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The President of the Legislative Council, Legislative Council Complex, Hong Kong.

Sir,

In accordance with the paper tabled in the Provisional Legislative Council on 11 February 1998 on the Scope of Government Audit in the Hong Kong Special Administrative Region — 'Value for Money Audits', I have the honour to submit my Report No. 63 on the results of value for money audits completed in accordance with the value for money audit guidelines laid down in the paper. These guidelines are also attached.

Yours faithfully,

daiso

David Sun

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The Director of Audit's Report No. 63 contains the following chapters:

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1	Provision of long-term care services for the elderly			
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VALUE FOR MONEY AUDIT GUIDELINES

Value for money audit

Value for money audit is an examination into the economy, efficiency and effectiveness with which any bureau of the Government Secretariat, department, agency, other public body, public office, or audited organisation has discharged its functions. Value for money audit is carried out under a set of guidelines tabled in the Provisional Legislative Council by the Chairman of the Public Accounts Committee on 11 February 1998. The guidelines were agreed between the Public Accounts Committee and the Director of Audit and have been accepted by the Administration.

- 2. The guidelines are:
 - firstly, the Director of Audit should have great freedom in presenting his reports to the Legislative Council. He may draw attention to any circumstance which comes to his knowledge in the course of audit, and point out its financial implications. Subject to the guidelines, he will not comment on policy decisions of the Executive and Legislative Councils, save from the point of view of their effect on the public purse;
 - secondly, in the event that the Director of Audit, during the course of carrying out an examination into the implementation of policy objectives, reasonably believes that at the time policy objectives were set and decisions made there may have been a lack of sufficient, relevant and reliable financial and other data available upon which to set such policy objectives or to make such decisions, and that critical underlying assumptions may not have been made explicit, he may carry out an investigation as to whether that belief is well founded. If it appears to be so, he should bring the matter to the attention of the Legislative Council with a view to further inquiry by the Public Accounts Committee. As such an investigation may involve consideration of the methods by which policy objectives have been sought, the Director should, in his report to the Legislative Council on the matter in question, not make any judgement on the issue, but rather present facts upon which the Public Accounts Committee may make inquiry;
 - thirdly, the Director of Audit may also consider as to whether policy objectives have been determined, and policy decisions taken, with appropriate authority;

- fourthly, he may also consider whether there are satisfactory arrangements for considering alternative options in the implementation of policy, including the identification, selection and evaluation of such options;
- fifthly, he may also consider as to whether established policy aims and objectives have been clearly set out; whether subsequent decisions on the implementation of policy are consistent with the approved aims and objectives, and have been taken with proper authority at the appropriate level; and whether the resultant instructions to staff accord with the approved policy aims and decisions and are clearly understood by those concerned;
- sixthly, he may also consider as to whether there is conflict or potential conflict between different policy aims or objectives, or between the means chosen to implement them;
- seventhly, he may also consider how far, and how effectively, policy aims and objectives have been translated into operational targets and measures of performance and whether the costs of alternative levels of service and other relevant factors have been considered, and are reviewed as costs change; and
- finally, he may also be entitled to exercise the powers given to him under section 9 of the Audit Ordinance (Cap. 122).

3. The Director of Audit is not entitled to question the merits of the policy objectives of any bureau of the Government Secretariat, department, agency, other public body, public office, or audited organisation in respect of which an examination is being carried out or, subject to the guidelines, the methods by which such policy objectives have been sought, but he may question the economy, efficiency and effectiveness of the means used to achieve them.

4. Value for money audit is conducted in accordance with a programme of work which is determined annually by the Director of Audit. The procedure of the Public Accounts Committee provides that the Committee shall hold informal consultations with the Director of Audit from time to time, so that the Committee can suggest fruitful areas for value for money audit by the Director of Audit.

CHAPTER 1

Labour and Welfare Bureau Social Welfare Department

Provision of long-term care services for the elderly

Audit Commission Hong Kong 30 October 2014 This audit review was carried out under a set of guidelines tabled in the Provisional Legislative Council by the Chairman of the Public Accounts Committee on 11 February 1998. The guidelines were agreed between the Public Accounts Committee and the Director of Audit and accepted by the Government of the Hong Kong Special Administrative Region.

Report No. 63 of the Director of Audit contains 10 Chapters which are available on our website at http://www.aud.gov.hk

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PROVISION OF LONG-TERM CARE SERVICES FOR THE ELDERLY

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PROVISION OF LONG-TERM CARE SERVICES FOR THE ELDERLY

Executive Summary

1. Hong Kong is facing an ageing population. In 1997, the Chief Executive of the Hong Kong Special Administrative Region (HKSAR) has made "Care for the Elderly" a Strategic Policy Objective of the Government of the HKSAR. The objective is to improve the quality of life of our elderly population and to provide them with a sense of security, a sense of belonging and a feeling of health and worthiness.

2. The Government's long-term care (LTC) policy is to promote ageing in place and subsidised LTC services are provided by the Social Welfare Department (SWD), through community care services (CCS) and residential care services (RCS), to the elderly citizens (aged 65 and above) with proven needs as assessed under a standardised care need assessment mechanism ("assessment mechanism") it operates. There is no means test for these subsidised LTC services. If subsidised care places are not readily available, eligible elderly persons are put on the Central Waiting List for subsidised LTC services (CWL) to wait for their turn of admission. The CWL allocates the subsidised places on a first-come-first-served basis according to the applicants' registration dates and their preferences.

3. In 2013-14, recurrent expenditure on subsidised CCS and RCS amounted to \$4.38 billion. In addition, the Government has from time to time applied for funds from the Lotteries Fund (LF) to finance the development of elderly services. These included funds for the construction and setting-up of contract residential care homes for the elderly (RCHEs) and for the implementation of various time-limited welfare projects/schemes for the elderly (e.g. \$380 million approved for the first phase of the Pilot CCS Voucher Scheme for the Elderly). Non-governmental organisations (NGOs) may also apply for grants from LF to meet the capital costs of works projects in connection with elderly services provided by them. The Audit Commission (Audit) has recently conducted a review on the SWD's provision of subsidised LTC services for the elderly and its regulation of RCHEs.

