

CHAPTER 3

Water Supplies Department

<h3>Customer Care and Billing System of the Water Supplies Department</h3>

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CUSTOMER CARE AND BILLING SYSTEM OF THE WATER SUPPLIES DEPARTMENT

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PART 1: INTRODUCTION

1.1 This PART describes the background to the audit and outlines the audit objectives and scope.

Background

1.2 A mission of the Water Supplies Department (WSD) is to provide reliable and adequate supply of potable water and sea water (for flushing) to meet residential, commercial and industrial demand in the most cost-effective way. In 2006:

- (a) the average daily potable water consumption was 2.64 million cubic metres; and
- (b) the average daily sea water consumption was 0.71 million cubic metres.

In 2006-07, the WSD collected \$2,407 million water charges. As at 31 October 2007, the WSD administered 2.68 million customer accounts.

Water Billing and Information System

1.3 Between 1978 and 2004, the WSD made use of a computer system, namely the Water Billing and Information System (WIS), for maintaining customer accounts and billing. The WIS was a batch input and updating system. The WSD found that the WIS had the following restrictions:

- (a) ***Lack of system integration.*** The WIS could not integrate with the other WSD systems (e.g. systems for new applications for water supply and refund of deposits);
- (b) ***System limitations.*** The WIS:
 - (i) lacked real-time updating functions;
 - (ii) had slow response time and insufficient access terminals; and
 - (iii) could not accommodate additional customer information, such as telephone numbers, Chinese names and addresses, and complaint histories; and

- (c) ***Maintenance problems.*** As the WIS was designed many years ago, it was increasingly difficult and laborious to maintain.

Customer Care and Billing System

1.4 In March 1999, the WSD completed an Information Systems Strategy Study. The study recommended that, to meet business needs, the WSD should accord priority to developing a new computer system, namely the Customer Care and Billing System (CCBS), to replace the WIS. The Office of the Government Chief Information Officer (OGCIO — Note 1) and the Development Bureau (Note 2) supported the recommendation.

1.5 In March 2000, the WSD completed a feasibility study. In February 2001, the Administration submitted a paper to the Finance Committee (FC) of the Legislative Council (LegCo) seeking funding approval for implementing the CCBS. In the paper, the Administration said that the proposed CCBS would be an integrated computer system which would:

- (a) maintain and manage information on water consumption, water-charge billing, customer contacts, customer documents (Note 3) and service orders. The system would provide support to the Customer Telephone Enquiry Centre, the Customer Enquiry Centres (Note 4), the Meter Reading Sub-offices and the Regional Offices of the WSD;
- (b) support interactive customer services through the Internet or by telephone;
- (c) provide useful and timely information to the WSD management for planning and decision making; and

Note 1: *In July 2004, the OGCIO was formed to take over the functions of the former Information and Technology Services Department. For simplicity, this Department is also referred to as the OGCIO in this Report.*

Note 2: *In July 2007, the Development Bureau was formed to take over, among others, the works policy portfolio of the former Environment, Transport and Works Bureau. For simplicity, the Environment, Transport and Works Bureau is also referred to as the Development Bureau in this Report.*

Note 3: *Under the CCBS, customer documents would be stored in electronic form. The system would also print documents for sending to customers.*

Note 4: *There were five Customer Enquiry Centres located in Wan Chai, Mong Kok, Sha Tin, Tai Po and Tuen Mun.*

- (d) interface with a system (Note 5) of the Drainage Services Department for billing of trade effluent surcharge.

In March 2001, the FC approved \$253.1 million for implementing the CCBS.

Award of contract

1.6 Under the Stores and Procurement Regulations, the Government Logistics Department (GLD — Note 6) is the Government's agent for procurement of stores (including computer systems) for government departments. In February 2003, the GLD, as the Authorised Contractual Authority, awarded a contract (the Contract) to a contractor (the Contractor) for:

- (a) developing the CCBS in the sum of \$183.5 million; and
- (b) maintaining the CCBS at an annual cost of \$20.7 million over a period of nine years after the one-year warranty period.

System development

1.7 A Project Steering Committee (PSC), chaired by the Director of Water Supplies (and comprising members from the WSD and the OGCIO), was established to provide guidance and direction and to monitor the project development. The OGCIO representative provided information technology advice.

1.8 According to the Contract, the CCBS was scheduled for commissioning in July 2004. The whole system was planned for completion in September 2004. In January 2005, upon completion of its core functions and essential features, the CCBS commenced operation. In the event, the completion of the whole system was extended to June 2006. As at November 2007, the cost of developing the CCBS was \$193.1 million.

Note 5: *This system was subsequently included in the CCBS.*

Note 6: *In July 2003, the GLD was established by merging the former Government Land Transport Agency, the Government Supplies Department and the Printing Department. For simplicity, the Government Supplies Department is also referred to as the GLD in this Report.*

Audit review

1.9 The Audit Commission (Audit) has recently conducted a review to examine the WSD's economy, efficiency and effectiveness in implementing the CCBS. The audit review focused on the following areas:

- (a) phased system implementation (PART 2);
- (b) supplemental maintenance fees (PART 3);
- (c) contract retention money (PART 4);
- (d) system commissioning (PART 5); and
- (e) system performance (PART 6).

Audit has found that there are areas where improvements can be made by the WSD in the planning, monitoring and administration of computerisation projects. Audit has made a number of recommendations to address the issues.

Acknowledgement

1.10 Audit would like to acknowledge with gratitude the full cooperation of the staff of the WSD, the GLD, the Hongkong Post and the OGCIO during the course of the audit review.

PART 2: PHASED SYSTEM IMPLEMENTATION

2.1 This PART examines the WSD's planning, monitoring and administration of the phased implementation of the CCBS.

Contract terms

Three phases of implementation

2.2 According to the Contract, the Contractor should implement the CCBS in three phases:

- (a) *Phase I: Provision of Electronic Document Management System by 1 December 2003.* This system would facilitate the storage, searching, retrieval and viewing of text and image files;
- (b) *Phase II: Provision of business functions by 31 July 2004.* The functions included management of customer accounts, water bills, water-consumption information, works orders, new applications for water supply, payment collections and debt recoveries; and
- (c) *Phase III: Provision of data warehouse and mining system by 30 September 2004.* The system would provide data analysis and management report compilation functions.

Customisation and liquidated damages

2.3 The Contract also stipulated that:

- (a) the Contractor should carry out customisation to supplement the functions of the Contractor's proposed software to meet the contract requirements;
- (b) if any requirements were not met by the proposed software after customisation, the Contractor should provide necessary custom programs; and
- (c) if the Contractor failed to provide the system and/or the sub-systems by each respective completion date, the Contractor should pay to the Government liquidated damages for any loss or damages resulting from the delay.

Contract extensions

2.4 As proposed in his tender, the Contractor acquired an overseas software package and used it for developing the CCBS. In November 2003, after system analysis and design, the Contractor found that there was more customisation work than expected. To meet the contract requirements, the Contractor had to develop custom programs to provide the required system functions.

Contract extensions between November 2003 and December 2004

2.5 In November 2003, the Contractor sought the WSD's support (before seeking the approval of the GLD, which was the Authorised Contractual Authority — see para. 1.6) for splitting Phase II into the following three sub-phases:

- (a) ***Phase II(a) for completion by 31 July 2004 (the original completion date).*** This comprised the provision of essential features and core functions of the CCBS;
- (b) ***Phase II(b) for completion by 20 December 2004.*** This mainly included the provision of less essential functions, some automation related functions and system-access services through the Internet; and
- (c) ***Phase II(c) for completion by 31 March 2005.*** This mainly included the provision of minor work.

The completion dates of the three sub-phases were later extended (see Table 1 in para. 2.11).

