

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

**HEAD 706 - HIGHWAYS
Transport - Traffic Control**

- 21TC - Provision of traffic control and surveillance facilities for existing strategic roads**
- 22TC - Replacement of Area Traffic Control and Closed Circuit Television systems for Kowloon, Tsuen Wan and Sha Tin and expansion of the systems to Tseung Kwan O**
- 23TC - Provision of facilities for traffic incident management and traffic information dissemination in the urban areas and their vicinities**

Members are invited to recommend to Finance Committee –

- (a) the upgrading of part of **21TC** for the implementation of the Closed Circuit Television (CCTV) system for existing strategic roads at an estimated cost of \$32.4 million in money-of-the-day prices;
- (b) the upgrading of **22TC** for the replacement of the Area Traffic Control (ATC) system and CCTV system for Kowloon, Tsuen Wan and Sha Tin and expansion of these systems to Tseung Kwan O at an estimated cost of \$337.2 million in money-of-the-day prices;

/(c)

- (c) the upgrading of part of **23TC** for the implementation of the CCTV system in the urban areas and their vicinities at an estimated cost of \$92.2 million in money-of-the-day prices; and
- (d) the retention of the remainder of **21TC** and **23TC** in Category B.

PROBLEM

To facilitate better traffic management and allow quick remedial actions to be taken when necessary to cope with abnormal traffic conditions and/or incidents, we need to replace and expand the CCTV¹ and ATC² systems in the territory.

PROPOSAL

2. The Commissioner for Transport, with the support of the Secretary for the Environment, Transport and Works, proposes to upgrade the following projects at estimated costs in money-of-the-day (MOD) prices as shown below:

	Estimated Cost (\$ million)
(a) Part upgrade of 21TC	32.4
(b) Full upgrade of 22TC	337.2
(c) Part upgrade of 23TC	92.2

PROJECT SCOPE AND NATURE

3. The scope of the part which we proposed to be upgraded under **21TC** comprises the following works for Strategic Roads –

/(a)

¹ 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 abnormal traffic conditions and/or traffic incidents.

² 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 road capacity and to minimise traffic delay.

- (a) provision of instation CCTV computer equipment, associated software, data transmission equipment, video display system and operator workstations;
- (b) installation of about 40 new CCTV cameras on the Strategic Road Network (SRN) in the New Territories;
- (c) associated works including civil works, camera mounting works including foundation;
- (d) provision of leased telecommunication services to allow the transmission of video images and related control signals from the CCTV cameras to the control centres; and
- (e) provision of additional CCTV and incident management equipment at Transport Department's control centres and offices of the Hong Kong Police Force, Fire Services Department, Immigration Department and Highways Department.

4. The scope of the proposed works to be upgraded under **22TC** comprises –

- (a) replacement of the existing ATC and CCTV instation equipment including computer systems, associated system software, data transmission equipment, video display system, peripheral equipment and remote terminals;
- (b) replacement of all ATC outstation equipment including traffic signal controllers, vehicle detectors and about 105 CCTV cameras in Kowloon, Tsuen Wan and Sha Tin;
- (c) provision of ATC outstation equipment including traffic signal controllers, vehicle detectors and about 14 new CCTV cameras in Tseung Kwan O;
- (d) provision of leased data transmission network for the ATC and CCTV systems; and
- (e) associated engineering works, including works for the provision, replacement and upgrading of detector loops, plinths for traffic signal controller and CCTV kiosk, aspect cable checking and repair, drawpits, cable ducts and minor fitting out works at existing control centres.

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5. The scope of the part which we propose to be upgraded under **23TC** comprises the same kinds of works as those specified in paragraph 3(a), (c) and (d) above to be undertaken in the urban areas as well as the following –

- (a) installation of about 85 new CCTV cameras in the urban areas for traffic incident management; and
- (b) installation of about 180 new CCTV cameras mounted at fixed and pre-set direction in the urban areas to capture the general traffic information.