Growing demand for subsidised long-term care services

4. Long waiting lists and waiting times. With the ageing population and the longer life expectancy of Hong Kong people, the <u>demand</u> for subsidised LTC services is growing rapidly. Although the Government has strived to cope with the increasing demand, the long waitlisting situation remains. For CCS, the numbers of elderly on the waiting lists for both day care and home care services were generally rising. The uneven waiting times for CCS in different districts also call for concern. For RCS, against a capacity of some 23 000 "care and attention" (C&A) places and 3 000 nursing home (NH) places, as at end-August 2014, the SWD reported a waiting list on the CWL of 24 250 elderly awaiting subsidised C&A places and 6 440 elderly awaiting subsidised NH places, and the average waiting time was 36 months for subsidised C&A places in subvented/contract RCHEs, 7 months for purchased C&A places in private RCHEs and 32 months for subsidised NH places (paras. 2.11, 2.13 to 2.15 and 2.17).

- 5. Audit further noted the following:
 - 6 800 elderly persons on the CWL not included as a result of their (a) "inactive" status. The waitlisting information reported on RCS by the SWD to the Legislative Council (LegCo) and posted onto the SWD's website did not reflect, among others, the number of "inactive" cases on the CWL. For example, the reported number of 30 690 $(24\ 250\ +\ 6\ 440)$ applicants on the CWL awaiting C&A or NH places as at end-August 2014 had not included a total of 6 800 "inactive" elderly who had been assessed as "RCS only" or "dual option" (i.e. either RCS or CCS is equally appropriate for the applicant) but were meanwhile using CCS. Given that these 6 800 "inactive" elderly can opt at any time for RCS (with their priority on the CWL not being affected by the "inactive" status), they represent a hidden, but not negligible, demand which should have been disclosed when reporting the waiting list and suitably taken into account in service planning (para. 2.18(a));
 - (b) *SWD statistics relating to elderly persons on the CWL*. Based on SWD statistics, the number of elderly on the CWL who had passed away while waiting for RCS places had increased from "4 000 to 4 500" a year before 2010 to 5 700 in 2013-14 (para. 2.18(b)); and

(c) Need for reviewing the assessment mechanism. The SWD assessment mechanism is used to assess elderly persons' level of impairment which will be matched with appropriate subsidised LTC services. It acts as the "Gate-keeper" and plays a very important role in the Government's provision of LTC services. Audit has however found a number of issues warranting a review of the assessment mechanism. Among others, Audit noted that although there were about 2 700 accredited assessors as at June 2014, only 1 800 of them were recorded as active ones. An analysis further revealed that: (i) only 47% of the 1 800 active assessors had been involved in conducting assessments in the 12 months ended June 2014; and (ii) 70% of the assessment work was conducted by 36 accredited assessors of the five regional Standard Care Need Assessment Management Offices (Elderly Services) of the SWD. The extremely uneven output may affect the quality and efficiency of the assessments which determine the appropriate LTC services to be provided and may also have accounted for why the SWD has kept on taking longer time to complete the care need assessments (paras. 2.19 and 2.21).

6. *Marginal increase achieved in the capacity of subsidised RCS places.* On the <u>supply</u> side, although the Administration has made great efforts to increase the provision of RCS places over the years, the overall increase in the number of subsidised RCS places was not significant. The number of subsidised RCS places had only increased by 20% in 14 years, i.e. from 21 600 as at end-March 2000 to 26 000 as at end-March 2014. In particular, although some 10 000 RCS places previously provided by 74 homes for the aged and self-care hostels were converted to some 6 100 C&A places in order to provide the elderly residents with continuum of care, the Administration was not able to offset the reduction in number of subsidised RCS places by increasing timely the supply at a greater pace (paras. 2.23 to 2.26).

7. Need to maximise the effective use of limited subsidised RCS places available. Given the growing service demand and the constraints faced by the Government in bringing forth more rapid expansion of the subsidised RCS capacity (see paras. 4 to 6 above), the Administration should make good efforts to maximise the optimum use of the limited subsidised places available, as each subsidised RCS place cost the Government \$7,900 to \$15,600 a month in 2013-14. Audit has however found inadequacies in the provision, allocation and monitoring of the limited RCS places, as follows:

- (a) Purchase and allocation of Enhanced Bought Place Scheme (EBPS) places. As at end-March 2014, 30% of the subsidised RCS places were provided by RCHEs participating in one of the Government's purchase schemes, namely, the EBPS. In 2013-14, the SWD spent \$673 million on the purchase of 7 660 EBPS places. Audit however found that 39 (32%) of the 121 private RCHEs participating in the EBPS could not achieve the 92% enrolment rate set by the SWD. Among them, ten RCHEs had an average enrolment rate between 50% and 80%, and three below 50%. On average, some 550 to 590 EBPS places had remained vacant in 2012-13 and 2013-14 (para. 2.30(a));
- (b) *Allocation, matching and admission of RCS places.* Audit noted various inefficiency and wastage in the allocation of, and admission to, subsidised RCS places, including: (i) late reporting by RCHEs of discharge cases (including temporary discharge of elderly residents); (ii) no time pledge set for SWD placement referrals; (iii) delay in admissions of applicants by RCHEs; and (iv) lack of laid-down procedures for handling late reporting of RCS vacancies and reliance on an honour system for reporting RCS vacancies (para. 2.34);
- Management of agency quota (AQ) places. Although the SWD has (c) implemented the CWL since 2003 to centralise under its control all applications for subsidised LTC services, Audit has however found that among the 16 460 subsidised RCS places provided by subvented RCHEs, 1 812 (or 11%) AQ places were managed and allocated by NGOs outside the CWL and beyond the SWD's control, so long as the elderly taking up the AQ places had been subject to care need assessment under the SWD's assessment mechanism. These 1 812 AQ places are fully subsidised by the Government at some \$25.5 million a month. Audit considers that the SWD needs to critically review the possibility of clawing back the AQ places for central allocation under the CWL taking into consideration, among others, the following: (i) the growing demand for, and the acute shortfall of, subsidised RCS places the Government is facing today and the 100% subvention provided for the AQ places; (ii) the admission of elderly by NGOs outside the CWL may provide opportunities for inequitable allocations; (iii) the commitment made by the Administration to LegCo in March 1995 that NGOs operating subvented RCHEs would not be given any discretion to admit applicants other than those on the

