

ITEM FOR PUBLIC WORKS SUBCOMMITTEE OF FINANCE COMMITTEE

HEAD 706 – HIGHWAYS

Transport – Roads

746TH – Reconstruction and improvement of Tuen Mun Road

Members are invited to recommend to Finance Committee –

- (a) the upgrading of part of **746TH**, entitled “Reconstruction and improvement of Tuen Mun Road – detailed design and associated site investigations” to Category A, at an estimated cost of \$71.6 million in money-of-the-day prices; and
- (b) the retention of the remainder of **746TH** in Category B.

PROBLEM

Tuen Mun Road (TMR) was designed and built in the 1970s. Most at-grade sections of TMR have already reached the end of the service life and are now in a state beyond economical repair. Also, we need to upgrade TMR to the current design standards as far as practicable.

PROPOSAL

2. The Director of Highways, with the support of the Secretary for the

Environment, Transport and Works, proposes to upgrade part of **746TH** to Category A at an estimated cost of \$71.6 million in money-of-the-day (MOD) prices to engage consultants to undertake the detailed design for the reconstruction and improvement of the section of TMR between Tsuen Wan and Sam Shing Hui and to carry out the associated site investigation works.

PROJECT SCOPE AND NATURE

3. The latest scope of works for **746TH** includes –
- (a) reconstruction of the 13.9 kilometers (km) of at-grade sections of the section of TMR between Tsuen Wan and Sam Shing Hui (“the section of TMR”);
 - (b) improvement of the road design of the section of TMR to current expressway standards as far as practicable, including widening of traffic lanes, provision of hard shoulders and improvement of sight lines, gradients, road curvature, super-elevation, etc;
 - (c) replacement of barriers at the central median with current standard concrete profile barriers and modification of the edge parapets on bridges / viaducts and the roadside barriers along the at-grade sections;
 - (d) lengthening of the merging / diverging lanes at the interchanges at Sham Tseng and Siu Lam;
 - (e) upgrading of the traffic control and surveillance system (TCSS);
 - (f) retrofitting of noise barriers at locations currently exposed to traffic noise levels exceeding the limit of 70dB (A) L_{10} (1 hour)¹ where practicable; and
 - (g) associated civil, structural and slope upgrading works, and works on environmental mitigation, drainage, road lightings, water mains and traffic aids.

A plan showing the proposed works is at Enclosure 1.

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¹ L_{10} (1 hour) is the noise level exceeded for 10% of a one-hour period, generally used for road noise at peak traffic flow. The noise level standard of 70dB (A) for residential premises stipulated in the Hong Kong Planning Standards and Guidelines is adopted as the administrative guideline for retrofitting works identified under the new noise policy.

4. The part of the project we now propose to upgrade to Category A comprises –

- (a) the re-examination of the option for widening the section of TMR to dual four-lane;
- (b) the detailed design of the works described in paragraphs 3 above;
- (c) the detailed design of a dual four-lane option arising from 4(a) above if considered feasible;
- (d) associated site investigations and works supervision; and
- (e) preparation of tender documents and assessment of tenders.

5. We plan to start the detailed design of the proposed works in August 2004 for completion in August 2005. We intend to commence the construction works in end 2005 for completion by phases between 2009 and 2010.

JUSTIFICATION

6. The existing section of TMR between Tsuen Wan and Sam Shing Hui is a dual three-lane carriageway of about 15.5 km in length comprising about 13.9 km at-grade and 1.6 km bridge structures. The road has been in service for more than 20 years. Most of the at-grade sections have already reached the end of their service life² and are now beyond economical repair.

7. The annual maintenance cost per square metre (m²) for the section of TMR is about \$50 which is nearly 37% higher than that for the adjacent Yuen Long Highway and San Tin Highway. Maintenance works for TMR have become more frequent. There were on average 387 lane closures per annum on the section of TMR. The aging carriageway renders frequent ad-hoc repairs necessary which effectively reduce the capacity of TMR. Reconstruction of the at-grade sections of the highway will minimise repair works and the associated traffic disruption.

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² The design service life of at-grade road pavement is 20 years while that for highway bridge structures is 120 years.

8. As TMR was built over 20 years ago according to design standards of the time, its design is not completely in line with the current expressway standard. While the safety of motorists is assured³, to improve traffic flow and to enhance road safety, we propose to upgrade the section of TMR to current expressway standard as far as practicable as part of the reconstruction programme, including widening of the lane width to the current standard, provision of hard shoulders, improvement of sight lines, gradients, road curvature, super-elevation etc.

