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Panel on Transport Meeting on 15 March 2019

Updated background brief on replacement of traffic control and surveillance systems in government tunnels

Purpose

This paper provides updated background information on the replacement of the traffic control and surveillance systems ("TCSSs") in government tunnels and the Tsing Ma Control Area ("TMCA"). It also summarizes the major discussions by Legislative Council ("LegCo") Members on financial proposals on the replacement of TCSSs in the past.

Background

Traffic control and surveillance systems

2. Since early 1980's, all road tunnels and TMCA have been equipped with comprehensive traffic control and surveillance facilities including closed circuit television ("CCTV") cameras, automatic incident detectors, lane control signals ("LCS"), variable speed limit signs ("VSLS") and variable message signs, etc. for efficient and effective traffic and incident management. TCSSs have been expanded in recent years to include the Shenzhen Western Corridor, the Tsing Sha Control Area, Tuen Mun Road and Tolo Highway. New TCSSs are now being or will be implemented as part of the highway projects when new strategic routes are built or existing routes are reconstructed.

3. According to the information provided by the Administration,¹ TCSSs have been installed in the following locations: Aberdeen Tunnel, Cross Harbour Tunnel, Eastern Harbour Crossing ("EHC"), Kai Tak Tunnel, Lion Rock Tunnel, Shing Mun Tunnels, Tai Lam Tunnel, Tate's Cairn Tunnel, Tseung Kwan O Tunnel, Western Harbour Crossing, Shenzhen Western Corridor, Tolo Highway between Sha Tin and Tai Po near Hong Lok Yuen, TMCA, Tsing Sha

¹ LC Paper No. CB(4)951/17-18(07)

Control Area, Central–Wanchai Bypass, Hong Kong Boundary Crossing Facilities of Hong Kong–Zhuhai–Macao Bridge and Hong Kong Link Road. It is also expected that TCSS will be installed at Tuen Mun–Chek Lap Kok Link, connecting road linking up the Liantang/Heung Yuen Wai Boundary Control Point and the existing Fanling Highway, Tolo Highway between Tai Po near Hong Lok Yuen and Fanling, Tseung Kwan O–Lam Tin Tunnel, Tseung Kwan O Cross Bay Link, Tai Po Road (Sha Tin Section) between Fo Tan Road and Sha Tin Rural Committee Road, Central Kowloon Route and Trunk Road T2.

Major discussions by Members

4. The major discussions by LegCo Members on funding proposals in relation to the replacement of TCSSs in government tunnels and TMCA in the past are summarized in the ensuing paragraphs.

Replacement of traffic control and surveillance systems

5. In May 2008, members of the Panel on Transport ("the Panel") noted the Administration's proposal for replacement of TCSS in the Shing Mun Tunnels ("SMT"), which had been in use for 17 years, at an estimated cost of \$140 million. The relevant funding proposal was approved by the Finance Committee ("FC") in June 2008. According to the work programme, the project, which started in the fourth quarter of 2008, would take about 54 months to complete.

6. In April 2016, the proposals for replacing TCSSs in the Kai Tak Tunnel ("KTT") and EHC at estimated costs of \$112.04 million and \$145.65 million respectively were supported by members of the Panel. Subsequently, FC approved the funding in June 2016. The target completion date for replacement of TCSS in KTT would be November 2020, and that in EHC would be February 2021.

7. In July 2017, members of the Panel were briefed by the Administration on its funding proposal to replace TCSS in TMCA, which had been in use for more than 20 years, at an estimated cost of \$298.91 million. Members raised no objection to the Administration's funding proposal which was subsequently approved by FC in February 2018. The Administration targeted to complete the replacement project in the second quarter of 2022.

8. When considering the above proposals, members generally noted and agreed that as the existing TCSSs which were in service for a long time was ageing and hence the risk of malfunctioning would increase, they should be

replaced to ensure the reliability, effectiveness and efficiency of the traffic control and surveillance of the tunnels. In addition, the components of the old systems had generally become obsolete, making the maintenance of the systems difficult and not economical.

