

ITEM FOR FINANCE COMMITTEE

CAPITAL WORKS RESERVE FUND

HEAD 708 – CAPITAL SUBVENTIONS AND MAJOR SYSTEMS AND EQUIPMENT

Transport Department

New Subhead “Replacement of Area Traffic Control System for Tai Po and North Districts”

Members are invited to approve a new commitment of
\$32,200,000 to replace the Area Traffic Control System
for Tai Po and North Districts.

PROBLEM

The existing Area Traffic Control (ATC) system in Tai Po and North
(TP&N) Districts is reaching the end of its serviceable life cycle.

PROPOSAL

2. The Commissioner for Transport, with the support of the Secretary
for Transport and Housing, proposes to replace the ATC system for TP&N Districts
at an estimated cost of \$32,200,000.

JUSTIFICATION

3. Reliable operation of traffic signals is important not only for
maintaining smooth traffic flow, but also for ensuring the safety of motorists and
pedestrians. In order to maintain a smooth and efficient traffic flow in TP&N
Districts, a reliable, effective and efficient ATC system for controlling the
signalised junctions is essential. The existing ATC system for TP&N Districts,
comprising a central control computer and 131 on-street traffic signal controllers

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for 139 junctions, was fully commissioned in 2005 and has since been operating round-the-clock. The system is reaching the end of its serviceable life cycle, which is about ten to 15 years. The majority of the equipment will have been continuously operating for about 13 to 15 years by 2018. According to the operation and maintenance records in the past three years, the fault¹ rates of the equipment were on the increasing trend. Taking into account the time required for preparation and implementation of the proposed replacement, it is necessary to start the preparation work now.

4. The maintenance of the system has become increasingly difficult and costly as many of its critical electronic components are outdated and replacement spare parts have been very difficult to source. The original equipment manufacturers have ceased producing the outdated model of the central computer, the on-street traffic signal controllers and some spare parts, thus affecting the proper and continual operation of the system. With only limited spare parts for maintenance, it is anticipated that the operation of the system will be affected. As such, timely replacement of the TP&N ATC system is necessary.

5. The proposed new system will be more reliable; breakdowns and faults will be reduced. It will also be easier to purchase the necessary spare parts for regular maintenance, which will help reduce the estimated recurrent expenditure. In addition, with the use of advanced microprocessor and electronic components, the new traffic signal controllers will be more energy efficient. The signal controllers are also designed to be compatible with the LED traffic signals which were introduced in recent years, thus facilitating more accurate reporting of LED signal failures.

FINANCIAL IMPLICATIONS

Non-recurrent Expenditure

6. We estimate that the capital cost of the project to be \$32,200,000, with the following breakdown –

	\$ '000
(a) Renewal of the ATC system in TP&N Districts	25,600
(b) Project management cost	4,100
(c) Contingency	2,500
Total	32,200

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¹ The types of faults include switching off of signals due to failure of controllers or signal aspect cables; temporary transmission problem between the central control computer and on-street controllers and detector failure, etc.

7. Regarding paragraph 6(a) above, the estimated cost of \$25,600,000 is for the following items –

- (a) supply, installation, testing and commissioning of the ATC system, including the central computer system, telecommunication equipment, operator consoles, on-street traffic signal controllers, and vehicle detectors;
- (b) civil works required for replacing on-street traffic signal controllers, checking and repairing on-street signal lamps cable and cable ducting as well as other associated works; and
- (c) building services and cabling works required to accommodate the ATC system in the traffic control centre.

8. Regarding paragraph 6(b) above, the estimated cost of \$4,100,000 is for meeting the project management cost for the replacement project, which includes preparing for the tender documents, overseeing the tendering process, undertaking contract management, supervising site replacement and installation works, and testing and commissioning the new system.

9. As regards paragraph 6(c) above, the estimated amount of \$2,500,000 represents a 10% contingency on the items set out in paragraph 6(a).

10. The estimated cash flow requirements between 2014-15 and 2018-19 are as follows –

Year	\$ '000
2014-15	200
2015-16	3,900
2016-17	11,500
2017-18	10,100
2018-19	6,500
Total	32,200

Recurrent Expenditure

11. The estimated annual recurrent expenditure for maintaining the new system will be about \$5,000,000, which is less than that for the existing system, which is about \$6,600,000. Such requirement will be reflected in the Estimates of relevant years.

/IMPLEMENTATION

IMPLEMENTATION PLAN

12. We plan to start implementing the project in the third quarter of 2014 for completion by early 2018. The proposed programme is as follows –

	Activity	Target completion date
(a)	Preparation of tender document and tender invitation	April 2015
(b)	Contract commencement	July 2015
(c)	ATC system design	October 2015
(d)	Hardware delivery	January 2016
(e)	ATC system development	April 2016
(f)	Installation of central computer system	April 2016
(g)	Replacement of on-street traffic signal controllers	November 2017
(h)	Testing and commissioning of ATC system	January 2018

PUBLIC CONSULTATION

13. We consulted the Legislative Council Panel on Transport on 26 May 2014. Members supported the proposal. The Administration has provided supplementary information concerning the replacement schedule of the remaining three ATC systems as per Members' request.

BACKGROUND

14. The ATC system uses a central computer to coordinate the operations of on-street traffic signals on a regional basis. It aims at providing a series of green signals for vehicles passing through various signalised junctions, so as to achieve smooth traffic flow by minimising stops and delays of vehicles at traffic signals. The ATC system also allows operators in the traffic control centre to monitor and adjust the on-street traffic signals timing in real time having regard to the traffic conditions, particularly to alleviate traffic congestion arising from major traffic incidents. Currently, there are four ATC systems² for different parts of Hong Kong.

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² The four ATC systems are the Hong Kong ATC system; the Kowloon, Tsuen Wan, Sha Tin and Tseung Kwan O ATC system; the Tuen Mun and Yuen Long ATC system; and the TP&N ATC system.

15. Development of the ATC system in TP&N Districts started in 2003 and the system was fully commissioned in 2005. At present, it controls 139 signalised junctions in the Tai Po, Fanling and Sheung Shui Districts. Encl. Drawings showing the signalised junctions under the system are at the Enclosure.

Transport and Housing Bureau
June 2014

Enclosure to FCR(2014-15)28

TAI PO DISTRICT

Legend:
● JUNCTIONS CONTROLLED BY EXISTING TP&N ATC SYSTEM



運輸署
Transport Department

更換大埔及北區區域交通控制系統
REPLACEMENT OF AREA TRAFFIC CONTROL SYSTEM FOR TAI PO AND NORTH DISTRICTS

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