For information

Legislative Council Panel on Transport

836TH – Improvement to Sham Tseng Interchange

PURPOSE

This paper informs Members of our proposal to upgrade **836TH** – Improvement to Sham Tseng Interchange (the Project) to Category A to relieve the present and anticipated traffic congestion at the Sham Tseng Interchange (STI).

PROJECT SCOPE AND NATURE

2. The scope of **836TH** comprises –

(a) construction of a single-lane vehicular underpass of about 60 metres (m) long underneath Tuen Mun Road (TMR) at the STI;

(b) widening of sections of the TMR slip roads of about 300 m long in total between TMR (Tsuen Wan bound (TWB)) and Castle Peak Road (CPR) from a single two-lane to a single three-lane carriageway;

(c) extension of the existing two-lane underpass underneath TMR at the STI by about 10 m;

(d) modification of the junction of the TMR slip roads and CPR (Junction J1);

(e) modification of the junction of the TMR slip roads at the STI (north of Block 5 of Rhine Garden) (Junction J2) to a signalised junction, including the extension of the existing Area Traffic

Control (ATC)[1] system to cover this road junction;

(f) installation of a closed circuit television (CCTV) system[2] at Junctions J1 and J2;

(g) ancillary works including pavement reconstruction, slope, drainage and landscaping works; and

(h) implementation of an environmental monitoring and audit (EM&A) programme for the works mentioned in paragraph 2(a) to 2(g) above.

A plan showing the proposed works with cross sections is at **Enclosure**.

3. We have substantially completed the detailed design for the Project. We plan to commence construction works in September 2009 for completion by September 2013[3].

JUSTIFICATION

4. The STI connects CPR with TMR. It consists of mainly single two-lane TMR slip roads (including a single two-lane underpass connecting TMR (TWB)), a signalised junction (Junction J1) and a priority junction (Junction J2). The STI is currently saturated during peak hours. According to the latest forecast, Junctions J1 and J2 will be further overloaded in 2016.

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[1] An ATC System is a computerised system that integrates the control and operation of traffic signals within an area.

[2] A CCTV system provides traffic operators at the control centre of the Transport Department with real-time traffic information from CCTV cameras installed at strategic locations, thus allowing quick remedial actions to be taken when necessary to cope with traffic incidents and/or emergency situations.

[3] To facilitate interface issues and avoid possible abortive work, the Improvement to Sham Tseng Interchange has been incorporated under the Eastern Section Contract of **746TH** – Reconstruction and Improvement of TMR, the completion date of which is September 2013. We will try to complete the improvement to the Interchange as early as practicable.

5. The capacities of the two junctions above during the peak hours in 2016, with and without the proposed improvement works, are summarised below in comparison with the actual figures in May 2009[4] –

Junction	Junction Capacities		
	May 2009	2016	
	Without improvement	Without improvement	With improvement
TMR slip roads / CPR (Junction J1)	4%[5]	-9%[5]	12%[5]
TMR slip roads (Junction J2)	-41%[6]	-169%[6]	5%[5]

6. Junction J1 is currently a signalised junction. It connects CPR with the TMR slip roads. At present, there is one lane through the junction for traffic going to Tsuen Wan from CPR to turn left and go uphill to join TMR. Its capacity is close to saturation during morning peak hours as demonstrated by the daily queues on CPR (TWB). The latest forecast shows that the junction will be overloaded by 9% during the morning peak in 2016. Without the proposed improvement works, queues will further develop and affect the smooth operation of the through traffic on CPR (TWB). The proposed improvement works will provide an additional lane for the left-turning vehicles on the concerned section of the TMR slip roads to go uphill and offer relief to the junction.

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[4] A survey was conducted in May 2009 to take stock of the latest traffic figures at the STI. The figures accord with previous assessments conducted by the Transport Department (TD).

[5] The performance of a traffic signalised junction is indicated by its reserve capacity (RC). A positive RC indicates that the junction is operating with spare capacity. A negative RC indicates that the junction is overloaded, resulting in traffic queues and longer delay time.