2.6 The WSD noted that the proposed splitting of the Contract would:

- (a) minimise implementation risk and ensure overall system quality;
- (b) ensure that internal operation systems were in place before introducing new services for public use through the Internet; and
- (c) allow more time for staff to get familiar with the functions of the CCBS.

In November 2003, the PSC noted the Contractor's proposals for splitting Phase II. In February 2004, the PSC discussed the scope of the sub-phases and the revised payment schedule. In May 2004, the Contractor requested extending the completion date of Phase II(a) to 30 September 2004. In July 2004, with the PSC's support, the GLD approved the extension.

2.7 In December 2003, Phase I of the CCBS was completed according to the scheduled time in the Contract. In September 2004, the Contractor further sought the WSD's support and the GLD's approval for extending Phase II(a) completion date from 30 September 2004 to 13 November 2004. In October 2004, the GLD approved the extension.

2.8 At a PSC meeting held on 28 December 2004, the Contractor sought the WSD's further support (before seeking the GLD's approval) for:

- (a) extending the completion date of Phase II(a) (from 13 November 2004 to 28 December 2004);
- (b) splitting Phase II(b) into Phase II(b1) and Phase II(b2). The completion dates of Phases II(b1) and II(b2) would be extended (to 31 March 2005 and 30 June 2005 respectively); and
- (c) extending the completion date of Phase II(c) (to 19 December 2005).

At the meeting, the PSC supported the extensions.

Further contract extensions between January 2005 and July 2007

2.9 **Phase II(a) was completed on 28 December 2004. It was rolled out at the end of 2004 for commissioning in January 2005.** Between January 2005 and July 2007, the Contractor proposed, the WSD supported and the GLD approved the following further contract splitting and extensions:

- (a) extending the completion dates of Phase II(b1) and Phase II(b2) to 26 April 2005 and 12 August 2005 respectively; and
- (b) splitting Phase II(c) into Phase II(c), Phase II(d) and Phase II(e), with completion dates extended to 9 January 2006, 19 May 2006 and 30 June 2006 respectively.

2.10 The WSD noted the following reasons for the contract extensions:

- (a) there was increased complexity in customisation work;
- (b) additional time was required for user acceptance tests;

- (c) urgent support and enhancement were required for work completed under Phase II(a), including streamlining of certain operational activities; and
- (d) more interfaces with external systems were required.

2.11 In July 2007, the GLD approved the extension of the project completion date to 30 June 2006. In the event, no liquidated damages were imposed on the Contractor. Table 1 shows the scheduled and actual completion dates of the CCBS.

Table 1
Scheduled and actual completion dates

Original phase	Description of work	Original scheduled completion date	Revised phase/ sub-phase	Actual completion date
I	Electronic Document Management System	1 December 2003	I	1 December 2003
II	Provision of business functions	31 July 2004 (Note)	II(a)	28 December 2004
			II(b1)	26 April 2005
			II(b2)	12 August 2005
			II(c)	9 January 2006
			II(d)	19 May 2006
			II(e)	30 June 2006
III	Data warehouse and mining	30 September 2004	III	25 February 2005

Source: WSD records

Note: Approvals were given for extending the original scheduled completion date of Phase II to various completion dates after splitting Phase II into six sub-phases (see paras. 2.5 to 2.9).

Guidelines on computer contract extensions

2.12 In February 2007, the Financial Services and the Treasury Bureau (FSTB) issued a memorandum to remind Controlling Officers of the need to regularly review the management of computer contracts under their purview and take necessary actions to prevent contract claims. The FSTB said that:

- (a) there were recent cases where user departments had risked potential claims from contractors regarding the payment arrangement for maintenance charges in relation to contracts for developing and implementing computer systems. Such cases had significant resource implications and might result in prolonged litigation. The situations could have been avoided if appropriate actions had been taken at the early stage of contract management. Necessary preventive steps could also be taken at the system planning and implementation stage;
- (b) the implementation schedule of a computer system might be revised with the mutual consent of the user department and the contractor due to operational requirements and, as a result, the computer system had to be delivered by phases. As the change had not been covered in the original contract, this resulted in subsequent disputes over whether maintenance charges should be paid upon the expiry of the warranty period of individual phases or upon the expiry of the warranty period of the whole system;
- (c) regarding changes to the implementation schedule and payment of one-off and recurrent maintenance charges, some departments had obtained endorsement from the relevant PSC but such endorsement could not be taken as approval. Proceeding with the changes by the user department without obtaining prior approval and formal agreement on the change of contract terms and values had given rise to subsequent disputes on whether additional maintenance charges should be paid and how the amount was to be determined which would lead to potential claims;
- (d) **for computer projects under planning, departments should ensure that the implementation plan was realistic taking into account the complexity of the project.** If an existing system which was critical in providing services to the public was to be replaced, it was necessary to ensure that the implementation plan of the new system provided adequate time for system changeover. The proposed terms and conditions of the tender documents, including the payment arrangement of maintenance charges, should align with the specific operational requirements on system implementation;

- (e) **necessary measures should be in place to ensure that the contractor would complete all the phases of the project on time.** To allow for some flexibility in handling project changes, the user department might wish to incorporate clauses on change management at the time of tender invitation. However, despite the change management clauses, prior approval should still be sought from the relevant authorities for any proposed contract variations;

- (f) **if there were changes in the implementation approach or schedule, and/or different payment arrangements which might require variations to the contract terms and conditions, departments should ensure that prior approval was sought from relevant authorities.** The user department and the contractor should have mutual consensus through the relevant PSC on the proposed variations; and

- (g) as the change to contract implementation plan might involve legal implications such as the waiver of the Government's right to claim liquidated damages for the project delay, the user department should seek legal advice as appropriate on the changes to contract terms and conditions prior to reaching a consensus with the contractor to help avoid potential disputes and claims. **Departments or the contractors should under no circumstances proceed with the changes before approval was obtained from the relevant authorities for the proposed variations.**

Audit observations and recommendations

Need to allow sufficient time for work completion before tendering

2.13 Phase II(a) of the CCBS was rolled out in December 2004 for commissioning in January 2005, five months after the original scheduled date of commissioning. The whole project was completed in June 2006 (see Table 1 in para. 2.11), 21 months after the original scheduled completion date. This was due to the complex work involved, and the need to carry out more customisation work and additional user acceptance tests. As the CCBS was developed based on an overseas software package, substantial modifications were required.

2.14 In January 2008, the WSD informed Audit that:

- (a) the time for completion stated in the tender was the WSD's best estimate at the time of preparing the tender; and

- (b) the progress had been closely monitored through Project Progress Review Meetings and Reports, and PSC Highlight Reports.

2.15 **Audit considers that, in administering a similar computer contract in future, the WSD should allow sufficient time for completing the work, taking into account system complexity and modifications required. The WSD should also closely monitor the implementation process with a view to completing the project on time (see para. 2.12(a), (b), (d) and (e)).**

Need to obtain prior approval for contract variations

2.16 Under the Contract and the Stores and Procurement Regulations, all contract variations should be approved by the GLD or the FSTB (Note 7). Between April 2004 and June 2006, the WSD/Contractor submitted 94 Change Requests costing \$8.54 million to the GLD for approval. Audit examination of the 94 Change Requests revealed that:

- (a) 52 requests (55%) involving variation work were submitted to the GLD for approval after the work had passed the user acceptance tests or the related systems had been put into use; and
- (b) 11 requests (12%) were endorsed by the PSC in September 2004 but they were only submitted to the GLD for approval in April 2005 (i.e. seven months later).

