ITEM FOR FINANCE COMMITTEE

CAPITAL WORKS RESERVE FUND

HEAD 708 – CAPITAL SUBVENTIONS AND MAJOR SYSTEMS AND EQUIPMENT

Transport Department

New Subhead "Replacement of Fire Alarm System in the Aberdeen Tunnel"

New Subhead "Replacement of Manual Toll Collection System in the Aberdeen Tunnel"

New Subhead "Replacement of Traffic Control and Surveillance System in the Eastern Harbour Crossing"

New Subhead "Replacement of Traffic Control and Surveillance System in the Kai Tak Tunnel"

New Subhead "Replacement of Tunnel Lighting System in the Kai Tak Tunnel"

Members are invited to approve the five new commitments for the Transport Department –

- (a) \$15,120,000 for replacement of Fire Alarm System in the Aberdeen Tunnel;
- (b) \$19,908,000 for replacement of Manual Toll Collection System in the Aberdeen Tunnel;
- (c) \$145,650,000 for replacement of Traffic Control and Surveillance System in the Eastern Harbour Crossing;
- (d) \$112,040,000 for replacement of Traffic Control and Surveillance System in the Kai Tak Tunnel; and
- (e) \$85,900,000 for replacement of Tunnel Lighting System in the Kai Tak Tunnel.

/PROBLEM

Transport Department needs to replace the fire alarm system (FAS) and the manual toll collection system (TCS) of the Aberdeen Tunnel (ABT), the traffic control and surveillance systems (TCSS) of the Eastern Harbour Crossing (EHC) and Kai Tak Tunnel (KTT), and the tunnel lighting system (TLS) of KTT for ensuring safe, reliable and efficient operations of these tunnels.

PROPOSAL

2. The Commissioner for Transport, on the advice of the Director of Electrical and Mechanical Services, proposes to—

- (a) replace the FAS of ABT at an estimated cost of \$15,120,000;
- (b) replace the TCS of ABT at an estimated cost of \$19,908,000;
- (c) replace the TCSS of EHC at an estimated cost of \$145,650,000;
- (d) replace the TCSS of KTT at an estimated cost of \$112,040,000; and
- (e) replace the TLS of KTT at an estimated cost of \$85,900,000.

The Secretary for Housing and Transport supports the above proposals.

3. Details and financial implications of the above proposals are at Encls. 1-5 Enclosures 1 to 5.

Transport and Housing Bureau May 2016

Replacement of Fire Alarm System in the Aberdeen Tunnel (\$15,120,000)

The fire alarm system (FAS) in the Aberdeen Tunnel (ABT) gives fire alerts and warning of fire incidents happened inside the tunnel tubes. When the fire alarm is triggered, the alarm signal will be automatically sent to the tunnel control room and Fire Services Department (FSD).

JUSTIFICATION

2. The existing FAS in ABT has been operating for 34 years since the commissioning of the tunnel in 1982. The Electrical and Mechanical Services Trading Fund (EMSTF) advised that the system was ageing and it has become increasingly difficult to procure the required spare parts in the market for maintaining the system. In case of any system malfunction and that the fire alerts and warnings could not be timely sent to the tunnel control room and FSD, firefighting and rescue operations would be delayed. Besides, in case a false alarm is caused by the ageing of the system, the operations of ABT will be affected, which may lead to traffic congestion on the roads linking Aberdeen and other areas of Hong Kong Island. Therefore, we consider the replacement of FAS in ABT necessary to ensure safe and effective tunnel operation.

FINANCIAL IMPLICATIONS

Capital Expenditure

3. It is estimated that the replacement of FAS in ABT will incur a total capital expenditure of \$15,120,000. The detailed breakdown is as follows –

			\$'000
(a)	Repla	cement of FAS in ABT	12,000
	(i)	break glass fire alarm and fire extinguishers	2,400
	(ii)	movement activation system and fire alarm control panel	4,200
	(iii)	cabling and wiring works	3,400
	(iv)	removal and reinstatement of tunnel wall panels	2,000

		\$'000
(b)	EMSTF project management charges	1,920
(c)	Contingency (10% of item (a) above)	1,200
	Total	15,120

4. On paragraph 3(a) above, the estimated expenditure of \$12,000,000 will cover the supply, installation, testing and commissioning of all fire alarm equipment, fire extinguishers and the associated movement activation system, and fire alarm control panel; associated electrical and signaling works such as cabling and wiring; dismantling and removal of existing equipment; and the removal and reinstatement of tunnel wall panels.

