

ITEM FOR FINANCE COMMITTEE

CAPITAL WORKS RESERVE FUND

HEAD 710 – COMPUTERISATION

Correctional Services Department

New Subhead “Relocation of Information Technology Systems to the New Correctional Services Department Headquarters and Related System Enhancements”

Members are invited to approve the creation of a new commitment of \$213,693,000 for the relocation and re-provisioning of information technology systems to the new Correctional Services Department Headquarters and related system enhancements.

PROBLEM

The Correctional Services Department (CSD) needs to relocate and re-provision its information technology (IT) systems to the new CSD Headquarters (HQ) in Chai Wan to tie in with the relocation plan of the new CSD HQ, and enhance the related systems for improving the efficiency of correctional services and level of security.

PROPOSAL

2. The Commissioner of Correctional Services, with the support of the Secretary for Security and the Government Chief Information Officer, proposes to create a new commitment of \$213,693,000 for the relocation and re-provisioning of IT systems to the new CSD HQ with related system enhancements.

/JUSTIFICATION

JUSTIFICATION

Relocation Plan of the New CSD HQ

3. The Finance Committee (FC) of the Legislative Council (LegCo) approved in December 2020 a commitment of \$3,252.8 million in money-of-the-day prices for the construction of a twin-tower office building for the “Water Supplies Department HQ with Hong Kong and Islands Regional Office and CSD HQ Building in Chai Wan”, which is in connection with the relocation of government bureaux/departments (B/Ds) and the Judiciary in the Wan Chai Government Offices Compound to make way for the development of convention and exhibition facilities, hotel facilities, and Grade A office space. Based on the current construction work schedule, the new CSD HQ in Chai Wan would be completed in the second quarter of 2024 at the earliest. Under the relocation plan, IT infrastructure will be established at the new CSD HQ. Besides, more than 30 existing IT application systems¹ running on more than 300 servers/virtual machines have to be relocated to and re-provisioned at the new CSD HQ. To minimise service interruption, relocation and re-provisioning of IT systems have to tie in with the relocation plan of the new CSD HQ.

Challenges and Limitations

4. In addition, CSD commissioned the second Information Systems Strategy Study² (ISSS 2) to cope with the development of correctional services for enhancing the efficiency of prison management and level of security. The Study was completed in January 2021. It set out the “Smart Prison” blueprint and recommended that CSD should take the opportunity of the Department’s relocation to the new CSD HQ to upgrade its systems and IT infrastructure. It has identified the following challenges and limitations that CSD should tackle –

/(a)

¹ Examples include the e-mail system, intranet and departmental portal, Human Resources Management System, Internet access and remote access systems, backend system for CSD’s mobile application and Official Visit Booking System.

² To cope with the development of correctional services, CSD conducted the first Information Systems Strategy Study (ISSS 1) in 2013. The study recommended the development of an Integrated Custodial and Rehabilitation Management System (iCRMS) (details of this system are set out in paragraph 4(e) below). In 2019, CSD launched ISSS 2 to evaluate the progress of projects proposed in the ISSS 1 and devise a technological development blueprint for “Smart Prison” to roll out innovation and technology projects to modernise, informatise and humanise the management mode and process innovation of correctional facilities in the short, medium and long term according to priorities.

(a) *Inadequate network infrastructure*

The network infrastructure at the existing CSD HQ is limited in bandwidth and is not of a fully structured network design, thus hindering scaling up and expansion of network capacity and capability. Besides, the existing insufficient network bandwidth has slowed down the network connections between the existing CSD HQ and other correctional institutions and offices of CSD. Furthermore, the existing network infrastructure is inadequate in supporting the application of up-to-date solutions, such as video conferencing and real-time closed-circuit television (CCTV) signal streaming from correctional institutions.

(b) *Limitations in data centre*

As the data centre located at the existing CSD HQ has reached its maximum capacity in terms of space, electricity supply and cooling, it is unable to meet the IT development needs of CSD in the long run, including the implementation of the “Smart Prison” strategy. Besides, the facilities of the data centre are aged, causing service disruption and downtime from time to time.