6. Plans showing the ATC junctions and locations of CCTV cameras under **22TC** are at Enclosure 1.

7. Plans showing the locations of the CCTV cameras under **21TC** and **23TC** are at Enclosure 2.

8. We plan to commence the proposed works in respect of CCTV system in early 2008 for completion in late 2010, and to commence the proposed works in respect of ATC system in late 2008 for completion in late 2011.

JUSTIFICATION

21TC

9. The SRN comprises the most important transport corridors in Hong Kong which carries high traffic volumes. Any traffic incident in the SRN may lead to serious consequences and/or severe traffic congestions. To improve the efficiency and safety of the SRN, and facilitate better traffic management, we have provided traffic control and surveillance facilities including CCTV on the SRN.

10. At present, CCTV cameras are installed on the SRN including Tuen Mun Road, Yuen Long Highway, North Lantau Highway, San Tin Highway, Fanling Highway and Tolo Highway. The coverage of CCTV on the SRN in the New Territories should be further improved to enhance incident management. Therefore, we propose to expand the CCTV coverage to more locations of the SRN in the New Territories, including Sha Tin Road and Tate's Cairn Highway.

22TC

11. We first introduced the ATC and CCTV systems in Kowloon in 1977 and progressively extended them to Hong Kong Island and Tsuen Wan, Sha Tin, Tai Po and North Districts³. Installation of these systems in Tuen Mun and Yuen Long is expected to complete in 2008. Statistics show that the traffic conditions have improved significantly through better management of the signalised junctions.

12. The existing ATC and CCTV systems were installed in Kowloon and Tsuen Wan in 1995, and Sha Tin in 1998 respectively. The systems are reaching the end of their effective life cycle, and maintenance has been costly and difficult. We therefore propose to replace these systems.

13. Currently, the signalised junctions in Tseung Kwan O are not placed under the control of the ATC system. In recent years, rapid development and population increase in Tseung Kwan O have significantly increased pressure on traffic at critical junctions, particularly during peak hours. For better traffic management and congestion alleviation, we propose to expand the ATC and CCTV systems to Tseung Kwan O.

23TC

14. At present, there are about 100 CCTV cameras in the urban areas. While these CCTV cameras are generally adequate for traffic control purposes, they are not adequate for the collection and dissemination of traffic information in the event of region-wide serious traffic congestion. To facilitate better traffic and incident management, we propose to improve the coverage of CCTV cameras in the urban areas.

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³ The ATC and CCTV systems in Kowloon were installed in 1977 and replaced in 1995. The systems in Tsuen Wan and Sha Tin were installed in 1995 and 1998 respectively. The systems in Hong Kong Island were installed in 1989 and replaced in 2006. The systems were expanded to Tai Po and North District in 2005.

15. CCTV images captured from a selection of about 180 cameras from the existing CCTV system are made available on the Internet and the media to inform the public of prevailing traffic conditions on critical road sections. This service allows road users to make informed route choices and facilitates pre-trip planning, and is welcomed by the public⁴. However, when these cameras are deployed for incident management purposes (e.g. during serious traffic accident and/or traffic congestion), they would become unavailable to perform their normal traffic monitoring functions. This would cause considerable inconvenience to the public, especially those planning to travel through the areas affected by the incident. To ensure continuous and timely access of traffic information by the public, we propose to install an independent set of cameras at these 180 locations. We will mount these cameras at fixed and pre-set direction to capture general traffic information.

FINANCIAL IMPLICATIONS

16. We estimate the costs of **21TC**, **22TC** and **23TC** to be \$32.4 million, \$337.2 million and \$92.2 million respectively in MOD prices, made up as follows –

	(\$ million)		
	21TC	22TC	23TC
(a) CCTV system and equipment	11.6	39.9	29.2
(i) CCTV instation control hardware and software	5.1	13.9	5.0
(ii) CCTV outstation equipment	5.9	24.7	23.2
(iii) Telecommunication equipment	0.6	1.3	1.0
(b) ATC systems and equipment	-	151.4	-
(i) ATC instation equipment including computer systems, software, peripheral equipment and terminals, etc.	-	38.3	-

⁴ The hit rate of the relevant website is around 200 000 per day.