9. During discussion on the funding proposal in 2008 on replacement of TCSS in SMT at the FC meeting, Members asked about details of the function of the automatic incident detection system in automatically identifying the location of traffic incidents, and noted how the colour CCTV system would help improve traffic monitoring efficiency. In response to a Member's enquiry, the Administration advised members that the CCTV footage would only be provided to government departments on justifiable grounds.

10. Noting the long implementation time required for replacing TCSSs in KTT and EHC, members of the Panel in 2016 urged the Administration to expedite the works progress so as to minimize the impact of the installation work on normal tunnel operations. In reply, the Administration said that the proposed programmes of the replacement projects involved a series of works inside the tunnel tubes and roads in the tunnel area, such as site investigation, temporary traffic arrangement, system installation work, etc. Further, these works could only be carried out during non-peak hours. As such, the proposed implementation schedules were already very tight.

11. Noting that the estimated annual recurrent expenditure of the new TCSS in TMCA would be similar to that of the existing system, i.e. around \$11.1 million, some Members considered the amount quite high and asked if the annual recurrent expenditure had already covered the maintenance costs. Some Members also expressed concern about the details of defects liability period ("DLP") of the new TCSS, as well as the impact of the depreciation costs of the new system on toll charges of Lantau Link.

12. The Administration responded that given the "cost-recovery" and "user-pays" principles according to the existing toll policy, the depreciation costs of the new TCSS, which formed part of the operating costs, would be taken into account together with other factors when setting the tolls in future. That said, as the depreciation costs of the new TCSS would spread over a number of years, it was unlikely that the annual costs incurred would have significant impact on the toll levels.

13. The Administration further advised that the duration of DLP for general electrical and mechanical system was normally one year. During the one-year DLP, no fees would be charged for rectifying defects, while the operator would have to negotiate with the TCSS supplier on the maintenance

charges thereafter. After the expiry of DLP, the operator of TMCA would be responsible for the repair and maintenance of the new system, including the replacement of defective spare parts when necessary. The relevant costs incurred would be covered under the overall management fee payable to the operator of TMCA.

Replacement of the lane control signals and variable speed limit signs of traffic control and surveillance system in Tsing Ma Control Area

14. In May 2012, members of the Panel were informed of the Administration's proposal to replace LCS and VSLS of TCSS in TMCA at an estimated cost of \$56.750 million.

15. Members noted that LCS and VSLS were two key components of TCSS in TMCA. LCS provided real-time indication of lane status (e.g. whether the lane was in operation or closed) of the road and control traffic for guiding motorists to use the suitable lanes. VSLS regulated the speed of vehicles by indicating the speed limit applicable to a road section, which would be varied according to changes in traffic conditions. Effective functioning of LCS and VSLS was critical to the safety and management of expressways, control areas and tunnels. Being installed in TMCA since its commissioning in 1997, LCS and VSLS which had been in service for more than 14 years were then approaching the end of their economic serviceable life. The old fibre optic type LCS and VSLS were replaced with new Light Emitting Diode ("LED") type LCS and VSLS, which have wider viewing angle and are much brighter. LED displays are also more environmentally friendly as they consume much less electricity, have a longer service life and are more reliable. The relevant funding proposal was considered and approved at the meeting of the Finance Committee on 13 July 2012.

Latest development

16. The Administration plans to seek members' support for the funding application for taking forward the replacement of TCSSs and other systems in various government tunnels at the meeting of the Panel to be held on 15 March 2019.

