For discussion **FCR(2017-18)59**
on 2 February 2018

ITEM FOR FINANCE COMMITTEE

CAPITAL WORKS RESERVE FUND
HEAD 708 – CAPITAL SUBVENTIONS AND MAJOR SYSTEMS AND EQUIPMENT
Transport Department
New Subhead "Replacement of Traffic Control and Surveillance System in the Tsing Ma Control Area"

Members are invited to approve a new commitment of $298,910,000 for the replacement of traffic control and surveillance system in the Tsing Ma Control Area.

PROBLEM

The Transport Department (TD) needs to replace the traffic control and surveillance system (TCSS) in the Tsing Ma Control Area (TMCA) to maintain the safe, reliable and efficient operation of the control area.

PROPOSAL

2. The Commissioner for Transport, on the advice of the Director of Electrical and Mechanical Services, proposes to replace the TCSS in TMCA at an estimated cost of $298,910,000. The Secretary for Transport and Housing supports the proposal.

/**JUSTIFICATION** …..

JUSTIFICATION

3. The TCSS in TMCA[1] is for ensuring the safe and effective operation of the control area. The existing TCSS commenced operation when TMCA was commissioned in 1997, and has already been in use for more than 20 years. According to the Electrical and Mechanical Services Trading Fund (EMSTF), it is increasingly difficult and not cost effective to carry out repairs for the TCSS. For example, the existing multimode optical fibre cables[2] in the system can only provide limited bandwidth. The telecommunication industry has long been replaced them by single-mode optical fibre cables. Other relevant equipment such as prismatic variable message signs, closed circuit television (CCTV) system and emergency telephone system are also beyond their economical serviceable life. Since most of the equipment and components of the system are aging and it is increasingly difficult to procure the required spare parts from the market for maintenance, EMSTF considers it necessary to replace the whole TCSS.

4. In addition, the risk of system malfunction has increased due to aging. If the system is not replaced in a timely manner, the frequency and seriousness of system failure may both increase. A breakdown of the TCSS may cause a malfunction of various traffic control and surveillance equipment, thus hampering the traffic monitoring, control and direction in TMCA by TD and the operator. It may also affect the detection of traffic accidents and subsequent rescue and vehicle recovery operations. Since TMCA is a major expressway connecting Kowloon and Hong Kong Island to the western New Territories, Lantau Island and the Hong Kong International Airport, any traffic chaos and delay in the control area could have a significant impact on the traffic in the vicinity as well as in other areas, and may even affect the operations of the airport.

5. The new TCSS in TMCA will be a fully computerised system which integrates various traffic control and monitoring functions on a single platform. It will be able to implement more programmed traffic management schemes for improving operation efficiency. The capability of the system in controlling remote traffic message signs, signals and other field equipment will be enhanced to meet traffic management needs. The new system will also have high definition cameras and monitors for providing clearer images in support of effective traffic monitoring. Furthermore, more cameras will be erected on the approach roads in TMCA to enhance traffic monitoring and management efficiency.

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[1] The TCSS includes variable message signs, over-height vehicle detectors, automatic incident detection system, CCTV system and environmental monitoring system, etc.

[2] Compared to multimode optical fibre, single-mode optical fibre enables a higher transmission rate and longer transmission distance, and can therefore enhance the performance of the new TCSS.

FINANCIAL IMPLICATIONS

Capital Expenditure

6. We estimate that the total capital expenditure for the replacement of the TCSS in TMCA is $298,910,000. The breakdown is as follows –

			$'000
(a)	Replacement of the TCSS in TMCA		241,100
	Central Control System	59,870	
	Traffic Surveillance System	36,000	
	Traffic Control System	28,100	
	Communication System and network	53,630	
	Associated civil engineering and building services works, cables and accessories	63,500	
(b)	EMSTF project management charges		33,700
(c)	Contingency (10% of item (a) above)		24,110
	Total		298,910

7. Regarding item (a) of paragraph 6 above, the estimated expenditure of $241,100,000 is for the supply and installation of the new TCSS, including the central control system, CCTV system, automatic incident detection system, remote-controlled traffic signs, variable message signs, various field equipment (e.g. over-height vehicle detectors), computer hardware and software, data communication network and the associated cables and accessories; building services works for traffic control room and replacement works for associated control facilities, together with the dismantling and removal of old equipment; and the removal and reinstatement of tunnel wall panels.

8. Regarding item (b) of paragraph 6 above, the estimated expenditure of $33,700,000 is for meeting the charges of the EMSTF for managing the project, which includes preparing the system specifications, designing and overseeing the tendering process of the new TCSS and engaging civil and traffic engineering consultants; supervising site inspection, installation, testing and commissioning of the system; and monitoring the operation of the system facilities and rectification work within the defects liability period.

/9. …..

9. Regarding item (c) of paragraph 6 above, the estimated cost of $24,110,000 is for contingency use, which is 10% of item (a) of paragraph 6 above.

10. The estimated cash flow is as follows –

Year	**$'000**
2017-18	1,800
2018-19	12,000
2019-20	44,000
2020-21	61,000
2021-22	80,000
2022-23	100,110
Total	298,910

Recurrent Expenditure

11. The management, operation and maintenance of TMCA are currently undertaken by an operator engaged by the Government through open tender. The annual recurrent expenditure of the existing TCSS accounts for around $11,100,000 of the overall management fee payable to the operator of TMCA. It is expected that the recurrent expenditure of the new TCSS will be similar to that for the existing one.

12. According to the existing policy, the operating costs of government tolled roads should be recovered through toll charges. The depreciation costs of the proposal are part of the operating costs of tolled roads, and will therefore be taken into account in the course of setting and adjusting the relevant toll charges in future.

IMPLEMENTATION PLAN

13. If funding is approved in the first quarter of 2018, we plan to proceed with the replacement project according to the following timetable –

/**Activity** …..

	Activity	Target Completion Date
(a)	Site investigation and tender preparation	Q4 of 2018
(b)	Tendering exercise and selection of contractor	Q3 of 2019
(c)	System design by contractor	Q2 of 2020
(d)	Procurement of associated equipment	Q4 of 2021
(e)	Installation of associated equipment	Q1 of 2022
(f)	Testing and training	Q2 of 2022
(g)	Commissioning and changeover of system	Q2 of 2022

14. During the implementation of the project, TD will minimise the impact on traffic as far as possible. The existing system will be closely monitored and maintained to ensure normal operation. All the installation work will be carried out during non-peak hours such that the normal operations of TMCA will not be affected.

PUBLIC CONSULTATION

15. We consulted the Legislative Council Panel on Transport (the Panel) on the proposal on 21 July 2017. The Panel has no objection to the Government's submission of this funding proposal to the Finance Committee for consideration.

BACKGROUND

16. TMCA covers roads that run from Mei Foo Interchange to Sunny Bay Interchange in North Lantau and to Ting Kau, including Tsing Ma Bridge, Kap Shui Mun Bridge and Ting Kau Bridge. The management, operation and maintenance of TMCA are undertaken by an operator engaged by the Government through open tender. TD is responsible for the timely replacement of the major systems of TMCA in consultation with the EMSTF to ensure the safe, reliable and efficient operation of the control area.

Transport and Housing Bureau
Transport Department
January 2018