9. In order to provide better vehicle containment and also enhance road safety, we will replace the barriers along the central median of the section of TMR with standard concrete profile barriers and modify the edge parapets at bridges / viaducts and the roadside barriers along the at-grade sections.

10. The merging / diverging lanes of the existing interchanges at Sham Tseng and Siu Lam are too short to meet current traffic engineering standards. We will lengthen the merging / diverging lanes at these two interchanges, which will enable motorists to enter and exit TMR via the interchanges more smoothly and safely.

11. The existing TCSS consists of a closed circuit television (CCTV) system which covers only part of the section of TMR, and the TMR Traffic Congestion Indicators⁴. We will take the opportunity to carry out upgrading works for the TCSS to enhance the efficiency and effectiveness of traffic and incident management. Such works include replacing the existing aged cables, adding more cameras for the CCTV system for a more comprehensive coverage of the section of TMR, enabling prompt incident detection. We will also replace the existing traffic congestion indicators with more informative variable message signs.⁵

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³ The Report on Enhancement of Highway Safety issued by the Independent Expert Panel on Tuen Mun Road Incident in December 2003 stated that :

“Having examined the past accident statistics, the Panel considers that Tuen Mun Road is intrinsically safe as seen by its accident rates, which are about average for all expressways...” (Page vii, para. 20)

“The Panel considers that the marginally lower standards of Tuen Mun Road at a few locations, due to changes in standards over time, mainly affect the comfort of motorists but not their safety...” (Page 118, para. 10.22)

⁴ A traffic congestion indicator is a message sign advising motorists on traffic condition ahead well before they enter the expressway.

⁵ Variable message signs show more precise traffic information in the forms of texts and graphics. They can show the location of and expected delays due to incidents ahead and recommend diversion routes.

12. In November 2000, the Administration introduced a new policy to address the noise impact of existing roads on neighboring residents. Under this new policy, direct engineering solutions by way of retrofitting of barriers and enclosures, and resurfacing with low noise material, should be implemented where practicable on existing excessively noisy roads where the noise level exceeds the limit of 70dB (A) L₁₀ (1 hour). We plan to take the opportunity to install noise barriers, to the extent practicable, at those locations along the section of TMR which are subject to excessive traffic noise.

13. We completed the investigation and preliminary design (I&PD) for the project in April 2004. We need to proceed to the detailed design stage to refine the findings and recommendations of the I&PD assignments, including the re-examination of the option for widening the section of TMR covered under the project to dual four-lane in the light of the concerns of Members of relevant DCs and Legislative Council Panel on Transport, and to carry out detailed design of the works. We will also have to carry out additional site investigation works to collect the necessary site data for the detailed design. As the Highways Department does not have the necessary in-house resources, we need to employ consultants to undertake the detailed design and the associated site investigation works.

FINANCIAL IMPLICATIONS

14. We estimate the cost of this part of the project to be \$71.6 million in MOD prices (see paragraph 15 below), made up as follows –

	\$ million
(a) Consultants' fees	54.8
(i) re-examination of the dual four-lane option	1.0
(ii) review of the findings of the I&PD assignments	5.6
(iii) detailed design	41.7

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(iv) preparation of tender documents and assessment of tenders	5.6	
(v) supervision of site investigations	0.9	
(b) Site investigations	13.2	
(c) Contingencies	6.3	
	Sub-total	74.3 (in September 2003 prices)
(d) Provision for price adjustment	(2.7)	
	Total:	71.6 (in MOD prices)

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

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

Year	\$ million (Sep 2003)	Price Adjustment Factor	\$ million (MOD)
2004 – 2005	36.5	0.97150	35.5
2005 – 2006	37.8	0.95450	36.1
	<u>74.3</u>		<u>71.6</u>

16. 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 2004 to 2006. We will employ consultants on a lump sum basis with provision for price fluctuation as the duration of the consultancy agreement will exceed 12 months. The consultants will supervise the site investigation works under a contract to be awarded through competitive tendering.

17. The proposed detailed design and site investigations will not give rise to any annual recurrent expenditure.

PUBLIC CONSULTATION

18. We consulted the Tuen Mun (TM) District Council (DC), Tsuen Wan DC and Yuen Long (YL) DC on 22 March, 30 March and 15 April 2004 respectively on the proposed reconstruction and improvement to TMR. Members of the DCs generally had no objection to the project and urged for its early completion. Some members of the TM and YL DCs suggested that the section of TMR be widened to dual four-lane. We explained to them that we have examined the feasibility and practicability of widening the section of TMR to dual four-lane but found this impracticable due to the physical constraints. There would also be significant environmental and land resumption implications for such a proposal.

