

ITEM FOR FINANCE COMMITTEE

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

Hong Kong Police Force

New Subhead “Replacement of the Radio System of the Operations Wing of the Hong Kong Police Force”

Members are invited to approve a new commitment of \$39,274,000 for replacing the radio system of the Operations Wing of the Hong Kong Police Force.

PROBLEM

The existing analog radio system of the Special Duties Unit (SDU) of the Operations Wing of the Hong Kong Police Force (HKPF) has been used for 13 years and is running out of crucial spare parts. Failure to replace the system with a new one in a timely manner will jeopardise the effective operation of the SDU.

PROPOSAL

2. The Commissioner of Police, with the support of the Secretary for Security, proposes to create a new commitment of \$39,274,000 to replace the existing analog radio system of the SDU with a new digital one with enhanced functions.

JUSTIFICATION

Need to Replace the Existing Radio System

3. The existing analog radio system of the SDU was put into service in 1994 with a commitment of \$6,615,000 approved by the Finance Committee. It has extended beyond its normal life expectancy of ten years. The vendor supplier has stopped producing the necessary spare parts for the existing system (e.g. components for storing the encryption keys, fixed radio repeaters and radio handsets) since 2004. Since it is a proprietary system, there is a lack of compatible

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parts available in the market. Hence, upgrading the existing system to further extend its useful life is not feasible. The HKPF has in fact been maintaining the system by cannibalising decommissioned Force radio equipment for the replacement parts. This supply source is obviously unreliable, and will likely be exhausted in a year or so. Without the necessary spare parts, the coverage, efficiency and security of the existing system will be compromised. For instance, if all spare components of the encryption keys are exhausted, the integrity of the system will certainly be affected. Similarly, if there are insufficient spare parts for the radio repeaters, the communication coverage and in turn the operational efficiency will be undermined.

4. To ensure that SDU operations continue to be underpinned by effective, efficient and secure radio communications, it is necessary to acquire a new replacement system without delay. The replacement system should be in place before the existing one becomes inoperable.

The Proposed System

5. We will take advantage of the latest technologies so that the proposed system will provide better support for the work of the SDU. In particular, the proposed system will match or improve upon the existing system in the following key aspects –

- (a) voice quality: full digital technology instead of the existing analog technology will be adopted to improve clarity in both the clear and encrypted modes of operation;
- (b) coverage: the proposed system will enable more comprehensive communication coverage of better quality on land, sea and air;
- (c) operating environments: the portable radios will comply with the “intrinsically safe” requirement in order to meet a range of demanding operating environments, e.g. the radios will need to be safe from ignition when operated in the presence of explosive or flammable gases / fumes;
- (d) security: “end-to-end” encryption for the entire radio system as well as additional encryption keys within the system will be available. The adoption of digital technology will also allow a stronger and therefore more secure encryption than that of the existing analog system, with additional encryption keys to cater for multiple-channel operations to enhance protection against eavesdropping or unauthorised access; and

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- (e) leveraging on open source standards: the proposed system will be specified to meet open and proven digital technology standards, allowing equipment sourcing and future upgrading from multi-vendors, hence more cost effective in the long term.

FINANCIAL IMPLICATIONS

Non-recurrent Expenditure

6. Drawing reference from other digital radio systems currently used by the HKPF and market surveys, we estimate that the non-recurrent expenditure of the project will be \$39,274,000, broken down as follows -

	\$'000
(a) Radio repeaters	10,560
(b) Radio terminals	10,612
(c) Specialised operational gear	4,083
(d) Initial spares and consumables	2,526
(e) Engineering and other supporting services during the system development phase	7,923
	Sub-total 35,704
(f) Contingency (10% of items (a) to (e))	3,570
	Total 39,274

7. On paragraph 6(a), the estimate of \$10,560,000 is for the procurement of 38 fixed radio repeaters, eight mobile radio repeaters and two sets of gateway equipment for providing territory-wide as well as local radio coverage for effective communications during SDU operations.

8. On paragraph 6(b), the estimate of \$10,612,000 is for the procurement of 280 handheld radio sets and 57 mobile radio sets to be carried by individual officers or installed in vehicles, vessels, etc. as well as other ancillary gear (such as power supplies, spare batteries and battery chargers) for effective communications during SDU operations.

9. On paragraph 6(c), the estimate of \$4,083,000 is for the procurement of specialised operational gear including encryption key loaders for generating and distributing encryption codes; tactical audio gear connected to handheld radios for hand free operations; and a visual control system that indicates the status positions of SDU officers on a portable display for effective monitoring by the Field Commander.

10. On paragraph 6(d), the estimate of \$2,526,000 is for the procurement of initial spares and consumables, e.g. radio terminals, tactical audio gear, radio batteries, etc. The figure is calculated on the basis of about 10% of the cost of the items set out in paragraphs 6(a) to 6(c) according to past experience.

11. On paragraph 6(e), the estimate of \$7,923,000 is for engineering and other supporting services during the system development phase, including equipment installation and programming in respect of the items set out in paragraphs 6(a) to 6(c); radio licence fees during the one-year warranty period; vehicle preparation for mobile radio installation; training as well as documentation.