		(\$ million)	/(ii)
	21TC	22TC	23TC
(ii) ATC outstation equipment including traffic signal controller, vehicle detectors, etc.	-	107.6	-
(iii) Other equipment in control centre including data transmission equipment, etc.	-	5.5	-
(c) Civil works	14.0	86.8	46.6
(i) Plinths	-	1.7	-
(ii) Telecommunication ducting works	4.2	52.1	15.3
(iii) Ground investigation works, foundation and high mast works	9.8	33.0	31.3
(d) Miscellaneous works including minor fitting out and building services works at existing control centres and duty visits where required	0.1	1.8	0.6
(e) Consultants' fees for	3.0	24.3	7.5
(i) Resident site staff	2.4	20.0	6.1
(ii) Construction supervision and contract administration	0.6	4.3	1.4
(f) Contingencies	3.2	25.8	7.0
Sub-total	31.9	330.0	90.9 (in September 2006 prices)
(g) Provision for price adjustment	0.5	7.2	1.3

Total	32.4	337.2	92.2 (in MOD prices)
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A breakdown by man-months of the estimate for the consultants' fees is at Enclosure 3 and Enclosure 4.

17. As regards paragraph 16(a) above, the cost is for the design, supply, installation, testing and commissioning of the CCTV system including cameras, installation equipment, telecommunication equipment, software, operator consoles and incident management equipment.

18. As regards paragraph 16(b) above, the cost is for the design, supply, installation, testing and commissioning of the ATC system including computer systems, data transmission system, operator consoles, traffic signal controllers, and vehicle detectors.

19. As regards paragraph 16(c) above, the cost is for the civil works required to construct the plinths for the controller and the CCTV kiosk, the aspect cable checking and repair, the cable ducting and associated works, ground investigation, foundation, high mast and related works which are required to install the outstation equipment and to connect them to the data transmission network.

20. As regards paragraph 16(d) above, the cost is for design and implementation of all building and cabling works, which are required to accommodate the ATC and CCTV system in the control centre. Provision is also included to provide for duty visit to the contractor's premises overseas to resolve problem that may arise during the course of the project.

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

Year	\$ million (September 2006)			Price adjustment factor	\$ million (MOD)		
	21TC	22TC	23TC		21TC	22TC	23TC
2007 – 2008	0.7	5.4	1.1	0.99900	0.7	5.4	1.1
2008 – 2009	7.7	62.3	45.3	1.00649	7.7	62.7	45.6
2009 – 2010	15.3	131.9	24.1	1.01656	15.6	134.1	24.5
2010 – 2011	4.2	63.9	16.3	1.02672	4.3	65.6	16.7

/2011

Year	\$ million (September 2006)			Price adjustment factor	\$ million (MOD)		
	21TC	22TC	23TC		21TC	22TC	23TC
2011 – 2012	4.0	45.0	4.1	1.03699	4.1	46.7	4.3
2012 – 2013	0.0	21.5	0.0	1.05514	0.0	22.7	0.0
Total	31.9	330.0	90.9		32.4	337.2	92.2

22. 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 2007 to 2013. We will tender the civil engineering works as standard re-measurement contracts, and the electrical works as lump-sum contracts. We will allow for adjustment in the contracts for inflation as the construction period will exceed 21 months.

23. We estimate the annual recurrent expenditure arising from **21TC**, **22TC** and **23TC** to be \$3.4 million, \$0.7 million and \$14.1 million respectively.

PUBLIC CONSULTATION

24. We consulted the Legislative Council Panel on Transport (the Panel) in 2001 on the Intelligent Transport Systems, which comprised the ATC and CCTV systems. Members supported the proposal. We have also circulated an information paper to the Panel in May 2007 on the present proposal. Members have no objection to the proposal.

25. We also consulted the Traffic and Transport Committees (TTCs) of relevant District Councils (DCs) in the past few months. For items relating to the ATC system, we consulted the TTCs of nine relevant DCs. A list of these DCs is at **Enclosure 5**. DC Members in general supported the proposals. One member of the Central & Western DC indicated concern on the privacy issue and raised objection. In response, we explained that guidelines were established to restrict the use of the CCTV system and information collected would only be used for traffic management purposes.