SWD's waiting list; and (iv) the low enrolment rate for AQ places allocated by NGOs themselves as a whole (paras. 2.37, 2.38, 2.45 to 2.50); and

(d) *Utilisation of subsidised infirmary unit (IU) places.* RCHEs have been taking care of infirm elderly while the latter are waiting for infirmary placement in public hospitals. As at end-June 2014, 19 subvented RCHEs were running 29 IUs providing a total of 580 IU places, which cost the Government some \$52 million in 2013-14. Audit has however found that 62 (11% of 580) IU places had, on average, been vacant for at least five years, with the vacancy reaching 22% to 53% for five RCHEs (paras. 2.51, 2.52 and 2.54).

Provision of community care services for the elderly

8. The Government provides a wide range of subsidised CCS to assist the elderly to age in the community. They include centre-based day care services and home-based home care services which are essentially operated by NGOs with subventions or service fees from the Government. In 2013-14, the Government spent some \$970 million on the provision of subsidised CCS for the elderly (paras. 3.2 and 3.5).

9. *Monitoring of CCS places.* In 2013-14, it cost the Government about \$7,100 a month for a day care service place and about \$3,700 a month for a home care service place. Owing to the limited CCS places available, timely reporting of discharge cases and timely admission of elderly to services are both important. Audit has however found that there is scope for improvement in these respects (paras. 3.9 and 3.12).

10. *Implementation of the Pilot CCS Voucher Scheme*. The Scheme, launched in September 2013 with a \$380 million grant from LF, adopts a "money-follows-the-user" approach and provides subsidy directly to service users (instead of service providers) in the form of service vouchers. Audit has noted that as at August 2014 (one year after implementation), some 310 out of 1 200 elderly users still participating in the Scheme had not commenced using the services, with vouchers issued to some 180 elderly users having become void (paras. 3.16 and 3.20(a)).

11. *Need for a more strategic approach to implement CCS.* According to the Elderly Commission, effective CCS can encourage the elderly to age in place and avoid premature and unnecessary institutionalisation. Since 2000, the SWD has launched various pilot schemes at different times to supplement the regular CCS. No concrete plan has however been drawn up to properly integrate, rationalise or re-engineer them to provide effective CCS for the frail elderly. For example, the Enhanced Home and Community Care Services (EHCCS), the Integrated Home Care Services (IHCS) and the Pilot Scheme on Home Care Services for Frail Elders, which were launched in 2001, 2003 and 2011 respectively, provide similar services yet they differ in various ways in their operational modes (paras. 3.4, 3.25 and 3.27).

Provision of residential care services for the elderly

12. As at end-March 2014, there were 748 RCHEs providing 75 000 (26 000 subsidised and 49 000 non-subsidised) RCS places for the elderly. Subsidised RCS places are provided by subvented/contract RCHEs and private/self-financing RCHEs participating in the Government's two purchase schemes, whereas non-subsidised RCS places are provided by private and self-financing RCHEs. In 2013-14, the Government spent \$3.41 billion on the provision of the 26 000 subsidised RCS places (paras. 4.2 and 4.3).

13. Varying quality standards of different types of RCHEs. Apart from the provision of subsidised RCS, the SWD also regulates RCHEs through a licensing system it operates. Although 424 private RCHEs not offering any subsidised RCS places formed the majority of the RCHEs, Audit noted that their service quality varied and most of them differed from the other types of RCHEs which offered subsidised places, with obvious disparities in their spacing and staff provision. Many of these private RCHEs just met the statutory minimum requirements. Many of the RCHEs in the private sector had high vacancy rates too, despite the high demand for subsidised RCS places. Audit noted that more warning letters on non-compliance with licensing requirements were issued against RCHEs in the private sector. For example, although these RCHEs accounted for only 57%

of total RCHEs in the sector, in 2013-14, 284 (81%) of 351 warning letters issued by the SWD were issued against them. It is understood that high rentals and manpower shortage are two major problems facing many of these RCHEs in the private sector. This might also have explained why the Administration had been slow in upgrading the statutory minimum requirements which had not been revised in the past 18 years (paras. 4.5 and 4.7 to 4.14).

14. *Many elderly opted not to stay in private RCHEs under EBPS.* Although 30% of the 26 000 subsidised RCS places were provided by the two purchase schemes (including the EBPS), applicants on the CWL who were willing to take up EBPS places had decreased from 7% as at end-March 2009 to 5% as at end-March 2014. As mentioned in paragraph 7(a) above, some 550 to 590 EBPS places were vacant in 2012-13 and 2013-14, indicating that good value has not been realised for some \$50 million spent a year. Audit also noted a case when the demand for more subsidised RCS places in a particular private RCHE could not be entertained because of the "50% cap" requirement set by the SWD since 2003 on the number of subsidised places to be purchased (paras. 4.16 to 4.19).

15. *Granting of sites by private treaty for RCHE purpose.* The Government may grant sites at nominal premium to NGOs for welfare purposes. Based on the SWD records, some 50 private treaty grants (PTGs) had been granted to NGOs for operating subvented and/or self-financing RCHEs. Based on an examination of a number of such PTGs, Audit found that in two cases (both involving self-financing RCHEs which did not provide subsidised RCS places), the SWD had not exercised its rights reserved in the PTGs to agree with the grantees on the admission quotas to be provided to the Government (para. 4.25).

