

**For information  
on 6 March 2007**

**Legislative Council Panel on Security**

**Replacement of the Radio System of the  
Operations Wing of the Hong Kong Police Force (HKPF)**

**INTRODUCTION**

This paper outlines the proposal to replace the existing analog radio system of the Operations Wing of the HKPF with a new digital one with enhanced functions. The existing system provides critical support to the work of the Special Duties Unit (SDU) of the Operations Wing. It has been used for 13 years and is running out of crucial spare parts.

**BACKGROUND**

2. 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.

3. 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.

**JUSTIFICATIONS**

**Need for replacement of the existing radio system**

4. The existing analog radio system of the SDU was put into service in 1994 with a commitment of \$6.615 million approved by the Finance Committee (FC). It has reached the end of its normal life expectancy of ten years. The vendor supplier has stopped producing the necessary spare parts for the existing system. Since it is a proprietary system, there is a lack of compatible parts in the market. Hence, upgrading the existing system to further extend its useful life is not feasible. The Police have 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.

5. 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 current one becomes inoperable.

### **The proposed system**

6. 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 on 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 and better quality communications coverage on land, sea and air;
- (c) operating environment: 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 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
- (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 cost**

7. Drawing reference from other digital radio systems currently used by the Police and market surveys, we estimate that the total non-recurrent cost of the

project will be \$39.274 million over a three-year period from 2007-08 to 2009-10. The detailed breakdown is at **Annex A**.

### **Recurrent cost**

8. The annual recurrent cost of the existing system is \$1.862 million, which includes primarily the staff costs of four in-house technical staff <sup>Note 1</sup> for maintenance as well as the radio licence fees and expenses on consumables. Upon the implementation of the proposed system, it would be more cost-effective to outsource the maintenance service (at an estimated cost of \$2.526 million per year) in view of the substantial increase in the number of radio equipment and accessories. Otherwise, three additional posts <sup>Note 2</sup> on top of the four existing posts (at a total staff cost of \$2.851 million per year) will be required for the maintenance service. The recurrent cost for the proposed system on the assumption that the maintenance service will be outsourced is estimated at \$1.766 million in 2009-10, rising to \$3.049 million from 2010-11 onwards. The additional annual recurrent cost of \$1.187 million in a full year is mainly due to the increased amount of radio equipment and accessories in the proposed system and in turn higher expenditure on maintenance. A breakdown of the recurrent cost for the existing and the proposed systems is at **Annex B**. HKPF will absorb the additional recurrent cost from within its existing resources.

### **IMPLEMENTATION PLAN**

9. We plan to seek funding approval from the FC in April / May 2007 with a view to implementing the proposed system by 2008. A detailed implementation plan is at **Annex C**.

### **Security Bureau February 2007**

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<sup>Note 1</sup> The four posts include one Police Telecommunications Inspector, one Assistant Police Telecommunications Inspector, one Senior Radio Mechanic and one Radio Mechanic, involving an annual staff cost of \$1.652 million.

<sup>Note 2</sup> The three posts include two Assistant Police Telecommunications Inspectors and one Senior Radio Mechanic, involving an annual staff cost of \$1.199 million.

**Annex A****Breakdown of Non-recurrent Cost**

	<b><u>2007 – 08</u></b>	<b><u>2008 – 09</u></b>	<b><u>2009 – 10</u></b>	<b><u>Total</u></b>
	<b><u>\$'000</u></b>	<b><u>\$'000</u></b>	<b><u>\$'000</u></b>	<b><u>\$'000</u></b>
(a) Radio repeaters – providing territory-wide as well as local radio coverage for effective communication during tactical operations	2,535	7,497	528	10,560
(b) Radio terminals – handheld radio sets as well as mobile radio sets installed in vehicles, vessels, etc. for effective communication during tactical operations	2,547	7,535	530	10,612
(c) Specialised operational gear, e.g. encryption key loaders for generating and distribution of encryption codes, tactical audio gear connected to handheld radios for handsfree operation, etc.	980	2,899	204	4,083
(d) Initial spares and consumables, e.g. radio terminals, audio gear, radio batteries, etc.	606	1,793	127	2,526
(e) Engineering and other supporting services during system development phase	1,902	5,625	396	7,923
(f) Contingency (10% of the items above)	857	2,535	178	3,570
<b>TOTAL</b>	<b>9,427</b>	<b>27,884</b>	<b>1,963</b>	<b>39,274</b>

**Annex B**

**Recurrent Cost for  
the Existing and the Proposed Radio Systems**

	<b><u>\$'000</u></b>	<b><u>\$'000</u></b>
<b><i>The proposed system (full-year requirement from 2010-11 onwards)</i></b>		
(a) Maintenance contract	2,526	
(b) Consumables and equipment spares	400	
(c) Radio licence fees	123	
<i>Sub-total</i>	<hr/>	3,049
 <b><u>Less</u></b>		
<b><i>The existing system</i></b>		
(a) Staff cost <sup>Note</sup> for maintenance	1,652	
(b) Consumables and equipment spares	143	
(c) Radio licence fees	67	
<i>Sub-total</i>	<hr/>	1,862
		<hr/>
<b>Total additional recurrent cost per year</b>		<b>1,187</b>

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<sup>Note</sup> Including one Police Telecommunications Inspector, one Assistant Police Telecommunications Inspector, one Senior Radio Mechanic and one Radio Mechanic.

**Implementation Plan**

	<b><u>Target date</u></b>
(a) System design/tender preparation	Apr – Jun 2007
(b) Tendering and award of contract	Jul – Dec 2007
(c) Delivery of equipment	Jan – May 2008
(d) Installation, acceptance test, training and commissioning	Feb – Jun 2008
(e) System nursing	Jul – Aug 2008