

## **ITEM FOR FINANCE COMMITTEE**

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

#### **Correctional Services Department New Subhead “Replacement of Radio Communications System of the Correctional Services Department”**

Members are invited to approve a new commitment of \$101,150,000 for replacing the radio communications system of the Correctional Services Department.

#### **PROBLEM**

The existing analogue radio communications system of the Correctional Services Department (CSD) comprises an Ultra High Frequency (UHF) system and a Very High Frequency (VHF) system. The two systems have been in use since 1992 and 1998 respectively and are approaching the end of their serviceable lives. Failure to replace the system with a new one in a timely manner will jeopardise the daily operations of CSD.

#### **PROPOSAL**

2. The Commissioner of Correctional Services, on the advice of the Director of Electrical and Mechanical Services and with the support of the Secretary for Security, proposes to create a new commitment of \$101,150,000 to replace the existing analogue radio communications system of CSD with a new digital system.

**/JUSTIFICATION .....**

## JUSTIFICATION

### Need to Replace the Existing System

3. The Electrical and Mechanical Services Department (EMSD) conducted a study on the existing analogue radio communications system of CSD in 2007, the results of which revealed the following problems –

- (a) since the analogue technology is becoming obsolete, the existing radio system cannot be upgraded to cater for the future operational needs of CSD. It is also increasingly difficult to find spare parts for servicing the system;
- (b) the existing analogue radio system is susceptible to interception and interference by other radio communications systems operating in adjacent frequency bands;
- (c) the UHF system is not communicating efficiently with the VHF system. When there is a need for communication between two CSD institutions equipped with different communications systems, the messages are relayed through the institutional communication rooms by telephone, fax machine, etc. This is not efficient and increases the chance of interruption;
- (d) most CSD officers on site are required to take up patrol and escort duties, and the use of portable radio handsets is their sole means of communication. Due to the limited capacity of the existing radio system and the heavy intra-institutional voice traffic, the voice channels are at times congested, undermining the effectiveness and efficiency of CSD's daily operations; and
- (e) under the existing system, there are some radio blind spots and the radio coverage for some CSD institutions located in remote areas is poor. In addition, the strong building structure (e.g. metal structure like gates and strong concrete walls) of the institutions gives rise to a shielding effect which makes it harder for radio frequency to be transmitted from one building to another.

### The Proposed Radio System

4. In the light of the study findings, EMSD recommended CSD to replace the existing radio communications system with a new digital one. The benefits of the proposed system are set out below –

/(a) .....

- (a) the infrastructure of the proposed system will be built on open technological standards, ensuring interoperability among products by different manufacturers and thereby allowing greater flexibility in further enhancement and development to meet changing operational needs;
- (b) supported by digital technology, the proposed system will offer improved voice quality and better protection against interference and interception by its new features, which include error correction, digital encoding, as well as random allocation of voice channels;
- (c) the proposed system will cover 24 CSD’s institutions under a common platform. This will obviate the need for messages to be relayed through the institutional communication rooms, hence enabling more efficient communications among the institutions;
- (d) the proposed system will make more efficient use of the radio spectrum and has the capacity to increase the usable airtime by about 100%; and
- (e) with the support of 28 base transmission stations and three repeaters, the reliability and coverage of the proposed system will be enhanced as compared with the existing analogue system which is supported by 13 base transmission stations. In addition, the digital technology to be employed in the proposed system is able to reduce the impact of the shielding effect and improve indoor radio communication.

**FINANCIAL IMPLICATIONS**

**Non-recurrent Expenditure**

5. We estimate that the total non-recurrent expenditure of the replacement system will be \$101,150,000, broken down as follows –

	<b>\$’000</b>
(a) Radio transceivers	29,090
(b) Base transmission stations and radio repeaters	28,090
(c) Network equipment	21,810
(d) Initial spare equipment and consumables	790
(e) Engineering and other supporting services	500
(f) Contingency	8,025
(g) Electrical and Mechanical Services Trading Fund (EMSTF) project management services	12,845
<b>Total</b>	<b>101,150</b>

/6. ....

6. On paragraph 5(a) above, the estimate of \$29,090,000 is for the procurement of 2 000 portable handsets and 150 radio desktop terminals.

7. On paragraph 5(b) above, the estimate of \$28,090,000 is for the procurement of 28 base transmission stations and three repeaters to improve radio coverage.

8. On paragraph 5(c) above, the estimate of \$21,810,000 is for the procurement of network equipment, such as network management terminals, network maintenance terminals, etc.

9. On paragraph 5(d) above, the estimate of \$790,000 is for the procurement of initial spare equipment and consumables, such as radio terminals, audio gear, radio batteries, etc.

