. 38 = \$56,945 per month and MPS pt. 14 = \$18,840 per month).
2. The consultants’ fees for construction supervision and contract administration are estimated in accordance with Agreement No. CE 6/2006 (HY) titled “Retrofitting of Noise Barriers on Tseung Kwan O Road, Tsing Tsuen Bridge and Kwun Tong Bypass – Investigation, Design and Construction”. The construction phase of the assignment will only be executed subject to Finance Committee’s approval to upgrade **800TH** to Category A.



圖則名稱 drawing title

工務計劃項目第800TH號 - 觀塘繞道加建隔音屏障工程  
 - 透視觀景於擬建隔音屏障  
 PWP ITEM No. 800TH - RETROFITTING OF NOISE BARRIERS AT  
 KWUN TONG BYPASS - PERSPECTIVE VIEW TO PROPOSED NOISE BARRIERS

設計 designed SIGNED S.M.CHUNG 14/05/07	繪圖 drawn SIGNED S.K.WONG 14/05/07
覆核 checked SIGNED K.T.CHEUNG 14/05/07	批准 approved SIGNED M.Y.MA 14/05/07
主要工程管理處 MAJOR WORKS PROJECT MANAGEMENT OFFICE	

A.	24/10/07	MINOR AMENDMENT	SIGNED L.S.CHEUNG
no.	date	description	initial

圖則編號 drawing no.	比例 scale
HMW6800TH-SP0002-A	示意圖 DIAGRAMMATIC

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