

ITEM FOR FINANCE COMMITTEE

CAPITAL WORKS RESERVE FUND

HEAD 708 – CAPITAL SUBVENTIONS AND MAJOR SYSTEMS AND EQUIPMENT

Transport Department

New Subhead “Replacement of the field equipment of the toll collection system in Tseung Kwan O Tunnel”

New Subhead “Replacement of the field equipment of the toll collection system in Shing Mun Tunnels”

New Subhead “Replacement of the field equipment of the toll collection system in Lion Rock Tunnel”

Members are invited to approve new commitments
of –

- (a) \$16.4 million for the replacement of the field equipment of the toll collection system in Tseung Kwan O Tunnel;
- (b) \$18.8 million for the replacement of the field equipment of the toll collection system in Shing Mun Tunnels; and
- (c) \$18.8 million for the replacement of the field equipment of the toll collection system in Lion Rock Tunnel.

/PROBLEM

PROBLEM

The field equipment of the toll collection systems for the manual toll lanes¹ in Tseung Kwan O Tunnel (TKOT), Shing Mun Tunnels (SMT) and Lion Rock Tunnel (LRT) are reaching the end of their serviceable life.

PROPOSAL

2. The Commissioner for Transport, with the support of the Secretary for Environment, Transport and Works, proposes to replace the field equipment of the toll collection systems for the manual toll lanes in the following tunnels at the stated estimated costs –

	\$ million
(a) TKOT	16.4
(b) SMT	18.8
(c) LRT	18.8
Total	54.0

JUSTIFICATION

3. The field equipment of the toll collection systems has been in operation for 15 years. According to the Director of Electrical and Mechanical Services, most components of the equipment are reaching the end of their serviceable life and are beyond economical repair. The equipment is now showing signs of aging with reducing reliability. Moreover, it has become increasingly difficult to maintain the aged equipment and to procure the obsolete spare parts in the market. Further delay in replacement could lead to complete system failures, which would seriously affect the efficiency of toll collection and traffic throughput, causing congestion in the tunnels concerned and in their vicinity.

/4.

¹ The toll field equipment for the autotoll lanes at Tseung Kwan O Tunnel, Shing Mun Tunnels and Lion Rock Tunnel are currently provided and maintained by the Autotoll Company Limited. The equipment is not covered by the three proposed replacement projects in question.

4. In view of the above-mentioned maintenance problems and the long lead time for tendering, delivery, installation and commissioning works, we consider that it is necessary to start the replacement projects as soon as possible.

5. The new field equipment will adopt the most advanced technologies to minimise equipment downtime and avoid unexpected toll lane closures. Detailed real-time equipment status and toll registration information will be indicated at the toll supervisor control console in the control rooms of the tunnels so that any irregularities at the toll booths could be detected and rectified immediately. The storage capacity of the toll lane processors will also be enhanced to provide data backup in case the central toll computer systems break down. The overall design will emphasise high data security, high operational efficiency and minimum maintenance.

FINANCIAL IMPLICATIONS

6. We estimate the non-recurrent expenditure of the three replacement projects to be \$16.4 million for TKOT and \$18.8 million for SMT and LRT respectively, with the breakdown as follows –

	\$ million		
	TKOT	SMT	LRT
(a) Replacement of the toll booth equipment for all manual toll lanes ²	6.3	7.2	7.2
(b) Replacement of the toll lane equipment for all manual toll lanes	4.5	5.2	5.2
(c) Replacement of other ancillary toll collection field equipment and central toll computer system	2.4	2.7	2.7
(d) Electrical and Mechanical Services Trading Fund (EMSTF) project management charges	1.9	2.2	2.2
(e) Contingency (10% of (a) to (c))	1.3	1.5	1.5
Total	16.4	18.8	18.8

/7.

² There are eight manual toll lanes at TKOT and nine manual toll lanes at SMT and LRT respectively.

7. As regards paragraph 6(a) above, the cost is for the design, supply, installation, testing and commissioning of the toll booth equipment, including the toll lane processors for the control and monitoring of all field equipment, the toll collector terminal, the card readers for access control, the intercoms, emergency foot-operated alarm, security switches, beacons and the necessary interfacing devices with the Autotoll System.

8. As regards paragraph 6(b) above, the cost is for the design, supply, installation, testing and commissioning of the toll lane equipment, including the toll lane status signals, the manual barriers, the classification signs, the vehicle detectors and axle counters, the toll paid signs and traffic lights.

9. As regards paragraph 6(c) above, the cost is for the design, supply, installation, testing and commissioning of other ancillary toll collection field equipment and the central toll computer system. These include the toll supervisor console, the communication networks between the toll lane processors and the central toll computer, and the uninterruptible power supply for the toll collection system.

10. As regards paragraph 6(d) above, the cost is for the payment to EMSTF for providing engineering consultancy services, which include technical studies, definition of requirements, preparation of project programme and estimates, design, tendering, site inspection, installation supervision, testing and commissioning of the systems, as well as monitoring of defect rectification during the defect liability period of each project.

11. The estimated cash flow is as follows –

	\$ million		
	TKOT	SMT	LRT
2006-2007	1.7	1.9	1.9
2007-2008	6.5	7.5	7.5
2008-2009	8.2	9.4	9.4
Total	16.4	18.8	18.8

12. Since the three projects involve replacement of existing equipment, there will not be any additional recurrent expenditure.

13. The proposed replacement projects will have no impact on the level of tolls of the three tunnels.

IMPLEMENTATION PLAN

Encl. 14. We propose to start the replacement projects for the three tunnels in late August 2006. The replacement works at the three tunnels will be implemented simultaneously and will take about 27 months to complete. The first nine months are for preparatory works including detailed investigation, system design and preparation of specifications and tendering. The latter 18 months are for equipment manufacturing and delivery, system installation, testing and commissioning. The projects are expected to be completed before the end of November 2008. The work programme is at the Enclosure.

15. During the implementation of the projects, we will ensure minimal disruption to the tunnel traffic as far as possible. All the installation works will be arranged during the non-peak hours or the tunnel closure period in early hours such that the normal operation of the tunnels will not be affected. To avoid disruption of the traffic flow through the tunnels, we will also replace the equipment lane by lane and divert traffic to the lanes in operation.

PUBLIC CONSULTATION

16. We consulted the Legislative Council Panel on Transport on 24 February 2006 on the three proposed replacement projects. Members were generally supportive of the proposals.

BACKGROUND

17. The field equipment of the toll collection systems (including the traffic control equipment, vehicle detection equipment, vehicle classification equipment and toll booth equipment) for the manual toll lanes in SMT and TKOT was installed in 1990, and that in LRT was installed in 1991. The equipment is under the control of the toll lane processors, which feed the toll registration details to the toll central computer system of the respective tunnel for real-time monitoring and generation of toll collection reports.

18. The tunnels are currently operated by their respective management contractors. Transport Department is responsible for the timely replacement of major systems in the tunnels in consultation with the Director of Electrical and Mechanical Services.

Environment, Transport and Works Bureau
March 2006

**Work Programme for the Replacement of the Field Equipment of the Toll Collection Systems
in Tseung Kwan O Tunnel, Shing Mun Tunnels and Lion Rock Tunnel**

	Task Name	Duration (months)	2006				2007				2008				
			1-6		7-12		1-6		7-12		1-6		7-12		
1	System Engineering Study	3				■									
2	Detailed Design	3					■								
3	Tendering	3						■							
4	Equipment Manufacturing, Installation, Testing and Commissioning	18								■	■	■	■	■	■
