

For discussion
on 25 May 2005

PWSC(2005-06)11

ITEM FOR PUBLIC WORKS SUBCOMMITTEE OF FINANCE COMMITTEE

HEAD 707 - NEW TOWNS AND URBAN AREA DEVELOPMENT
New Territories East Development
Transport – Roads
705TH – Sha Tin New Town, stage 2 - Trunk Road T4

Members are invited to recommend to Finance
Committee -

- (a) the upgrading of part of **705TH**, entitled “Sha Tin New Town, stage 2 - detailed design and site investigation for Trunk Road T4”, to Category A at an estimated cost of \$20.2 million in money-of-the-day prices; and
- (b) the retention of the remainder of **705TH** in Category B.

PROBLEM

We need to carry out site investigation and detailed design for the proposed Trunk Road T4, the purpose of which is to meet the traffic demand in Sha Tin.

/PROPOSAL

PROPOSAL

2. The Director of Civil Engineering and Development, with the support of the Secretary for the Environment, Transport and Works, proposes to upgrade part of **705TH** to Category A at an estimated cost of \$20.2 million in money-of-the-day (MOD) prices for site investigation and engagement of consultants to carry out detailed design for the proposed Trunk Road T4.

PROJECT SCOPE AND NATURE

3. The scope of **705TH** comprises –

- (a) construction of a dual 2-lane elevated vehicular flyover of about 1 kilometre (km) long above Lion Rock Tunnel Road;
- (b) construction of single lane slip roads of a total length of 2 km, connecting the vehicular flyover to Trunk Road T3, Shing Mun Tunnel Road and Sha Tin Road;
- (c) widening of about 500 metres (m) of Sha Tin Road from dual 2-lane to dual 4-lane;
- (d) associated road, drainage, sewerage and landscaping works;
- (e) provision of about 3.2 km of noise barriers/enclosures, including 1 550 m of vertical noise barriers, 1 450 m of cantilevered noise barriers and 200 m of noise enclosures; and
- (f) an environmental monitoring and audit (EM&A) programme for works mentioned in sub-paragraphs (a) to (e) above.

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

/(a)

- (a) detailed design of the works described in paragraphs 3(a) to (e) above, including review of the preliminary design and Environmental Impact Assessment (EIA);
- (b) associated site investigation and supervision; and
- (c) preparation of tender documents and assessment of tenders.

————— A site plan showing the proposed works and the basic design of the different sections of the proposed Trunk Road T4 are at **Enclosures 1 and 2** respectively. The exact alignment and design of the trunk road may be modified in the course of detailed design having regard to technical constraints and views collected from the public.

5. We plan to start the detailed design and site investigation works in July 2005 for completion in November 2006. We intend to start the construction works in July 2007 for completion in March 2010.

JUSTIFICATIONS

6. Ma On Shan is a new town with population of about 200,000. Existing traffic makes use of Tai Po Road (Sha Tin section) and other district distributor roads to gain access to Shing Mun Tunnel and Trunk Road T3¹ which is now under construction and will serve as an alternative route to Kowloon. The proposed Trunk Road T4 will connect Sha Tin Road with the future Trunk Road T3 and Shing Mun Tunnel Road, and will serve as a bypass to Tai Po Road (Sha Tin section) and other district distributor roads, which are expected to operate beyond their capacities in the near future.

7. The Traffic Impact Assessment of the Investigation Study for Trunk
/Road

¹ **458CL** – “Sha Tin New Town, stage 2 – construction of Road T3” was upgraded to Category A in February 2003 with an approved project estimate of \$2,120.2 million in MOD prices. Trunk Road T3, scheduled for completion in April 2007, will serve as an approach to Route 8 on Sha Tin side.

Road T4 conducted in November 2004 concluded that Trunk Road T4 would relieve Tai Po Road (Sha Tin section) and the key junctions in the vicinity of Tai Po Road from traffic congestion. The volume to capacity (v/c) ratios² at peak hours for Tai Po Road (Sha Tin section) in 2009 and 2016, with and without Trunk Road T4, are shown in the following table –

Section of Tai Po Road	Without T4		With T4	
	2009	2016	2009	2016
Between Lion Rock Tunnel Road and Sha Tin Rural Committee Road	1.11	1.15	0.99	1.02
Between Sha Tin Rural Committee Road and Fo Tan Road	1.00	1.10	0.92	1.00