(c) *Limitations in the Manufacturing Management and Control System (MMCS) II, Job Costing System (JCS) and e-Ordering Portal*

MMCS II, JCS and e-Ordering Portal³ have been launched for more than ten years. Some software components have reached their end of support period. In addition, the central store of CSD’s Industries Unit still relies on manual stocktaking and updating of stock location details upon every transfer. All the above call for the upgrading of the said systems to enhance operational efficiency.

(d) *Lack of a Centralised Pharmacy*

At present, there is no centralised pharmacy in CSD. Under the current arrangement, dispensaries at correctional institutions are functioning independently. With the set-up of a Centralised Pharmacy, being part of the funding proposal approved by the FC in December 2020 for the construction of, among others, CSD HQ Building in Chai Wan, ISSS 2 recommended the set-up of a corresponding central pharmacy system, namely the Pharmacy Inventory and Warehouse Management System, to support the Centralised Pharmacy in the new CSD HQ Building.

/(e)

³ MMCS and JCS are IT systems to support CSD’s Correctional Services Industries (CSI) business for order processing, material procurement and job cost recovery. The e-Ordering Portal is a system for B/Ds’ online ordering of CSI products.

(e) *Limitations for expansion and extension of the iCRMS⁴*

iCRMS, the key penal system supporting CSD's daily operation and "Smart Prison" systems integration, is being developed and expected to come into operation in 2023. The core systems of iCRMS are currently set up in the server room at the Lai Chi Kok Reception Centre (LCKRC). The systems require further enhancements to enable system expansion and extension, which are however constrained by the limited space and facilities of the server room at LCKRC. Relocation of iCRMS to the new CSD HQ is necessary.

Proposed Relocation of IT Systems to the New CSD HQ with Related System Enhancements

5. Based on the recommendation of ISSS 2, CSD proposes implementing the following projects starting from 2022-23 –

- (a) Design and construction of the server farm and supporting systems for the relocation/re-provisioning of relevant systems from the existing CSD HQ to the new CSD HQ;
- (b) Design and construction of an updated network infrastructure in the new CSD HQ;
- (c) Design and construction of a data centre in the new CSD HQ;
- (d) Re-development of MMCS II, JCS and e-Ordering Portal;
- (e) Setting up of the Pharmacy Inventory and Warehouse Management System in the new CSD HQ; and
- (f) Relocation of iCRMS to the new CSD HQ.

6. The proposed implementation schedules and target completion dates for the projects in paragraphs 5(a) to (f) are set out in Enclosure 1.

Encl. 1

/Expected

⁴ CSD's existing custodial and rehabilitation operations are supported by eight core operational systems, which play a pivotal role in supporting the operations of CSD. For enhancing efficiency and supporting future service expansion, as approved by the FC in 2016, the existing eight systems will be consolidated into iCRMS to be the key penal system to support CSD's daily operation. The existing eight systems are (1) the Penal Record Information System, (2) the Rehabilitation Programmes Management System, (3) the Automatic Fingerprint Identification System, (4) the Patrol Management System, (5) the Tracking and Recording System for Urine Test, (6) the Security Intelligence Management System, (7) the Inmate Mail Information System, and (8) the Drug Management System.

Expected Benefits

7. The proposal will bring about the following benefits –

(a) *Improved network services*

There will be a more stable, reliable and scalable network infrastructure in the new CSD HQ, as well as a Wide Area Network connecting the new CSD HQ and all the correctional institutions and offices of CSD. The upgraded infrastructure will better support the application of up-to-date solutions, such as video conferencing and real-time CCTV signal streaming from correctional institutions for improving the communication between CSD HQ and the correctional institutions and offices.

(b) *Enhanced data centre services and IT security*

The new and enhanced data centre to be established in the new CSD HQ will be a satellite site of the Government Cloud Infrastructure Services (GCIS)⁵. This enables the use of agile development tools to cope with the rapid development of “Smart Prison” projects of CSD, as well as systems reliability, expansion capacity and better IT security protection.