2.17 In March 2007, as required under the Stores and Procurement Regulations, the FSTB was requested to give approval for contract variations (involving 72 Change Requests) because the accumulated value of variations would exceed \$10 million. In April 2007, the FSTB, upon giving its approval, said that the submission of the contract variations for its approval after the implementation of the variations was far from satisfactory. **Audit considers that, in administering a computer contract in future, the WSD should take measures to ensure that approval from relevant authority has been obtained in accordance with the Stores and Procurement Regulations before carrying out variation work (see para. 2.12(f) and (g)).**

Note 7: *Under the Stores and Procurement Regulations, if the accumulated value of the variations of a GLD contract exceeds \$10 million, all further variations should be approved by the Permanent Secretary for Financial Services and the Treasury (Treasury).*

Audit recommendations

2.18 **Audit has recommended that, in administering a computer contract in future, the Director of Water Supplies should:**

- (a) **allow sufficient time in the contract for completing the work, taking into account system complexity and modifications required (see para. 2.15);**
- (b) **closely monitor work progress, with a view to completing the contract on time (see para. 2.15); and**
- (c) **obtain approval from the relevant authority in accordance with the Stores and Procurement Regulations before carrying out variation work (see para. 2.17).**

Response from the Administration

2.19 The **Director of Water Supplies** agrees with the audit recommendations in paragraph 2.18. He has said that:

- (a) for similar cases in future, the WSD will fully investigate the complexity of the system with a view to establishing a reasonable/realistic implementation programme. Furthermore, additional efforts will be made to monitor work progress to avoid delay;
- (b) in respect of paragraph 2.18(c), when Phase II(a) was commissioned in early 2005, there was an increase in backlog cases. To avoid a serious deterioration in customer service, there was an immediate need to work with the Contractor to proceed with the Change Requests while proceeding in parallel with the preparation work to seek the GLD's approval. After handling the urgent situation, the WSD complied strictly with the requirement of seeking approval before carrying out variation work; and
- (c) the WSD has reminded its staff that the requirements stated in the FSTB's memorandum issued in February 2007 should be complied with to ensure that the problems encountered in implementing the CCBS will not recur in future.

PART 3: SUPPLEMENTAL MAINTENANCE FEES

3.1 This PART examines the WSD's administration of supplemental maintenance fees paid to the Contractor.

Contract provisions on maintenance services

3.2 The CCBS was originally scheduled for completion on 30 September 2004 (see Table 1 in para. 2.11). According to the Contract:

- (a) the Contractor should provide maintenance of hardware and software, and support services for a period of nine years, upon the completion of the one-year warranty period from the date of the WSD's acceptance of the CCBS; and
- (b) from the installation date of hardware/software, the Government should be entitled to use the system and/or the sub-systems at **no cost** to the Government, and the Contractor should provide free of charge maintenance services for the system and/or the sub-systems until the system was accepted and the warranty period had expired.

Requests for supplemental maintenance fees

3.3 Between November 2003 and January 2006, the Contractor sought the WSD's support (for the GLD's approval) for extending the completion dates of Phases II and III, and for splitting Phase II into six sub-phases (see Table 1 in para. 2.11). The WSD supported the Contractor's proposals. Between July 2004 and July 2007, the GLD approved several changes to the implementation plan. As a result, the revised warranty period would end on 29 June 2007 (instead of the original date of 29 September 2005), 12 months after the WSD's acceptance of the CCBS on 30 June 2006.

3.4 During the project implementation, the Contractor sought supplemental maintenance fees for maintaining the sub-systems (after the one-year warranty period counting from the actual completion date of each sub-system) up to the expiry of the revised warranty period (see Table 2).

Table 2
Periods claimed for supplemental maintenance fees

Phase/ sub-phase	Actual completion date	Period with free maintenance services	Period claimed for supplemental maintenance fees (Note 1)
I	1.12.2003	1.12.2003 — 29.9.2005 (Note 2)	30.9.2005 — 29.6.2007
II(a)	28.12.2004	28.12.2004 — 27.12.2005	28.12.2005 — 29.6.2007
II(b1)	26.4.2005	26.4.2005 — 25.4.2006	26.4.2006 — 29.6.2007
II(b2)	12.8.2005	12.8.2005 — 11.8.2006	12.8.2006 — 29.6.2007
II(c)	9.1.2006	9.1.2006 — 8.1.2007	9.1.2007 — 29.6.2007
II(d)	19.5.2006	19.5.2006 — 18.5.2007	19.5.2007 — 29.6.2007
II(e)	30.6.2006	30.6.2006 — 29.6.2007	Nil
III	25.2.2005	14.3.2005 — 13.3.2006 (Note 3)	14.3.2006 — 29.6.2007

Source: WSD records

Note 1: The completion date of the whole system was revised to 30 June 2006. Therefore, the revised warranty period for the whole system would end on 29 June 2007.

Note 2: According to the Contract, the Contractor should provide free maintenance services up to the expiry date of the original warranty period on 29 September 2005.

Note 3: Phase III was completed on 25 February 2005 with some minor outstanding work. The outstanding work was completed on 14 March 2005. The one-year free maintenance services for Phase III therefore commenced on 14 March 2005.

PSC's support for supplemental maintenance fees

3.5 In February 2004, the PSC supported in principle the Contractor's proposed phased approach and supplemental maintenance contract to cover the maintenance services provided after the one-year warranty period of each sub-phase (see Table 2 in para. 3.4). Between February and December 2004, the PSC discussed the issue and directed the WSD operational staff to follow up the details. The following statements were extracted from the minutes of the PSC meetings:

- (a) on 27 February 2004, "PSC confirmed the principle of the proposed approach of revising the payment schedule and maintenance contract";
- (b) on 21 September 2004, "the supplementary maintenance contract was also approved"; and
- (c) on 28 December 2004, "the revised payment schedule and supplementary maintenance contract were also confirmed".

The Contractor was in attendance at the three PSC meetings and the relevant parts of the minutes of meetings (including the statements in sub-paras. (a) to (c) above) were subsequently provided to the Contractor. In September 2005, upon receipt of the Contractor's request for the supplemental maintenance fees, the WSD asked the Contractor to seek the GLD's approval.

GLD's views on supplemental maintenance fees

3.6 In October 2005, the GLD was informed for the **first** time of the Contractor's intention to claim the supplemental maintenance fees. In January 2006, the GLD informed the Contractor that:

- (a) the Government had no obligation to pay the supplemental maintenance fees claimed as the system was still under implementation at that time; and
- (b) according to the Contract, the Contractor should provide free maintenance services for the system and/or the sub-systems before the expiry of the warranty period of the whole system.

3.7 In March 2006, in response to the GLD's enquiry, the WSD said that the PSC's support for the Contractor's requests for the supplemental maintenance fees was based on the following reasons:

- (a) the phased approach to project implementation had been adopted; and
- (b) it was a business norm to pay maintenance fees for sub-systems after the expiry of their warranty periods.

3.8 In April 2006, the GLD sought advice from the Department of Justice. In June 2006, the GLD informed the Contractor that the supplemental maintenance fees would not be approved. The GLD said that:

- (a) according to the Contract, the GLD was the Authorised Contractual Authority and any correspondence on contractual matters should continue to be addressed to the Director of Government Logistics for agreement/approval;
- (b) in each of the contract variation requests submitted to the GLD for revision of the implementation plan and the payment schedule, it was said that there would be no change in the contract amount. There was no mention of supplemental maintenance fees in these requests; and
- (c) the GLD's approvals given regarding the Contractor's variation requests were based on the Contractor's confirmation that there would be no change in the contract amount.

Settlement of dispute

3.9 In July 2006, the Contractor (through a legal representative) informed the WSD that he disagreed with the GLD's decision. Thereafter, the WSD, the GLD and the FSTB exchanged views on the issue.

3.10 In September 2006, the WSD sought the FSTB's approval for negotiating with the Contractor over his claim. In the same month, the FSTB gave the approval and informed the WSD that:

- (a) given that the supplemental maintenance services had been provided for nearly two years, the FSTB was presented with a fait accompli; and
- (b) the case was far from satisfactory.

