For discussion **FCR(2012-13)4**
on 13 April 2012

ITEM FOR FINANCE COMMITTEE

CAPITAL WORKS RESERVE FUND
HEAD 710 – COMPUTERISATION
Fire Services Department
New Subhead "Development of Asset Management and Maintenance System"

Members are invited to approve a new commitment of $49,830,000 for the development of Asset Management and Maintenance System in the Fire Services Department.

PROBLEM

The Fire Services Department (FSD) needs to develop an integrated computer system to improve its asset management and maintenance so as to better support the operations of the department.

PROPOSAL

2. The Director of Fire Services, with the support of the Secretary for Security and the Government Chief Information Officer, proposes to create a new commitment of $49,830,000 to develop an Asset Management and Maintenance System (AMMS) to improve the efficiency and effectiveness of asset management and maintenance of the department.

JUSTIFICATION

Present situation

3. The fire-fighting and rescue work of FSD requires specialised equipment and materials such as fire appliances, fireboats, ambulances, communication equipment, breathing apparatus, personal protective gears, fire

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extinguishing foam, rescue tools, first aid supplies and medicines, etc. Other supporting equipment and materials such as uniform, computer system and office equipment are also necessary. Currently, there are about 19 000 types of assets in FSD. They either carry an expiry date (e.g. medicines) or are subject to wear and tear in daily operation. A steady supply of these materials and the safety and reliability of their functions/conditions are vital to the effective and efficient discharge of fire-fighting and rescue duties by frontline staff and the operations of FSD.

4. At present, detailed information of these assets is kept either in paper form or separate electronic databases stored in different locations, and is managed by various units such as individual fire stations and ambulance depots. Owing to the lack of an integrated computer system, FSD cannot monitor the performance (such as breakdown rate) and status (such as location, stock quantity, expiry date, etc.) of these assets in a timely and efficient manner. In addition, without a centralised computer system to keep the maintenance records of fire appliances, equipment and rescue tools, FSD has to spend more time and manpower to prepare the relevant analysis reports. Together with the dispersed record-keeping arrangement, it is not possible for FSD to have an overview of its assets, thus hampering management, maintenance and timely replenishment. An integrated computer system is necessary for improving the efficiency and effectiveness of FSD's asset management and maintenance. The Management Study on FSD's Procurement and Related Management Issues completed by the Efficiency Unit (EU) in end-2010 also recommended FSD to develop an integrated computer system to improve its procurement and related management work.

The proposed integrated computer system and its benefits

5. The proposal to develop the AMMS in FSD is to enhance the quality of various assets in the department, which will particularly help frontline staff discharge their fire fighting and rescue duties, and offer better protection to frontline staff in their operation. The proposed AMMS, to be developed on the basis of an off-the-shelf enterprise resource planning system, will cover the whole life cycle of asset management, including procurement planning, acquisition, inventory control, asset maintenance and disposal. The system will provide an integrated electronic platform for keeping, consolidating and sharing asset information in various units and locations, such as value of the assets and their location, stock quantity, maintenance and disposal records, etc., which would help manage a wide variety of asset and related procurement work more effectively. It will also automate manual operations as far as possible, and provide statistical and management reports. The proposed AMMS has the following major functions for enhancing the procurement and asset management work in FSD –

/*(a)* …..

(a) Supply chain management

The proposed system will systematically record the supply chain flow for real-time access by users for processing applications for materials, drawing up procurement plans, preparing supplier lists, inviting quotations, issuing purchase orders and notices for goods delivery, recording goods delivery details and arranging for payments.

(b) Inventory control

The proposed system will allow users to set pre-defined safety stock level for individual items to ensure stable supply of materials. It can forecast materials demand according to various factors including past consumption rate, past procurement lead time, and life span of products, etc., and issue reminders to users to make timely replenishment. It will also support the use of barcode identification technology for accurate and speedy record of inventory information, which will facilitate the department to monitor the distribution and consumption of materials.

(c) Repair and maintenance management

The proposed system can generate preventive maintenance programme for vehicles/equipment in accordance with criteria pre-defined by the users such as mileage and age of a vehicle, the availability of spare parts and supply of maintenance reserve, as well as the number of maintenance staff and their workload. It will also support the monitoring of maintenance operation and efficiency such as utilisation of maintenance material and manpower.

(d) Business intelligence analysis

The proposed system will provide analytical and reporting tools for more effective management and maintenance of assets. This will help the department monitor quantity, performance and conditions of the assets and facilitate timely remedy when necessary.

6. With the above functions, the proposed AMMS will bring about the following benefits to FSD –

(a) Enhance decision making – by centralising the storage of a large amount of asset data and performing systematic analysis, the AMMS will facilitate the staff to make decision and enhance the quality of the decision-making process.

/(b) …..

(b) Enhance asset performance monitoring – the proposed AMMS will allow real-time checking of asset maintenance records and data on required parts and suppliers. This will facilitate the concerned staff to analyse data and information on the suppliers' performance, observe the trends and identify potential problems in advance.