16. *Granting of premium concession for RCHE purpose.* To encourage developers to provide RCHEs in new private developments, in July 2003, the Administration launched the Premium Concession Scheme, under which eligible premises will be exempted from assessment of premium for various types of land transactions, subject to meeting certain conditions for the delivery of the RCHE premises. Audit however found that as at June 2014, no RCHE under the Premium Concession Scheme had come into service and the SWD had not conducted any review to assess the effectiveness of the Scheme (paras. 4.28 and 4.29).

17. *Inspections of RCHEs.* To ensure that all RCHEs have complied with the licensing requirements, the SWD monitors them by conducting inspections. It conducts several surprise inspections of each RCHE a year and has adopted a risk-based approach in conducting such inspections. Over the five years from 2009-10 to 2013-14, 35 RCHEs had been successfully prosecuted, involving 46 offences. Among these 46 offences, 29 offences were related to non-compliance with requirements on staff employment, and 13 related to non-compliance with requirements on health matters such as drug management and use of physical restraints. Audit examination of the SWD's records revealed that: (a) its inspection targets had not always been achieved; and (b) for 24 (71%) of 34 RCHEs which had been assessed as high risk ones, follow-up inspections were not conducted within the target timeframe (paras. 4.31 to 4.35).

Way forward

18. *Government initiatives more recently taken.* Each year, the Government spends substantial public resources on providing subsidised LTC services to the elderly. To cope with the ageing population and the rising demand for LTC services, the Government has launched various initiatives in more recent years. These include, for example: (a) the launching of a Special Scheme in September 2013 by inviting welfare NGOs to submit proposals to make better use of the land they owned, through in-situ expansion or redevelopment, to provide welfare facilities (including elderly facilities); and (b) tasking the Elderly Commission to prepare an Elderly Services Programme Plan within two years (para. 5.2).

19. *Challenges ahead.* Various challenges are lying ahead for the Government in the provision of subsidised LTC services for the elderly. These include, for example, the need to expand the subsidised CCS and RCS to keep pace with the rising demand and the need to timely and effectively implement the various Government initiatives (para. 5.3).

Audit recommendations

20. Audit recommendations are made in PART 5 of this Audit Report. Only the key ones are highlighted in this Executive Summary. Audit has *recommended* that the Director of Social Welfare should, in collaboration with the Secretary for Labour and Welfare: Growing demand for subsidised long-term care services

- (a) continue striving to expand the subsidised CCS and RCS to meet the rising demand, shorten the waiting lists and reduce the waiting times for subsidised LTC services;
- (b) disclose the methodology used for calculating the waiting list and waiting time when reporting the waitlisting information to LegCo and/or posting the information onto the SWD website, including the proper disclosure of those "inactive" cases on the CWL;
- (c) review and fine-tune the SWD's care need assessment procedures taking into account the various inadequacies Audit identified in the effectiveness of the SWD assessment mechanism;
- (d) address the various inadequacies mentioned in paragraphs 7 and 14 above with a view to maximising the effective use of the limited subsidised RCS places available, including the need to:
 - (i) improve the effectiveness of the EBPS by optimising the use of the places and minimising the number of vacant places;
 - (ii) explore how the procedures for the allocation, matching and admission of the limited RCS places can be fine-tuned to minimise the lead time;
 - (iii) critically review the possibility of clawing back the AQ places for central allocation under the CWL; and
 - (iv) take measures to follow up on the 11% vacancy of the limited IU places available and review, in close collaboration with the Director of Health, how the IU places in subvented RCHEs can more effectively be used;

Provision of community care services for the elderly

(e) step up the SWD's monitoring of the allocation and admission of limited subsidised CCS places available, and fine-tune the procedures in the SWD Manual;

- (f) continue monitoring the effectiveness of the Pilot CCS Voucher Scheme;
- (g) formulate a long-term strategy for the provision of better and integrated CCS to meet the genuine needs of the frail elderly who prefer ageing in place, including exploring how EHCCS and IHCS can be properly integrated;

Provision of residential care services for the elderly

- (h) address the disparities in quality standards of different types of RCHEs as far as possible, paying particular attention to the acute manpower shortage in the RCHE sector;
- (i) examine all PTGs granted for operating RCHEs to ascertain if there are similar cases when the SWD's right to nominate persons for admission to the RCHEs has not been exercised;
- (j) conduct an effectiveness review of the Premium Concession Scheme and explore appropriate measures to improve it;
- (k) ensure that the inspection targets for individual RCHEs are met, and carry out more timely follow-up inspections of RCHEs with higher risk; and

Way forward

(1) address the various challenges ahead, including the monitoring of the various pilot CCS and RCS voucher schemes, and the Special Scheme for in-situ expansion or redevelopment of privately owned sites for welfare uses.

Response from the Administration

21. The Director of Social Welfare, with the support of the Secretary for Labour and Welfare, agrees with the audit recommendations. The Secretary for Labour and Welfare has also undertaken to forward Audit's findings and recommendations to the Elderly Commission for it to take into account as it deems appropriate when formulating the Elderly Services Programme Plan.

PART 1: INTRODUCTION

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

Government policy on provision of subsidised elderly care services

1.2 Like many other economies, Hong Kong is facing an ageing population. In 2013, the number of elderly people aged 65 and above stood at about one million, representing 14% of our population. According to the Government's projection, the number of elderly people will increase to 1.45 million by 2021, representing 19% of our population. Concurrently, the life expectancy of Hong Kong's population has also continued to increase. On average, men and women in Hong Kong today are expected to live 81 years and 86 years respectively.