5. On paragraph 3(b) above, the estimated expenditure of \$1,920,000 is for meeting the charges of EMSTF for management of the project which include the feasibility study; preparing the specifications, design and project programme; overseeing the tendering process; supervising site inspection, installation, testing and commissioning of the system; and monitoring the operation of the system and rectification work within the defects liability period.

6. On paragraph 3(c) above, the estimated expenditure of \$1,200,000 represents a 10% contingency on the items set out in paragraph 3(a).

7. The estimated cash flow is as follows –

Financial Year	ſ	\$'000
2016-17		200
2017-18		1,000
2018-19		5,000
2019-20		5,000
2020-21		3,920
Т	'otal	15,120

- 2 -

Recurrent

Recurrent Expenditure

8. The annual recurrent expenditure for the replacement of FAS in ABT will constitute about \$600,000 of the overall management fee payable to the operator of ABT.

9. The recurrent expenditure of the new system is similar to that of the existing system. No additional recurrent expenditure will be incurred by the replacement of the system.

10. According to existing policy, the operating cost of government tolled roads/tunnels should be recovered through toll charges. Since the depreciation cost of the proposal is part of the operating costs of the tunnel, it will be taken into account when setting and adjusting the toll charges in future.

IMPLEMENTATION PLAN

11. Subject to Finance Committee's funding approval in the second quarter of 2016, we plan to implement the proposal according to the following timetable –

	Activity	Target Completion Date
(a)	Site investigation (e.g. conducting cable duct survey and investigation on facilities within wall panels; studying and modifying the number and location of field equipment, etc.)	April 2017
(b)	Preparation of tendering document	September 2017
(c)	Tendering and selection of contractor	March 2018
(d)	System design by contractor	June 2018
(e)	Procurement and installation of associated equipment	September 2020
(f)	Testing, commissioning and changeover of system	December 2020

12. During the implementation of the project, we will minimise the impact on traffic as far as practicable. All the installation work will be arranged to be carried out during non-peak hours such that the normal tunnel operations will not be affected.

PUBLIC CONSULTATION

13. We consulted the Legislative Council Panel on Transport on the proposal on 15 April 2016. Members supported the proposal.

BACKGROUND

14. The ABT is a government tunnel. The operation, management and maintenance of the tunnel is taken up by an operator appointed by the Government through open tendering. The Transport Department, after consulting EMSTF, is responsible for the timely replacement of major tunnel systems in due course to ensure the safe, reliable and effective operations of the tunnel.

Replacement of Manual Toll Collection System in the Aberdeen Tunnel (\$19,908,000)

The manual toll collection system (TCS) in the Aberdeen Tunnel (ABT) serves the function of toll collecting. The system consists of Central Data Processor System and its peripherals equipment such as those for traffic management, vehicle detection and vehicle classification as well as equipment inside toll booths.

JUSTIFICATION

2. The existing TCS in ABT was replaced in 2001 and has been in use for more than 15 years. The Electrical and Mechanical Services Trading Fund (EMSTF) advised that the system had shown signs of ageing. Since the equipment and components of the system have become obsolete, it is increasingly difficult to procure the required spare parts in the market to maintain the system. As a result, we consider the replacement of the TCS in ABT necessary to ensure safe and effective tunnel operation.

3. Apart from upgrading the system computer hardware, software and its associated toll collection facilities, the new system will be improved by strengthening vehicle classification and counting capability so that the efficiency of toll collection and verification will be improved, bringing in additional benefits to ABT.