[6] The performance of a priority junction is normally measured by its design flow/capacity (DFC) ratio. A DFC ratio less than 1.0 (or in positive percentage) indicates that the junction is operating within design capacity. A DFC ratio greater than 1.0 (or in negative percentage) indicates that the junction is overloaded, resulting in traffic queues and longer delay time to the minor arm traffic. The figures shown in the tables are however converted from normal DFC value to give the equivalent percentages for easy comparison.

7. Junction J2 is currently a priority junction. It connects the TMR slip roads with TMR (both TWB and Tuen Mun Bound (TMB)) and serves traffic to and from CPR. The continuous uphill traffic from CPR (TWB) towards TMR (TWB) now dominates the traffic movements at this junction and affects the downhill traffic from TMR (TMB) towards CPR. If Junction J2 is not upgraded with the proposed improvement, it will be overloaded by 169% during peak hours in 2016, with long queues along the slow lane of TMR (TMB) affecting the smooth operation of the through traffic thereon. We propose to construct another underpass exclusively for the downhill traffic from TMR (TWB) and convert Junction J2 into a signalised one at the same time.

8. With the above proposed works, there will then be a two-lane underpass for the uphill traffic and another one-lane underpass for the downhill traffic. The performance of Junction J2 will be improved with a RC of 5% in 2016.

9. TD extended the ATC system to cover the Sham Tseng area, including Junction J1, in January 2009. We will take this opportunity to further extend the ATC system to cover the proposed signalised Junction J2. Together with the CCTV system, this will provide real-time traffic information to assist in coping with traffic incidents and/or emergency situations at the STI.

FINANCIAL IMPLICATIONS

10. We estimate the cost of **836TH** to be $99.6 million in money-of-the-day (MOD) prices, made up as follows –

		$ million
(a)	Roads and drains	8.4
(b)	Earthworks	5.7
(c)	Underpass	58.7
(d)	Slope works	3.1
(e)	Landscaping	1.2

				$ million	
(f)	Consultant's fees			1.4	
	(i)	construction supervision and contract administration	1.0		
	(ii)	management of resident site staff	0.3		
	(iii)	EM&A programme	0.1		
(g)	Remuneration of resident site staff			6.7	
(h)	Contingencies			7.7	
			Sub-total	92.9	(in September 2008 prices)
(i)	Provision for price adjustment			6.7	
			Total	99.6	(in MOD prices)

11. We estimate that the proposed works will create about 86 jobs (17 for professional/technical staff and 69 for labourers) providing a total employment of about 1 800 man-months.

PUBLIC CONSULTATION

12. When we consulted the Tsuen Wan District Council (TWDC) on **746TH** – Reconstruction and Improvement of TMR in November 2006, Members expressed concerns on the traffic at the STI tailing back to CPR (TWB) and TMR (TMB) during peak hours. They requested the Administration to study the improvements to the traffic situation at the STI. We conducted a review on Junctions J1 and J2, the findings of which are set out in paragraphs 4 to 9 above. We consulted the TWDC on the scheme on 30 September 2008. Members supported the Project and requested its early implementation.

13. We consulted the Advisory Committee on the Appearance of Bridges and Associated Structures[7] on the aesthetic design of the proposed retaining wall and underpass under the Project in November 2008. The Committee accepted the proposed aesthetic design.

14. We gazetted the proposed works under the Roads (Works, Use and Compensation) Ordinance (Cap. 370) (the Ordinance) on 19 December 2008 and received no objection. The Acting Permanent Secretary for Transport and Housing (Transport), under the delegated authority from the Secretary for Transport and Housing, authorised the proposed works under the Ordinance on 19 March 2009. The notice of authorisation was gazetted on 27 March 2009.

ENVIRONMENTAL IMPLICATIONS

15. The Project is not a designated project under the Environmental Impact Assessment Ordinance (Cap. 499). We have carried out an environmental review including noise, air and water quality impacts during construction as well as landscape, visual and waste management issues. The review concluded that the Project would not cause long-term environmental impacts. We will implement all the recommended mitigation measures to mitigate environmental impacts to within the established standards and guidelines.