(c) Optimise inventory level – through its centralised database, the AMMS can provide information on the stock level of warehouses in various locations, level of demand, and past consumption pattern, etc. It will also notify procurement staff when stock quantity falls below the safety level. This will optimise the inventory level, ensuring an adequate and stable supply without incurring unnecessary storage and other costs.

(d) Increase asset availability – the proposed AMMS will take into account the number of maintenance staff and their workload on hand, pre-set maintenance requirements for vehicles/equipment such as vehicle mileage and age, availability of spare parts and maintenance reserve, and devise a more suitable preventive maintenance schedule than the fixed schedule currently used. The waiting time for the maintenance staff and supply of spare parts can be shortened, and the availability of asset increased. This will enhance the delivery of frontline services and the safety of fire services members in discharging their duties.

Cost Savings

7. We estimate that the implementation of the proposed AMMS will bring about savings of $8,538,000 per annum from 2015-16 onwards, comprising –

(a) Realisable savings of $1,997,000 per annum

The realisable savings comprise costs avoided by reducing excessive/dead stock and by enhancing maintenance quality of the assets, and the maintenance cost of the existing standalone database systems. The savings will be used to offset part of the recurrent expenditure of the proposed AMMS.

(b) Notional savings of $6,541,000 per annum

The notional savings will be achieved through productivity gains by automating some clerical work in planning, procurement, inventory control, maintenance and equipment disposal of various units after implementation of the AMMS. We estimate that a total of about 117 man-months, i.e. staff cost of about $6,541,000 can be saved per annum.

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The manpower resources saved are scattered in various units and are fragmented. They will be redeployed to provide system support and enhance the service quality of work such as frontline operational and maintenance work, testing on and inspection of existing equipment, and keeping up with new development and technologies of fire-fighting equipment.

8. A cost and benefit analysis for the proposed implementation of the AMMS is set out at Enclosure.

Encl.

FINANCIAL IMPLICATIONS

Non-recurrent Expenditure

9. We estimate that the proposed implementation of the AMMS will require a non-recurrent expenditure of $49,830,000 over five financial years from 2012-13 to 2016-17, with detailed breakdown as follows –

	2012-13 $'000	2013-14 $'000	2014-15 $'000	2015-16 $'000	2016-17 $'000	Total $'000
(a) Hardware	-	1,919	8,959	1,920	-	12,798
(b) Software	-	966	1,772	484	-	3,222
(c) Implementation services	-	2,851	6,408	3,890	5,862	19,011
(d) Contract staff	750	1,620	1,021	450	-	3,841
(e) Site preparation	-	-	960	-	-	960
(f) Consumables	-	-	987	-	-	987
(g) Data conversion	-	-	4,048	-	-	4,048
(h) Security risk assessment and audit	-	-	273	-	-	273
(i) Training	-	-	160	-	-	160
(j) Contingency	75	736	2,459	674	586	4,530
Total :	**825**	**8,092**	**27,047**	**7,418**	**6,448**	**49,830**

/10. …..

10. On paragraph 9(a) above, the estimate of $12,798,000 is for the acquisition of computer hardware, including server systems for operation and development, network equipment, uninterrupted power supply system, barcode/Radio Frequency Identification (RFID) readers and printers, etc.

11. On paragraph 9(b) above, the estimate of $3,222,000 is for the acquisition of computer software, including operating system software, anti-virus software, backup software and network management software, etc.

12. On paragraph 9(c) above, the estimate of $19,011,000 is for the system implementation services, including project management, system design and development, provision of off-the-shelf enterprise resource planning system and its customisation.

13. On paragraph 9(d) above, the estimate of $3,841,000 is for the hiring of contract staff to provide support in project planning, quality assurance, system acceptance and contract management.

14. On paragraph 9(e) above, the estimate of $960,000 is for the site preparation works, including installation of network nodes and power sockets, as well as the associated trunking and cabling works.

15. On paragraph 9(f) above, the estimate of $987,000 is for the acquisition of start-up consumables, including barcode labels, RFID tags and backup tapes for data storage, etc.

16. On paragraph 9(g) above, the estimate of $4,048,000 is for data conversion of the existing inventory records and migration to the AMMS.

17. On paragraph 9(h) above, the estimate of $273,000 is for hiring independent consultants to assess system vulnerabilities and potential security risk before the commissioning of the AMMS.

18. On paragraph 9(i) above, the estimate of $160,000 is for the training of relevant staff for administering and operating the system.

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19. On paragraph 9(j) above, the estimate of $4,530,000 represents a 10% contingency on the cost of items set out in paragraphs 9(a) to (i) above.

Other Non-recurrent Expenditure

20. The proposed implementation of the AMMS will entail a non-recurrent staff cost of $2,773,000. The cost represents a total of 58 man-months of fire services officers and civilian staff for project management, procurement, site preparation, installation support, security risk assessment and audit, and system/user acceptance tests. FSD will absorb the cost with existing resources.

