

## **ITEM FOR PUBLIC WORKS SUBCOMMITTEE OF FINANCE COMMITTEE**

### **HEAD 706 – HIGHWAYS**

#### **Transport – Traffic Control**

#### **19TC – Area Traffic Control and Closed Circuit Television System for Tuen Mun and Yuen Long Districts**

Members are invited to recommend to the Finance Committee the upgrading of **19TC** to Category A at an estimated cost of \$153.5 million in money-of-the-day prices for implementation of the Area Traffic Control and Closed Circuit Television system in Tuen Mun and Yuen Long districts.

### **PROBLEM**

The traffic in Tuen Mun and Yuen Long is heavy, particularly during peak hours. We need to implement the Area Traffic Control (ATC)<sup>1</sup> and Closed Circuit Television (CCTV)<sup>2</sup> system in the area to alleviate the traffic problem.

**/PROPOSAL .....**

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<sup>1</sup> The ATC system provides real-time coordination and adjustment of traffic control signals within an area by computers having regard to changes in traffic flow level. The objectives are to maximise the use of road capacities and to minimise delay to traffic.

<sup>2</sup> The 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 the abnormal traffic conditions and/or traffic incidents.

## PROPOSAL

2. The Commissioner for Transport, with the support of the Secretary for the Environment, Transport and Works, proposes to upgrade **19TC** to Category A at an estimated cost of \$153.5 million in money-of-the-day (MOD) prices to implement the ATC and CCTV system to improve the traffic conditions in Tuen Mun and Yuen Long.

## PROJECT SCOPE AND NATURE

3. The scope of **19TC** comprises –
- (a) installation of about 280 ATC traffic signal controllers in Tuen Mun and Yuen Long;
  - (b) installation of a central computer-controlled traffic system and associated software and equipment in the Transport Department (TD)'s control centre;
  - (c) installation of equipment for interfacing with the Light Rail Transit (LRT) System;
  - (d) installation of vehicle detectors to enable real-time signal operation and monitoring of traffic conditions;
  - (e) installation of 48 CCTV cameras to provide real-time visual traffic information;
  - (f) installation of CCTV monitoring and control equipment at two branch offices of TD, as well as the offices of the Hong Kong Police Force (HKPF), the Fire Services Department (FSD) and the Highways Department (HyD);
  - (g) acquisition of leased telecommunication services and provision of associated civil works to allow the transmission of traffic data and images between the control centre and the sites; and
  - (h) checking of related existing traffic signal cables and carrying out repair works as appropriate.

—— The site plans are at Enclosure 1.

4. We completed the detailed design of the project in March 2005. We plan to start the installation works in early 2006 for completion by mid 2008.

## JUSTIFICATION

5. We first introduced the ATC and CCTV system in Kowloon in 1977 and progressively extended it to Hong Kong Island, Tsuen Wan, Sha Tin, Tai Po and North Districts. The traffic statistics in these districts show that the traffic conditions have improved significantly through better management of the signalised junctions.

6. The rapid housing and new town developments in Tuen Mun and Yuen Long in recent years have resulted in a significant traffic increase in both the regional and local road networks. At present, the signal system is isolated, i.e. each signalised junction works at its own without co-ordination with adjacent road junctions, and signal timing can only be adjusted on site. The need to provide light rail vehicles (LRVs) with priority has further exacerbated the traffic problem, resulting in long vehicular queues and delays to motorists, particularly during the peak hours. The Tuen Mun and Yuen Long Traffic Study completed by TD in 2001 forecast that some junctions will be significantly overloaded by 2011. We estimate that the traffic in Tuen Mun and Yuen Long will further increase by about 10% over the next five years and the traffic condition will continue to deteriorate.

7. At present, there are 83 LRT signalised junctions<sup>3</sup> and 170 non-LRT signalised junctions in Tuen Mun and Yuen Long. The total number of signalised junctions will increase to 280 by 2008<sup>4</sup>. Apart from interfacing with the existing LRT signal system, the proposed ATC system will provide the following additional features over the existing junction signal control system –

- (a) central adjustment of traffic signal timing to suit prevailing traffic conditions;
- (b) better co-ordination of traffic signals to minimise the number of vehicles stopping at all signalised junctions, thus reducing journey time; and

/(c) .....

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<sup>3</sup> LRT signalised junctions are junctions where there are through passage of LRVs which, together with other vehicles, are controlled by an interactive set of traffic signals at the junctions.