(c) *Enhanced MMCS II, JCS and e-Ordering Portal*

The upgraded MMCS II, JCS and e-Ordering Portal will enhance the operational efficiency of CSI business through, amongst others, adoption of the data storage government cloud services.

In addition, the new warehouse management subsystem under MMCS II developed for the central store of the Industries Unit will be equipped with new functions to help reduce the time required to locate the goods and avoid human errors. Such functions include product expiry tracking, space allocation suggestion, etc.

Under the new and upgraded e-Ordering Portal, apart from government B/Ds as per the current arrangement, external parties including the Hospital Authority and contractors of works departments will also be able to place orders of CSI products through an online portal (instead of the current means of e-mail and fax). Customer support will also be enhanced by a new order tracking sub-system with a chat-bot function.

/(d)

⁵ GCIS is the new generation government cloud services, launched in September 2020. Leveraging on modern cloud technologies, GCIS provides a secure, reliable and scalable IT infrastructure equipped with agile application development tools, facilitating B/Ds in agile development and delivery of digital government services.

(d) *Pharmacy Inventory and Warehouse Management System*

The proposed Pharmacy Inventory and Warehouse Management System supports CSD's Centralised Pharmacy. The proposed system will streamline coordination between the new CSD HQ and various correctional institutions. It will enable CSD to centralise and streamline order fulfilment to achieve economies of scale on drug ordering, reduce the handling time and minimise potential chemical waste created by expired drugs. The proposed system will bring about better management of drugs and delivery schedule, and relieve staff from repetitive daily routine. Traceability of prescription records, order and inventory entries will be improved. Resources required for quarterly stocktaking and inventory checking can also be saved. In case of any recall of drugs and medical consumables by the Department of Health, the return process will also be centralised and streamlined.

(e) *Ensure system extensibility of iCRMS*

iCRMS is the mission critical system supporting CSD's daily operation and the platform for integration with "Smart Prison" systems. With the custodial and rehabilitation records of persons in custody (PICs) consolidated in one single platform, iCRMS would provide a holistic view of PICs' information to facilitate operational planning, provision of rehabilitation services and assessment of the risks and needs of PICs. The relocation of iCRMS to the data centre at the new CSD HQ with upgraded facilities and larger space will ensure system extension capability as well.

FINANCIAL IMPLICATIONS

Non-recurrent Expenditure

8. The proposal involves an estimated non-recurrent expenditure of \$213,693,000 over a four-year period from 2022-23 to 2025-26, with breakdown as follows –

/(a)

	2022-23 (\$'000)	2023-24 (\$'000)	2024-25 (\$'000)	2025-26 (\$'000)	Total (\$'000)
(a) Hardware	-	3,530	38,651	1,580	43,761
(b) Software	2,608	712	16,828	185	20,333
(c) Communication Network	-	-	17,954	23,992	41,946
(d) Cloud Services	-	182	3,078	-	3,260
(e) Implementation Services	801	20,485	30,976	8,039	60,301
(f) Contract Staff	1,572	6,747	8,723	7,623	24,665
(g) Contingency	498	3,166	11,621	4,142	19,427
Total	5,479	34,822	127,831	45,561	213,693

9. On paragraph 8(a) above, the estimated expenditure of \$43,761,000 is for acquisition of computer hardware, including servers, storage devices and system backup equipment.

10. On paragraph 8(b) above, the estimated expenditure of \$20,333,000 is for acquisition of computer software, including operating systems, application server software and virtualisation software.

11. On paragraph 8(c) above, the estimated expenditure of \$41,946,000 is for acquisition of network equipment and services, including routers, switches, security appliances and installation of communication lines for the computer network.

12. On paragraph 8(d) above, the estimated expenditure of \$3,260,000 is for implementation services of Cloud platform installation and configuration under the GCIS.

13. On paragraph 8(e) above, the estimated expenditure of \$60,301,000 is for hiring of services from external service providers to implement the project, including system analysis and design, technical consultancy, security risk assessment and audit, system development, installation, configuration and nursing.