FINANCIAL IMPLICATIONS

Capital Expenditure

4. It is estimated that the replacement of TCS in ABT will incur a total capital expenditure of \$19,908,000. The detailed breakdown is as follows –

			+ -	
(a)	Repla	acement of TCS in ABT		15,800
	(i)	toll booth equipment and toll lane equipment	7,500	
	(ii)	Central Data Processor System and toll accounting system	3,750	
	(iii)	associated cables and accessories	4,550	

\$'000

		\$'000
(b)	EMSTF project management charges	2,528
(c)	Contingency (10% of item (a) above)	1,580
	Total	19,908

5. On paragraph 4(a) above, the estimated expenditure of \$15,800,000 will cover the new TCS and toll booth equipment, including the toll lane processors for the control and monitoring of all field equipment, the toll collector terminal, card readers for access control and intercoms, etc.

6. On paragraph 4(b) above, the estimated expenditure of \$2,528,000 is for meeting the charges of EMSTF for managing the project, which includes preparing the system specifications, designing and overseeing the tendering process of the TCS, electrical and mechanical facilities; supervising site inspection, installation, testing and commissioning of the system; and monitoring the operation of the system and rectification work within the defects liability period.

7. On paragraph 4(c) above, the estimated expenditure of \$1,580,000 represents a 10% contingency on the items set out in paragraph 4(a).

8. The estimated cash flow is as follows –

Financial Yea	ar	\$'000
2016-17		1,000
2017-18		4,000
2018-19		6,000
2019-20		8,908
	Total	19,908
	-	

Recurrent Expenditure

9. The annual recurrent expenditure for the replacement of TCS in ABT will constitute about \$800,000 of the overall management fee payable to the operator of ABT.

10. The recurrent expenditure of the new system is similar to that of the existing system. No additional recurrent expenditure will be incurred by the replacement of the system.

11. According to existing policy, the operating cost of government tolled roads/tunnels should be recovered through toll charges. Since the depreciation cost of the proposal is part of the operating costs of the tunnel, it will be taken into account when setting and adjusting the toll charges in future.

IMPLEMENTATION PLAN

12. Subject to Finance Committee's funding approval in the second quarter of 2016, we plan to implement the proposal according to the following timetable –

	Activity	Target Completion Date
(a)	Site investigation (e.g. studying the design and installation of equipment and its location, etc.)	November 2016
(b)	Preparation of tendering document	February 2017
(c)	Tendering and selection of contractor	October 2017
(d)	System design by contractor	March 2018
(e)	Procurement and installation of associated equipment	March 2019
(f)	Testing, commissioning and changeover of system	July 2019

13. During the implementation of the project, we will minimise the impact on traffic as far as practicable. All the installation work will be arranged to be carried out during non-peak hours such that the normal tunnel operations will not be affected.

PUBLIC CONSULTATION

14. We consulted the Legislative Council Panel on Transport on the proposal on 15 April 2016. Members supported the proposal.

BACKGROUND

15. The ABT is a government tunnel. The operation, management and maintenance of the tunnel is taken up by an operator appointed by the Government through open tendering. The Transport Department, after consulting EMSTF, is responsible for the timely replacement of major tunnel systems in due course to ensure the safe, reliable and effective operations of the tunnel.

Replacement of Traffic Control and Surveillance System in the Eastern Harbour Crossing (\$145,650,000)

The Traffic Control and Surveillance System (TCSS) in the Eastern Harbour Crossing (EHC) ensures the safe and effective tunnel operations. The system is mainly used for the monitoring and management of traffic. It consists of lane control signals and variable message signs, closed circuit television (CCTV) system and environmental monitoring system, etc.

JUSTIFICATION

2. The EHC was commissioned in 1989. The Government will take over and appoint a contractor to manage EHC on 7 August 2016. The Electrical and Mechanical Service Trading Fund (EMSTF) advised that the existing TCSS in EHC is ageing and the risk of system malfunction has increased, which may lead to traffic congestion on Hong Kong Island and in East Kowloon. Therefore, we consider the replacement of the TCSS in EHC necessary for ensuring its effective operation.