<sup>4</sup> Road junction needs to be signalised for many reasons, e.g. change of traffic pattern, traffic growth, change of land use, new development, public request, road safety etc.

- (c) early identification and more speedy repair of traffic signal faults.

8. Experiences in other districts served by ATC systems show that full implementation of the ATC system will reduce the journey time, delay and number of stops by an average of 30%, 45% and 40% respectively. We expect that similar benefits can be produced by implementing the system in Tuen Mun and Yuen Long.

9. In addition, we propose to install a CCTV system in Tuen Mun and Yuen Long to provide TD's control centre with real-time traffic information, hence allowing quick remedial actions to be taken when necessary to cope with abnormal traffic conditions and/or traffic incidents. Under the project, CCTV cameras will be installed at strategic locations in Tuen Mun and Yuen Long districts and linked to the control centre of TD at the Headquarters and other auxiliary controls at HKPF, FSD and HyD.

## FINANCIAL IMPLICATIONS

10. We estimate the cost of this project to be \$ 153.5 million in MOD prices, made up as follows –

	<b>\$ million</b>
(a) Traffic Control System and Equipment	92.4
(i) ATC controllers and detectors	54.7
(ii) LRT interface	2.7
(iii) computer hardware and software, including their installation	18.7
(iv) CCTV roadside equipment including cameras	3.4
(v) CCTV control hardware and software, including their installation	7.2

	\$ million
(vi) other equipment at control centre (e.g. communication equipment)	3.5
(vii) traffic signal aspect cable checking and repair works (including labour and materials)	2.2
(b) Civil Works	34.7
(i) ATC ducting and foundation	15.6
(ii) foundation and high masts for CCTV cameras	16.4
(iii) CCTV ducting and related civil works	2.7
(c) Other miscellaneous works not covered by contracts including furnishing and building services works	2.9
(d) Overseas duty visits <sup>5</sup>	0.1
(e) Consultants' and site staff fees	10.0
(i) Resident site staff	8.1

/(ii) .....

<sup>5</sup> The ATC technology is sophisticated and developing fast. Overseas duty visits to overseas suppliers/manufacturers may be required for system assessment and factory acceptance tests. The estimated expenditure of \$100,000 is based on three man-trip of 10 days each, and the cost of air passage, subsistence allowances, etc. are subject to the relevant provisions in the Civil Service Regulations. Whether duty visits are required will very much depend on the state of technological development by the time of the tender and the availability of new products in the market. We will take all necessary measures to ensure that the visits are made only if they are absolutely necessary, and that the best value-for-money system is chosen.

		<b>\$ million</b>
	(ii) Consultants' fee for 1.9 construction supervision and contract administration	
(f)	Contingencies	<u>12.6</u>
	Sub-total	152.7 (in September 2004 prices)
(g)	Provision for price adjustment	<u>0.8</u>
	Total	<u>153.5</u> (in MOD prices)

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

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

<b>Year</b>	<b>\$ million (Sept 2004)</b>	<b>Price adjustment factor</b>	<b>\$ million (MOD)</b>
2005 – 2006	3.9	1.00450	3.9
2006 – 2007	31.7	1.00576	31.9
2007 – 2008	76.5	1.00576	76.9
2008 – 2009	40.6	1.00576	40.8
	<u>152.7</u>		<u>153.5</u>

12. We have derived the MOD estimates on the basis of the Government's latest forecast of trend rate of change in the public sector building and construction output for the period 2005 to 2009. We will tender the civil engineering works as standard re-measurement contracts, and the electrical works as lump-sum contracts. We will allow for price adjustment in the contracts for inflation/deflation as the construction period will exceed 21 months.

13. We estimate the annual recurrent expenditure arising from the project to be \$11.5 million.

### **PUBLIC CONSULTATION**

14. We consulted the LegCo Panel on Transport (the Panel) in 2001 on the Intelligent Transport Systems, which comprised the ATC and CCTV system. Members supported the proposals. We have also circulated an information paper to the Panel again on 22 April 2005 on the present proposal, and Members have no objection to the proposal.

15. We also consulted the Traffic and Transport Committee (TTC) of the Tuen Mun District Council on 10 May 2002 and the TTC of the Yuen Long District Council on 21 May 2002. Both committees supported the project.