/ENVIRONMENTAL

ENVIRONMENTAL IMPLICATIONS

26. The projects are not designated project under Schedule 2 of the Environmental Impact Assessment Ordinance (Cap. 499) and an environmental permit is not required. The projects will unlikely give rise to adverse environmental impacts. We have included in the project estimates the cost of implementing suitable mitigation measures⁵ to control the short-term environmental impacts during the construction works for the foundations, plinths ducting, vehicles detectors and traffic signal controllers, etc.

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

LAND ACQUISITION

28. The projects do not require any land acquisition.

BACKGROUND INFORMATION

29. We upgraded **21TC**, **22TC** and **23TC** to Category B in October 2005.

30. We upgraded part of **23TC** in January 2007 to implement the expansion of the Journey Time Indication System to Kowloon.

31. The current proposal is to upgrade **21TC** and **23TC** in part to implement the CCTV components of these items and to upgrade **22TC** in full to implement both the replacement of the existing ATC system and the CCTV system and to expand these systems to Tseung Kwan O. We engaged the consultants in September 2006 and January 2007 to carry out the review, design and tender preparation for the CCTV and ATC systems respectively. We charged the total cost of \$3.85 million to block allocation **Subhead 6100TX**

⁵ Standard pollution control measures shall be implemented, such as 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 silt run-off, and infiltration pits for retaining concrete washings etc.

“Highway works, studies and investigations for items in Category D of the Public Works Programme”.

/32.

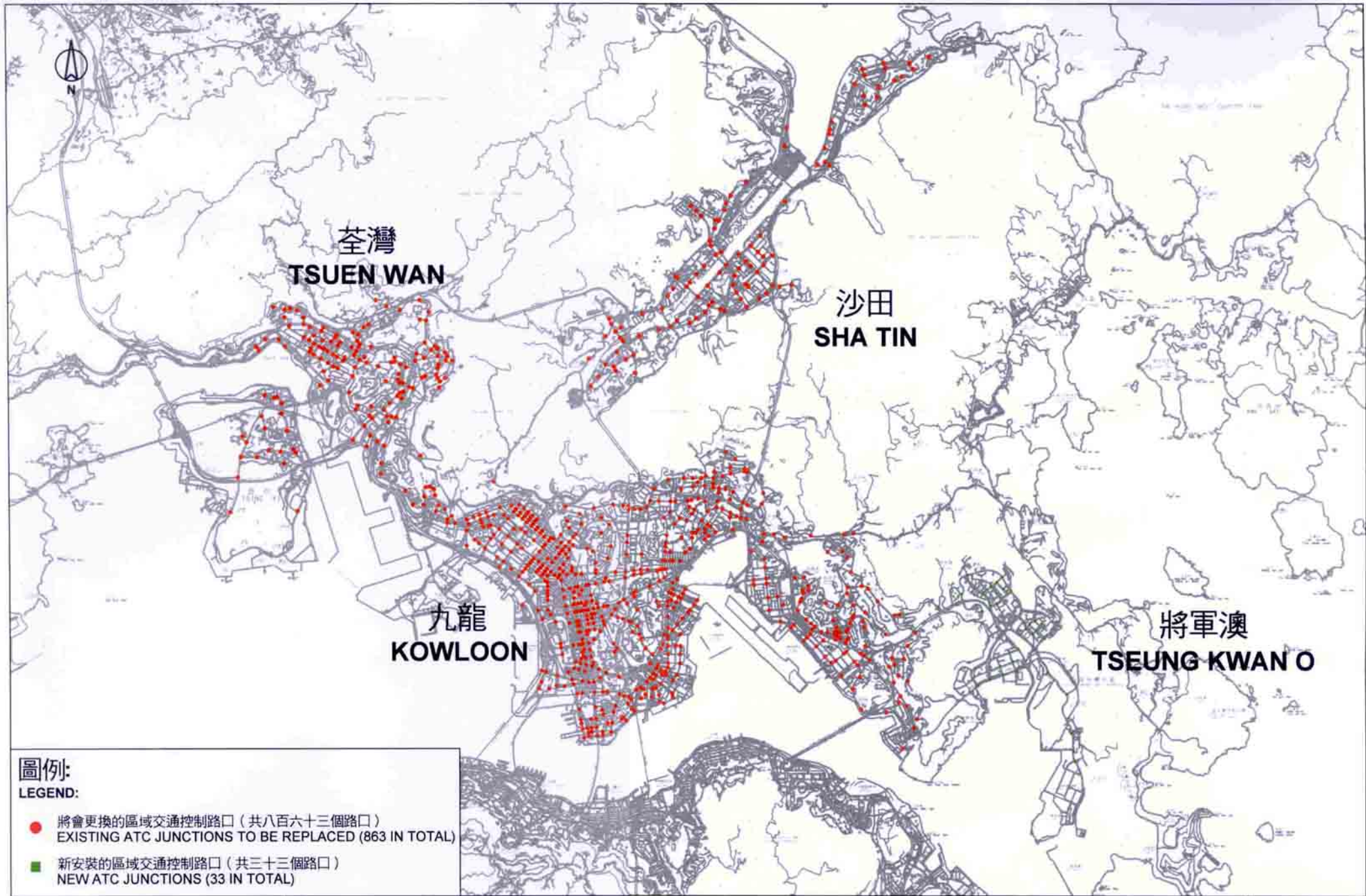
32. We will integrate the various systems to be implemented under **21TC**, **22TC** and **23TC** into one single CCTV system. This arrangement can achieve a consistent design for the systems.