3. The new TCSS in EHC will be a fully computerised system under which various tunnel traffic control and monitoring functions are integrated under a single platform. It is also capable of implementing pre-programmed traffic management schemes for improving operation efficiency. The system's capability of controlling remote traffic message signs, signals and other field equipment will be enhanced to cope with different traffic situations. In addition, the system will be installed with high definition cameras and monitors for providing clearer images for more effective traffic monitoring. Furthermore, more cameras will be erected on the approach roads to enhance traffic monitoring and management capacity.

FINANCIAL IMPLICATIONS

Capital Expenditure

4. It is estimated that the replacement of TCSS in EHC will incur a total capital expenditure of \$145,650,000. The detailed breakdown is as follows –

			\$'00	0
(a)	Repla	acement of the TCSS in EHC		117,500
	(i)	central control system	19,500	
	(ii)	traffic control system (e.g. traffic management computer, lane control signals, etc.)	26,000	
	(iii)	traffic surveillance system (e.g. CCTV system, automatic incident detection system, etc.)	24,000	
	(iv)	data communication network	13,000	
	(v)	associated civil engineering and building services work, cables and accessories	35,000	
(b)	EMS	TF project management charges		16,400
(c)	Conti	ngency (10% of item (a) above)	_	11,750
		Total		145,650

5. On paragraph 4(a) above, the estimated expenditure of \$117,500,000 is for the supply and installation of the new TCSS, including the central control system, CCTV system, automatic incident detection system, lane control signals and remote control traffic signs, variable message signs, traffic lights, various field equipment (e.g. over-height vehicle detectors), computer hardware and software, data communication network as well as the associated cables and accessories; and building services work 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.

6. On paragraph 4(b) above, the estimated expenditure of \$16,400,000 is for meeting the charges of EMSTF for managing the project, which includes preparing the system specifications, designing and overseeing the tendering process of the TCSS and engaging engineering consultants; supervising site inspection, installation, testing and commissioning of the system; and monitoring the operation of the TCSS facilities and rectification work within the defects liability period.

7. On paragraph 4(c) above, the estimated expenditure of \$11,750,000 represents a 10% contingency on the items set out in paragraph 4(a).

Financial Year	\$'000
2016-17	4,300
2017-18	11,000
2018-19	22,000
2019-20	58,070
2020-21	50,280
Total	145,650

8. The estimated cash flow is as follows –

Recurrent Expenditure

9. The EHC will be taken over by the Government and become a government tunnel on 7 August 2016. In accordance with the established practice of other government tunnels, EHC will be managed by a contractor appointed by the Government. The recurrent expenditure of the proposed replacement of TCSS will be included in the management fee payable to the contractor for the management, operation and maintenance of EHC. The relevant annual recurrent expenditure is around \$5,500,000^{Note}.

10. According to existing policy, the operating cost of government tolled roads/tunnels should be recovered through toll charges. Since the depreciation cost of the proposal is part of the operating costs of the tunnel, it will be taken into account when setting and adjusting the toll charges in future.

IMPLEMENTATION PLAN

11. Subject to Finance Committee's funding approval in the second quarter of 2016, we plan to implement the proposal according to the following timetable –

/Activity

^{Note} We do not have the relevant information on the recurrent expenditure as the system is currently managed by the franchisee of EHC.

	Activity	Target Completion Date
(a)	Site investigation (e.g. conducting cable duct survey and underground utilities investigation; studying and modifying the number and location of field equipment etc.)	September 2017
(b)	Preparation of tendering document	April 2018
(c)	Tendering and selection of contractor	December 2018
(d)	System design by contractor	June 2019
(e)	Procurement and installation of associated equipment	October 2020
(f)	Testing, commissioning and changeover of system	February 2021

12. During the implementation of the project, we will minimise the impact on traffic as far as practicable. All the installation work will be arranged to be carried out during non-peak hours such that the normal tunnel operations will not be affected.

PUBLIC CONSULTATION

13. We consulted the Legislative Council Panel on Transport on the proposal on 15 April 2016. Members supported the proposal.