14. On paragraph 8(f) above, the estimated expenditure of \$24,665,000 is for engagement of services of contract staff to supplement the in-house project management team to provide support in project planning, monitoring and conducting system acceptance tests.

15. On paragraph 8(g) above, the estimated expenditure of \$19,427,000 represents about 10% contingency on the costs items set out in paragraphs 8(a) to (f) above.

Other Non-recurrent Expenditure

16. The implementation of the proposal will require a project team for project management, procurement of hardware, software and services, system analysis and design, site preparation, user acceptance tests and implementation support, etc. This will entail non-recurrent staff cost of \$98,954,000.

Recurrent Expenditure

17. The estimated recurrent expenditure for the proposal will be \$531,000 in 2023-24 and will increase to \$28,618,000 from 2026-27 onwards, mainly covering hardware and software maintenance, communication network, cloud services, system maintenance and engagement of contract staff. The breakdown is as follows –

	2023-24	2024-25	2025-26	From 2026-27 onwards
	(\$'000)	(\$'000)	(\$'000)	(\$'000)
(a) Hardware and software maintenance	261	306	6,426	6,474
(b) Communication network	-	-	-	13,383
(c) Cloud services	-	-	1,877	1,877
(d) System maintenance	140	140	2,898	4,081
(e) Contract staff	130	656	2,192	2,803
Total	531	1,102	13,393	28,618

18. On paragraph 17(a) above, the estimated annual expenditure of \$6,474,000 is for provision of hardware and software maintenance, and for software licence fee to support the enhanced IT infrastructure and systems.

19. On paragraph 17(b) above, the estimated annual expenditure of \$13,383,000 is for provision of network equipment maintenance, and for rental of communication lines for the computer network.

20. On paragraph 17(c) above, the estimated annual expenditure of \$1,877,000 is for Cloud services fee under the GCIS.

21. On paragraph 17(d) above, the estimated annual expenditure of \$4,081,000 is for provision of system maintenance by hiring of services from external service providers.

22. On paragraph 17(e) above, the estimated annual expenditure of \$2,803,000 is for engagement of services of contract staff to provide support in system maintenance of new and enhanced systems and administrative work.

23. After offsetting the realisable savings of \$15,506,000 per annum as detailed in paragraph 25(a) below, the proposal will require a net recurrent cost of \$13,112,000 per annum from 2026-27 onwards.

24. Besides, CSD will arrange a team for system administration, operation and support. The annual staff cost involved will be \$20,757,000 from 2026-27 onwards.

Cost Savings

25. It is estimated that the proposal will enable CSD to save expenditure for maintaining the existing IT infrastructure and ensuring continued smooth operation of the IT systems. The proposal is expected to bring about annual savings of \$18,276,000 from 2026-27 onwards, comprising –

/(a)

(a) Annual realisable savings of \$15,506,000

The savings in the maintenance cost for the existing systems and equipment, and communication network will be \$15,320,000. Moreover, the savings in drug cost will be \$186,000, which is around 27% of the seldom used drug arising from economies of scale in drug ordering.

(b) Annual notional savings of \$2,770,000

These represent fragmented staff cost savings from productivity gain as a result of more efficient operations as well as reduced demand for IT support and maintenance as a result of the new systems. The notional savings cannot be realised by deletion of posts given that they spread over various application systems, but will be deployed to cover other minor enhancements that may arise in future.

Encl. 2 26. A cost and benefit analysis for the proposal is at Enclosure 2.

IMPLEMENTATION PLAN

27. Subject to funding approval of the FC, CSD plans to start the procurement process in June 2022 and progressively implement the proposal starting from 2022-23. CSD expects that all implementation work will be completed by November 2025. A detailed implementation plan is at Enclosure 1.

PUBLIC CONSULTATION

28. We consulted the LegCo Panel on Security on the proposal on 1 April 2022. Members supported the proposal and its submission to the FC for funding approval.