8. The peak junction performances³ of the major nearby junctions, with and without Trunk Road T4, are at **Enclosure 3** and summarised below –

Junction	Without T4		With T4	
	2009	2016	2009	2016
Sha Tin Rural Committee Road/ Yuen Wo Road	-2%	-4%	41%	31%
Sha Tin Rural Committee Road/ Tai Chung Kiu Road/ Sha Tin Wai Road	-6%	-10%	24%	22%
Sha Tin Wai Road/ Sha Tin Road Slip Roads	-1%	-5%	14%	14%

² Volume/capacity (v/c) ratio is an indicator which reflects the performance of a road. A v/c ratio equals 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; that above 1.2 indicates more serious congestion with traffic speeds deteriorating progressively with further increase in traffic.

³ The performance of a traffic signal 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 junction is overloaded, resulting in traffic queues and longer delay time.

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9. Diversion of the through traffic from the district road network to the proposed Trunk Road T4 will also help reduce air and noise pollution currently experienced by residents along those roads.

10. We propose to engage consultants to supervise the site investigation works and to carry out the detailed design, including review of preliminary design and EIA, preparation of tender documents and assessment of tenders.

FINANCIAL IMPLICATIONS

11. We estimate the cost of the detailed design to be \$20.2 million in MOD prices (see para. 12 below), made up as follows –

	\$ million	
(a) Site investigation	4.0	
(b) Consultants' fees	14.3	
(i) detailed design	12.0	
(ii) preparation of tender documents and assessment of tenders	1.3	
(iii) supervision of site investigation	1.0	
(c) Contingencies	1.8	
	<hr/>	
	Sub-total	20.1 (in September 2004 prices)
(d) Provision for price adjustment	0.1	
	<hr/>	
	Total	20.2 (in MOD prices)
	<hr/>	

/A

A breakdown by man-months of the estimate for consultants' fees is at Enclosure 4.

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

Year	\$ million (Sept 2004)	Price adjustment factor	\$ million (MOD)
2005 – 06	7.5	1.00450	7.5
2006 – 07	9.3	1.00576	9.4
2007 – 08	3.3	1.00576	3.3
	20.1		20.2

13. We have derived the MOD estimates on the basis of the Government's latest forecast of the trend rate of change in the prices of public sector building and construction output for the period 2005 to 2008. Subject to funding approval, we will instruct the consultants for the existing Sha Tin New Town Development, Stage 2 to undertake the detailed design. We will allow for price adjustments in the consultancy agreement as the duration of the consultancy will exceed 12 months. We will tender the contract for site investigation works under a standard remeasurement contract as the quantities of works involved may vary according to the actual ground conditions.

14. The proposed site investigation works and consultancy have no recurrent financial implications.

PUBLIC CONSULTATION

15. We consulted the Traffic and Transport Committee (T&TC) of the Sha Tin District Council on 6 January 2005. While Members supported the project unanimously, the Committee passed two motions asking the Administration to –

/(a)

- (a) include in the detailed design a two-way slip road linking the proposed Trunk Road T4 to Che Kung Miu Road at its junction with Sha Tin Tau Road; and
- (b) ensure inclusion of adequate traffic noise mitigation measures along and in the vicinity of Trunk Road T4 in the project.

16. In response to the first motion, we will review the preliminary design during the detailed design stage, taking into account the proposed two-way slip road to Che Kung Miu Road. We will consult the T&TC on the feasibility and necessity for the inclusion during the detailed design stage. On the second motion, we will ensure inclusion of all the mitigation measures required under the EIA Ordinance in the construction contract for Trunk Road T4. These plans were reported to the T&TC at its meeting on 3 March 2005 and were agreeable to the Members.

17. We circulated an information paper to the Legislative Council Panel on Transport on 22 April 2005. Members raised no comment on the proposed project.

ENVIRONMENTAL IMPLICATIONS

18. The proposed Trunk Road T4 project is a designated project under the EIA Ordinance. We completed an EIA report in December 2004. We will implement the recommended mitigation measures to alleviate noise impacts during the construction and operational phases.

19. The proposed site investigation works and consultancy will not have any adverse environmental implications. We will incorporate into the detailed design and relevant works contracts all the mitigation measures and an EM&A programme as recommended in the EIA report.

20. The proposed site investigation works will only generate minimal

/amount

amount of construction and demolition (C&D) materials. We will require the consultants to plan and design the works to minimise the generation of C&D materials during its work, and to reuse/recycle any C&D materials generated as far as possible.