BACKGROUND

14. The EHC will become a government tunnel on 7 August 2016. The operation, management and maintenance of the tunnel will be taken up by an operator appointed by the Government through open tendering. The Transport Department, after consulting EMSTF, is responsible for the timely replacement of major tunnel systems in due course to ensure the safe, reliable and effective operations of the tunnel.

Replacement of Traffic Control and Surveillance System in the Kai Tak Tunnel (\$112,040,000)

The traffic control and surveillance system (TCSS) in the Kai Tak Tunnel (KTT) ensures the safe and effective tunnel operations. The system is mainly used for the monitoring and management of traffic. It consists of lane control signals and variable message signs, closed circuit television (CCTV) system and environmental monitoring system, etc.

JUSTIFICATION

2. The existing TCSS in KTT was replaced in 2000 and has been in use for more than 15 years. The Electrical and Mechanical Services Trading Fund (EMSTF) advised that the system had shown signs of ageing. Since the equipment and components of the system have become obsolete, it is increasingly difficult to procure the required spare parts in the market to maintain the system. As a result, we consider the replacement of the TCSS in KTT necessary for ensuring its effective operation.

3. The new TCSS in KTT will be a fully computerised system under which various tunnel traffic control and monitoring functions are integrated under a single platform. It is also capable of implementing pre-programmed traffic management schemes for improving operation efficiency. The system's capability to control remote traffic message signs, signals and other field equipment will be enhanced to cope with different traffic situations. In addition, the system will be installed with high definition cameras and monitors for providing clearer images for more effective traffic monitoring. Furthermore, more cameras will be erected on the approach roads to enhance traffic monitoring and management capacity.

FINANCIAL IMPLICATIONS

Capital Expenditure

4. It is estimated that the replacement of TCSS in KTT will incur a total capital expenditure of \$112,040,000. The detailed breakdown is as follows –

	Replacement of the TCSS in KTT		\$'	\$'000	
(a)				90,400	
	(i)	traffic control system (e.g. traffic management computers, lane contro signals, etc.)	ac 22,400		
	(ii)	traffic surveillance system (e.g CCTV system, automatic incider detection system, etc.)	g. 20,000 nt		
	(iii)	data communication network	13,000		
	(iv)	associated civil engineering an building services work, cables an accessories	d 35,000 d		
(b)	EMS	TF project management charges		12,600	
(c)	Cont	ingency (10% of item (a) above)		9,040	
		То	tal	112,040	

5. On paragraph 4(a) above, the estimated expenditure of \$90,400,000 is for the supply and installation of the new TCSS, including the CCTV system, automatic incident detection system, lane control signals and remote control traffic signs, variable message signs, traffic lights, various field equipment (e.g. over-height vehicle detectors), computer hardware and software, data communication network as well as the associated cables and accessories; and building services work 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.

6. On paragraph 4(b) above, the estimated expenditure of \$12,600,000 is for meeting the charges of EMSTF for managing the project, which includes preparing the system specifications, designing and overseeing the tendering process of the TCSS and engaging engineering consultants; supervising site inspection, installation, testing and commissioning of the system; monitoring the operation of TCSS facilities and defect rectification work during defects liability period.

7. On paragraph 4(c) above, the estimated expenditure of \$9,040,000 represents a 10% contingency on the items set out in paragraph 4(a).

8. The estimated cash flow is as follows –

Financial Year	\$'000
2016-17	2,000
2017-18	5,000
2018-19	24,000
2019-20	34,000
2020-21	47,040
Total	112,040

Recurrent Expenditure

9. The annual recurrent expenditure of the above system will constitute about \$4,300,000 of the overall management fee payable to the operator of KTT.

10. The recurrent expenditure of the new system is similar to that of the existing system. No additional recurrent expenditure will be incurred by the replacement of the system.