1.3 In 1997, the Chief Executive of the Hong Kong Special Administrative Region (HKSAR) has made "Care for the Elderly" a Strategic Policy Objective of the Government of the HKSAR. The objective is to improve the quality of life of our elderly population and to provide them with a sense of security, a sense of belonging and a feeling of health and worthiness (Note 1). A wide spectrum of subsidised community care services (CCS) and residential care services (RCS), collectively termed long-term care (LTC) services, are provided by the Social Welfare Department (SWD) to the elderly citizens with proven needs as assessed by it under an assessment mechanism which it operates (see para. 1.6). There is no means test for these subsidised LTC services. Through the provision of subsidised LTC services to the frail elderly, the Administration aims to enable them to stay at home and remain living in the community for as long as possible, before admitting

Note 1: Apart from the long-term care services for the elderly provided by the SWD (the subject of this Audit Report — see para. 1.19), the Government has provided multifarious types of other elderly services. These include, for example, the Senior Citizen Card Scheme, the old age living allowance, priority public housing rental schemes for the elderly, public transport fare concessions and the Elderly Health Care Voucher Scheme. These other services are not covered in this review. A separate Audit Report on the provision of health services for the elderly is included in Chapter 2 of the Director of Audit's Report No. 63.

them to be taken care of in licensed residential care homes for the elderly (RCHEs). In the RCHE sector, the majority of the RCHEs are run by private operators.

1.4 The Government's LTC policy is underpinned by the following three principles:

- (a) it is the Government's policy to promote "ageing in place as the core, institutional care as back-up". By "ageing in place", the Government aims to encourage the elderly to age at home, which is also their preference (Note 2), and to support their families to take care of them by providing appropriate support and care services (Note 3);
- (b) the Government aims to promote a continuum of care (CoC) in subsidised RCS. By providing residential care places with CoC, the elderly can stay in the same RCHE and continue to receive care services even when their health conditions have deteriorated; and
- (c) given the ageing population and limited public resources, elderly who are most in need should have priority in using subsidised care services.

1.5 Within the Government, the Labour and Welfare Bureau (LWB) is the policy bureau overseeing the provision of LTC services for the elderly. Under the LWB, the SWD is responsible for implementing the Government's elderly services. Like most other welfare services in Hong Kong, LTC services are not directly provided by the Government. Instead, the Government funds the non-governmental organisations (NGOs) and service operators in both the CCS and RCS domains to provide the services, with service quality monitored by the SWD. Within the SWD, the Elderly Branch (see Appendix A) oversees the operation of the CCS and RCS.

Note 2: In our predominantly Chinese society, ageing in place is often the common wish of our elderly citizens.

Note 3: With elderly persons living in the community, some of them have the support of private care services, e.g. foreign domestic workers and local paid domestic helpers/carers, and some may make use of services provided by private health professionals. Family support is always an important pillar. A considerable number of elderly persons are being taken care of by family members.

Standardised care need assessment mechanism

The long-term care services delivery system (LDS) operated by the SWD 1.6 is a single-entry point for application established for all applicants who wish to seek for subsidised LTC services. To apply for the services, elderly persons have to apply through responsible/referring workers (collectively termed "RWs") in referring units authorised by the SWD (Note 4). Since 2000, the SWD has implemented a standardised care need assessment mechanism ("assessment mechanism") to determine the LTC services to be provided for elderly of moderate or severe level of impairment, with other health problems, coping problems and/or environmental risks to be assessed. The assessments are conducted by accredited assessors who may include social workers, nurses, physiotherapists and occupational The assessment tool adopted is internationally recognised, namely therapists. Minimum Data Set-Home Care (MDS-HC). Assessors are required to undergo necessary training and pass examination for accreditation to ensure the level of knowledge and skills attained.

1.7 Based on the assessment results, the elderly persons will be matched with the appropriate subsidised LTC services, which include "RCS only", "CCS only" or "dual option" (i.e. either RCS or CCS). If subsidised places are not readily available, eligible elderly persons are put on the Central Waiting List for subsidised LTC services (CWL) to wait for their turn of admission.

Central Waiting List

1.8 The SWD has implemented since 2003 the CWL for the registration and allocation of subsidised LTC services. With the implementation of the CWL, the elderly can apply to a single-entry point for subsidised LTC services and appropriate services will be arranged to them according to the assessment results. The CWL is intended to achieve the following:

Note 4: Such authorised referring units refer to welfare/elderly service units of the SWD, NGOs and the Hospital Authority. They include, for example, the Medical Social Services Units under the SWD and the Hospital Authority, integrated family service centres of NGOs and SWD, district elderly community centres, neighbourhood elderly centres/social centres for the elderly of NGOs.

- To centralise and streamline the application process in that the elderly no longer need to indicate a specific service or approach different NGOs for different services;
- To secure better coordination of service allocation. With assessment conducted for the elderly at the time when they apply for LTC services, those assessed to have care needs (i.e. impairment level at moderate or above) will be registered in the CWL and provided with or waitlisted for the appropriate services as applicable. Elderly assessed to have no care needs (i.e. no or mild impairment level) will be referred to other district-based support services as necessary;
- To target resources at elderly with LTC needs. The CWL can facilitate more effective service planning and resource management; and
- To encourage ageing in place, an elderly who wish to stay at home will be given the choice of CCS, even if matched to any RCS.

1.9 Under the CWL, all applications for LTC services must be referred by the RWs in authorised referring units (see para. 1.6). The RWs support the elderly by making applications for LTC services to the Standardised Care Need Assessment Management Offices (Elderly Services) (SCNAMO(ES)s) of the SWD (see Appendix A), keeping in view their conditions and welfare needs while they are waitlisting for LTC services and explaining the assessment result to them and following up their welfare needs. Allocation of care services, arranged by the LDS Office (in the case of RCS) and by the SCNAMO(ES)s (in the case of CCS), is based on the applicants' priority on the CWL and their indicated preferences for the matched services. In general, applicants with restrictive preferences have to wait for a longer time.