The FSTB reminded the WSD that it should seek **prior** approval from the relevant authority for any variations to existing contracts.

3.11 In February 2007, after negotiations, the GLD (as the Authorised Contractual Authority) signed a Supplemental Agreement (in respect of the supplemental maintenance services and fees) with the Contractor. In the same month, the WSD (as the main user of the CCBS) signed a Settlement Agreement with the Contractor relating to his claim. Subsequently, the Government paid a sum of money to the Contractor to settle his claim.

Audit observations and recommendations

Need to promptly inform the GLD of proposed supplemental maintenance contract

3.12 When the Contract was awarded in February 2003, the GLD advised the Contractor in a letter (which was copied to the WSD) that the GLD was the Authorised Contractual Authority and any correspondence on contractual matters should be addressed to the GLD for agreement and/or approval. The GLD approved changes to the implementation plan based on the understanding that there would be no change in the contract sum (see para. 3.8(c)). In February 2004, the PSC supported the need for a supplemental maintenance contract. In October 2005, the GLD was informed for the first time of the Contractor's intention to claim supplemental maintenance fees (see para. 3.6). **Audit considers that, as the GLD was the Authorised Contractual Authority, the WSD should have informed the GLD of the proposed supplemental maintenance contract as soon as possible after the PSC had given its support (see para. 3.5).**

Room for improvement in administering contract variations

3.13 The Contractor sought supplemental maintenance fees for maintaining the sub-systems (see Table 2 in para. 3.4). In February 2004, the PSC supported the need for a supplemental maintenance contract (see para. 3.5).

3.14 It was stated in the PSC minutes of meetings between February and December 2004 that "PSC confirmed maintenance contract", "the supplementary maintenance contract was also approved", and "supplementary maintenance contract confirmed" (see para. 3.5). **Audit considers that, in a similar situation in future, the WSD should avoid using the wording of "confirmed" or "approved" to prevent misunderstanding before the GLD has given approval for a supplemental maintenance contract.**

3.15 In September 2006, the FSTB said that, given that the supplemental maintenance services had been provided for nearly two years, the FSTB was presented with a fait accompli. The FSTB also said that the WSD should seek **prior** approval from the relevant authority for any contract variations (see para. 3.10). **Audit considers that the WSD should make improvement in this area by implementing the audit recommendation in paragraph 2.18(c).**

Need to consider introducing disclosure clauses in settlement agreements

3.16 Audit noted that there was no provision in the Settlement Agreement signed in February 2007 to allow the Government to disclose to the Public Accounts Committee of LegCo information concerning the settlement. **Audit considers that, to enhance public accountability, the FSTB should advise departments to consider including a disclosure clause in settlement agreements in respect of procurement contracts.**

Audit recommendations

3.17 **Audit has recommended that, in administering a computer contract in future, the Director of Water Supplies should:**

- (a) **promptly inform the Authorised Contractual Authority of possible contract variations involving additional fees (see para. 3.12);**
- (b) **inform the Authorised Contractual Authority of the financial implications when seeking its advice/approval for contract variations (see para. 3.12); and**
- (c) **avoid using wording which may cause misunderstanding of acceptance of contract variations before the Authorised Contractual Authority has given approval (see para. 3.14).**

3.18 **Audit has recommended that, with a view to enhancing public accountability, the Secretary for Financial Services and the Treasury should advise government departments to consider making provisions in settlement agreements for procurement contracts to allow the Government to disclose confidential information, under certain circumstances, to the Public Accounts Committee of LegCo concerning matters relating to the settlement agreements (see para. 3.16).**

Response from the Administration

3.19 The **Director of Water Supplies** agrees with the audit recommendations in paragraph 3.17. He has said that:

- (a) the WSD has reminded its staff that the requirements stated in the FSTB's memorandum issued in February 2007 should be complied with to ensure that the problems encountered in implementing the CCBS will not recur in future. In particular, regarding a contractor's proposal for contract extensions, the implications of the maintenance cost would be closely examined to avoid disputes, and prior approval from the Authorised Contractual Authority would be sought in good time; and
- (b) both the GLD and the WSD had informed the Contractor that all contractual matters should be addressed to the GLD. The PSC supported the supplemental maintenance contract in principle. The choice of wording in the minutes of PSC meetings was unfortunate and not precise enough to avoid misinterpretation.

3.20 The **Secretary for Financial Services and the Treasury** agrees with the audit recommendation in paragraph 3.18.

PART 4: CONTRACT RETENTION MONEY

4.1 This PART examines the WSD's administration of retention money under the Contract.

Payment terms

4.2 In May 2002, the WSD invited tenders for the Contract for supplying hardware and software, and providing implementation services and training for the CCBS. The tender closed in July 2002 and the WSD received 11 tenders. After evaluation, the WSD recommended acceptance of the Contractor's tender. In February 2003, upon the recommendation of the Central Tender Board (Note 8), the GLD awarded the Contract to the Contractor in the sum of \$183.5 million, comprising the prices of four services (see Table 3).

Table 3

Composition of contract sum

Description	Amount (\$ million)
(a) Supply of hardware	34.7
(b) Supply of software	57.5
(c) Implementation services	87.2
(d) Training	4.1
	<hr/>
Total	183.5
	<hr/> <hr/>

Source: WSD records

Note 8: *The Central Tender Board, chaired by the Permanent Secretary for Financial Services and the Treasury (Treasury), considers and decides on the acceptance of tenders for goods and general services exceeding \$10 million.*

- 4.3 The Contract included the following payment terms:
- (a) **General Conditions of Contract (GCC).** Clause 24.1 of the GCC stipulated that 15% of the contract sum should be kept as retention money by the Government; and
 - (b) **Contract Schedules.** A payment schedule in Schedule 19 of the Contract Schedules specified that payments for 95% of the price of implementation services (see item (c) in Table 3) should be made upon completion of the post implementation review, and the remaining 5% should be payable at the end of the warranty period (see Table 4).

Table 4

Payment schedule for implementation services costing \$87.2 million

Stage	Payment (Percentage of price)
Stage 1: Acceptance of system analysis and design documents	10%
Stage 2: Acceptance of Phase I work	5%
Stage 3: Acceptance of Phase II work	40%
Stage 4: After issue of acceptance certificate	25%
Stage 5: Completion of post implementation review	15%
Stage 6: End of warranty period	5%
Total	100%

Source: WSD records

Action to recover retention money

4.4 From January 2004 to December 2005, the WSD made 16 payments totalling \$169.1 million to the Contractor. In February 2006, the WSD discovered that:

- (a) it had made the payments without withholding any retention money as stipulated in the GCC; and
- (b) the outstanding contract sum was less than the required amount of retention money.

In April 2006, the WSD informed the GLD of the issue, providing it with a schedule showing the retention money which could have been withheld from the 16 payments based on the 15% retention rate.

4.5 In April 2006, the WSD asked the Contractor to refund \$25.4 million (\$169.1 million × 15%) of retention money. After negotiation, in March 2007, the Contractor provided the GLD with a performance bond (Note 9) of \$28.3 million (Note 10), covering the amount required in lieu of refunding the retention money. In August 2007, the performance bond was discharged upon satisfactory completion of the work.

Audit observations and recommendations

Need to withhold retention money according to GCC

4.6 Clause 24.1 of the GCC stipulated that 15% of the contract sum should be kept as retention money by the Government (see para. 4.3(a)). However, the WSD made 16 payments to the Contractor totalling \$169.1 million without withholding any retention money. The WSD only detected this omission in February 2006, 25 months after the first payment was made in January 2004. In March 2007, the Contractor provided the GLD with a performance bond in lieu of refunding the retention money.