Relevant papers

17. A list of relevant papers is in the **Appendix**.

Council Business Division 4
Legislative Council Secretariat
12 March 2019

List of relevant papers

Date of meeting	Meeting	Minutes/Paper	LC Paper No.
--	Panel on Transport	Administration's paper on replacement of the traffic control and surveillance system in the Shing Mun Tunnels	CB(1)1556/07-08(03) http://www.legco.gov.hk/yr07-08/english/panels/tp/papers/tpcb1-1556-3-e.pdf
13.6.2008	Finance Committee	Administration's paper on replacement of the traffic control and surveillance system in the Shing Mun Tunnels	FCR(2008-09)30 http://www.legco.gov.hk/yr07-08/english/fc/fc/papers/f08-30e.pdf
		Minutes of meeting	FC31/08-09 http://www.legco.gov.hk/yr07-08/english/fc/fc/minutes/fc080613.pdf
--	Panel on Transport	Administration's paper on replacement of field traffic equipment (lane control signals and variable speed limit signs) of traffic control and surveillance system in the Tsing Ma Control Area	CB(1)1935/11-12(01) http://www.legco.gov.hk/yr11-12/english/panels/tp/papers/tpcb1-1935-1-e.pdf
13.7.2012	Finance Committee	Administration's paper on replacement of the lane control signals and variable speed limit signs of the traffic control and surveillance system in the Tsing Ma Control Area	FCR(2012-13)45 http://www.legco.gov.hk/yr11-12/english/fc/fc/papers/f12-45e.pdf
		Minutes of meeting	FC193/11-12 http://www.legco.gov.hk/yr11-12/english/fc/fc/minutes

Date of meeting	Meeting	Minutes/Paper	LC Paper No.
			es/fc20120713.pdf
15.4.2016	Panel on Transport	Administration's paper on replacement of fire alarm system and manual toll collection system in the Aberdeen Tunnel, and traffic and control surveillance systems in the Eastern Harbour Crossing and the Kai Tak Tunnel	CB(4)831/15-16(07) http://www.legco.gov.hk/yr15-16/english/panels/tp/papers/tp20160415cb4-831-7-e.pdf
		Minutes of meeting	CB(4)1321/15-16 http://www.legco.gov.hk/yr15-16/english/panels/tp/minutes/tp20160415.pdf
3.6.2016	Finance Committee	Administration's paper on replacement of fire alarm system in the Aberdeen Tunnel; replacement of manual toll collection system in the Aberdeen Tunnel; replacement of traffic control and surveillance system in the Eastern Harbour Crossing; replacement of traffic control and surveillance system in the Kai Tak Tunnel; and replacement of Tunnel Lighting System in the Kai Tak Tunnel	FCR(2016-17)32 http://www.legco.gov.hk/yr15-16/english/fc/fc/papers/f16-32e.pdf
		Minutes of meeting	FC314/15-16 http://www.legco.gov.hk/yr15-16/english/fc/fc/minutes/fc20160603.pdf

Date of meeting	Meeting	Minutes/Paper	LC Paper No.
21.7.2017	Panel on Transport	Administration's paper on replacement of traffic control and surveillance system in Tsing Ma Control Area	CB(4)1409/16-17(03) https://www.legco.gov.hk/yr16-17/english/panels/tp/papers/tp20170721cb4-1409-3-e.pdf
		Minutes of meeting	CB(4)1618 /16-17 https://www.legco.gov.hk/yr16-17/english/panels/tp/minutes/tp20170721.pdf
23.2.2018	Finance Committee	Administration's paper on replacement of traffic control and surveillance system in the Tsing Ma Control Area	FCR(2017-18)59 https://www.legco.gov.hk/yr17-18/english/fc/fc/papers/f17-59e.pdf
		Information provided by the Administration on follow-up issues in respect of FCR(2017-18)59 related to the replacement of traffic control and surveillance system in the Tsing Ma Control Area (follow-up paper)	FC259/17-18(01) https://www.legco.gov.hk/yr17-18/english/fc/fc/papers/fc20180223fc-259-1-e.pdf
		Minutes of meeting	FC21/18-19 https://www.legco.gov.hk/yr17-18/english/fc/fc/minutes/fc20180223.pdf