Security Bureau
Correctional Services Department
May 2022

**Implementation Plan for
the Relocation of Information Technology (IT) Systems to the
New Correctional Services Department Headquarters and
Related System Enhancements**

Activity	Target Completion Date
I. Systems Relocation	
(a) Procurement – services	December 2022
(b) Network and system design	June 2023
(c) Procurement – hardware and software	June 2024
(d) Installation and system migration	August 2025
(e) Security risk assessment and audit	October 2025
(f) Systems live run	November 2025
II. Establishment of Network Infrastructure^{Note}	
(a) Procurement – services	June 2022
(b) Network and system design	November 2022
(c) Procurement – hardware and software	October 2023
(d) Installation and system migration	November 2024
(e) Security risk assessment and audit	November 2024
(f) Systems live run	December 2024
III. Establishment of Data Centre^{Note}	
(a) Procurement – services	June 2022
(b) Network and system design	September 2022
(c) Procurement – hardware and software	August 2023
(d) Installation and system migration	July 2024
(e) Systems live run	August 2024

/IV.

^{Note} Activities II and III, i.e. the establishment of Network Infrastructure and Data Centre respectively, are critical milestones and pre-requisites for other Activities and the subsequent office relocation and IT systems relocation. Before that, time should be allowed for tendering of services and equipment.

	Activity	Target Completion Date
IV.	Re-development of Manufacturing Management and Control System II, Job Costing System and e-Ordering Portal	
	(a) Procurement	October 2022
	(b) System analysis and design	February 2023
	(c) System development and installation	October 2023
	(d) Data conversion	October 2023
	(e) Security risk assessment and audit	November 2023
	(f) User acceptance	February 2024
	(g) Systems live run	March 2024
V.	Setting up of Pharmacy Inventory and Warehouse Management System	
	(a) Procurement	November 2023
	(b) System analysis and design	February 2024
	(c) System development and installation	July 2024
	(d) Security risk assessment and audit	September 2024
	(e) User acceptance	October 2024
	(f) Data conversion	October 2024
	(g) Systems live run	December 2024
VI.	Integrated Custodial and Rehabilitation Management System Relocation	
	(a) Procurement – services	September 2023
	(b) Network and system design	January 2024
	(c) Procurement – hardware and software	January 2025
	(d) Installation and system migration	April 2025
	(e) Security risk assessment and audit	May 2025
	(f) User acceptance	July 2025
	(g) Data conversion	August 2025
	(h) System integration	October 2025
	(i) Systems live run	November 2025

**Cost and Benefit Analysis for the Relocation of Information Technology (IT) Systems to the
New Correctional Services Department Headquarters and Related System Enhancements**

	Cash Flow (\$'000)					
	2022-23	2023-24	2024-25	2025-26	2026-27	Total
1. Non-recurrent						
Expenditure	5,479	34,822	127,831	45,561	-	213,693
Staff Cost	20,394	22,095	34,282	22,183	-	98,954
Total Non-recurrent Cost	25,873	56,917	162,113	67,744	-	312,647
2. Recurrent						
Expenditure	-	531	1,102	13,393	28,618	43,644
Staff Cost	-	-	205	8,150	20,757	29,112
Total Recurrent Cost	-	531	1,307	21,543	49,375	72,756
Total Non-recurrent and Recurrent Cost (A)	25,873	57,448	163,420	89,287	49,375	385,403
3. Savings						
Realisable Savings ¹	-	-	244	7,811	15,506	23,561
Notional Savings ²	-	-	766	2,770	2,770	6,306
Total Savings (B)	-	-	1,010	10,581	18,276	29,867
Net Savings (C) = (B) – (A)	(25,873)	(57,448)	(162,410)	(78,706)	(31,099)	(355,536)
Net Cumulative Savings	(25,873)	(83,321)	(245,731)	(324,437)	(355,536)	

¹ This represents the savings in the maintenance cost for the existing systems and equipment, and communication network, as well as that in drug cost arising from economies of scale in drug ordering.

² Notional savings will be achieved from productivity gain as a result of more efficient operations and reduced demand for IT support and maintenance.