Discussion Paper for Legislative Council
LegCo Panel on Planning, Lands and Works
Meeting on 5 February 2001

Implementation of the Customer Care and Billing System in Water Supplies Department

PURPOSE

This paper seeks Members' views on the Water Supplies Department's (WSD) proposal to implement a computerised Customer Care and Billing System (CCBS) as Stage I of the Information Systems Strategy (ISS) for WSD.

BACKGROUND

2. In order to meet WSD's longer-term operational requirements, the Director of Water Supplies (DWS), with the assistance of the Director of Information Technology Services (DITS) and consultants, had completed in March 1999 a departmental ISS Study aimed to develop a strategic plan for the implementation of information technology (IT) systems in WSD over the following five years. The Study concluded that the current IT situation in WSD is far from adequate in supporting its business needs and therefore recommended an ISS with the following three major components for further development -

(a) Customer service

To replace the outdated Water Information and Billing System (WIS) with a new Customer Care and Billing System (CCBS) that will support the billing and collection processes, enable "one-stop shop" service to customers and offer on-line access to a range of WSD's services.

(b) Water supply and distribution operations

To develop an integrated IT system with geographical information needed to enhance support to WSD's water supply and distribution operations to ensure a reliable and quality water supply and to achieve efficient assets management.

(c) Management information for finance and administration

To provide an integrated management information system for the internal management of financial and administrative matters of WSD.

3. Of the three components, the ISS study has accorded priority to the development and implementation of the proposed CCBS. A feasibility study completed in March 2000 has confirmed the viability of the system. With the support of the Secretary for Works, DWS proposes to start development work in April 2001 for full implementation of the system by April 2004.

4. We are conducting a feasibility study on the integrated IT system for "Water supply and distribution operations" as Stage II of the ISS and will seek Members' views on the implementation of the project in due course. We plan to conduct a similar study on the management information system for finance and administration in 2002.

CURRENT SITUATION

5. WSD's main businesses are to provide a full supply to meet the demands of the territory and to provide efficient and effective services to water consumers. At present, WSD relies on the WIS for maintaining and billing some 2.3 million water accounts at regular intervals. Located at and run by the Treasury, the system has been in use since 1978 and was designed solely for billing purpose. It is a batch-updated system and does not support such key customer service operations as handling applications for new water supply, taking up and giving up consumership, refund of deposit, management of service orders and maintenance of complaint and enquiry records. The major limitations and deficiencies of the present mode of operation are as follows -

(a) Lack of integration

To cope with increasing scope and volume of transactions, WSD has developed individual PC-based systems on a piece-meal basis to support the customer service operations. These systems are not connected with each other nor integrated with the WIS. This has led to considerable problems including duplicated data entries, inconsistency of data, fragmentation of information, extensive manual intervention in data transfer and sharing, lengthy response time in processing enquiries and unsatisfactory reporting of management information.

(b) Excessive record creation

Correspondence with customers on application for new water supply, change of consumership, dispute and complaint records and requests for customer service are kept in some 350 000 paper files. Storing, managing, updating and retrieval of data from such a huge volume of paper files require substantial manpower and space. In addition, the manual mode of operations is prone to errors and imposes constraints on WSD's ability to improve operational efficiency.

(c) System limitations

The WIS has been in use for 22 years. Its limitations include the absence of real time update facility, slow response time, not user-friendly to operate and insufficient access terminals. In addition, the WIS cannot process such crucial customer information as telephone number, Chinese name and address, service request and complaint history, while the design and the technical environment of the system impose great constraints and difficulties on further enhancement. This outdated system severely limits WSD's capability in meeting customer expectations as well as the present and future needs in the delivery of efficient customer services.

(d) Incompatibility with new system products

The outdated technology and the proprietary platform of the existing system make it very difficult to integrate with new systems.

(e) Maintenance problem

Given the aging hardware and software, the existing system has become increasingly difficult to maintain.

The proposed CCBS

6. The proposed CCBS is an integrated system with some 400 workstations. The system will maintain a centralised database to provide system functions on billing, meter reading, customer contact management, electronic document management and service order management to support the day-to-day

operation of the Customer Telephone Enquiry Centre, eight Customer Enquiry Centres, five Meter Reading Sub-offices and five Regional Offices of WSD. It will enable the department to provide "one-stop shop" service to customers and to offer on-line service through the Internet so that the customer service provided by the department is comparable to those of other utilities. It will also provide useful and timely information to the management for planning and decision-making, and will be able to interface with future WSD computer systems. A summary of major functions of the proposed system is set out at **Annex A**.

