

**For discussion  
on 13 March 2018**

**Legislative Council Panel on Food Safety and Environmental Hygiene**

**Replacement of Radio Communications System  
of the Food and Environmental Hygiene Department**

**PURPOSE**

This paper seeks Members' support for the proposal of replacing the existing radio communications system of the Food and Environmental Hygiene Department ("FEHD") to improve and strengthen its communication capability and efficiency in performing hawker management functions.

**BACKGROUND**

2. FEHD is responsible for, among others, regulating the hawking activities of licensed hawkers and taking enforcement action against illegal ones. Hawker management duties are undertaken by Hawker Control Teams ("HCTs")<sup>1</sup> and Hawker Control Task Forces ("HCTFs")<sup>2</sup>, which are divided into about 190 squads to perform patrolling and raiding duties on the streets and at hawker blackspots.

3. The existing radio communications system has been running since 1985 to provide a means of communication underpinning the daily operation of HCTs and HCTFs and linking up members at different levels. It is a conventional two-way analogue radio system and operating in the very high frequency band. Through the existing system, squad members can communicate with the console (such as seeking advice or reporting ground

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<sup>1</sup> There are 19 HCTs, one each stationed in the 19 District Environmental Hygiene Offices of FEHD.

<sup>2</sup> There are three HCTFs, one each servicing Hong Kong and Islands region, Kowloon region and New Territories region.

situations) and among themselves, as well as call for assistance from the console or fellow members during emergency situations.

4. Over the years, enhancement works have been made to improve the performance of the existing system for meeting frontline operations requirements. For example, effort has been made to reconfigure base station equipment, relocate existing base stations to new and better spots across the territory and install additional base stations where circumstances permit. Since 2016, three districts have been benefiting from the pilot run of a modern day digital system which is the subject of the proposal presented in this paper (see paragraph 8 below). The early results of the pilot run are satisfactory. Three more districts will shortly join the pilot run to further confirm the requirements of the proposed system and prepare for its full rollout, facilitating early improvement to the efficiency of HCTs' communication equipment and exploiting the use of the new technology of the digital system.

## **JUSTIFICATIONS**

### **Current problems encountered**

5. Built on conventional analogue technology, the existing system is encountering the following major problems –

- (a) the major equipment of the existing system has become obsolete and is being phased out. Meanwhile, the maintenance of the system mainly relies on spare part inventories. As their manufacturers have already discontinued support in relation to production, stock and maintenance, it is envisaged that such spare part inventories might be depleting in the next couple of years risking the normal maintenance of the system;
- (b) the existing system does not provide full radio coverage of all inhabited areas in Hong Kong. There are more radio blind spots in many districts as a result of urban development over the years and an increasing number of high-rise buildings interfering with radio signal transmission. The coverage problem has particularly affected the communication between portable radio handsets and the respective

consoles. Coverage expansion or capacity improvement for the existing system is not feasible due to the inherent limitations of the conventional analogue technology native to the existing system; and

- (c) it is not practically feasible to enhance the existing system to incorporate advanced and essential functions like the Global Positioning System (GPS) feature.

6. To ensure that hawker management operations will continue to be underpinned by effective, efficient and secure radio communications, FEHD commissioned Electrical and Mechanical Services Trading Fund (“EMSTF”) in August 2015 to conduct a consultancy study on present day technologies and solutions to address the problems encountered.

### **The proposed system and its benefits**

7. In the final report of the consultancy study, EMSTF recommends a total replacement of the existing system with a new digital radio system employing Radio over Internet Protocol (RoIP) technology with enhanced functions. The proposed system will provide better support for the work of the HCTs/HCTFs with the following major functions and benefits –

- (a) the proposed system is more spectrum-efficient and offers improved voice quality and better immunity against interference;
- (b) RoIP technology will enable the connection of multiple radio stations/repeaters and consoles via an IP network in a cost-effective manner. Through the secured network, voice/data communications exchanged by the radio stations/repeaters so connected up are sent in digital packets resulting in better communication quality and higher transmission efficiency;
- (c) the proposed system will meet the prevailing industrial standards, ensuring compatibility and interoperability among products such as portable radio handsets and radio stations/repeaters to be supplied by different manufacturers and thereby allowing greater flexibility in further enhancement and development to meet changing operational needs, as well as availability of more cost-effective maintenance

services in the market;

- (d) making use of RoIP technology, the proposed system is planned to set up well over 200 fixed radio stations/repeaters<sup>3</sup> (as opposed to 35 fixed radio stations in the existing system) and 17 mobile radio stations/repeaters and therefore provide more comprehensive and flexible radio communications coverage, in particular in bustling urban areas. The coverage of the system can be expanded cost-effectively;
- (e) system security measures may be put in place to guard against eavesdropping; and
- (f) new features including electronic map, emergency button<sup>4</sup>, “man down”<sup>5</sup>, hot microphone<sup>6</sup>, GPS and voice recording can be provided to meet the present day operation requirements of HCTs/HCTFs and to help safeguard personal safety of frontline staff during emergency situations.