33. The proposed projects will not involve any tree removal or planting proposals.

34. We estimate that the ATC system will create about 44 jobs (12 for professional/technical staff and 32 for labourers) providing a total employment of 1 258 man-months. The CCTV system will create about 72 jobs (22 for professional/technical staff and 50 for labourers) providing a total employment of 1 448 man-months. Details are set out below –

	Professional / Technical staff	Labourer	Total jobs created	Estimated total man-months
21TC	3	7	10	203
22TC	22	55	77	1924
23TC	9	20	29	579

 Environment, Transport and Works Bureau
 June 2007



圖例:

LEGEND:

- 將會更換的區域交通控制路口 (共八百六十三個路口)
EXISTING ATC JUNCTIONS TO BE REPLACED (863 IN TOTAL)
- 新安裝的區域交通控制路口 (共三十三個路口)
NEW ATC JUNCTIONS (33 IN TOTAL)



荃灣
TSUEN WAN

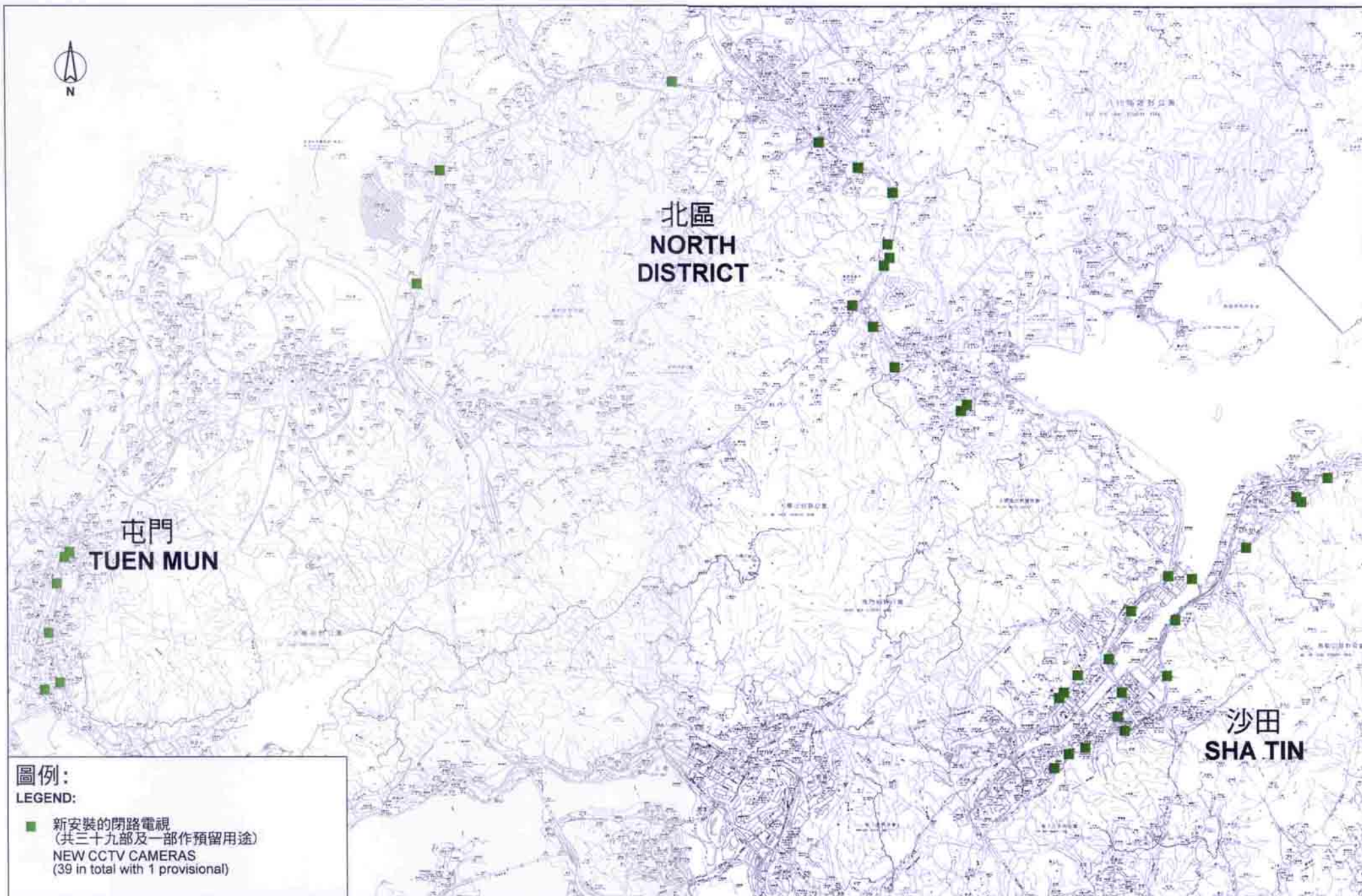
沙田
SHA TIN

九龍
KOWLOON

將軍澳
TSEUNG KWAN O

圖例:
LEGEND:

- 將會更換的閉路電視 (共一百零五部)
EXISTING CCTV CAMERAS TO BE REPLACED (105 in total)
- 新安裝的閉路電視 (共十三部及一部作預留用途)
NEW CCTV CAMERAS (13 in total with 1 provisional)



圖例:

LEGEND:

- 新安裝的閉路電視
(共三十九部及一部作預留用途)
NEW CCTV CAMERAS
(39 in total with 1 provisional)



九龍
KOWLOON

香港
HONG KONG

圖例:

LEGEND:

- 新安裝的閉路電視 (共八十五部另加一百八十部作公眾交通訊息發放用途)
- NEW CCTV CAMERAS (85 in total plus additional 180 cameras for traffic information dissemination to the public)

備註: 另外於現有攝影機位置加裝大約180部固定攝影機將交通資訊經傳媒及互聯網發放給市民。

Notes: About 180 additional fixed cameras will be installed at existing camera locations to capture the general traffic conditions for dissemination to the public via the electronic media and Internet.