ANTICIPATED BENEFITS

Savings

7. It is estimated that implementation of the proposed system will give rise to annual savings of $100.64 million, of which $87.67 million is realisable. The realisable savings will mainly come from the anticipated reduction of 261 staff through centralisation of customer service operations, streamlining of work and office automation. A summary of savings is at **Annex B**. The staff reduction would be achieved in phases through natural wastage, retraining and redeployment. There will be no forced redundancy as a result of the implementation of the CCBS.

Service Improvement

8. In addition, the proposed system will also bring about the following service improvements –

(a) With the support of electronic document management and the consolidated customer information under an integrated system, WSD will be able to provide "one-stop shop" service to its customers so that the officer serving the customer will be able to handle a majority of enquiries and service requests without the need to refer to other officers.

(b) The billing process will be more efficient as the new system will be meter–reading driven and will be able to issue water bills as and when required.

(c) The new system will have the flexibility to produce water bills that will meet the needs of individual customers e.g. consolidated bill for customers with more than one metered account. Both bill payment and account keeping will be made easier.

(d) The new system will be able to support interactive customer services through the Internet or over the telephone for billing, application for change of mailing address, application for meter test, making appointment for service orders and enquiry of water accounts.

(e) Customers can make appointment on-line for attendance to technical fault complaints etc. at a convenient time.

(f) The processing time in respect of such key customer services as taking up and giving up consumership, refund of deposit and reply to applications for metered supply to new building projects will be substantially reduced. For instance, the time required to process giving up of consumership will be shortened from eight days to within the same working day.

COSTS

9. The total non-recurrent costs for implementing the proposed CCBS is estimated to be $253.08 million. Of these, $235.48 million is for the purchase of computer hardware and software, and outsourcing for system development and technical services while $17.6 million is to meet the costs of a project team of 16 staff required for preparing and evaluating tender documents, working with the system provider to ensure the package solution conforms to WSD's operational requirements, business process re-engineering and training of end users. The estimated annual recurrent cost of the proposed system is $7.14 million in 2003-04 and $42.96 million from 2004-05 onwards. A detailed breakdown of the non-recurrent and annual recurrent costs is at **Annex C**.

Staffing for IT management and development

10. The existing IT establishment in WSD is inadequate for managing and supporting the operation and maintenance of the proposed CCBS. Upon full implementation of the new system, WSD will need a team, comprising 21 staff, for running the new system, managing maintenance contracts and providing technical support to end-users. The team will be headed by a Chief System Manager (D1) or equivalent, who will also be responsible for the continuing development of IT in the department.

COST-BENEFIT ANALYSIS

11. A cost-benefit analysis indicates that this project will break even in the year 2010-11 (i.e. seven years after implementation). A detailed cost and benefit analysis is at **Annex D**.

IMPLEMENTATION PLAN

12. We estimate that implementation of the system will be completed by April 2004. A proposed implementation plan is as follow -

	Activities	Target completion date
(a)	Tendering for implementation service including provision of hardware and software	April 2002
(b)	System development including application development, site preparation and data conversion	January 2004
(c)	System live run	April 2004

Way Forward

13. Subject to any comments which Members may have, we will submit the proposed CCBS to Finance Committee on 23 February 2001 for approval of funding.

Works Bureau
January 2001

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Annex A

Summary of major functions of the Customer Care and Billing System

The proposed Customer Care and Billing System will provide an integrated solution to support all the customer service related operations of a typical utility organisation. In summary, the functions of the new system include –

(a) calculate charge for water consumption and issue water bills (facility is provided for issuing consolidated water bill for water consumption and other customer services such as fees for supply connection and reconnection, and meter test);

(b) maintain meter reading records and allow downloading and up-loading of customer information and meter readings between the handheld computer and the main system automatically;

(c) maintain customer information (some key information such as customer name and address will be maintained in bilingual forms);

(d) keep record of payments;

(e) maintain dispute and complaint records;

(f) handle changes of customer details and termination of consumership;

(g) provide on-line facility for data entry or enquiry;

(h) maintain correspondence with customers in electronic form centrally with indexing and file tracking facilities;

(i) process new water supply applications and handle water deposit;

(j) assign routine and special meter reading route;

(k) process refund of water deposit;

(l) schedule and manage service orders;

(m) generate management information and statistics.

(n) provide on-line service to customers through the Internet; and

(o) interface with the Trade Effluent Surcharge Billing System of Drainage Services Department for billing of Trade Effluent Surcharge.