Subsidised community care services

1.10 Subsidised CCS are allocated on a district basis and are essentially provided by NGOs with subventions or service fees from the Government. As at March 2014, some 27 000 elderly were receiving CCS funded by the Government. Subsidised CCS include "centre-based" day care services and "home-based" home care services, as shown below:

Types of the Government's subsidised community care services

I. "Centre-based" day care services

- Services, implemented since 1980s, cover personal care, nursing care, meal services, rehabilitation exercises, health education, and social activities for the frail elderly. They serve frail elderly of 60 or above in age and who have no family member or lacking the care from family members during daytime.
- As at March 2014, there were 67 day care centres/units providing 2 750 places in total. While 58 day care centres were operated by NGOs and funded by the Government under Lump Sum Grant (LSG) subventions, 9 day care units attached to contract RCHEs were operated by NGOs/home operators and funded by the Government by service fees.

II. "Home-based" home care services

- Services cover basic and special nursing care, personal care, rehabilitation exercises, home-making and meal delivery services, escort services, as well as carer support services. Such services are mainly provided by the following two schemes:
 - (a) Enhanced Home and Community Care Services (EHCCS introduced in 2001), which are operated by NGOs and funded by the Government by service fees. As at March 2014, there were 24 teams serving 5 580 frail elderly of 65 or above in age (or aged between 60 and 64 if there is a proven need); and
 - (b) Integrated Home Care Services (IHCS), which were formed in 2003 by re-engineering various home help, home care and meal teams previously in operation. IHCS are operated by NGOs and funded by the Government under LSG subventions. As at March 2014, there were 60 IHCS teams serving 1 120 frail elderly and 17 300 elderly of no or mild impairment and of 60 or above in age.

Source: SWD records

Subsidised residential care services

1.11 In the RCS domain, there exists a mix of public and private modes. In fact, the private market is providing the majority of the RCS places. As at March 2014, some 61 200 elderly were receiving RCS, with some 40% of them taking up subsidised RCS places. Subsidised RCS places are provided by subvented/contract RCHEs or by purchase of places from private/self-financing RCHEs (Note 5) which participated in the Government's Enhanced Bought Place Scheme (EBPS) and Nursing Home Place Purchase Scheme (NHPPS).

1.12 In essence, there are two types of RCS places, namely "care and attention" (C&A) places and nursing home (NH) places. C&A places are provided for elderly persons assessed to be moderately impaired under the assessment mechanism whereas NH places are provided for those assessed to be severely impaired. Elderly residents at C&A places are provided with, among others, limited nursing care whereas residents staying at NH places are provided with regular basic medical and nursing care. An overview of the types of the Government's subsidised RCS is shown below.

Note 5: Self-financing RCHEs refer to those non-profit-making RCHEs which have not received Government subvention to support their operations.

Types of the Government's subsidised residential care services

Subsidised RCS provide residential care and facilities for elderly of 65 or above in age (or aged between 60 and 64 if there is a proven need) who, for personal, social, health or other reasons, cannot be adequately taken care at home.

I. Subvented RCHEs

Subvented RCHEs, started as early as the 1970s, are operated by NGOs and funded by Government under LSG subventions. As at March 2014, there were 127 subvented RCHEs providing some 14 790 C&A places, 1 570 NH places and 100 home for the aged (H/A) places.

II. Contract RCHEs

Contract RCHEs, introduced since 2001, are purpose-built premises set up by the Government. Once built, they are awarded to be operated by NGOs/home operators through competitive bidding. Each contract awarded lasts for five years, extendable for another five years. As at March 2014, there were 22 contract RCHEs providing 210 C&A and 1 460 NH places.

III. Enhanced Bought Place Scheme (EBPS)

The EBPS was introduced in 1998 to replace the previous Bought Place Scheme. Under the EBPS, the Government purchases RCS places from private RCHEs which are paid monthly subsidies for the places purchased. As at March 2014, there were 135 private RCHEs which participated in the Scheme, providing 7 660 C&A places. There are two categories of EBPS places, namely EA1 and EA2 places, with the former of higher quality in terms of space and staffing.

IV. Nursing Home Place Purchase Scheme (NHPPS)

The NHPPS was introduced in 2010-11. The Government purchases NH places from self-financing RCHEs. As at March 2014, four self-financing RCHEs were participating in the Scheme, providing 160 NH places.

Source: SWD records

Remarks: There are also some 49 000 non-subsidised RCS places in the RCHE sector. As at March 2014, these places were occupied by 36 000 residents, including 25 700 residents who were receiving Comprehensive Social Security Assistance allowances (see para. 2.10).

Use of LTC services by the elderly

1.13 According to the 2014 Policy Address, to uphold the spirit of respecting, loving and caring for the elderly, the Government is committed to promoting the well-being of the elderly in all aspects of their life by providing them with services which will enable them to remain members of the community for as long as possible and, by making available RCS for those in need. Against an elderly population of one million in 2013 (see para. 1.2), during the year 2013-14, some 14 000 frail elderly had received subsidised CCS and some 30 000 frail elderly had received subsidised RCS.

Expenditure on provision of subsidised CCS and RCS

1.14 All along, the Administration has allocated substantial resources every year under the Government General Revenue for the provision of elderly services. In 2013-14, the SWD spent \$4.38 billion for the provision of subsidised CCS (\$0.97 billion) and RCS (\$3.41 billion) to the elderly, an increase of 69% as compared with \$2.59 billion spent in 2004-05 (see Figure 1).



