

**For Discussion  
on 24 May 2013**

## **Legislative Council Panel on Transport**

### **Replacement / Reprovisioning of Toll Collection Systems at Lantau Toll Plaza and Ma Wan Toll Plaza in Tsing Ma Control Area**

#### **PURPOSE**

This paper seeks Members' views on the proposal to replace the manual toll collection systems (TCSs) at the Lantau Toll Plaza and the Ma Wan Toll Plaza in the Tsing Ma Control Area (TMCA), together with the reprovisioning of toll collection facilities<sup>Note</sup> at the airport bound carriageways of the Lantau Toll Plaza and replacement of toll booths at the two toll plazas.

#### **BACKGROUND**

2. Currently the Lantau Link is the only road access to the Lantau Island. Drivers travelling between the airport and urban areas must go through the Lantau Toll Plaza. For the convenience of drivers and to streamline airport bound traffic flow, one-way toll collection arrangement is adopted at the Lantau Link. Drivers do not need to stop for payment on journeys to the airport through the Lantau Link. The operator of the TMCA will collect from the drivers the tolls payable for using the Lantau Link twice at the Lantau Toll Plaza when they return via the Kowloon bound route. To tie in with this toll collection arrangement, two traffic islands and five toll booths at the airport bound carriageways of the Lantau Toll Plaza were removed in October 1999 so that drivers can drive right through without stopping.

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<sup>Note</sup> Reprovisioning of toll collection facilities include installation of Autotoll System and reinstatement of the toll booths, traffic islands, traffic signs and road markings.

3. The components of the manual TCSs (including traffic control equipment, vehicle detection equipment, vehicle classification equipment and toll booth equipment) at the Lantau Toll Plaza (Kowloon bound) and the Ma Wan Toll Plaza are either outdated or reaching the end of their serviceable life, thus making maintenance difficult and not economical. Replacement is thus considered necessary. On the other hand, with the commissioning of the Hong Kong-Zhuhai-Macau Bridge (Bridge) and the Tuen Mun-Chek Lap Kok Link, the Lantau Link will no longer be the only road access to the Lantau Island. Therefore, we need to change the existing toll collection arrangement at the Lantau Link and implement the two-way toll arrangement.

## **PROPOSAL**

4. We propose to create a commitment of \$81,300,000 to replace the manual TCSs at the Lantau Toll Plaza and the Ma Wan Toll Plaza in TMCA, install the Autotoll System at the airport bound carriageways of the Lantau Toll Plaza, reinstate the removed traffic facilities and reprovide / replace all toll booths at the two toll plazas.

## **JUSTIFICATION**

5. The manual TCS at the Lantau Toll Plaza, the Lantau Link has been in operation since May 1997. According to the Electrical and Mechanical Services Trading Fund (EMSTF), most of the components of the system are reaching the end of their 15-year serviceable life and the system is also showing signs of aging. It is becoming increasingly difficult to procure the required spare parts in the market to maintain the aged equipment as the components are obsolete. Should the replacement project be delayed and if there is any malfunctioning of individual parts, the toll collection of the Lantau Link and the traffic at the toll plaza will be affected. Due to the complexity of the TCS, it is estimated that it will take about 3 years to replace the entire system. We need to begin the replacement work in 2013 so that the project can be completed in time in 2016 to tie in with the completion and commissioning of the Bridge and other traffic facilities.

6. The manual TCS at the Ma Wan Toll Plaza has been operating since December 2002. The manufacturer of its server has indicated that the operating system of the server is already out of production and maintenance support on the server can only be provided on an annual basis until 2016. If the TCS is not replaced in time, any breakdown of the server after the expiry of the maintenance support will disrupt the toll collection. The design of the two new systems mentioned above can also accommodate the installation of other e-payment facilities to the system in future.

7. The new TCSs will emphasise on strengthening toll data security and enhancing the monitoring of operational efficiency, as well as minimising the need for maintenance, with merits as follows –

- (a) The toll lane processor of the TCS will adopt a fast (at least dual core) central processor so that it can handle data more efficiently. The highly-efficient processor can enhance system reliability, minimising equipment downtime and thereby lowering the chances of unexpected toll lane closures. Meanwhile, the storage capacity of the TCS processor will be increased with enhanced data backup technology so as to strengthen its data backup and retrieval capabilities in the event of a system breakdown;
- (b) Through the newly installed digital video recording system, toll supervisors in the control rooms can monitor the operation of all toll lanes and review video recordings immediately in case of any irregularities so detected for taking follow-up actions as appropriate; and
- (c) Data security and encryption design will be strengthened so as to ensure proper storage of data.