IMPLEMENTATION PLAN

11. Subject to Finance Committee's funding approval in the second quarter of 2016, we plan to implement the proposal according to the following timetable –

	Activity	Target Completion Date	е
(a)	Site investigation (e.g. conducting cable duct survey and underground utilities investigation; studying and modifying the number and location of field equipment, etc.)	June 2017	
(b)	Preparation of tendering document	January 2018	
(c)	Tendering and selection of contractor	September 2018	
		/	(d)

	Activity	Target Completion Date
(d)	System design by contractor	March 2019
(e)	Procurement and installation of associated equipment	July 2020
(f)	Testing, commissioning and changeover of system	November 2020

12. During the implementation of the project, we will minimise the impact on traffic as far as practicable. All the installation work will be arranged to be carried out during non-peak hours such that the normal tunnel operations will not be affected.

PUBLIC CONSULTATION

13. We consulted the Legislative Council Panel on Transport on the proposal on 15 April 2016. Members supported the proposal.

BACKGROUND

14. The KTT is a toll-free government tunnel. The operation, management and maintenance of the tunnel is taken up by an operator appointed by the Government through open tendering. The Transport Department, after consulting EMSTF, is responsible for the timely replacement of major tunnel systems in due course to ensure the safe, reliable and effective operations of the tunnel.

Replacement of Tunnel Lighting System in the Kai Tak Tunnel (\$85,900,000)

The tunnel lighting system (TLS) in the Kai Tak Tunnel (KTT) comprises mainly lighting fittings, power supply, cables and control system.

JUSTIFICATION

2. The existing TLS in KTT was put to use when KTT was commissioned in 1982. The Electrical and Mechanical Services Trading Fund (EMSTF) advised that the system has approached the end of its economic serviceable life^{Note}. It has become increasingly difficult to maintain the system in good condition due to the lack of certain spare parts of TLS in the market. If not replaced timely, any failure in TLS coupled with the lack of spare parts will affect the operation of KTT. The operation of KTT may even have to be suspended, resulting in serious impact on the traffic of the major road networks on both sides of the tunnel.

3. At present, the TLS in KTT is composed of two types of lighting, namely T8 fluorescent lamps mainly as basic lighting, and High Pressure Sodium lamps (SONs) as reinforcement lighting. Like other road tunnels, the basic lighting provides adequate lighting for motorists to pass through the tunnel comfortably and safely whereas reinforcement lighting provides sufficient and adjustable illumination near the entrance and exit of the tunnel with a view to enabling motorists to accommodate the changes of lighting intensity when driving in and out of the tunnel.

4. To enhance the stability, reliability and efficiency of TLS, new lighting of better quality and energy efficiency will be procured. We propose to replace all T8 fluorescent lamps with more energy efficient T5 fluorescent lamps as basic lighting while SONs, which are more efficacious compared with other types of lamps, would continue to be used as reinforcement lighting. Pursuant to the latest design requirements of Hong Kong, the lamps to be used for illuminating tunnels shall be SONs and fluorescent lamps. The new equipment will also meet the relevant standards and requirements such as those of the International Commission on Illumination and British Standards.

/FINANCIAL

^{Note} The economic serviceable life of a TLS is around 25 years, depending on the actual tunnel conditions.

FINANCIAL IMPLICATIONS

Capital Expenditure

5. It is estimated that the replacement of TLS in KTT will incur a total capital expenditure of \$85,900,000. The detailed breakdown is as follows –

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		\$^0	00
Repl	acement of the TLS in KTT:		68,170
(i)	lighting fittings inside tunnel tubes	38,170	
(ii)	power supply and control equipment inside tunnel	20,000	
(iii)	tunnel lighting control console in control room	3,000	
(iv)	cables	5,000	
(v)	removal and reinstatement of tunnel wall panels	2,000	
EMS	TF project management charges		10,910
Cont	ingency (10% of item (a) above)		6,820
	Total	-	85,900
	Repl (i) (ii) (iii) (iv) (v) EMS Cont	 Replacement of the TLS in KTT: (i) lighting fittings inside tunnel tubes (ii) power supply and control equipment inside tunnel (iii) tunnel lighting control console in control room (iv) cables (v) removal and reinstatement of tunnel wall panels EMSTF project management charges Contingency (10% of item (a) above) 	Replacement of the TLS in KTT: (i) lighting fittings inside tunnel tubes 38,170 (ii) power supply and control equipment inside tunnel 20,000 (iii) tunnel lighting control console in control room 3,000 (iv) cables 5,000 (v) removal and reinstatement of tunnel values 2,000 EMSTF project management charges 2,000 Contingency (10% of item (a) above) Total

6. On paragraph 5(a) above, the estimated expenditure of \$68,170,000 will cover the supply, installation, testing and commissioning of all lighting fittings, control equipment and the tunnel lighting console; the associated electrical works such as cabling and wiring; and the removal and reinstatement of tunnel wall panels.