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Figure 1

Recurrent expenditure on the provision of subsidised CCS and RCS (2004-05 to 2013-14)

1.15 In addition, the Government has from time to time applied for funds from the Lotteries Fund (LF) to finance the development of elderly services. These included funds for the construction and setting-up of contract RCHEs and for the implementation of various time-limited welfare projects/schemes for the elderly (e.g. \$380 million for implementing the first phase of the Pilot CCS Voucher Scheme for the Elderly). NGOs may also apply for grants from LF to meet the capital costs of works projects in connection with elderly services provided by them (Note 6). In September 2013, the Administration further launched a Special Scheme by inviting welfare NGOs to submit proposals to provide the necessary welfare facilities, in particular elderly and rehabilitation facilities, through in-situ expansion or redevelopment of the land they owned, and undertook to finance out of LF the capital costs for feasible projects under the Special Scheme. The Government would provide targeted assistance for land owners during the planning or development process. To ensure sufficient resources are available for the purpose, the Legislative Council (LegCo) Finance Committee (FC) approved in February 2014 fund transfer of \$10 billion from the General Revenue to LF.

Regulation of RCHEs

1.16 The Residential Care Homes (Elderly Persons) Ordinance (Cap. 459 — the RCHE Ordinance) and its subsidiary legislation, the Residential Care Homes (Elderly Persons) Regulation (Cap. 459A — RCHE Regulation) have provided for the regulation of RCHEs through a licensing system administered by the SWD (Note 7). The purpose of the RCHE Ordinance is to ensure that the services received by residents in RCHEs are of standards that are beneficial to them physically, emotionally and socially. The SWD has also issued a Code of Practice under the RCHE Ordinance setting out the principles, procedures, guidelines and standards for the management and operation of RCHEs.

- Note 6: Under section 6(4) of the Government Lotteries Ordinance (Cap. 334), the Financial Secretary has the authority to approve payments from LF to finance the support and development of social welfare services. In 2012-13 and 2013-14, LF funds of some \$1.4 billion had been approved to finance various projects on elderly services.
- Note 7: All RCHEs are licensed under the RCHE Ordinance, with the exception of RCHEs offering only NH places, which are regulated by the Department of Health under the Hospitals, Nursing Homes and Maternity Homes Registration Ordinance (Cap. 165).

Audit review

1.17 In 2002, the Audit Commission (Audit) conducted a review on RCS for the elderly, with the results published in the Director of Audit's Report No. 38 (March 2002). After examining that Audit Report, in July 2002, the Public Accounts Committee (PAC) made, among others, the following conclusions and recommendations:

- (a) the PAC expressed concern that there were significant disparities in the service levels between subvented RCHE places and RCHE places under the EBPS, and that the waiting time for admission to subvented RCHEs was 34 months whereas that for EBPS places was 10 months only; and
- (b) the PAC urged the Director of Social Welfare to take further actions to reduce the disparities in the waiting time and the level of services mentioned in (a) above.

1.18 In his 2014 Policy Address, the Chief Executive of HKSAR has announced that he would task the Elderly Commission (which advises the Government on elderly policy matters) to prepare within two years an Elderly Services Programme Plan. In April 2014, the LWB informed LegCo that given the combined effect of an ageing population and increasing longevity, there would be a pressing need for the Government to enhance its medium to long-term planning for elderly services, while at the same time exploring a viable model for subsidised LTC services. In this connection, the Elderly Commission has also been tasked to conduct a study on the feasibility of a pilot scheme on RCS voucher.

1.19 In April 2014, Audit commenced a review on the SWD's provision of LTC services for the elderly. Focus was placed on the waitlisting situation, the expansion and effective use of the limited subsidised LTC places available and the regulation of RCHEs. Audit notes that the disparities in waiting time and service levels between subvented RCHE places and EBPS places, as commented by the PAC in 2002 (see para. 1.17), still exist. This Audit Report will cover the following PARTs:

- (a) growing demand for subsidised long-term care services (PART 2);
- (b) community care services (PART 3);
- (c) residential care services (PART 4); and
- (d) way forward (PART 5).

Audit has found that there is room for improvement in various areas and has made recommendations to address the issues.

Acknowledgement

1.20 Audit would like to acknowledge with gratitude the full cooperation of the staff of the LWB and SWD during the course of the audit review.

PART 2: GROWING DEMAND FOR SUBSIDISED LONG-TERM CARE SERVICES

2.1 This PART examines the growing demand for subsidised LTC services and the multi-pronged approach taken by the Administration to tackle the growing demand. Against the background set out in paragraphs 2.2 to 2.10, the following issues are covered:

- (a) long waiting lists and waiting times (paras. 2.11 to 2.22);
- (b) marginal increase achieved in the capacity of subsidised RCS places (paras. 2.23 to 2.28); and
- (c) need to maximise the effective use of limited subsidised RCS places available (paras. 2.29 to 2.60).

Long-term care services delivery system

Central Waiting List

As mentioned in paragraph 1.8, the SWD implemented in 2003 the CWL for the registration and allocation of subsidised LTC services. An elderly person may apply for LTC services through RWs of authorised referring units in the SWD, NGOs and the Hospital Authority (HA). The SWD only accepts requests for care services on a referral basis. The elderly persons are required to undergo care need assessments under the standardised assessment mechanism operated by the SWD (formerly known as the "Gate-keeping Mechanism"). Such assessments are conducted by accredited assessors (Note 8) who are trained up and accredited by the SWD. Based on the assessment results, elderly persons may be matched with appropriate LTC services. Eligible elderly persons are put on the CWL for the services according to the options recommended in the assessments.

Note 8: The accredited assessors, who have to complete training in the use of the MDS-HC assessment tool, are professionals from various disciplines such as social workers, nurses, occupational therapists and physiotherapists of the SWD, HA or NGOs.

2.3 Appendix B shows the procedures for processing applications for LTC services from the time requests are made by applicants until their admission to service. Before an applicant is included for waitlisting on CWL, the SWD arranges care need assessment to be conducted by accredited assessors and quality checks (QCs) to be conducted by the regional SCNAMO(ES)s to ensure the accuracy of the assessment (see Steps (a) to (h) at Appendix B). The result of an assessment is only valid for 12 months. Re-assessment of the applicants is required prior to admission to services if the 12-month validity period of the assessment results has expired. The allocation of care services is on a first-come-first-served basis determined according to the applicants' LTC dates (Note 9) and their preferences (such as specific districts or RCHEs, religious background and diet provision of RCHEs).