16. During construction, we will control noise, dust and site run-off nuisance to comply with established criteria through the implementation of appropriate mitigation measures in the works contract. We will implement an EM&A programme during the course of construction to ensure that proactive measures are adopted to avoid the occurrence of adverse environmental impacts on the public.

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[7] 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 enclosures, from the aesthetic and visual impact points of view.

17. We have considered minimising the cutting of existing steep slopes and maximising the angle of cut slopes through optimal road alignment design to reduce the generation of construction waste where possible. In addition, we will require the contractor 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 construction waste to public fill reception facilities[8]. We will encourage the contractor 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.

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 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 37 700 tonnes of construction waste. Of these, we will reuse about 900 tonnes (2.4%) of inert construction waste on site and deliver 36 300 tonnes (96.3%) of inert construction waste to public fill reception facilities for subsequent reuse. In addition, we will dispose of 500 tonnes (1.3%) 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 about $1.0 million for this Project (based on a unit cost of $27/tonne for disposal at public fill reception facilities and $125/tonne[9] at landfills).

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[8] 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.

[9] This estimate has taken into account the cost of 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 $\$90/m^3$), nor the cost to provide new landfills (which is likely to be more expensive) when the existing ones are filled.

20. Of the 63 trees within the project boundary, seven trees will be preserved. The proposed works will involve the removal of 56 trees including 55 to be felled and one to be transplanted within the project site. All of the trees to be removed are not important trees[10]. We will incorporate planting proposals as part of the Project, including estimated quantities of about 1 300 trees, 4 100 shrubs and 1 600 square metres 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 interest and Government historic sites identified by the Antiquities and Monuments Office.

LAND ACQUISITION

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

WAY FORWARD

23. We intend to submit a funding application to the Public Works Sub-Committee and Finance Committee of the Legislative Council on 3 June 2009 and 19 June 2009 respectively to upgrade the Project to Category A. Subject to funding approval, we plan to start the construction works in September 2009 for completion by September 2013.

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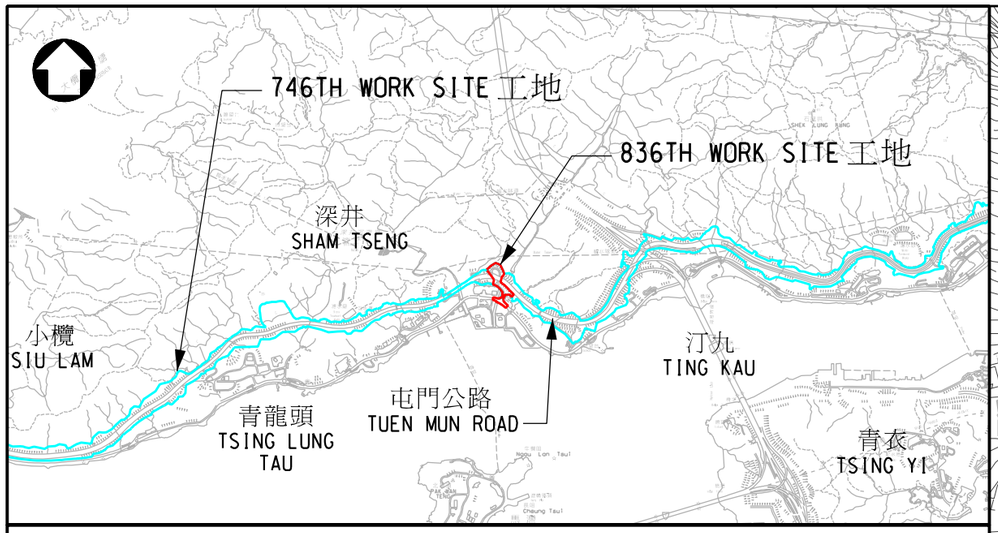
[10] "Important trees" refer to trees in the Register of Old and Valuable Trees, or any other trees that meet one or more of the following criteria –

(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 metre (measured at 1.3 metre above ground level), or with height/canopy spread equal or exceeding 25 metres.