### **ENVIRONMENTAL IMPLICATIONS**

16. The Director of Environmental Protection confirmed in January 1998 that an Environmental Impact Assessment is not required for this project as it is not a designated project under the Environmental Impact Assessment Ordinance. We completed the Preliminary Environmental Review in December 1999. The Review concluded that the proposed works would not cause long-term environmental impacts. We have included in the project estimates the cost of implementing suitable mitigation measures<sup>6</sup> to alleviate short-term environmental impacts arising from the civil works for the CCTV masts and ATC ducts and controllers.

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<sup>6</sup> Measures include the use of quiet equipment, careful scheduling of work, appropriate location of plant in relation to noise sensitive receivers as well as good site practices such as implementation of a temporary drainage system which includes silt traps, sedimentation pits for silty run-off, and infiltration pits for retaining concrete washings, etc.

17. The project will generate negligible amount of construction and demolition materials. Nevertheless, we will require the consultants to consider measures to minimise the generation of such materials and to reuse/recycle as much as possible.

## LAND ACQUISITION

18. The project does not require any land acquisition.

## BACKGROUND INFORMATION

19. We upgraded the project to Category B in October 2004.

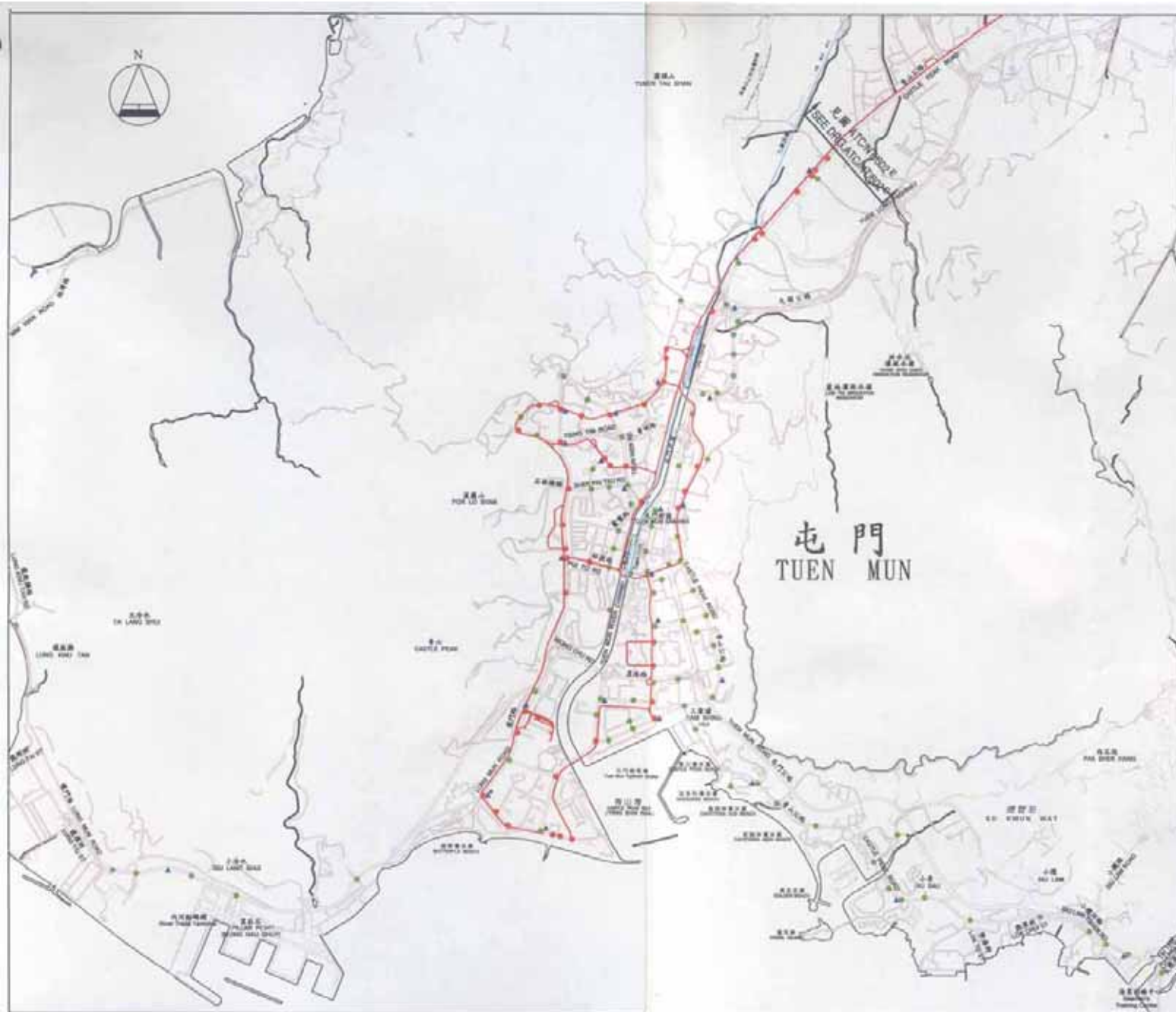
20. We engaged consultants to carry out the review and detailed design of the project in December 2001 at a total cost of \$2.9 million. The cost was charged to Subhead **6100TX** – “Highway works, studies and investigation for items in Category D of the Public Works Programme”.