4.7 In November 2007, the WSD informed Audit that there might have been some confusion over the terms “retention money” in the GCC and “end of warranty payment” in the payment schedule (see Table 4 in para. 4.3), and the two terms might have been treated

Note 9: *The performance bond was a guarantee from a bank that it would take up the liability for the Government’s loss up to the value of the bond in the event of default by the Contractor.*

Note 10: *The sum also covered the retention money required for some additional work.*

to have “the same meaning”. **Audit considers that, in administering computer contracts in future, the WSD should be more vigilant over contract terms so that such confusion will not arise.**

Need to specify the time of withholding retention money

4.8 The GCC and the payment schedule did not explicitly state the time of withholding retention money. According to the Stores and Procurement Regulations, to protect government interest, departments may include in the payment schedule of a contract the Government’s right in withholding retention money. Audit notes that, in government civil engineering works contracts, the GCC explicitly stipulate that, at the end of each month, the Government shall pay to a contractor a certified sum after adjusting for retention money according to the percentage specified in the contract until the sum retained reaches the retention limit. **Audit considers that the WSD should clearly specify the time of withholding retention money in computer contracts in future.**

Need for system control over contract payments

4.9 By February 2006, the WSD had made 16 contract payments without discovering the need to withhold retention money. **Audit considers that, in administering contract payments in future, the WSD should set up a control system so as to prevent similar omissions.**

Audit recommendations

4.10 **Audit has recommended that, in administering a computer contract in future, the Director of Water Supplies should:**

- (a) **take measures to ensure that retention money is withheld from contract payments according to the GCC (see para. 4.7);**
- (b) **specify the time of withholding retention money in the contract (see para. 4.8); and**
- (c) **set up a control system over contract payments (see para. 4.9).**

Response from the Administration

4.11 The **Director of Water Supplies** agrees with the audit recommendations in paragraph 4.10. He has said that the WSD has implemented additional measures, including independent audit checking on withholding retention money, to tighten the controls over contract payments.

PART 5: SYSTEM COMMISSIONING

5.1 This PART examines the WSD's administration of the commissioning of the CCBS.

Date of system commissioning

5.2 According to the Contract, the CCBS was scheduled for commissioning in July 2004 (see para. 1.8). Subsequent to the granting of extensions of time, the WSD rolled out Phase II(a) of the CCBS at the end of 2004. In January 2005, the CCBS was commissioned.

Data conversion

5.3 Customers' account data, including names, service addresses (locations of water supply) and mailing addresses maintained in the WIS had to be converted into a new format and migrated to the CCBS. As stated in the WSD Feasibility Study Report of April 2000:

- (a) data to be used by the CCBS should be as accurate as possible;
- (b) address records were so important that it would be beneficial to assign a special team to carry out the data conversion; and
- (c) to ensure data accuracy, the WSD should take all possible steps to check the existing data, and should correct any inaccuracies before formal data conversion.

Risk management on data conversion

5.4 In May 2003, the Contractor provided the WSD with a project initiation document. In the risk management plan of the document, data conversion was identified as one of the risk factors (Note 11). The data stored in the WIS had to be converted into a new format acceptable to the CCBS. To address this risk, the WSD was advised that:

Note 11: *The other risk factors included user acceptance (see para. 5.9) and organisation restructuring.*

-
- (a) data conversion planning process should commence as early as possible;
 - (b) sample data should be collected and trial run of data conversion should be conducted as soon as practicable; and
 - (c) an overall system coordinator should be appointed to ensure that data stored in the existing systems could be provided for migration to the new system on a timely basis.

Adopting Hongkong Post addresses

5.5 For sorting mails electronically according to the areas served by individual postmen, the Hongkong Post (HKP) maintains a database of postal addresses (hereinafter referred to as HKP addresses) in English and Chinese. In 2002, the WSD decided to adopt the HKP addresses to replace the WIS customer service addresses and mailing addresses. The HKP addresses, after matching with the WIS ones and conversion into the CCBS format, would be migrated to the CCBS. The WSD considered that:

- (a) the HKP addresses were well structured (Note 12), facilitating data search in the CCBS; and
- (b) the HKP Chinese addresses would facilitate the issue of water bills using Chinese addresses.

5.6 In November 2003, the WSD decided to make the following arrangements for migrating addresses from the WIS to the CCBS:

- (a) the Contractor would develop a computer program to match the WIS English addresses with the HKP ones;
- (b) if the WIS English address of a customer matched with the HKP one, both the English and Chinese addresses would be adapted from the HKP database to the CCBS after conversion into the CCBS format (Note 13); and

Note 12: *In the HKP database, the floor numbers, building names, street names and districts of addresses were stored in assigned fields, facilitating data search.*

Note 13: *The address data fields in the CCBS were different from those in the HKP database.*

- (c) **for WIS English addresses which could not match with those in the HKP database, the WIS English addresses would still be migrated to the CCBS after conversion into the CCBS format.**

Manual conversion of address format

5.7 In May 2004, after a trial run of the address matching, the WSD found that 810,000 WIS addresses could not match with those in the HKP database. Nevertheless, in September 2004, the WSD decided to migrate the 810,000 unmatched addresses from the WIS to the CCBS. **During the address migration (between late December 2004 and January 2005), the 810,000 unmatched addresses were migrated to the CCBS in the WIS format.**

5.8 In October 2004, during user acceptance tests and practice sessions, the WSD staff expressed concern over the existence of addresses in both the WIS and the CCBS formats in the system. This caused problems in address searching and affected customer services (such as taking up of consumership and answering enquiries). In December 2004, the WSD instructed the Contractor to develop a search engine to facilitate the searching of addresses in two formats. This was done at an additional cost of about \$300,000 (funded under the project vote). In the same month, the PSC approved the hiring of 24 temporary clerical assistants to manually convert the 810,000 unmatched addresses into the CCBS format. The manual conversion commenced in June 2005 and was completed in December 2005 at a cost of \$1.2 million (funded under the project vote).

User acceptance

Risk management on user acceptance

5.9 According to the risk management plan, user acceptance was one of the risk factors (see para. 5.4). User acceptance of changes required good communication and understanding between the management and the end-users.

Familiarisation arrangements

5.10 From January to November 2004, the WSD made the following preparatory arrangements to familiarise its operational staff with the new system operation before the commissioning of the CCBS:

-
- (a) **Process forum meetings.** In January 2004, process forum meetings were conducted to enable WSD staff to exchange views and to understand the interaction among the processes in the new system;
 - (b) **Training sessions.** Between late June and November 2004, the Contractor provided training sessions for WSD operational staff. Around 1,200 WSD staff attended the training sessions. For various reasons (such as unavailability of WSD staff and training materials), the training programmes were revised several times;
 - (c) **Practice environment.** From September to November 2004, the WSD provided a practice environment for the CCBS users to carry out trial operations (using test data);
 - (d) **Walkthrough programmes.** Between October and November 2004, the CCBS process teams made use of walkthrough programmes to brief the WSD staff; and
 - (e) **Rehearsals.** In November 2004, the WSD organised two pre-commissioning rehearsals and 785 operational staff participated.

Rehearsal assessment survey

5.11 In November 2004, a consultant appointed by the Contractor conducted a survey to solicit the 785 participants' views on the rehearsals. The respondents were asked to give a score (from the lowest of 1 to the highest of 5) to each of the five questions and to give their comments. The survey findings are shown in Table 5.

