

ITEM FOR FINANCE COMMITTEE

CAPITAL WORKS RESERVE FUND HEAD 708 – CAPITAL SUBVENTIONS AND MAJOR SYSTEMS AND EQUIPMENT

Food and Environmental Hygiene Department New Subhead “Replacement of Radio Communications System of the Food and Environmental Hygiene Department”

Members are invited to approve a new commitment of \$56,362,000 for the replacement of the existing radio communications system of the Food and Environmental Hygiene Department.

PROBLEM

The Food and Environmental Hygiene Department (FEHD) needs to replace the existing radio communications system to strengthen its communication capability and efficiency in performing hawker management functions.

PROPOSAL

2. The Director of Food and Environmental Hygiene, on the advice of the Director of Electrical and Mechanical Services and with the support of the Secretary for Food and Health, proposes to create a new commitment of \$56,362,000 for replacing the existing analogue radio communications system with a new digital system (the proposed system).

/JUSTIFICATION

JUSTIFICATION

Need for replacing the existing system

3. Radio communication has been one of the essential means of communication underpinning the daily operations of Hawker Control Teams (HCTs)¹ and Hawker Control Task Forces (HCTFs)². The existing radio communications system in use by HCTs and HCTFs is a conventional two-way analogue radio system that operates in the very high frequency band. Through the existing system, squad members can communicate with the console (such as seeking advice or reporting on ground situations) and among themselves, as well as call for assistance from the console or fellow members in emergency situations.

4. Built on conventional analogue technology, the existing system has the following major problems –

- (a) the majority of the 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, such spare part inventories may deplete in the next couple of years, jeopardising the normal maintenance of the system;
- (b) the existing system does not provide full radio coverage for all inhabited areas in Hong Kong. Urban development over the years has created more radio blind spots in many districts and an increasing number of high-rise buildings interferes with radio signal transmission. The coverage problem has particularly affected the communication between portable radio handsets and the respective consoles. The existing system does not lend itself ready to coverage expansion in a cost-effective manner or capacity improvement due to the inherent limitations of the conventional analogue technology native to the existing system; and
- (c) it is not practicable to enhance the existing system to incorporate advanced and essential functions like the Global Positioning System (GPS) feature.

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

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

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

The proposed system and its benefits

6. 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 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. For protection against unauthorised tapping, voice/data communications exchanged on the radio stations/repeaters so connected are sent over a secured network. System security measures can also be put in place;
- (c) the proposed system will meet the prevailing industry standards. This will enable compatibility and interoperability among products such as portable radio handsets and radio stations/repeaters to be supplied by different manufacturers, thereby allowing greater flexibility in future enhancement and development to meet changing operational needs, and also availability of more cost-effective maintenance services in the market;
- (d) making use of RoIP technology, the proposed system is planned to be set up with 199 fixed radio stations/repeaters³ (as opposed to 35 fixed radio stations in the existing system) and 17 mobile radio stations/repeaters, thus providing more comprehensive and flexible coverage, in particular in bustling urban areas. The coverage of the system can be expanded flexibly and cost-effectively; and

/(e)

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

- (e) new features including electronic map, emergency button⁴, “man-down”⁵, hot microphone⁶, GPS and voice recording can be provided to meet the present day operation requirements of HCTs/HCTFs and safeguard personal safety of frontline staff in emergency situations.

7. To test out 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 overall result is satisfactory, 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, FEHD plans to extend the pilot run to the Southern, Mong Kok and Tsuen Wan districts in mid-2018. The results of the extended pilot which will be available in October 2018, alongside those of the first run, will contribute to refinement of the detailed user and system 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 replacement⁷.

FINANCIAL IMPLICATIONS

Capital Expenditure

8. It is estimated that the capital expenditure of developing the proposed system is around \$56,362,000. The detailed breakdown is as follows –

/(a)

⁴ 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.

⁵ 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.

⁶ 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.

⁷ 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/will be installed in these six districts for pilot testing, and 54 more will be needed for rolling out the full-fledged replacement system.

	2018-19 \$'000	2019-20 \$'000	2020-21 \$'000	2021-22 \$'000	Total \$'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
(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
Total :	697	11,043	29,517	15,105	56,362

9. On paragraph 8(a) above, the estimate of \$9,890,000 is for the procurement of 1 163 sets of portable radio handsets (including accessories) for use by officers during daily operations.

10. On paragraph 8(b) above, the estimate of \$22,407,000 is for the procurement of up to 199 fixed and 17 mobile radio stations/repeaters to be installed on government land or government premises for providing more comprehensive radio coverage across the territory.

11. On paragraph 8(c) above, the estimate of \$1,565,000 is for the procurement of 16 consoles and related equipment for enhancing the communication efficiency between FEHD district environmental hygiene offices and the HCTs.

12. On paragraph 8(d) above, the estimate of \$9,805,000 is for the new site preparation, including provision of additional power supply points, conduit installation and any related building works.

13. On paragraph 8(e) above, the estimate of \$500,000 is for decommissioning and dismantling works of the existing analogue radio stations and consoles, etc.

14. On paragraph 8(f) above, the estimate of \$35,000 is for the training of staff on system administration, management and operational workflow.

15. On paragraph 8(g) above, the estimate of \$703,000 is for the payment of license fee to the Office of the Communications Authority for the testing and user acceptance, etc. of radio stations/repeaters and portable radio handsets prior to commissioning of the proposed system.

16. On paragraph 8(h) above, the estimate of \$4,490,000 represents about 10% contingency on the items set out in paragraph 8(a) to (g) above.

17. On paragraph 8(i) above, the estimate of \$6,967,000 is for the payment to EMSTF for providing project management services, including preparation of tender documents, tender evaluation, the vetting of contractor's design submissions, the monitoring of contractor's installation, acceptance tests, and coordination with various government departments and the contractor.

Recurrent Expenditure

18. 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

IMPLEMENTATION PLAN

19. Subject to Finance Committee (FC)'s approval, we plan to implement the proposed system according to the following schedule –

	Key deliverable	Target completion date
(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 and award of contract	October 2019
(d)	Equipment manufacture and delivery, installation, building services works, as well as system alignment, testing and training – ⁸	
	▪ 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

PUBLIC CONSULTATION

20. We consulted the Legislative Council Panel on Food Safety and Environmental Hygiene on the proposal on 13 March 2018. Members supported the proposal for submission to the FC for funding approval.

/BACKGROUND

⁸ 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.

BACKGROUND

21. 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 HCTs and HCTFs, which are divided into about 190 squads to perform patrolling and raiding duties on the streets and at hawker blackspots. Radio communication has been one of the essential means of communication underpinning the daily operations of HCTs and HCTFs.

Food and Health Bureau
Food and Environmental Hygiene Department
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