21. During the implementation of the civil works on roads, such as installation of the CCTV masts and ATC ducts, detectors, pits and new controllers, vehicular and/or pedestrian traffic may be slightly affected. We will require the contractors to prepare the necessary temporary traffic arrangements for approval by various government departments. The contractor will have to implement the traffic arrangements before commencing construction work at the affected areas to minimise the impact to traffic.

22. The proposed project will not involve any tree removal or planting proposals.

23. We estimate that the project will create about 80 jobs comprising 16 professional/technical staff and 64 labourers, totalling 1 750 man-months.





附件一  
(第1頁共2頁)  
ENCLOSURE 1  
(P.1 OF 2)

備註：擬定的區域交通控制系統將安裝在各個輕鐵及非輕鐵路口如圖中。

Notes: The proposed ATC system will be installed at all the LRT and non-LRT junctions as marked on the drawing.

圖例：  
LEGEND:

- 現有非輕鐵路口  
EXISTING NON-LRT JUNCTION
- 現有輕鐵路口  
EXISTING LRT JUNCTION
- ▲ 建議輕鐵電視攝影機的位置  
PROPOSED CCTV CAMERA LOCATION
- ★ 現有的閉路電視 (屬外另一工程項目)  
EXISTING CCTV CAMERA (UNDER A SEPARATE PROJECT)
- 輕鐵線路  
LIGHT RAIL TRANSIT
- 西鐵  
WEST RAIL

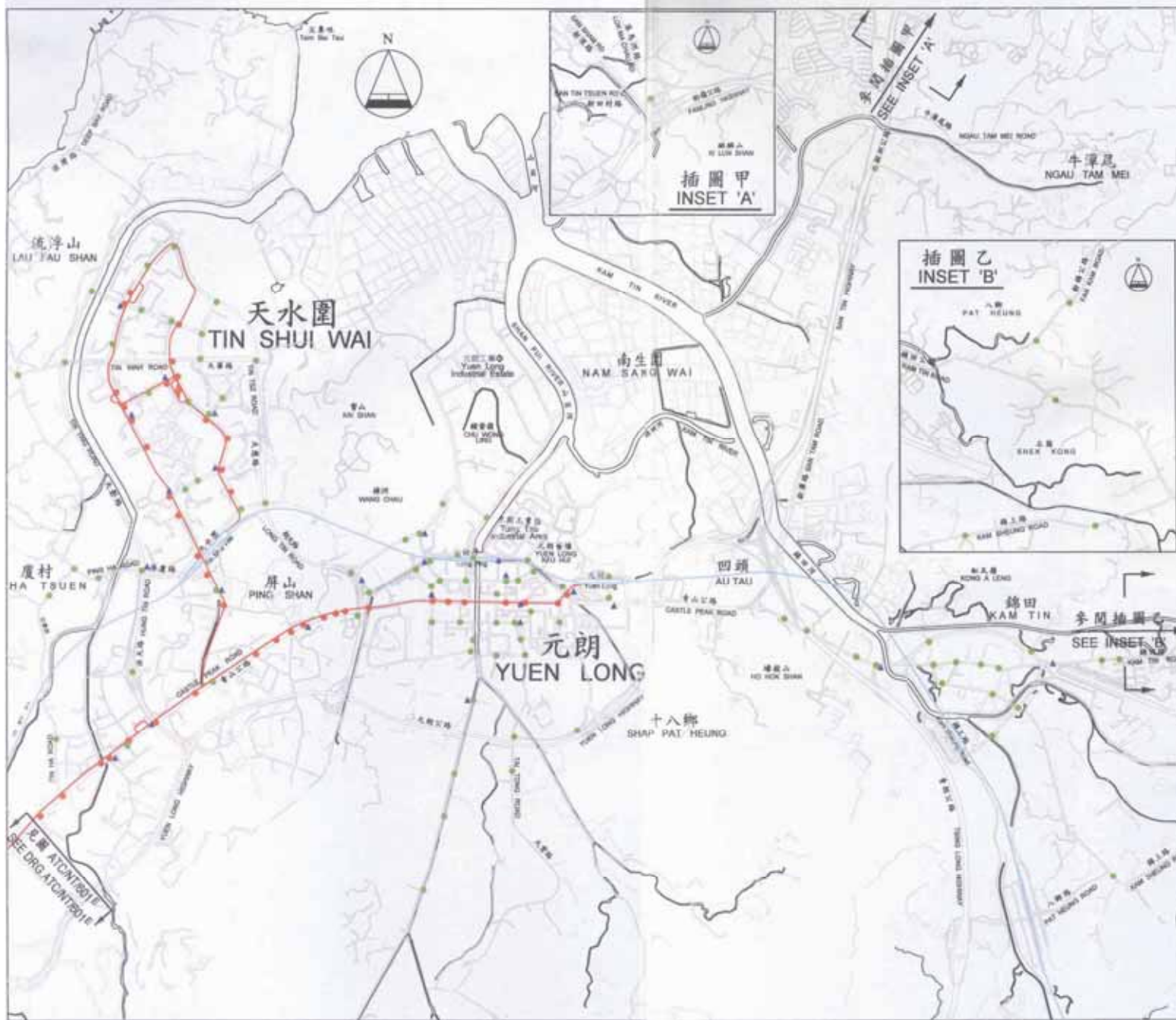
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for C.E. / T.C.		DATE