Table 5

Results of survey on rehearsals

Question	Description	Score (Note)	Percentage of respondents	Survey results
1	Overall organisation of the rehearsals	1 and 2	45%	45% of the respondents indicated that their overall impression of the rehearsals fell short of expectations.
		3	41%	
		4 and 5	14%	
		Total	100%	
2	Usefulness of the rehearsals to staff	1 and 2	36%	Despite disappointing overall results and comments on the planning and execution of the rehearsals, 64% of the respondents considered that the rehearsals were useful.
		3	37%	
		4 and 5	27%	
		Total	100%	
3	System performance meeting staff expectations	1 and 2	51%	51% of the respondents found that user-friendliness and performance of the system were not quite up to their expectations.
		3	38%	
		4 and 5	11%	
		Total	100%	
4	Level of comfort in using the system	1 and 2	53%	53% of the respondents expressed concern over their ability to operate the new system. Many respondents commented that practice and training were insufficient.
		3	37%	
		4 and 5	10%	
		Total	100%	
5	Helpfulness of the system to duties	1 and 2	44%	44% of the respondents were skeptical about the extent to which the new system would be able to help them in their daily work/duties and to improve performance.
		3	42%	
		4 and 5	14%	
		Total	100%	

Source: WSD records

Note: In the survey, respondents were asked to give a score of 1 to 5 to each question, where 5 was for full satisfaction and 1 for the least satisfaction.

5.12 The respondents also expressed concern over the following areas:

- (a) practice and training were inadequate. In particular, training was not tailor-made to meet the needs of different users;
- (b) clear and step-by-step procedure guidelines were not available; and
- (c) the roles and responsibilities of different teams, sections and branches were not clearly defined.

In December 2004, the WSD conducted another rehearsal and issued a procedure handbook to the staff. The WSD also extended the practice environment to January 2005. To reinforce staff confidence in using the new system, the WSD carried out a full operation test before system commissioning.

Problems after system commissioning

5.13 Phase II(a) of the CCBS was rolled out at the end of 2004 and commenced operation on 22 January 2005. Between late January and early February 2005, the WSD sent water bills to about 420,000 customers. Of these, the WSD sent about 300,000 water bills using the Chinese addresses adapted from the HKP database. For the remaining 120,000 customers, the water bills were sent using the English addresses. Thereafter, the WSD found that about 6,000 water bills had used incorrect Chinese addresses (due to the difference in floor numbers between Chinese addresses and English addresses). In response to Audit enquiry, the WSD informed Audit that:

- (a) the 6,000 incorrect Chinese addresses were due to the adding of one floor to the English addresses of some buildings;
- (b) the HKP had asked its postmen to deliver the water bills to the correct addresses despite the fact that wrong Chinese addresses had been used; and
- (c) about 200 water bills with Chinese addresses had been sent to wrong addresses.

5.14 On 8 February 2005, the WSD suspended issuing water bills using Chinese addresses. Instead, the WSD reverted to the previous practice of issuing water bills using English addresses.

Increase in backlog cases

5.15 In March 2005, subsequent to the commissioning of the CCBS, there were about 16,000 backlog cases (Note 14 — e.g. cases involving applications for new accounts). To clear the backlog, the WSD employed temporary staff for six months (at a cost of \$1.2 million), and the WSD Customer Services Division staff worked overtime for six months (at a cost of \$6.2 million).

5.16 In January 2008, the WSD informed Audit of the following reasons for the building up of backlog cases during early system commissioning:

- (a) the WSD ceased system operation during the system changeover period;
- (b) the CCBS had more complicated on-line processes than the WIS. The operational staff needed time to learn during the initial implementation; and
- (c) the CCBS was implemented by existing staff. They had to conduct testing of the new system, and attend training, practice and briefing sessions before system commissioning.

Increase in customer complaints and enquiries

5.17 Upon the commissioning of the CCBS in January 2005, the WSD enclosed a leaflet in its billing informing customers of the changes to the water-bill format and the customer account number (from 14 digits to 11 digits). In early 2005, the number of daily telephone enquiries and complaints increased significantly. Many enquiries were related to the changes to the water-bill format and the customer account numbers. Telephone enquiries to the Drainage Services Department about the new bills, which covered the sewage charge and the trade effluent surcharge, also increased significantly. From March to May 2005, the WSD publicised the changes on some local newspapers, and through radio and television channels.

Note 14: *These referred to cases where the processing time exceeded the WSD performance targets.*

Audit observations and recommendations

Need to fully convert customer addresses before system commissioning

5.18 In November 2003, the WSD decided that the WIS customer addresses, that did not match with the HKP ones, would be migrated to the CCBS after conversion into the CCBS format. However, in the event, 810,000 unmatched customer addresses were migrated to the CCBS in the WIS format. Such addresses in WIS format caused operational problems until December 2005 when the manual conversion was completed (see para. 5.8). In December 2004, the WSD developed a search engine at an additional cost of about \$300,000 to facilitate address searching. The WSD hired temporary staff at an additional cost of \$1.2 million to manually convert the unmatched addresses into the CCBS format after the system commissioning.

5.19 In January 2008, the WSD informed Audit that:

- (a) full address matching was found not technically feasible after the May 2004 trial run (see para. 5.7);
- (b) the WSD was aware that there would be two address formats in the CCBS. It was impossible to convert all the address data in one exercise and subsequent follow-up action was required;
- (c) during the initial system implementation, operational staff took time to learn to operate the new system. The searching approach in the CCBS was different from that in the WIS; and
- (d) the searching problem had been substantially resolved by developing an address search engine.

5.20 **In implementing computer projects in future, Audit considers that data should be fully converted into a format acceptable to a new system before system commissioning to avoid operational problems.**

Need to take early action to resolve problems

5.21 In May 2004, after the trial run of the address matching, the WSD found that 810,000 WIS service addresses could not match with the HKP ones (see para. 5.7). In late December 2004, the PSC approved the hiring of temporary staff to carry out the address conversion manually. However, the conversion work only commenced six months later in June 2005. The work was completed in December 2005, nearly one year after the system commissioning in January 2005. In January 2008, the WSD informed Audit that:

- (a) the WSD needed time to hire the temporary staff, acquire computer workstations for them, and instruct the Contractor to develop programs for amending and uploading the related addresses; and
- (b) the unmatched addresses would not have implications for billing.

Audit considers that, for system implementation in future, the WSD should take early action to resolve problems encountered, taking into account the lead time required for such action.

Need to enhance user acceptance

5.22 In a survey conducted in November 2004 (see Table 5 in para. 5.11), some WSD staff found that the rehearsals and performance of the new system fell short of their expectation. They commented that practice and training were insufficient, and clear and step-by-step procedure guidelines were not available. **Audit considers that there is scope for improvement in providing training for staff in implementing new systems in future.**

Need to enhance publicity

5.23 The changes to water, sewage charge and trade effluent surcharge bills led to a significant increase in public enquiries after the commissioning of the CCBS (see para. 5.17). This in turn increased the WSD workload. From March to May 2005, the WSD conducted publicity campaigns. **Audit considers that the WSD should enhance publicity efforts for service changes in future.**

Need to ensure accuracy of Chinese addresses

5.24 In early February 2005, after sending 300,000 water bills using the Chinese addresses adapted from the HKP database, the WSD found that 6,000 had used incorrect Chinese addresses.

5.25 In January 2008, the WSD informed Audit that:

- (a) the WSD believed that the HKP addresses were correct and could be used for WSD data conversion;
- (b) the WSD followed up on the address discrepancies (including checking with the HKP and making reference to related information through other organisations' websites);
- (c) the WSD checked visually the address of each water bill during the parallel run of the CCBS. It provided the HKP with samples for clarification after detecting the differences between the Chinese and the English floor numbers of some addresses; and
- (d) the HKP rectified the errors in the Chinese addresses in most cases and the incident caused minimum inconvenience to the public.