運輸署

Transport Department

圖名

Drawing Title

工務計劃項目第23TC號-在市區及其鄰近範圍提供交通事故管理及交通資訊發放設施

PWP ITEM NO 23TC - PROVISION OF FACILITIES FOR TRAFFIC INCIDENT MANAGEMENT AND TRAFFIC INFORMATION DISSEMINATION IN THE URBAN AREAS AND THEIR VICINITIES

附件二

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ENCLOSURE 2

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Enclosure 3 to PWSC (2007-08)41

21TC - Provision of traffic control and surveillance facilities on existing strategic roads

22TC - Replacement of Area Traffic Control and Closed Circuit Television systems for Kowloon, Tsuen Wan and Sha Tin and expansion of the systems to Tseung Kwan O

23TC - Provision of facilities for traffic incident management and traffic information dissemination in the urban areas and their vicinities

Breakdown of estimates for consultants' fees for the implementation of the Closed Circuit Television system

		Estimated man- months	Average MPS* salary point	Multiplier (Note 1)	Estimated fees (\$ million)
Consultants' staff costs					
(a) Construction supervision and contract administration (Note 2)	Professional	17	38	2.0	1.9
	Technical	47	14	2.0	1.7
(b) Resident site staff	Professional	102	38	1.6	8.9
	Technical	282	14	1.6	8.1
Total					20.6

*MPS = Master Pay Scale

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 April 2007, MPS pt. 38 = \$54,255 per month and MPS pt. 14 = \$18,010 per month)
2. The above figures are based on the estimates prepared by the consultants. The consultancy works in construction and completion phase, and provision of resident site staff for this project, have been included as an optional part of Agreement No. CE 14/2006 titled "Closed Circuit Television Project in Urban and New Territories Areas". These options will only be exercised subject to Finance Committee's approval for upgrading of part of **21TC** and **23TC** and full upgrading of **22TC** to Category A.

22TC - Replacement of Area Traffic Control and Closed Circuit Television systems for Kowloon, Tsuen Wan and Sha Tin and expansion of the systems to Tseung Kwan O

Breakdown of estimates for consultants' fees for the implementation of the Area Traffic Control system

		Estimated man-months	Average MPS* salary point	Multiplier (Note 1)	Estimated fees (\$ million)
Consultants' staff costs					
(a) Construction supervision and contract administration (Note 2)	Professional	22	38	2.0	2.4
	Technical	9	14	2.0	0.3
(b) Resident site staff	Professional	39	38	1.6	3.4
	Technical	281	14	1.6	8.1
				Total	14.2

*MPS = Master Pay Scale

1. A multiplier of 2.0 is applied to the average MPS point to arrive at the full staff costs including the consultant's overheads and profits as the staff will be employed in the consultant's office. A multiplier of 1.6 is applied to the average MPS point in the case of resident site staff supplied by the consultant. (As at 1 April 2007, MPS pt. 38 = \$54,255 per month and MPS pt. 14 = \$18,010 per month)
2. The above figures are based on the estimates prepared by the consultants. The consultancy works in construction and completion phase, and provision of resident site staff for this project, have been included as an optional part of Agreement No. CE 23/2006 (TT) titled "Replacement of Area Traffic Control System for Kowloon, Tsuen Wan and Sha Tin and Expansion of the System to Tseung Kwan O – Design and Construction". These options will only be exercised subject to Finance Committee's approval for full upgrading of 22TC to Category A.

Enclosure 5 to PWSC (2007-08)41

ATC System – District Councils Consultation

District Council	Date of Consultation
Yau Tsim Mong	11 January 2007
Kowloon City	25 January 2007
Wong Tai Sin	30 January 2007
Sai Kung	8 February 2007
Kwai Tsing	15 February 2007
Tsuen Wan	6 March 2007
Sha Tin	22 March 2007
Shum Shui Po	29 March 2007
Kwun Tong	12 April 2007

CCTV System – District Councils Consultation

District Council	Date of Consultation
Yuen Long	4 January 2007
North	8 January 2007
Yau Tsim Mong	11 January 2007
Tuen Mun	12 January 2007
Eastern	18 January 2007
Wan Chai	23 January 2007
Kowloon City	25 January 2007
Southern	29 January 2007
Wong Tai Sin	30 January 2007
Sai Kung	8 February 2007
Kwai Tsing	15 February 2007
Tsuen Wan	6 March 2007
Islands	12 March 2007
Tai Po	15 March 2007
Sha Tin	22 March 2007
Central & Western	22 March 2007
Sham Shui Po	29 March 2007
Kwun Tong	12 April 2007