8. To test out and demonstrate the capability and viability of the proposed system, a specially designed, scaled-down pilot with all the essential features was built and launched in the Central and Western, Yau Tsim and Sha Tin districts in June 2016. The result is satisfactory overall with technical issues identified and solutions worked out for full system rollout. To better try out the communication capability, functioning and reliability of the proposed system at other districts with different topography, building density and environmental factors, it is planned to extend the pilot run to the Southern, Mong Kok and Tsuen Wan districts in mid-2018. The early results of the extended pilot, alongside with those of the first run, will contribute useful inputs to working out and fine-tuning the detailed user and system

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<sup>3</sup> The fixed radio stations/repeaters will be installed on either government land or government premises across the territory.

<sup>4</sup> When the emergency button is pressed by a portable radio handset user, other users in the same talkgroup and the relevant console will receive an emergency alert. The location of the portable radio handset concerned will be displayed on the electronic map installed at the console.

<sup>5</sup> If a portable radio handset user falls down on the ground, it will trigger the automatic sending of a specific emergency alert signal and the map display of location as described in footnote 4 above.

<sup>6</sup> When the emergency button or man-down function is activated, a user of the portable radio handset concerned can talk to the console without holding down the push-to-talk button on the handset.

requirements for system design and preparation of the tender documents for commissioning a total system across the whole territory. In addition, the pilots will facilitate experience sharing and knowledge transfer among frontline users prior to the total system replacement<sup>7</sup>.

## FINANCIAL IMPLICATIONS

### Non-recurrent expenditure

9. FEHD plans to implement the proposed total system replacement in phases over the next few years (full completion by 2021-22). The estimated non-recurrent cost of the project is around \$56.4 million<sup>8</sup>. The detailed breakdown is as follows –

|   | 2018-19<br>\$'000 | 2019-20<br>\$'000 | 2020-21<br>\$'000 | 2021-22<br>\$'000 | Total<br>\$'000 |
|---|-------------------|-------------------|-------------------|-------------------|-----------------|
| (a) Portable radio handsets                   | -                 | 1,798             | 5,844             | 2,248             | 9,890           |
| (b) Fixed and mobile radio stations/repeaters | -                 | 3,992             | 12,482            | 5,933             | 22,407          |
| (c) Console and related equipment             | -                 | 150               | 973               | 442               | 1,565           |
| (d) New site preparation                      | -                 | 2,455             | 4,850             | 2,500             | 9,805           |
| (e) Decommissioning and dismantling           | -                 | 91                | 295               | 114               | 500             |
| (f) Training                                  | -                 | 6                 | 21                | 8                 | 35              |

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<sup>7</sup> The pilot run in these six districts involves the integrated operation of consoles, fixed/mobile radio stations/repeaters and digital portable radio handsets. Such equipment installed for pilot testing will be incorporated into the full-fledged replacement system proposed to be rolled out as set out in this paper. For example, 18 fixed/mobile radio stations/repeaters were installed in these six districts for pilot testing, and 54 more will be needed for rolling out the full-fledged replacement system.

<sup>8</sup> Exclusive of the costs of around \$3 million required for conducting the two pilot runs funded under General Revenue Account Head 49 (FEHD) Subhead 661 Minor Plant, Vehicles and Equipment (block vote) in 2016-17 and 2018-19.

|   |            |               |               |               |               |
|---|------------|---------------|---------------|---------------|---------------|
| (g) Office of the Communications Authority license fee        | -          | 27            | 279           | 397           | 703           |
| (h) Contingency (approximately 10% of items (a) to (g) above) | -          | 852           | 2,474         | 1,164         | 4,490         |
| (i) EMSTF project management services                         | 697        | 1,672         | 2,299         | 2,299         | 6,967         |
| <b>Total :</b>  | <b>697</b> | <b>11,043</b> | <b>29,517</b> | <b>15,105</b> | <b>56,362</b> |

### **Recurrent expenditure**

10. The proposal will entail an indicative additional annual recurrent expenditure of \$5.5 million from 2021 onwards to cover the costs of system maintenance and support, equipment spare parts, annual licences, etc. FEHD will absorb the recurrent expenditure from within its existing resources.

### **IMPLEMENTATION SCHEDULE**

11. We plan to seek funding approval from the Finance Committee within 2018. A tentative implementation plan is set out below –

|     | <b>Key deliverable</b>  | <b>Target completion date</b> |
|-----|---|-------------------------------|
| (a) | Collection and detailed analysis of results of the pilot test for fine-tuning user and system requirements          | November 2018                 |
| (b) | System design and preparation of tender specifications  | April 2019                    |
| (c) | Tendering (six months) and award of contract  | October 2019                  |
| (d) | Equipment manufacture and delivery, installation, building services works, as well as system alignment, testing and |                               |

training - <sup>9</sup>

- |     |  |                |
|-----|--|----------------|
| ▪   | First batch (comprising four HCTs)                 | March 2020     |
| ▪   | Second batch (comprising ten HCTs and three HCTFs) | March 2021     |
| ▪   | Third batch (comprising five HCTs)                 | September 2021 |
| (e) | Full commissioning of the system                   | October 2021   |
| (f) | System nursing                                     | December 2021  |

## **ADVICE SOUGHT**

12. Members are invited to comment on and support the above proposal.

**Food and Health Bureau**

**Food and Environmental Hygiene Department**

**March 2018**

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<sup>9</sup> The schedule has been drawn up on professional advice of EMSTF. As the replacement project will cover all 22 HCTs/HCTFs across the territory, the installation works will be implemented by phases. Each batch includes the testing and commissioning of the newly supplied / installed equipment.