19. We consulted the Legislative Council Panel on Transport on 23 April 2004. Members supported the early commencement of the project. Some Members suggested that the TMR, or sections of it where feasible, be widened to dual four-lane. We explained to them along the line in paragraph 18 above and added that we would re-examine in the detailed design the feasibility of the suggestion. Some Members were concerned about the impact of traffic flow on TMR with the commissioning of the Hong Kong – Shenzhen Western Corridor (HK – SWC) and the Deep Bay Link (DBL) in 2005/2006 during the construction stage of the project. We explained that there was still capacity for TMR to absorb additional traffic arising from the commissioning of the HK – SWC and DBL during the construction stage of the project. In response to Members' request for supplementary information on the relevant volume to capacity (v/c) ratios, we issued a supplementary Information Paper on 7 May 2004.

ENVIRONMENTAL IMPLICATIONS

20. The project is not a designated project under the Environmental Impact Assessment Ordinance (Cap. 499). We have carried out an environmental study covering construction noise impact, waste management, landscape and visual impact, ecology, construction air quality and construction water quality impact for the project. The study has concluded that the project will not cause long-term environmental impact.

21. The proposed detailed design will not give rise to any adverse

/environmental

environmental implications and the proposed site investigations will only generate a negligible amount of construction and demolition (C&D) materials. The detailed mitigation measures for the project will be formulated during the detailed design stage. We will also require the consultants to take into consideration the need for tree preservation and will also incorporate tree planting proposals, where possible, when the project is implemented.

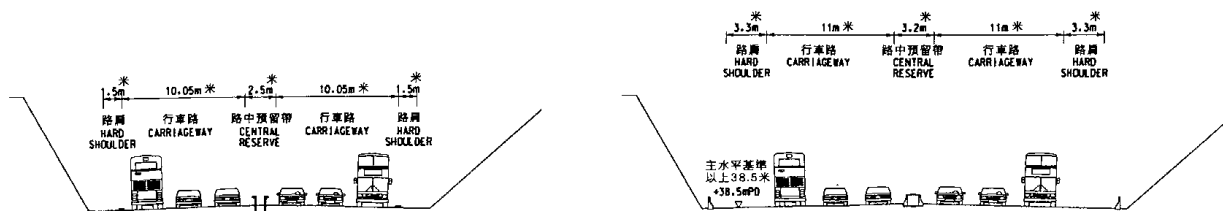
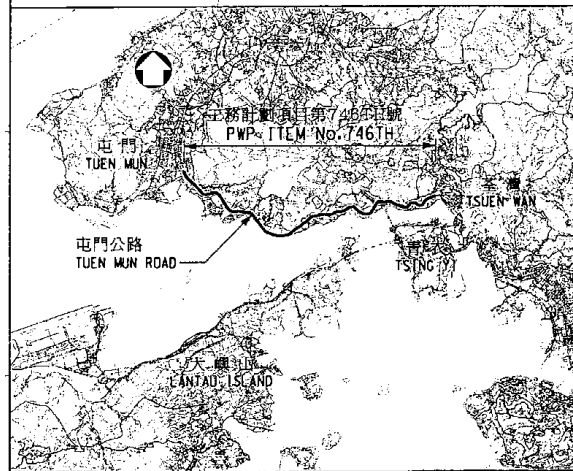
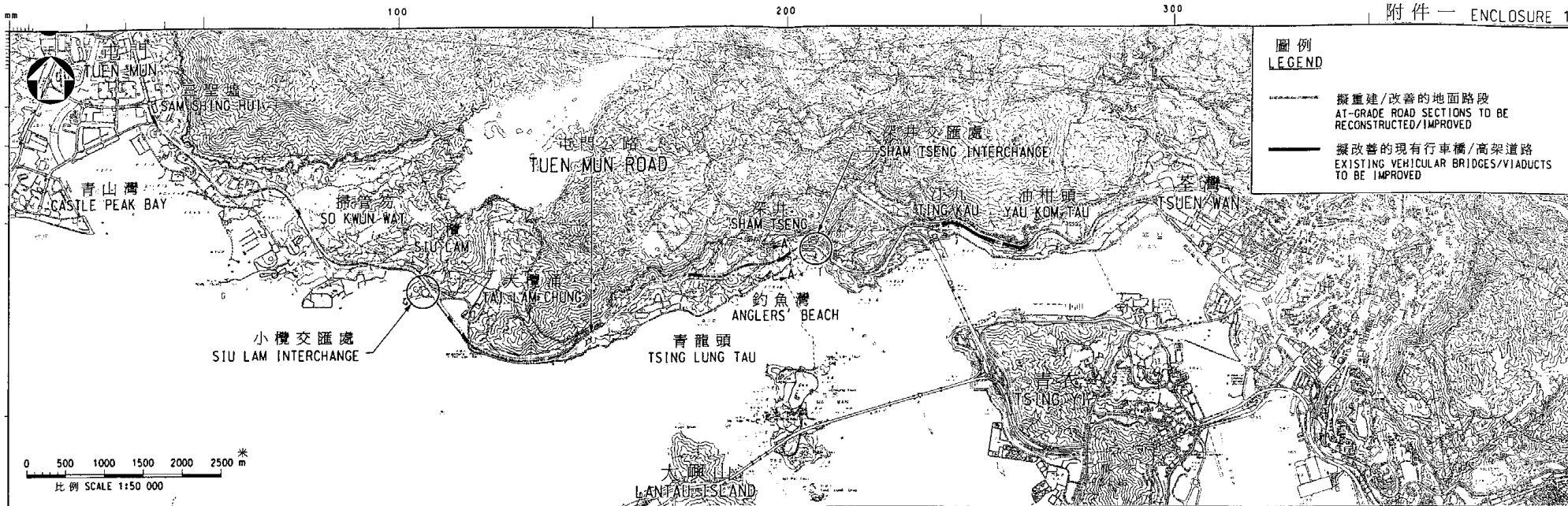
LAND ACQUISITION

