

**For discussion
on 2 June 2011**

LEGISLATIVE COUNCIL PANEL ON TRANSPORT

Installation of Radio Re-broadcasting System for Digital Audio Broadcasting at 11 Government Road Tunnels

PURPOSE

This paper seeks Members' views on our proposal to install radio re-broadcasting system for Digital Audio Broadcasting (DAB) at 11 government road tunnels.

BACKGROUND

2. The Government is committed to promoting digitisation of broadcasting services in Hong Kong. Following the successful launch of digital terrestrial television service in end 2007, the Government released a Band III multiplex in 2010 for interested operators to provide DAB service.

3. All the 11 government road tunnels¹ are currently equipped with radio re-broadcasting system in respect of all radio platforms (i.e. both Amplitude Modulation (AM) and/or Frequency Modulation (FM) channels) to ensure that tunnel users can receive broadcast messages in respect of traffic and road safety information. However, the radio re-broadcasting system currently installed in the government road tunnels can only relay analogue radio broadcast transmitted via AM and/or FM systems. The government tunnel operators are responsible for delivering emergency broadcasting services to tunnel users. With the expected launch of DAB service from late 2011, there is a need for government tunnels to be

¹ The 11 government road tunnels are Aberdeen Tunnel, Cross Harbour Tunnel, Kai Tak Tunnel, Lion Rock Tunnel, Tseung Kwan O Tunnel, Shing Mun Tunnels, Cheung Tsing Tunnel in the Tsing Ma Control Area, and Nam Wan Tunnel, Eagle's Nest Tunnel, Sha Tin Heights Tunnel and Tai Wai Tunnel in the Tsing Sha Control Area.

equipped with the necessary re-broadcasting system for broadcasting radio channels and emergency broadcasts transmitted in DAB format.

PROPOSAL

4. We propose to install radio re-broadcasting system for broadcasting DAB channels at the 11 government road tunnels at an estimated cost of \$46.4 million.

JUSTIFICATION

Launch of DAB service

5. It is the Government's policy to develop DAB in addition to the existing analogue radio broadcasting services in order to help reinforce our status as the forerunner of technological innovation and the broadcasting hub in the region. On 22 March 2011, the Chief Executive in Council granted sound broadcasting licences to Digital Broadcasting Corporation Hong Kong Limited, Metro Broadcast Corporation Limited and Phoenix U Radio Limited for providing DAB service. The licensees are required to formally commence DAB service within the first 18 months after the licence grant date. They plan to roll out their DAB service in phases as early as from late 2011. In addition, Radio Television Hong Kong (RTHK) is also planning to launch its DAB service in late 2011. With such a time frame, there is an urgency to kick-start the process of installation of DAB re-broadcasting system in government road tunnels as soon as possible to facilitate tunnel users to enjoy DAB while travelling in the tunnels.

Need for coverage in government road tunnels

6. Like analogue radio broadcasting, the DAB operators are required to provide their services on a territory-wide basis. Seamless reception of radio services across different areas including road tunnels is important to audience. Indeed, a significant portion of radio users are drivers and passengers who listen to radio programmes while they travel in vehicles. According to a survey conducted by RTHK in late 2010, it is estimated there are on average about 850 000 people listening to radio in private vehicles or public transport per day.

7. When compared with the existing analogue radio services, DAB service offers better sound quality, more stable reception, greater capacity to provide more programme channels, and transmission of ancillary visual services including text and images through the screens of DAB receivers. To tie in with the Government policy to develop DAB, it is important for government road tunnels to be equipped with the system to re-broadcast DAB. Motorists who have procured DAB receivers which are necessary for reception of DAB signals in their vehicles will expect that they could enjoy DAB in government road tunnels having regard to the Government's policy of developing DAB within the territory. Moreover, the Government should also endeavour to provide a level playing field for DAB operators to compete against their analogue counterparts. All the existing radio re-broadcasting system at government road tunnels is installed and funded by the Government².

8. Moreover, to ensure that tunnel users can receive broadcast messages in respect of traffic and road safety information of the tunnel provided by the tunnel operators, the existing radio re-broadcasting system at government road tunnels is equipped with voice break-in services for message dissemination to tunnel users via AM/FM channels. For emergency broadcasts, all available channels (including the existing AM/FM and future DAB ones) should be used to ensure the broadcast messages could reach all tunnel users who have turned on their radio. With the introduction of DAB service, it is important that we should ensure tunnel users equipped with DAB receivers will be able to receive the emergency broadcasts in DAB channels in addition to AM/FM channels, especially when DAB service is expected to become more and more popular in the future. Installation of the DAB rebroadcasting system would help ensure that tunnel users who have opted to listen to DAB in their vehicles could also receive emergency broadcast messages, and that such messages would be received with better sound and reception quality.