LAND ACQUISITION

21. The proposed site investigation and consultancy will not require land acquisition. However, land acquisition will likely be required for the construction of the project in the future. We will ascertain the details and scope of the land acquisition required at the detailed design stage.

BACKGROUND INFORMATION

22. We upgraded **705TH** to Category B in September 2004.

23. We engaged consultants to carry out an investigation study including preliminary design and an EIA study for the project in 2003. We have charged the cost of \$6 million to the block allocation **Subhead 7100CX** "New towns and urban area works, studies and investigations for items in Category D of the Public Works Programme".

24. The proposed site investigation and consultancy will not involve any tree removal or planting proposals. We will require the consultants to take into consideration the need for tree preservation during the detailed design stage of the project. We will also incorporate tree planting proposals, where possible, in the construction phase in the future.

25. We estimate that the proposed consultancy will create about 25 jobs (3 labourers and 22 professional/technical staff), providing a total employment of 370 man-months.

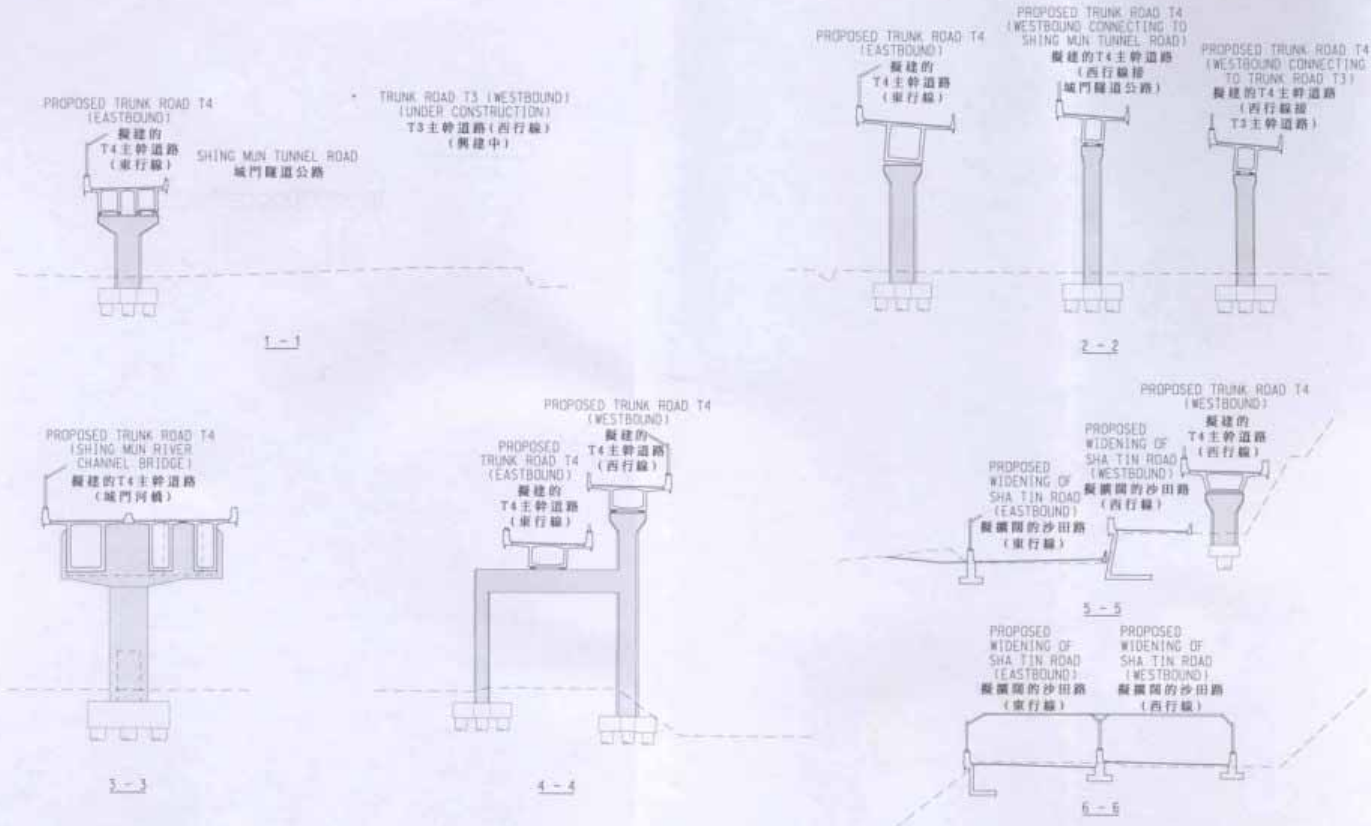


圖則名稱 Drawing title
 PWP ITEM No. 705TH - SHA TIN NEW TOWN, STAGE 2 - TRUNK ROAD T4 - SITE PLAN
 工務計劃第705TH號 - 沙田新市鎮第2階段工程 - T4號主幹道路 - 工地平面圖

繪圖 drafter W. H. LEUNG	簽署 checked S. C. CHAN	日期 date 08-08-2008	項目編號 item no. 705TH
繪圖 drafter K. J. YING	簽署 checked K. J. YING	日期 date 08-08-2008	圖則編號 drawing no. ST2041

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 AND DEVELOPMENT
 DEPARTMENT





圖則名稱 drawing title

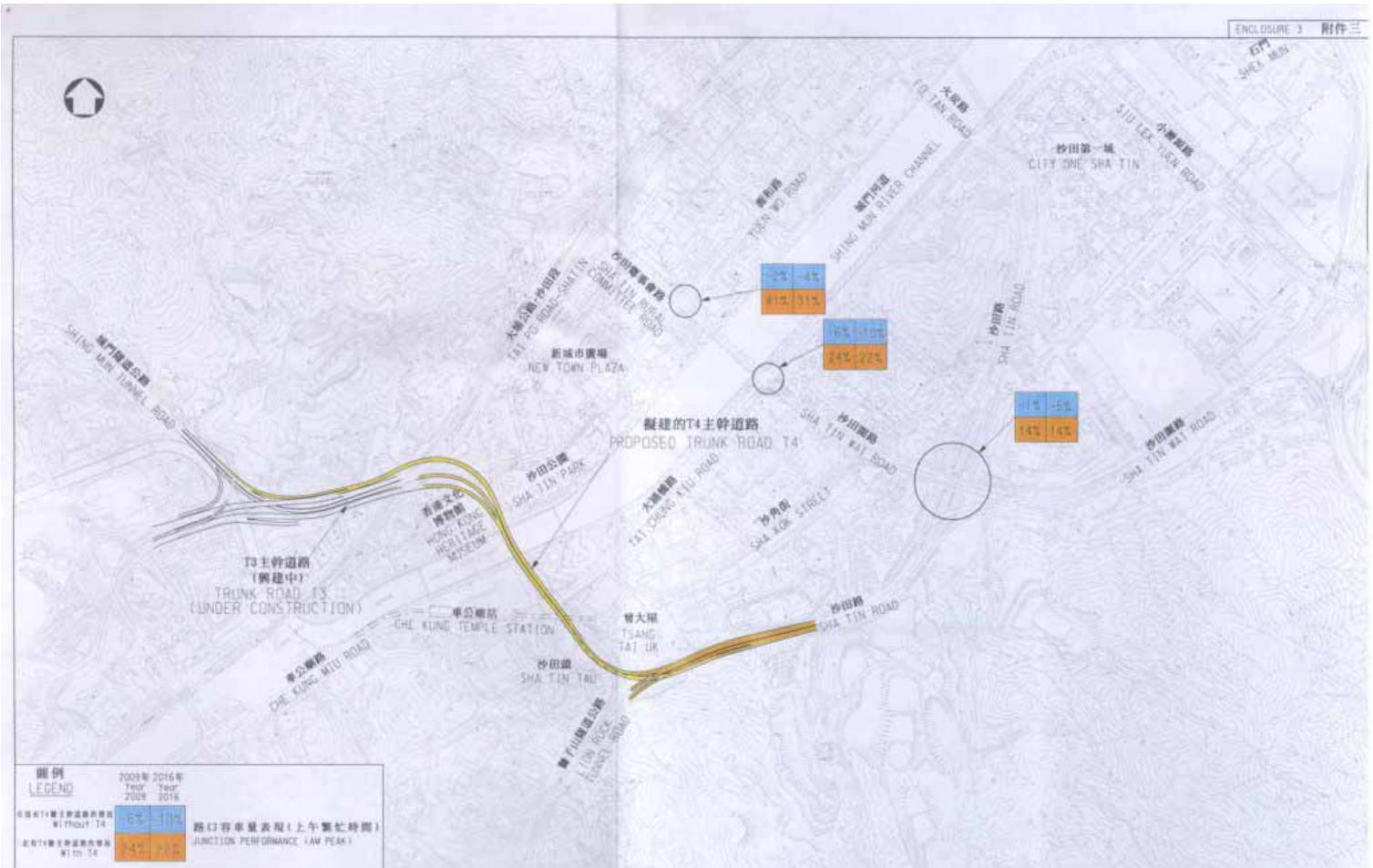
PWP ITEM No. 705TH - SHA TIN NEW TOWN, STAGE 2 - TRUNK ROAD T4 - SECTIONS
 工務計劃第705TH號 - 沙田新市鎮第2階段工程 - T4號主幹道路 - 剖面圖