Annex B

Summary of savings expected from the Customer Care and Billing System

A. Summary of annual savings (from 2006-07 onwards)

		$ million	$ million
(a)	Realizable savings		87.67
	(i) Staff savings (see (B) below for details)	83.23	
	(ii) Reduction in office space (about 500 m^2)	2.03	
	(iii) Maintenance cost for WIS	1.51	
	(iv) Reduced requirement for stationery	0.90	
(b)	Notional savings		12.97
	(i) Operating cost for WIS	10.06	
	(ii) Reduced requirement for office and storage space (a total of about 830 m^2)	2.91	
	Total annual savings		**100.64**

B. Staff Savings – from centralisation of customer service operations, streamlining of processes, better scheduling of meter reading work, elimination of duplicated processes and certain manual work, and office automation

	Reduction in Staff			
Grade/Rank	**2004-05**	**2005-06**	**2006-07**	**Total**
(i) Civil Service Posts				
Assistant Waterworks Inspector	4	6	11	21
Senior Meter Reader	0	4	0	4
Meter Reader I	10	10	0	20
Meter Reader II	0	4	0	4
Technical Officer	1	2	0	3
Clerical Officer	19	19	3	41
Assistant Clerical Officer	22	23	11	56
Clerical Assistant	43	42	15	100
Sub-total for (i):	99	110	40	249
(ii) Temporary staff	2	4	6	12
Total: (i) + (ii)	**101**	**114**	**46**	**261**

Annex C

Breakdown of non-recurrent cost and recurrent cost of the Customer Care and Billing System

A. Non-recurrent Cost

		2001-02	2002-03	2003-04	Total
			($ million)		
(a)	Computer hardware, software and data communication equipment		39.35	85.49	124.84
(b)	System development and implementation services (including site preparation, and data conversion)		34.10	46.71	80.81
(c)	Training		3.50	3.32	6.82
(d)	WSD staff	3.29	7.70	6.61	17.60
(e)	Contingencies	0.33	8.47	14.21	23.01
	Total	**3.62**	**93.12**	**156.34**	**253.08**

B. Recurrent Cost

		2003-04	2004-05 onwards
		($ million)	
(a)	Computer hardware, software and data communication equipment maintenance	1.61	27.84
(b)	System support services	4.43	8.37
(c)	Training		0.10
(d)	WSD staff	1.10	6.65
	Total	**7.14**	**42.96**

Annex D

Cost-Benefit Analysis of the Customer Care and Billing System

	($ millions) – at 2000 prices												
	01/02	**02/03**	**03/04**	**04/05**	**05/06**	**06/07**	**07/08**	**08/09**	**09/10**	**10/11**	**11/12**	**12/13**	**13/14**
COST													
Non-recurrent Expenditure (a)	3.62	93.12	156.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Recurrent Expenditure (b)	0.00	0.00	7.14	42.96	42.96	42.96	42.96	42.96	42.96	42.96	42.96	42.96	42.96
Total Cost (c=a+b)	**3.62**	**93.12**	**163.48**	**42.96**	**42.96**	**42.96**	**42.96**	**42.96**	**42.96**	**42.96**	**42.96**	**42.96**	**42.96**
SAVINGS													
Realisable	0.00	0.00	0.00	35.71	73.28	87.67	87.67	87.67	87.67	87.67	87.67	87.67	87.67
Notional	0.00	0.00	0.00	12.16	12.76	12.97	12.97	12.97	12.97	12.97	12.97	12.97	12.97
Total savings (d)	**0.00**	**0.00**	**0.00**	**47.87**	**86.04**	**100.64**	**100.64**	**100.64**	**100.64**	**100.64**	**100.64**	**100.64**	**100.64**
Net Savings (d-c)	**-3.62**	**-93.12**	**-163.48**	**4.91**	**43.08**	**57.68**	**57.68**	**57.68**	**57.68**	**57.68**	**57.68**	**57.68**	**57.68**
Net Present Value (4%) [1]	-3.48	-86.09	-145.33	4.20	35.41	45.59	43.83	42.15	40.53	38.97	37.47	36.03	34.64
Net Cumulative Savings (4%)	**-3.48**	**-89.58**	**-234.91**	**-230.71**	**-195.30**	**-149.71**	**-105.88**	**-63.73**	**-23.20**	**15.77**	**53.24**	**89.27**	**123.91**

[1] A discount rate of 4% is adopted for the financial appraisal of a computer project where the cashflow expressed at constant prices.