10. On paragraph 5(e) above, the estimate of \$500,000 is for engineering and other supporting services, including system design and installation, testing and commissioning, and training during the system development phase.

11. On paragraph 5(f) above, the estimate of \$8,025,000 represents a 10% contingency on the items set out in paragraph 5(a) to (e) above.

12. On paragraph 5(g) above, the estimate of \$12,845,000 is for the payment to EMSTF for providing project management services, including preparation of tender documents, tender evaluation, approval of contractor's design submissions, monitoring of contractor's installation, acceptance tests, and co-ordination with various government departments and the contractor.

13. The estimated cash flow requirement for the proposed replacement is as follows –

<b>Financial Year</b>	<b>\$'000</b>
2009-10	2,000
2010-11	4,750
2011-12	31,170
2012-13	63,230
<b>Total</b>	<b>101,150</b>

/Recurrent .....

## Recurrent Expenditure

14. We estimate that the recurrent expenditure of the replacement project is \$7,600,000 per annum from 2014-15 onwards, including expenses on maintenance, consumables, equipment spare parts, and radio frequencies assignment and related services fee. This will be partly offset by the annual savings of \$6,600,000 from the existing system. The detailed breakdown is as follows –

	2012-13	2013-14	2014-15 and onwards
	\$'000	\$'000	\$'000
<b>The proposed system</b> <sup>Note 1</sup>			
(a) Maintenance contract, consumables and spare equipment	-	2,333	7,000
(b) Radio frequencies assignment and related services fee	600 <sup>Note 2</sup>	600	600
Sub-total	600	2,933	7,600
<b>Less: Savings from the existing system</b> <sup>Note 3</sup>			
(c) Maintenance contract, consumables and spare equipment	-	(2,000)	(6,000)
(d) Radio frequencies assignment and related services fee	-	(150)	(600)
Sub-total	-	(2,150)	(6,600)
<b>Total</b>	<b>600</b>	<b>783</b>	<b>1,000</b>

/15. ....

<sup>Note 1</sup> There will be a free maintenance and spare parts warranty for the first year after the commissioning of the proposed system, i.e. from December 2012 to November 2013.

<sup>Note 2</sup> Although the proposed system will be commissioned in December 2012, a full-year charge of radio frequencies assignment and related services fee will be incurred for 2012-13 for system trial purpose since April 2012.

<sup>Note 3</sup> CSD will need to keep the existing system as a backup for a period of 12 months after the commissioning of the proposed system, i.e. from December 2012 to November 2013. Hence, no savings on the recurrent cost can be identified for 2012-13.

15. On paragraph 14(a) above, the estimated annual expenditure of \$7,000,000 is for the maintenance service (including the costs of labour and materials for maintenance service for all equipment) and the procurement of consumables and equipment spare parts for the proposed system (including spare portable transceivers, radio batteries and antenna, etc).

16. On paragraph 14(b) above, the estimated annual expenditure of \$600,000 is to cover the radio frequencies assignment and related services fees for mobile radio sets, portable transceivers and repeaters.

17. The net increase of \$1,000,000 in recurrent expenditure from 2014-15 onwards is due to higher cost for the maintenance of additional and more advanced radio equipment and accessories of the proposed system. CSD will absorb the additional recurrent expenditure from within its existing resources.

## **IMPLEMENTATION PLAN**

18. We plan to implement the replacement project according to the following schedule –

	<b>Activity</b>	<b>Target completion date</b>
(a)	System design / tender preparation	June 2009
(b)	Tendering and award of contract	December 2009
(c)	Approval of system design	February 2010
(d)	Equipment manufacture, delivery, installation and building service works	August 2012
(e)	Acceptance test and training	November 2012
(f)	System commissioning	December 2012

## **PUBLIC CONSULTATION**

19. We consulted the Legislative Council Panel on Security on the proposal on 6 January 2009. Members had no objection to the proposal.

**/BACKGROUND .....**

**BACKGROUND**

20. The Finance Committee approved a commitment of \$29,113,000 in 1992 (with an increase in commitment of \$2,775,000 in 1997) for CSD to replace its then radio communications system. The existing analogue radio communications system of CSD comprises an UHF system and a VHF system which were commissioned in 1992 and 1998 respectively. The former serves the communication needs of five CSD institutions and the latter 19 CSD institutions. The radio system plays an important role in supporting the daily operations of CSD institutions by providing an essential means of communication among CSD's staff on site. To maintain prison security and ensure the safe custody of prisoners, CSD requires a reliable and secure means of communication to support its operation, and to meet the changing operational needs.

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Security Bureau  
February 2009