繪圖 drawn W. K. LEUNG	簽署 initial SIGNED	日期 date 04-04-2005	項目編號 item no. 705TH
核對 checked S. C. CHAN	簽署 initial SIGNED	日期 date 04-04-2005	比例 scale 1 : 500
核准 approval K. L. TING	簽署 initial SIGNED	日期 date 04-04-2005	圖則編號 drawing no. ST2042

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圖例
LEGEND

2009年 Year 2009	2016年 Year 2016								
<table border="1"> <tr> <td>2009年 Year 2009</td> <td>2016年 Year 2016</td> </tr> <tr> <td>65</td> <td>105</td> </tr> </table> 無T4號主幹道路的情況 Without T4	2009年 Year 2009	2016年 Year 2016	65	105	<table border="1"> <tr> <td>2009年 Year 2009</td> <td>2016年 Year 2016</td> </tr> <tr> <td>44</td> <td>65</td> </tr> </table> 有T4號主幹道路的情況 With T4	2009年 Year 2009	2016年 Year 2016	44	65
2009年 Year 2009	2016年 Year 2016								
65	105								
2009年 Year 2009	2016年 Year 2016								
44	65								

路口車量表現(上午繁忙時間)
 JUNCTION PERFORMANCE (AM PEAK)

圖則名稱 drawing title

PWP ITEM No. 705TH - SHA TIN NEW TOWN, STAGE 2 - TRUNK ROAD T4
 - PERFORMANCE OF KEY JUNCTIONS (AM PEAK)
 工務計劃第705TH號 - 沙田新市鎮第2階段工程 - T4號主幹道路
 - 主要路口車量表現(上午繁忙時間)

繪圖 drawn	簽署 initial	日期 date	項目編號 item no.
W. K. LEUNG	SIGNED	04-04-2005	705TH
核對 checked	簽署 initial	日期 date	比例 scale
S. C. CHAN	SIGNED	04-04-2005	1 : 10 000
核准 approved	簽署 initial	日期 date	圖則編號 drawing no.
K. L. TING	SIGNED	04-04-2005	ST2043

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 DEPARTMENT



Enclosure 4 to PWSC(2005-06)11

705TH - Sha Tin New Town, stage 2 – Trunk Road T4

Breakdown of the estimates for consultants' fees (in September 2004 prices)

Consultants' staff costs		Estimated man- months	Average MPS* salary point	(Note 1) Multiplier	Estimated fees (\$ million)
(a)	Detailed design ^(Note 2)				
	Professional	-	-	-	8.0
	Technical	-	-	-	4.5
(b)	Preparation of tender documents & assessment of tenders ^(Note 2)				
	Professional	-	-	-	0.9
	Technical	-	-	-	0.5
(b)	Supervision of site investigation ^(Note 3)				
	Professional	2	38	1.6	0.2
	Technical	7	14	1.6	0.2
Total					14.3

* MPS = Master Pay Scale

Notes

1. A multiplier of 1.6 is applied to the average MPS point to estimate the cost of resident site staff supplied by the consultants. (As at 1 January 2005, MPS pt. 38 = \$54,255 per month and MPS pt. 14 = \$18,010 per month.)
2. The consultants' staff cost for detailed design and preparation of tender documents and assessment of tenders is calculated in accordance with the existing consultancy agreement for the Sha Tin New Town Development stage 2.
3. The consultants' staff cost for site supervision is based on estimates prepared by the Director of Civil Engineering and Development. We will only know the actual man-months and actual costs after completion of the site investigation works.