ADVICE SOUGHT

24. Members are invited to note the contents of this paper.

Transport and Housing Bureau
May 2009



索引圖 KEY PLAN 比例 SCALE 1:50 000

圖例
LEGEND:

- 施工區界限 LIMIT OF WORKS AREA
- 行車線數 NO. OF TRAFFIC LANE
- 擬修改的道路路線 PROPOSED ROAD REALIGNMENT
- 擬建行車道 PROPOSED CARRIAGEWAY
- 擬建行車隧道 PROPOSED UNDERPASS
- 擬建斜坡改善工程 PROPOSED SLOPE IMPROVEMENT WORKS
- 擬建景觀美化工程 PROPOSED LANDSCAPING WORKS
- 擬建護土牆 PROPOSED RETAINING WALL

no.	date	description	initial
A	11/05/09	GENERAL REVISION	SIGNED L.T.CHAN

圖則名稱 drawing title

工務計劃項目第836TH號 - 深井交匯處改善工程 - 平面圖
PWP ITEM No. 836TH - IMPROVEMENT TO SHAM TSENG INTERCHANGE - LAYOUT

設計 designed	SIGNED L.T.CHAN 07/05/09	繪圖 drawn	SIGNED K.S.LEUNG 07/05/09
覆核 checked	SIGNED S.C.WONG 07/05/09	批准 approved	SIGNED C.K.WONG 07/05/09

主要工程管理處
MAJOR WORKS PROJECT MANAGEMENT OFFICE

圖則編號 drawing no. HMW6836TH-SP0001-A

比例 scale 1:2000

HIGHWAYS DEPARTMENT HONG KONG 香港路政署

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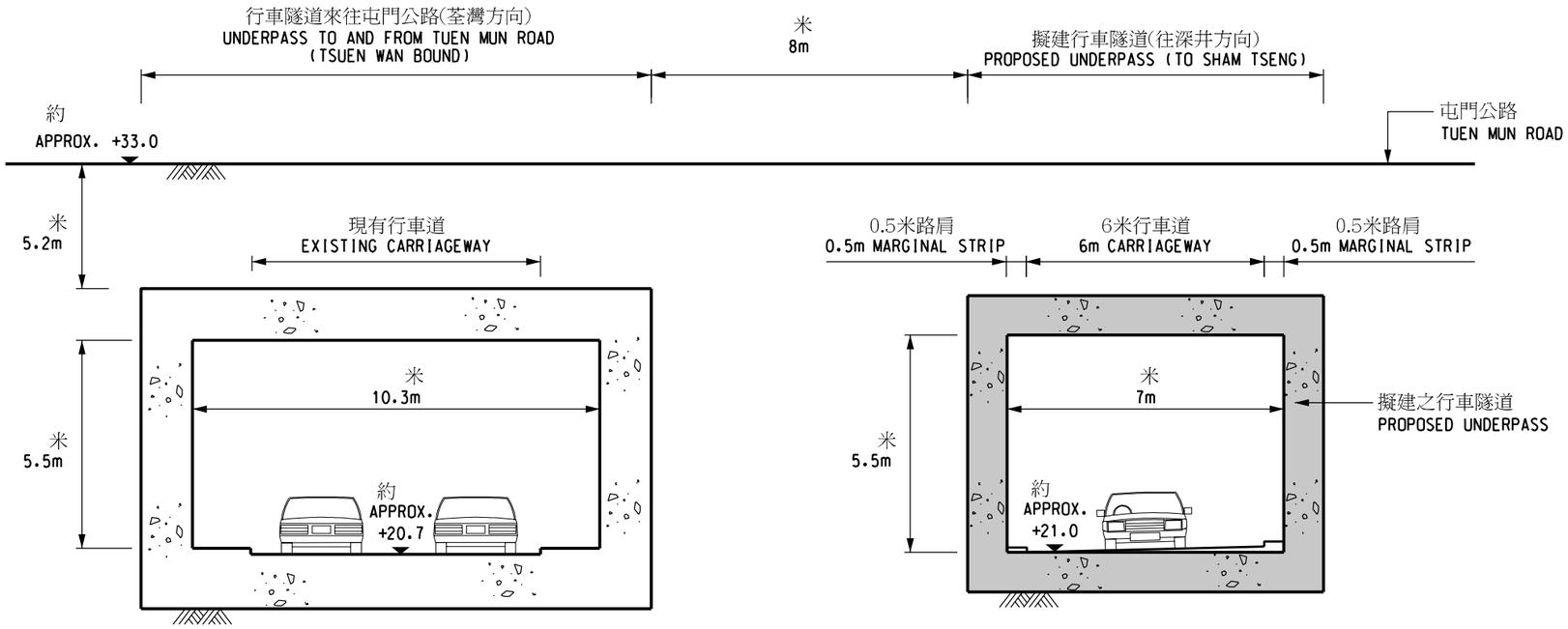
A3 420 x 297