FINANCIAL IMPLICATIONS

9. We estimate that the capital cost of the project will be \$46.4 million, with the breakdown as follows –

² As for the one private (i.e. the Discovery Bay Tunnel) and four "Build-Operate-Transfer" (BOT) tunnels (i.e. the Eastern Harbour Crossing, Tai Lam Tunnel, Tate's Cairn Tunnel and Western Harbour Crossing), their existing AM/FM radio re-broadcasting systems are installed and funded by the private tunnel companies. We understand that the prospective DAB operators are discussing with the private/BOT tunnel companies and the Mass Transit Railway Corporation Limited on the installation of DAB re-broadcasting system in their facilities.

| | \$ million |
|--|-------------------|
| (a) Installation of re-broadcasting system for DAB service for the 11 government road tunnels - | 36.8 |
| (i) DAB re-broadcasting equipment with radio break-in system | 21.7 |
| (ii) In-tunnel broadcasting monitoring system | 6.2 |
| (iii) Radiating coaxial cable ³ for three road tunnels | 5.9 |
| (iv) Interface equipment for existing radiating coaxial cable for the remaining eight road tunnels | 3.0 |
| (b) Electrical and Mechanical Services Trading Fund (EMSTF) project management charges | 5.9 |
| (c) Contingency (10% of item (a)) | 3.7 |
| Total | <u>46.4</u> |

10. Regarding paragraph 9(a) above, the estimated cost of \$36.8 million will cover the supply, delivery, installation, testing and commissioning of the radio re-broadcasting system for DAB service with all associated systems and equipment, including the radio break-in system and in-tunnel broadcasting monitoring system⁴ for the 11 government road tunnels. After a preliminary review on the existing radiating coaxial cables installed at the 11 government road tunnels, the Electrical and Mechanical Services Department has concluded that new radiating coaxial cables will have to be provided at the Aberdeen Tunnel, the Cheung Tsing Tunnel and the Lion Rock Tunnel in order to enable installation of the re-broadcasting system for DAB service. Meanwhile, the existing radiating coaxial cables at the remaining eight government road tunnels can continue to be used to

³ A radiating coaxial cable is a special antenna installed inside the tunnel tubes to broadcast the DAB signals in the tunnel.

⁴ The radio break-in system allows the tunnel operator to interrupt the re-broadcast of radio signals in order to broadcast emergency and traffic information messages. The in-tunnel broadcasting monitoring system is for monitoring the signal quality of radio signals and break-in messages in tunnel.

enable re-broadcasting of DAB signals with the installation of interfacing equipment.

11. Regarding paragraph 9(b) above, the estimated cost of \$5.9 million is for meeting the charges of EMSTF for carrying out the site investigation; preparing the specifications of the requirements, design and project programme; arranging tendering; undertaking site inspection; supervising the installation; arranging testing and commissioning of the system and monitoring the operation of the system and defect rectification work.

12. We intend to phase the expenditure as follows –

| Year | \$ million |
|--------------|-------------------|
| 2011-12 | 4.0 |
| 2012-13 | 15.0 |
| 2013-14 | 27.4 |
| Total | 46.4 |

13. The recurrent cost relating to the operation and maintenance of the re-broadcasting system for DAB service will be absorbed in the respective management, operation and maintenance contracts of the 11 government road tunnels.

14. The cost of the proposal will be taken into account in setting the toll and other charges of government toll road tunnels. Nevertheless, the estimated impact is immaterial.

IMPLEMENTATION PLAN

15. We plan to commence the project in the third quarter of 2011, and complete it in about 32 months. The first ten months are for preparation work including site investigation, detailed design and tendering. The remaining 22 months are for design submission, equipment manufacturing, system installation, testing and commissioning. In order to minimise disruption of the normal tunnel operations and maintenance work, the installation work would only be carried out after midnight when the traffic volume is lower and the one-tube-two-way operation is implemented.

16. Having regard to the scale of the project, and to facilitate early reception of DAB service in government road tunnels, we propose to implement the project in two phases outlined as follows -

- (a) Phase 1: installation of re-broadcasting system for DAB service of the four tolled government road tunnels with the highest traffic volume, namely the Aberdeen Tunnel, Cross Harbour Tunnel, Lion Rock Tunnel and Tseung Kwan O Tunnel, the works of which is expected to be completed by end-2012; and
- (b) Phase 2: installation of re-broadcasting system for DAB service of the remaining seven government road tunnels, the works of which is expected to be completed from August 2013 to end-February 2014 at the latest.

A work programme is set out at the Enclosure.

WAY FORWARD

17. We plan to seek funding approval from the Finance Committee on 24 June 2011 for implementing the project.

ADVICE SOUGHT

18. Members are invited to offer views on our proposal to install radio re-broadcasting system for DAB at 11 government road tunnels.

Transport and Housing Bureau
May 2011

Work Programme for Installation of Radio Re-broadcasting System for Digital Audio Broadcasting at 11 Government Road Tunnels

| | Work Items | Duration (months) | 2011 | | 2012 | | 2013 | | 2014 | |
|---|---|----------------------|------|------|------|------|------|------|------|------|
| | | | 1-6 | 7-12 | 1-6 | 7-12 | 1-6 | 7-12 | 1-6 | 7-12 |
| | <u>(a) Tendering Stage</u> | | | | | | | | | |
| 1 | Site Investigation & Detailed Design | 5 | | ■ | | | | | | |
| 2 | Tendering and Evaluation | 5 | | | ■ | | | | | |
| | <i>Sub-total for (a)</i> | <i>10</i> | | | | | | | | |
| | <u>(b) Construction Period</u> | | | | | | | | | |
| 3 | Design Submission | 8 | | | ■ | | | | | |
| 4 | Equipment Manufacturing and Site Work Preparation | 12 | | | ■ | | | | | |
| 5 | Installation, Testing & Commissioning | 20 | | | ■ | | | | | |
| | <i>Sub-total for (b)^(Note)</i> | <i>22</i> | | | | | | | | |
| | Total | 32 | | | | | | | | |

Note: As parts of the work items 3 – 5 are expected to be carried out concurrently, the total duration for the Construction Period (22 months) is less than the sum of the durations of individual items.