5.26 As the WSD used the Chinese addresses for billing, it is important that they should be correct. Although the WSD was aware of the Chinese address problem before using them for billing in January 2005, 6,000 water bills were issued using wrong Chinese addresses. Of the 6,000 bills, about 200 were sent to wrong addresses (see para. 5.13). Subsequently, the WSD had to revert to the previous practice of issuing water bills using English addresses. **Audit considers that the WSD should take effective action (such as asking customers to provide Chinese addresses) to ensure that the Chinese addresses are accurate before using them for billing.**

Need to expedite action for billing with Chinese addresses

5.27 One of the CCBS functions is that it would facilitate billing with Chinese addresses. However, up to January 2008, three years after the commissioning of the CCBS, the WSD had not resumed issuing water bills with Chinese addresses (see para. 5.14). **Audit considers that the WSD should expedite action to provide customers with the option of receiving water bills with Chinese addresses.**

Audit recommendations

- 5.28 **Audit has recommended that the Director of Water Supplies should:**
- (a) **in implementing a new computer project in future, remind WSD staff of the need to:**
 - (i) **convert data into a format acceptable to the new system before system commissioning (see para. 5.20); and**
 - (ii) **take early action to resolve problems encountered, taking into account the lead time required for such action (see para. 5.21);**
 - (b) **before commissioning of a new computer system in future:**
 - (i) **provide effective and sufficient training and guidance to WSD staff (see para. 5.22);**
 - (ii) **conduct publicity campaigns if the changes brought about by the new system will affect the public (see para. 5.23); and**
 - (iii) **take effective action to verify the accuracy of data adopted from another organisation (such as by confirming addresses with customers) before using them (see para. 5.26); and**
 - (c) **expedite action to provide customers with the option of receiving water bills with Chinese addresses (see para. 5.27).**

Response from the Administration

5.29 The **Director of Water Supplies** agrees with the audit recommendations in paragraph 5.28. He has said that, in view of the public demand, the WSD will expedite action to provide customers with the option of receiving water bills with Chinese addresses in 2008, and will take action to ensure that the Chinese addresses are correct before using them.

PART 6: SYSTEM PERFORMANCE

6.1 This PART examines the performance of the CCBS in providing customer services after system commissioning.

Anticipated benefits after system commissioning

6.2 In the paper submitted to the FC of LegCo in February 2001 seeking funding for the CCBS project (see para. 1.5), the Administration said that:

- (a) *Cost savings.* The implementation of the CCBS would lead to an annual saving of \$100 million starting from 2006-07, mainly through the reduction of 261 staff over three years; and
- (b) *Service improvements.* The CCBS would:
 - (i) support interactive customer services through the Internet (or by telephone) for billing, applying for change of mailing addresses and meter tests, enquiring water accounts, and making appointments for services and technical fault complaints; and
 - (ii) substantially reduce the processing time in respect of key customer services, such as replies to applications for water supply to new buildings, refunds of deposits, and taking up and giving up of consumership.

Cost savings

6.3 In March 2007, the Administration informed the LegCo Panel on Planning, Lands and Works that, subsequent to the CCBS implementation, the WSD had achieved cost savings of \$100 million mainly through the reduction of 263 posts without staff redundancy.

Audit observations and recommendations

Need to expedite action on providing customer services through the Internet

6.4 The Administration informed the FC of LegCo that the CCBS would support interactive customer services through the Internet or by telephone (see para. 6.2(b)(i)). Under the Contract, the CCBS would enable the delivery of 24 types of services through the Internet. Audit examination revealed that, up to 31 December 2007:

- (a) of the 15 types of services with a high anticipated frequency of use, 8 types had not been provided through the Internet (see Table 6); and
- (b) the remaining 9 types of services, with a low anticipated frequency of use, had not been provided through the Internet (Note 15).

Note 15: *The 9 types of services were: (i) review of results or status of applications; (ii) connection to websites of other government departments; (iii) selection of languages and display options; (iv) downloading/printing standard forms, pamphlets and fee tables; (v) request for refund of deposit; (vi) enquiry of application details; (vii) request for application reference numbers; (viii) provision of security against unauthorised persons from accessing the CCBS; and (ix) enquiry of water supply pipes and fittings acceptable to the WSD.*

Table 6
Provision of services through the Internet
(31 December 2007)

Customer service	Anticipated frequency of use (Number per day)	Provision of service through the Internet
(1) Request for taking up of consumership	1,000	Yes
(2) Request for giving up of consumership	1,000	Yes
(3) Enquiry of account information	500	No
(4) Request for bill copy	150	No
(5) Appointment for services	100	No (forms available for download)
(6) Appointment for collection of fishing/plumber licence	100	No
(7) Bill payment	100	Yes
(8) Change of personal particulars	100	Yes
(9) Connection to WSD website for other enquiries	100	No
(10) Electronic bill presentation	100	No
(11) Enquiry/Complaint on technical/account matters	100	Yes
(12) Input of self-meter reading	100	No
(13) Application for new water supply	100	No (forms available for download)
(14) Production of trial bill	100	Yes
(15) Request for scenario bill (Note)	100	Yes

Source: WSD records

Note: Upon a customer's request, the CCBS can provide estimates of water and sewage charges on a future billing date based on the meter reading given by the customer and his past water consumption.

6.5 In November 2007 and January 2008, the WSD informed Audit that:

- (a) all the contract requirements regarding electronic services had been implemented;
- (b) for security reasons, full delivery of customer services through the Internet would be commissioned by phases from early 2008, after completing security assessments and satisfactorily implementing the related recommendations;
- (c) the WSD would review the provision of these customer services and retest them to ascertain whether they could meet business needs;
- (d) to meet latest business requirements, the WSD would implement electronic billing after enhancement had been made to the CCBS; and
- (e) most of the customer services were available by telephone or at the WSD Customer Enquiry Centres.

6.6 Audit notes that some utility companies have provided two customer services, namely enquiry of account information and billing, through the Internet. **Audit considers that the WSD should expedite action on providing these two services through the Internet. In line with good practice of some utility companies, the WSD should encourage customers to receive electronic bills instead of paper bills by offering them incentives. This will help reduce paper consumption.**

6.7 **Audit considers that the WSD should also expedite action to provide the following customer services through the Internet:**

- (a) **applications for new water supply;**
- (b) **making appointments for meter tests; and**
- (c) **input of self-meter reading.**

This would help improve service quality and achieve cost savings.

Need to promote use of customer services through the Internet

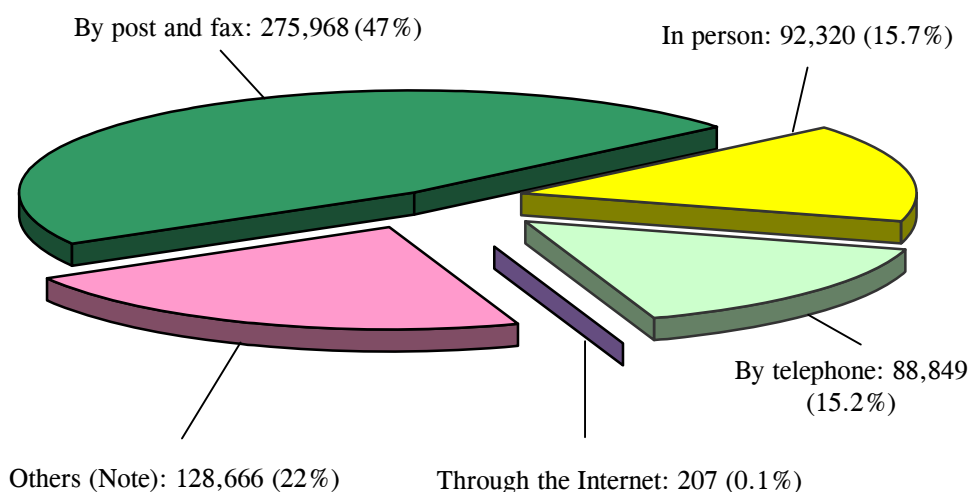
6.8 The WSD has provided the following customer services through the Internet (see Table 6 in para. 6.4):

- (a) change of personal particulars;
- (b) request for taking up of consumership; and
- (c) request for giving up of consumership.