12. The estimated cash flow requirement of the project is as follows –

Financial Year	\$'000
2007-08	9,427
2008-09	27,884
2009-10	1,963
Total	39,274

Recurrent Expenditure

13. We estimate that the recurrent expenditure arising from the project is \$3,049,000 per annum from 2010-11 onwards. This will be partly offset by the annual savings of \$1,862,000 from the staffing resources required to maintain the existing system as well as the current expenses on consumables and radio licence fees. The detailed breakdown is as follows -

/(a) ...

	2009-10	2010-11 and onwards
	\$'000	\$'000
(a) Maintenance contract	1,684	2,526
(b) Consumables and equipment spares	0	400
(c) Radio licence fees	82	123
Sub-total	1,766	3,049
Less: Savings from the existing system		
(d) Staff cost for maintenance	(1,652)	(1,652)
(e) Consumables and equipment spares ^{Note}	(72)	(143)
(f) Radio licence fees ^{Note}	(33)	(67)
Sub-total	(1,757)	(1,862)
Total	9	1,187

14. On paragraph 13(a), the estimated annual expenditure of \$2,526,000 is for the outsourced maintenance service of the proposed system. This includes services to attend to all the hardware and software faults, disaster recovery services and technical services.

15. On paragraph 13(b), the estimated annual expenditure of \$400,000 is for the procurement of consumables and equipment spares for the proposed system, including radio batteries and various types of audio gear.

16. On paragraph 13(c), the estimated annual expenditure of \$123,000 is for the radio licence fees for subscribing the radios and repeaters.

17. The additional annual recurrent expenditure of \$1,187,000 from 2010-11 onwards is mainly due to the increased amount of radio equipment and accessories in the proposed system. The HKPF will absorb the additional recurrent expenditure arising from the project from within its existing resources.

/IMPLEMENTATION

^{Note} HKPF would still need to keep the existing system as a backup for a period after the commissioning of the proposed system. Hence, only half-year provision can be saved in 2009-10.

IMPLEMENTATION PLAN

18. We plan to implement the proposed system according to the following schedule –

Activity	Target Completion Date
(a) System design and tender preparation	April – June 2007
(b) Tendering and award of contract	July – December 2007
(c) Delivery of equipment	January – May 2008
(d) Installation, acceptance test, training and commissioning	February – June 2008
(e) System nursing	July – August 2008

19. After the proposed system has been fully tested and accepted for operational use, the existing system will be decommissioned. All sensitive information (e.g. encryption keys and frequencies) will be erased before the system is disposed of in accordance with the relevant government procedures.

PUBLIC CONSULTATION

20. We consulted the Legislative Council Panel on Security on the proposal on 6 March 2007. Members were generally supportive of the proposed system. Some Members expressed concern about the security aspect of the proposal to outsource the maintenance service of the proposed system. We responded at the Panel meeting and subsequently circulated a supplementary information note to Members on 11 April 2007. A summary of our response to the concern is set out below -

- (a) the proposed radio system will have stringent security requirements up to the established international standards. The requirements of the standards place importance on in-built security features of the equipment, and there is no requirement for the maintenance of the hardware to be kept in-house;

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- (b) information transmitted through the radio handsets is subject to “end-to-end” digital encryption. Encryption and decryption of information will only be allowed with the necessary encryption keys, which are codes generated and stored by the HKPF only. The HKPF will change the keys from time to time. If someone attempts to tamper with a handset for accessing the information, the tampering will result in the automatic erasing of the encryption keys in the handset;
- (c) if a handset is lost, the HKPF will change the encryption keys of all remaining handsets immediately to minimise any possible risk of unauthorised access to information transmitted by the system;
- (d) the HKPF will erase all encryption keys in the handsets before they are sent to the contractor for repair. When the HKPF receives the handsets from the contractor, they will perform tests for integrity assurance and for detecting any tampering during the repair process; and
- (e) outsourcing the maintenance service of the proposed system is much more efficient and practicable than for the HKPF to assume the role, as the department does not have the level of professional expertise required to efficiently service the various components of the system.

21. To enhance Members’ understanding of the work of the SDU and the importance of the proposed radio system to the operational efficiency of the HKPF, we organised and subsequently five Members joined a visit to the headquarters of the Police Tactical Unit (where the SDU is based) on 12 April 2007. There were demonstrations of SDU operations under various circumstances, illustrating the importance of effective, efficient and secure radio communications in such operations. We also answered Members’ enquiries regarding the details of the proposed system, e.g. coverage, number and types of equipment to be acquired, and how the proposed system would help the operation of the SDU.

BACKGROUND

22. The SDU is the counter terrorist response unit of the HKPF. It is responsible for tactical operations in response to terrorist as well as serious criminal activities. The SDU plays an important role in ensuring our preparedness for terrorist attacks and hence has a critical deterrent effect. The Unit is also deployed to take part in arrest operations involving armed criminal gangs. One example of such operations is the arrest of the criminal gang headed by KWAI Ping Hung in 2003.

23. The SDU's tactical operations are complex and their success hinges on precise co-ordination through unimpeded real-time communications among SDU members. Moreover, in order to effectively interdict the activities of terrorist or organised criminal groups who commonly have access to advanced technologies, the SDU's radio communications must be secure from attempts to intercept or interfere with their transmissions.

Security Bureau
April 2007