22. The proposed detailed design and site investigations do not require any land acquisition. However, land acquisition is likely required for the construction of the project. We will ascertain the details and scope of land acquisition in the detailed design stage.

BACKGROUND INFORMATION

23. We upgraded **746TH** to Category B in September 2000. We upgraded part of **746TH** to Category A as **755TH** "Reconstruction and improvement of Tuen Mun Road – investigation and preliminary design" in June 2001 at an estimated cost of \$37.8 million in MOD prices. We engaged consultants in April 2002 to undertake the investigation and preliminary design and the ground investigation works for the project. The consultants completed the works in April 2004.

24. We estimate that the proposed works will create about 120 jobs (25 for labourers and another 95 for professional / technical staff) providing a total employment of 1 460 man-months.



橫切面 A-A
CROSS - SECTION A-A
不按比例 NOT TO SCALE

圖則名稱 drawing title

工務計劃項目第746TH號-屯門公路重建及改善工程
PWP ITEM No. 746TH - RECONSTRUCTION AND IMPROVEMENT OF TUEN MUN ROAD

設計 designed S.C. WONG 15/04/04	繪圖 drawn W.K. CHIU 15/04/04	圖則編號 drawing no. HMW6746TH-SP0002	比例 scale 圖示 AS SHOWN
覆核 checked S.C. WONG 15/04/04	批准 approved S.C. WONG 15/4/04	© 版權所有 COPYRIGHT RESERVED	
主要工程管理處 MAJOR WORKS PROJECT MANAGEMENT OFFICE		HIGHWAYS DEPARTMENT 路政署 HONG KONG	

Enclosure 2 to PWSC(2004-05)13

746TH – Reconstruction and improvement of Tuen Mun Road

Breakdown of estimates for consultants' fees and site investigation costs (in September 2003 prices)

		Estimated man- months	Average MPS* salary point	Multiplier (Note 1)	Estimated fee (\$million)
Consultants' staff costs					
(a) Re-examination of the dual four-lane option	Professional	5	38	2.0	0.6
	Technical	11	14	2.0	0.4
(b) Review of the findings of the I&PD assignments	Professional	30	38	2.0	3.4
	Technical	60	14	2.0	2.2
(c) Detailed design	Professional	240	38	2.0	26.9
	Technical	398	14	2.0	14.8
(d) Preparation of tender documents and assessment of tenders	Professional	30	38	2.0	3.4
	Technical	60	14	2.0	2.2
(e) Supervision of site investigation works	Professional	4	38	1.6	0.4
	Technical	17	14	1.6	0.5
Total consultants' staff costs					54.8
Out-of-pocket expenses (Note 2)					
(a) Site investigations					13.2
Total					68.0

* 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 (As at 1 January 2004, MPS pt. 38 = \$55,993 per month, and MPS pt. 14 = \$18,603 per month). A multiplier of 1.6 is applied in the case of site staff supplied by the consultants.
2. Out-of-pocket expenses are the actual costs incurred. The consultants are not entitled to any additional payment for overheads or profit in respect of these items.
3. The figures given above are based on estimates prepared by the Director of Highways. We will know the actual man-months and fees only when we have selected the consultants through the usual competitive lump sum fee bid system.