8. As mentioned in paragraph 3, with the completion and commissioning of the Bridge and the Tuen Mun-Chek Lap Kok Link from end 2016 to 2018, the Lantau Link will no longer be the only road access to the Lantau Island. Under the existing one-way toll collection arrangement, there may be scenarios in which we cannot collect tolls from

some motorists using the Lantau Link while some motorists will actually be charged twice of the single journey toll. To avoid the happening of the above situations, there is an imminent need to change the current one-way toll collection arrangement of the Lantau Link to a two-way toll arrangement before the end of 2016 so that drivers will pay a toll at the Lantau Toll Plaza for each journey on the Lantau Link in either direction. To tie in with the implementation of the two-way toll collection arrangement, we will install the Autotoll System, reinstate the removed traffic islands, traffic signs and road markings, and reprovide the toll booths at the airport bound carriageways. As the existing toll booths at the Lantau Toll Plaza and the Ma Wan Toll Plaza have been in operation for years, many of them are in dilapidated conditions due to normal wear and tear. These toll booths will be replaced during the TCS replacement.

9. In view of the aforementioned situation and reasons, as well as the long lead time for tendering, delivery, installation and commissioning work, we consider it necessary to start the replacement project as soon as possible.

## **FINANCIAL IMPLICATIONS**

### ***Non-recurrent Expenditure***

10. We estimate the capital cost of the project to be \$81,300,000 with breakdown as follows –

|     | Work items  | Cost (\$,000) |
|-----|---|---------------|
| (a) | Replacement of the manual TCSs at the Lantau Toll Plaza and the Ma Wan Toll Plaza; installation of the Autotoll System at the airport bound carriageways of the Lantau Toll Plaza | 51,000        |
| (b) | Reinstatement of traffic facilities at the airport bound carriageways of the Lantau Toll Plaza and reprovisioning / replacement of all toll booths at the                         | 15,490        |

|     | Work items   | Cost (\$,000) |
|-----|--|---------------|
|     | Lantau Toll Plaza and the Ma Wan Toll Plaza          |               |
| (c) | EMSTF project management charges                     | 8,160         |
| (d) | Contingency Cost (around 10% of items ((a) and (b))) | 6,650         |
|     | Total  | 81,300        |

11. Regarding paragraph 10(a) above, the cost is for the design, supply, installation, testing and commissioning of the new TCSs, toll booth equipment including the toll lane processors for the control and monitoring of all field equipment, the toll collector terminals, the card readers for access control, intercoms, foot-operated emergency alarms, security switches and beacons, and the necessary interfacing devices with the Autotoll System.

12. Regarding paragraph 10(b) above, the cost is for the reinstatement of traffic facilities at the airport bound carriageways of the Lantau Toll Plaza, including the traffic islands, traffic signs and road markings, and reprovisioning/replacement of all toll booths at the two toll plazas.

13. Regarding paragraph 10(c) above, the cost is for meeting the EMSTF project management charges for the project, which includes preparing system specifications, designing and overseeing the tendering process of the TCSs, electrical and mechanical facilities; supervising the site inspection, installation work, testing and commissioning; monitoring the operation of TCS facilities and defect rectification work during the defect liability period.

14. We intend to phase the expenditure as follows –

| Year    | \$,000       |
|---------|--------------|
| 2013-14 | 2,000        |
| 2014-15 | 20,000       |
| 2015-16 | 40,000       |
| 2016-17 | 19,300       |
| Total   | <hr/> 81,300 |

### ***Recurrent Expenditure***

15. The recurrent expenditure of the above proposal is estimated to be about \$3,100,000 and will be offset by the recurrent expenditure of the existing system, with no additional recurrent expenditure. Provision will be reserved in the budget of the relevant year to meet the need. The TMCA operator will be responsible for operating and maintaining these facilities.

### **IMPACT ON FEES AND CHARGES**

16. Under the existing policy, the operating cost of government tolled roads should be recovered through the toll charges. As the depreciation cost of the proposed project is part of the operating cost of the Lantau Link, it will be taken into account when setting the Lantau Link toll charges in the future.

### **IMPLEMENTATION PLAN**

17. We plan to proceed with the project in July 2013 for completion by August 2016. A work programme is set out below –

|     | <b>Activity</b>   | <b>Target<br/>Completion Date</b> |
|-----|---|-----------------------------------|
| (a) | Site investigation & tender preparation   | March 2014                        |
| (b) | Tendering exercise and selection of contractor  | October 2014                      |
| (c) | System design by contractor   | June 2015                         |
| (d) | Procurement and installation of toll booths and the associated equipment                        | December 2015                     |
| (e) | Commissioning test and changeover of the system   | April 2016                        |
| (f) | Reconstruction of traffic facilities at the airport bound carriageways of the Lantau Toll Plaza | August 2016                       |

18. During the implementation of the project, we will minimise the impact on traffic as much as possible. All the installation work will be arranged to be carried out during non-peak hours or in the early hours such that the normal operation of the TMCA will not be affected. We shall replace the equipment lane by lane and divert traffic to other lanes in operation.

## **WAY FORWARD**

19. Subject to Members' support for the proposal, we will seek funding approval from the Finance Committee to proceed with the project as soon as possible.

**ADVICE SOUGHT**

20. Members are invited to comment on and support the proposal.

**Transport and Housing Bureau  
May 2013**