drawing title  
工務計劃項目第197C號  
PWP ITEM No. 197C  
屯門區區域交通控制及  
閉路電視系統  
ATC & CCTV SYSTEMS FOR  
TUEN MUN DISTRICT

drawing no.	scale
ATC / NT / 601 <sup>E</sup>	N.T.S.

office  
TRAFFIC CONTROL DIVISION





附件一  
(第2頁共2頁)  
ENCLOSURE 1  
(P.2 OF 2)

備註：擬定的區域交通控制系統將安裝在各類輕鐵及非輕鐵路口如圖所示。  
Note: The proposed ATC system will be installed at all the LRT and non-LRT junctions as marked on the drawing.

- 圖例：  
LEGEND:
- 現有非輕鐵路口  
EXISTING NON-LRT JUNCTION
  - 現有輕鐵路口  
EXISTING LRT JUNCTION
  - ▲ 建議安裝電視攝影機的位置  
PROPOSED CCTV CAMERA LOCATION
  - 輕鐵線路  
LIGHT RAIL TRANSIT
  - 西鐵  
WEST RAIL

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drawing title		
工務計劃項目第19TC號 PWP ITEM No. 19TC 元朗及天水圍區區域交通 控制及閉路電視系統 ATC & CCTV SYSTEMS FOR YUEN LONG AND TIN SHUI WAI DISTRICTS		
drawing no.	scale	
ATC / NT / 602 <sup>E</sup>	N.T.S.	
office		
TRAFFIC CONTROL DIVISION		



## Enclosure 2 to PWSC (2005-06)1

### 19TC – Area Traffic Control and Closed Circuit Television System for Tuen Mun and Yuen Long Districts

#### Breakdown of estimates for consultants' fees (at September 2004 prices)

Consultants' staff costs		Estimated man-months	Average MPS* salary point	Multiplier	Estimated fees (\$ million)
(a) Consultants' fees for construction supervision and contract administration	Professional	13	38	2.0	1.4
	Technical	13	14	2.0	0.5
(b) Resident site staff	Professional	36	38	1.6	3.1
	Technical	173	14	1.6	5.0
Total consultants' staff cost					10

\*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 profits 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. (As at 1 January 2005, MPS pt.38 = \$54 255 per month and MPS pt.14 = \$18 010 per month.)
2. The consultants' fees for construction stage are estimated and will be controlled in accordance with the terms stipulated in Agreement No. CE 32/2001 titled "Consultancy Assignment for Area Traffic Control and Closed Circuit Television System for Tuen Mun and Yuen Long Districts (Design and Construction)".