In November 2007, the WSD informed Audit that, for item (a), it did not maintain statistics on the number of customers using the service through the Internet. For items (b) and (c), Audit examination of the use of the two services revealed that less than 1% of the customers used the services through the Internet (see Figures 1 and 2).

Figure 1

**Request for taking up of consumership
(January 2005 to June 2007)**

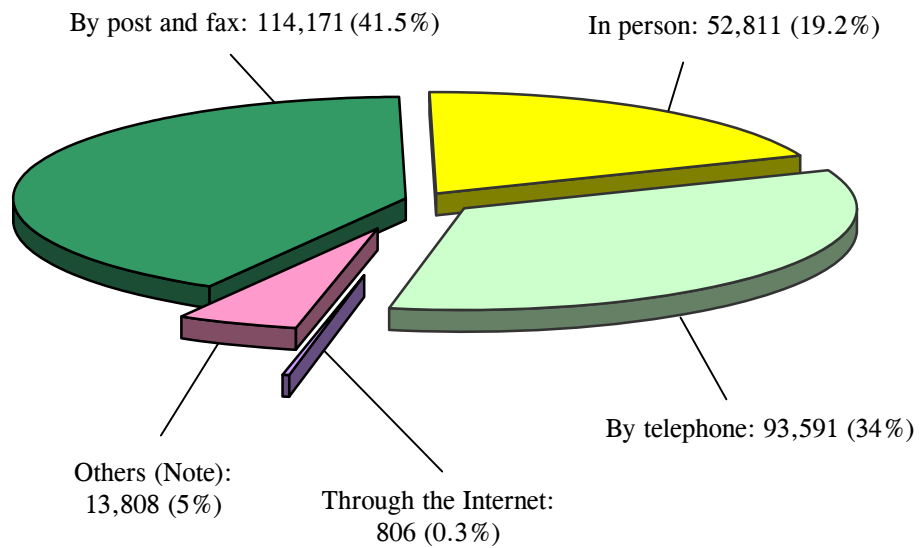


Source: WSD records and Audit's analysis

Note: These mainly included applications made by the Housing Department on a batch basis.

Figure 2

**Request for giving up of consumership
(January 2005 to June 2007)**



Source: WSD records and Audit's analysis

Note: These mainly included applications made by the Housing Department on a batch basis.

6.9 As less than 1% of the WSD customers used the two services through the Internet, there is room for growth. **Audit considers that the WSD should take action to encourage more customers to use the services through the Internet. This will help reduce the workload of the WSD staff handling the requests by post, by telephone or in person. For better monitoring, the WSD should also maintain statistics on the number of customers using the services through the Internet.**

Need to improve processing time for customer services

6.10 According to the paper submitted to the FC of LegCo in February 2001, the processing time for four key customer services would be substantially reduced after the implementation of the CCBS (see para. 6.2(b)(ii)). The WSD had laid down the following performance targets for the four services for the financial years 2003-04 to 2007-08:

- (a) *Replies to applications for water supply to new buildings:* within 20 clear working days;
- (b) *Processing of applications for taking up of consumership by post:* within 7 clear working days;
- (c) *Processing of applications for refund of deposits:* within 9 clear working days;
and
- (d) *Issue of final water bills upon closure of accounts:* within 3 clear working days.

6.11 Table 7 shows the attainment of performance targets for the four services from 2003-04 to 2007-08.

Table 7

**Attainment of performance targets for four customer services
(2003-04 to 2007-08)**

Customer service	Performance target (Note 1)	Attainment of targets					
		Before CCBS commissioning		After CCBS commissioning (Note 2)			
		1.4.2003 to 31.3.2004	1.4.2004 to 31.12.2004	1.1.2005 to 31.3.2005	1.4.2005 to 31.3.2006	1.4.2006 to 31.3.2007	1.4.2007 to 31.12.2007
(a) Replies to applications for water supply to new buildings	Within 20 clear working days	99.7%	97.9%	82.3%	69.9%	80.6%	84.8%
(b) Processing of applications for taking up of consumership by post	Within 7 clear working days	99.7%	99.6%	55.1%	82.0%	98.8%	99.2%
(c) Processing of applications for refund of deposits	Within 9 clear working days	99.7%	99.7%	65.0%	85.0%	98.5%	99.0%
(d) Issue of final water bills upon closure of accounts	Within 3 clear working days	99.6%	99.3%	38.7%	89.4%	99.5%	99.5%

Source: WSD records and Audit's analysis

Note 1: These were WSD performance targets for the years 2003-04 to 2007-08.

Note 2: Phase II(a) of the CCBS was commissioned on 22 January 2005.

6.12 As shown in Table 7, there was a significant deterioration in the attainment of the four WSD performance targets during the first three months of the commissioning of the CCBS. In February 2008, the WSD informed Audit that:

- (a) during the changeover from the WIS to the CCBS, backlog was built up. The WSD made efforts to clear the backlog. During the first few months of the system implementation, the provision of the services was affected by the backlog as reflected in the performance statistics; and
- (b) the deterioration in “Replies to applications for water supply to new buildings” service was due to an increase in the number of water supply applications (from 10,800 in 2004-05 to 25,200 in 2006-07, and 17,900 in the nine months from April to December 2007).

From April 2006 to December 2007, there were improvements in attaining the performance targets for all the four services. However, the processing time for “Replies to applications for water supply to new buildings” still fell short of the target. **Audit considers that the WSD should take action with a view to attaining its performance target for this service.**

6.13 As stated in the FC paper in February 2001, the processing time for key customer services would be substantially reduced subsequent to the CCBS implementation (see para. 6.2(b)(ii)). According to OGCI Circular No. 3/2007 of June 2007 on “Computerisation”, where business benefits are identified, the responsible department should include appropriate productivity and performance targets for measuring these improvements.

6.14 **Audit considers that the WSD should take action to reduce the processing time for customer services. As suggested by OGCI Circular No. 3/2007, the WSD should make appropriate revisions to its performance targets for measuring the improvements, taking into account the workload and available resources.**

Audit recommendations

6.15 **Audit has recommended that the Director of Water Supplies should:**

- (a) **expedite action on providing the following customer services through the Internet:**
 - (i) **enquiry of account information;**

- (ii) **billing;**
- (iii) **applications for new water supply;**
- (iv) **making appointments for meter tests; and**
- (v) **input of self-meter reading (see paras. 6.6 and 6.7);**
- (b) **after providing customer services through the Internet:**
 - (i) **conduct publicity campaigns to promote the services; and**
 - (ii) **consider providing incentives to encourage customers to use the services (see paras. 6.6 and 6.9);**
- (c) **maintain statistics on the number of customers using the services through the Internet (see para. 6.9);**
- (d) **adopt measures so that the WSD can attain its performance target for the service on “Replies to applications for water supply to new buildings” (see para. 6.12); and**
- (e) **revise the WSD performance targets for customer services to reflect the reduction in the processing time subsequent to the commissioning of the CCBS (see para. 6.14).**

Response from the Administration

6.16 The **Director of Water Supplies** agrees with the audit recommendations in paragraph 6.15. He has said that:

- (a) the WSD will strive to improve the service on “Replies to applications for water supply to new buildings” to such a level compatible with or better than that before the CCBS commissioning; and
- (b) the WSD is committed to reviewing its performance pledges regularly with a view to providing better services to its customers.

Acronyms and abbreviations

Audit	Audit Commission
CCBS	Customer Care and Billing System
FC	Finance Committee
FSTB	Financial Services and the Treasury Bureau
GCC	General Conditions of Contract
GLD	Government Logistics Department
HKP	Hongkong Post
LegCo	Legislative Council
OGCIO	Office of the Government Chief Information Officer
PSC	Project Steering Committee
WIS	Water Billing and Information System
WSD	Water Supplies Department