Recurrent Expenditure

21. We estimate that the recurrent expenditure for the proposed AMMS will be $4,520,000 per annum from 2016-17 onwards. Such requirements will be reflected in the Estimates of the relevant years, with breakdown as follows –

	Item	2016-17 onwards $'000
(a)	Hardware and software maintenance	1,478
(b)	System support services and maintenance	2,698
(c)	Consumables	344
	Total :	**4,520**

22. On paragraph 21(a) above, the estimated annual expenditure of $1,478,000 is for the maintenance of system hardware and software.

23. On paragraph 21(b) above, the estimated annual expenditure of $2,698,000 is for the hire of services for on-going operational maintenance of the system and related support services such as minor enhancement to the system.

24. On paragraph 21(c) above, the estimated annual expenditure of $344,000 is for the acquisition of consumables such as barcode labels, RFID tags and backup tapes, etc.

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25. FSD will deploy its existing resources to make available a total of 15 man-months of fire services officers, civilian staff and IT staff to manage the system and provide system support, entailing a recurrent staff cost of $877,000 per annum. No additional recurrent staffing will be required.

IMPLEMENTATION PLAN

26. We plan to implement the proposed AMMS according to the following schedule –

	Activity	Target Completion Date
(a)	Tender preparation	April 2012
(b)	Tender evaluation and award of contract	November 2012
(c)	System analysis and design	May 2013
(d)	Site preparation, procurement of hardware/software, system installation and modification	March 2014
(e)	System integration tests, data conversion/migration, and security risk assessment and audit	July 2014
(f)	User training	September 2014
(g)	System live-run	October 2014

PUBLIC CONSULTATION

27. We consulted the Legislative Council Panel on Security on the proposal on 6 December 2011. Members were concerned about the specific functions of the proposed AMMS, the potential manpower savings and their redeployment subsequent to the implementation of the proposed system. We briefed the Panel again on 7 February 2012, elaborated on the major functions of the proposed AMMS and explained that FSD would redeploy potential manpower savings internally to enhance the quality of various services of the department. Members were generally supportive of the proposal and raised no objection to submitting it to the Finance Committee for funding approval.

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BACKGROUND

28. The EU conducted a study on procurement and related management issues for FSD. The Administration briefed Members on the findings of the study at the Security Panel meeting on 17 January 2011. The study pointed out that due to the lack of an integrated computer system in FSD, much of the procurement work was carried out manually. The absence of readily available management information also made it difficult for FSD to monitor the effectiveness of procurement and inventory control, evaluate suppliers' performance and support the procurement planning work. To address these issues, the EU recommended FSD to develop an integrated computer system to improve the efficiency and effectiveness of its procurement and related management work.

Security Bureau
March 2012

Enclosure to FCR(2012-13)4

Cost and Benefit Analysis of the Implementation of the AMMS

	Cash flow ($'000)												
	2012-13	**2013-14**	**2014-15**	**2015-16**	**2016-17**	**2017-18**	**2018-19**	**2019-20**	**2020-21**	**2021-22**	**2022-23**	**2023-24**	**Total**
Cost													
Non-recurrent													
- Expenditure	825	8,092	27,047	7,418	6,448	-	-	-	-	-	-	-	49,830
- Staff cost	495	1,447	831	-	-	-	-	-	-	-	-	-	2,773
Sub-total	*1,320*	*9,539*	*27,878*	*7,418*	*6,448*	-	-	-	-	-	-	-	*52,603*
Recurrent													
- Expenditure	-	-	-	-	4,520	4,520	4,520	4,520	4,520	4,520	4,520	4,520	36,160
- Staff cost	-	-	365	877	877	877	877	877	877	877	877	877	8,258
Sub-total	-	-	*365*	*877*	*5,397*	*5,397*	*5,397*	*5,397*	*5,397*	*5,397*	*5,397*	*5,397*	*44,418*
Total Cost	**1,320**	**9,539**	**28,243**	**8,295**	**11,845**	**5,397**	**5,397**	**5,397**	**5,397**	**5,397**	**5,397**	**5,397**	**97,021**
Savings													
- Realisable savings	-	-	999	1,997	1,997	1,997	1,997	1,997	1,997	1,997	1,997	1,997	18,972
- Notional savings	-	-	3,271	6,541	6,541	6,541	6,541	6,541	6,541	6,541	6,541	6,541	62,140
Total savings	**-**	**-**	**4,270**	**8,538**	**8,538**	**8,538**	**8,538**	**8,538**	**8,538**	**8,538**	**8,538**	**8,538**	**81,112**
Net shortfall	**1,320**	**9,539**	**23,973**	**(243)**	**3,307**	**(3,141)**	**(3,141)**	**(3,141)**	**(3,141)**	**(3,141)**	**(3,141)**	**(3,141)**	**15,909**
Net cumulative shortfall	**1,320**	**10,859**	**34,832**	**34,589**	**37,896**	**34,755**	**31,614**	**28,473**	**25,332**	**22,191**	**19,050**	**15,909**	