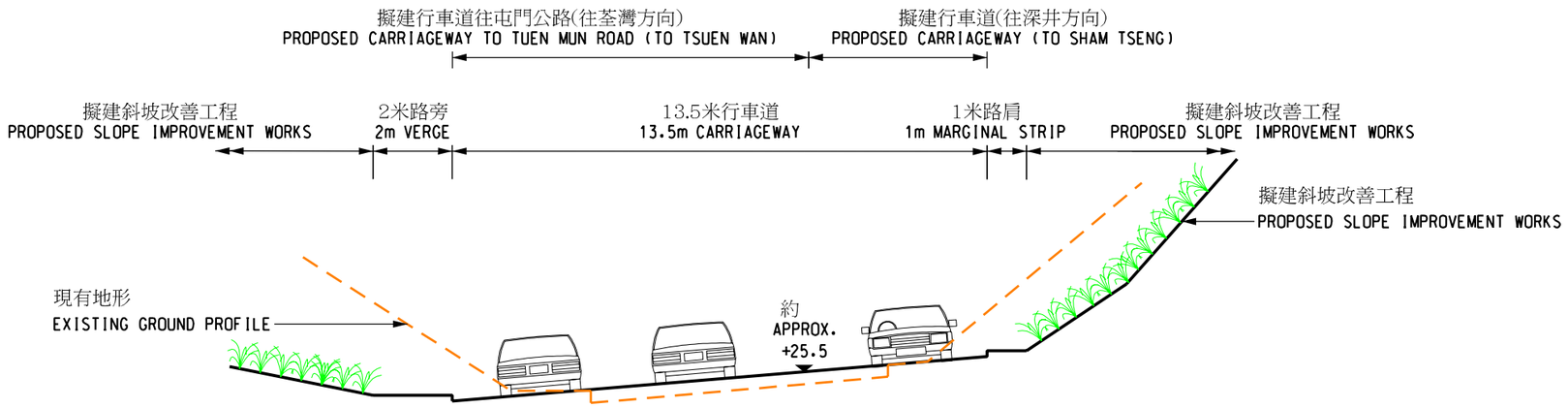
註釋 NOTES:

所有水平均以米為單位並在香港主水平基準上。

ALL LEVELS ARE IN METRES ABOVE HONG KONG PRINCIPAL DATUM.



切面 SECTION 1 - 1



切面 SECTION 2 - 2

no.	date	description	initial
A	11/05/09	GENERAL REVISION	SIGNED L.T.CHAN

圖則名稱 plan title

工務計劃項目第836TH號 - 深井交匯處改善工程 - 切面圖
PWP ITEM NO.836TH - IMPROVEMENT TO SHAM TSENG INTERCHANGE - CROSS SECTIONS

設計 designed	SIGNED L.T.CHAN 07/05/09	繪圖 drawn	SIGNED K.S.LEUNG 07/05/09
覆核 checked	SIGNED S.C.WONG 07/05/09	批准 approved	SIGNED C.K.WONG 07/05/09

主要工程管理處 MAJOR WORKS PROJECT MANAGEMENT OFFICE

圖則編號 plan no. HMW6836TH-SP0002-A

比例 scale 1:150

HIGHWAYS DEPARTMENT HONG KONG 香港路政署

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