7. On paragraph 5(b) above, the estimated expenditure of \$10,910,000 is for meeting the charges for management of the replacement project by the EMSTF, which includes carrying out the feasibility study on different proposals; preparing the specifications, design and project programme; arranging the tender; supervising the installation; testing and commissioning of the new system; and monitoring the operation of the system and defect rectification work.

8. On paragraph 5(c) above, the estimated expenditure of \$6,820,000 represents a 10% contingency on the items set out in paragraph 5(a).

9. The estimated cash flow is as follows –

Financial Year	\$'000
2016-17	5,000
2017-18	10,000
2018-19	23,000
2019-20	40,000
2020-21	7,900
Total	85,900

Recurrent Expenditure

10. The annual recurrent expenditure of the above system will constitute about \$3,100,000 of the overall management fee payable to the operator of KTT. Since new equipment of higher energy efficiency will be procured, the annual recurrent expenditure of the new TLS will be lower than that of the existing one. It is estimated that the new T5 fluorescent lamps will consume about 20% less electricity as compared with the existing T8 fluorescent lamps. As T5 fluorescent lamps constitute about one quarter of the total power consumption of the TLS, the overall saving of power consumption arising from using T5 fluorescent lamps would be about 5%.

IMPLEMENTATION PLAN

11. Subject to Finance Committee's funding approval in the second quarter of 2016, we plan to implement the proposal according to the following timetable –

	Activity	Target Completion Date
(a)	Site investigation (e.g. conduct investigation on facilities within wall panels, etc)	July 2016
(b)	Preparation of tendering document	December 2016
(c)	Tendering and selection of contractor	June 2017

Activity		Target Completion Date	
(d)	System design by contractor	September 2017	
(e)	Procurement and installation of associated equipment	June 2019	
(f)	Testing, commissioning and changeover of system	September 2019	

12. During the implementation of the project, we will minimise the impact on traffic as far as practicable. All the installation work will be arranged to be carried out during non-peak hours such that the normal tunnel operations will not be affected.

PUBLIC CONSULTATION

13. We consulted the Legislative Council Panel on Transport on the proposal on 12 May 2015. While the Panel in general did not object to the proposal, some Members enquired whether Light-Emitting Diode (LED) lamps should be used inside road tunnels. The performance of LED lamps varies significantly under different settings. The operating environment of a road tunnel is rather different from that of an office or other settings because of high ambient temperature, high traffic flow and emission inside a road tunnel. The operating environment of a road tunnel may have impact on the stability as well as the reliability of LED, hence jeopardising the safe operation of KTT. Furthermore, the life-cycle costs of LED lamps are currently less favourable than those of T5 fluorescent lamps and SONs. It is therefore not yet an opportune time to adopt LED lamps inside a road tunnel.

14. Nevertheless, in response to Members' suggestions and in order to assess the stability and reliability of LED lamps in road tunnels of Hong Kong, we plan to install LED lamps of different ratings and types at designated locations of KTT under this project for evaluation purposes. The results of the evaluation will be conducive to determine the applicability of LED lamps to future TLS replacement projects. We will also closely monitor the development of various lighting equipment in the market for application in road tunnels.

/BACKGROUND

BACKGROUND

15. The KTT is a toll-free government tunnel. The operation, management and maintenance of the tunnel is taken up by an operator appointed by the Government through open tendering. The Transport Department, after consulting EMSTF, is responsible for the timely replacement of major tunnel systems in due course to ensure the safe, reliable and effective operations of the tunnel.