2.4 Because the assessment results determine the applicants' eligibility for different types of subsidised care services, the SWD assessment mechanism acts as the "Gate-keeper" and plays a very important role in the Government's provision of subsidised LTC services.

Subsidised community care services

2.5 In line with the Government's "ageing in place" policy, applicants who wish to continue to stay at home are encouraged to accept CCS offers, even if they are matched to any RCS. According to the Elderly Commission, effective CCS could encourage the elderly to age in place and thus avoid premature or unnecessary institutionalisation, and CCS should be further developed to help the elderly stay at home. In ten years' time, the CCS capacity for frail elderly had increased by 80% from 5 260 places in 2003-04 to 9 450 places in 2013-14.

Note 9: Effective from January 2013, the SWD has adopted the registration date (i.e. the date of receiving the RW's application for arranging care need assessment of the elderly) as the LTC date. Before 2013, the assessment completion date was taken as the LTC date.

2.6 In 2013-14, the Government spent \$970 million on the provision of various types of subsidised CCS (see para. 1.14). According to the SWD Controlling Officer's Reports, in 2013-14, the cost to the Government for CCS was about \$7,100 a month for a place receiving day care services, about \$3,700 a month for EHCCS and about \$1,600 a month for IHCS. For day care services, elderly users have to pay standard rates of \$900 to \$1,000 a month whereas the fee for home care services varies, depending on the elderly user's household income and service usage (e.g. \$12.6 to \$18.6 for meal delivery and \$5.4 to \$19.0 per hour for home making).

2.7 On the other hand, elderly with no or mild impairment can apply for services under the IHCS (Ordinary Cases). They are however not required to be assessed by the SWD assessment mechanism and the NGOs which operate the IHCS maintain their own waiting lists for these ordinary cases.

Subsidised residential care services

2.8 At present, some 75 000 RCS places in the territory are provided by 748 RCHEs (see details in para. 4.2). Of the 75 000 RCS places provided, 26 000 are subsidised ones (some 23 000 for subsidised C&A places and some 3 000 for subsidised NH places). For these 26 000 subsidised RCS places, approximately two-third are provided by the subvented and contract RCHEs whereas the other one-third is provided by private/self-financing RCHEs participating in the EBPS and the NHPPS.

2.9 In 2013-14, the Government spent \$3.41 billion on providing the subsidised RCS (see para. 1.14). The cost per subsidised RCS place to the Government ranged from \$7,900 to \$15,600 a month (Note 10). An elderly user also has to pay \$1,600 to \$2,000 a month for the services received.

Note 10: According to the SWD Controlling Officer's Reports, in 2013-14, it cost the Government \$7,900 a month for an EBPS place, \$13,200 a month for a subsidised C&A place in a subvented RCHE, \$12,700 a month for a C&A/NH place in a contract RCHE and \$15,600 a month for an NHPPS place or an NH place in a subvented RCHE.

2.10 In addition, in 2013-14, the Government spent another \$2.1 billion (Note 11) on payments under the Comprehensive Social Security Assistance (CSSA) Scheme of the SWD to 25 700 elderly (aged 60 or above) living in non-subsidised RCS places in RCHEs. That is, apart from providing the 26 000 subsidised RCS places (see para. 2.8), the Government was also subsidising indirectly another 25 700 elderly who were living in non-subsidised RCS places in RCHEs, some 8 250 of whom were on the CWL (Note 12).

Long waiting lists and waiting times (para. 2.1(a))

2.11 On the <u>demand</u> side, with the ageing population and the longer life expectancy of Hong Kong people, the demand for subsidised LTC services is growing rapidly. Although the Government has strived to cope with the increasing demand, the long waitlisting situation remains.

Subsidised community care services

2.12 Against a capacity of some 7 010 to 9 450 places (an increase by 35%) over the five years from 2009-10 to 2013-14, the number of waiting cases for CCS had increased by 84%, rising from 2 330 to 4 280 for the same period. According to the SWD's records, the waitlisting situation for CCS was as follows:

Note 11: Based on the average monthly CSSA payments of \$6,953 a month for 25 700 elderly CSSA recipients living in non-subsidised RCS places in RCHEs as at March 2014, the Government spent some \$2.1 billion ($$6,953 \times 12 \times 25$ 700) on such CSSA payments to the elderly.

Note 12: The LWB informed LegCo in January 2014 that among the 29 000 applicants on the CWL as at end-September 2013, some 8 250 applicants were elderly CSSA recipients living in non-subsidised RCS places in RCHEs.

As at	Day care services		at Day care Home care services services (Note)		Total	
end-March of	Capacity	No. of waiting cases	Capacity	No. of waiting cases	Capacity	No. of waiting cases
	(a)	(b)	(c)	(d)	(a) + (c)	(b) + (d)
2010	2 310	1 580	4 700	750	7 010	2 330
2011	2 330	1 970	4 700	1 340	7 030	3 310
2012	2 560	2 260	6 200	910	8 760	3 170
2013	2 670	2 170	6 700	1 250	9 370	3 420
2014	2 750	2 100	6 700	2 180	9 450	4 280

(a) The numbers of elderly on the waiting lists for day care and home care services compared to the CCS capacity:

Source: SWD records

- *Note:* Home care services cover EHCCS and IHCS (Frail Cases), both of which provide similar services. In fact, elderly choosing these two types of services are on the same waiting list.
 - (b) The average waiting time for the two types of CCS over the past five years:

Financial year	Average waiting time (Month)			
	Day care services	Home care services		
2009-10	6.8	2.5		
2010-11	8.0	4.0		
2011-12	9.3	4.5		
2012-13	8.8	2.6		
2013-14	8.5	5.3		

Source: Audit analysis of SWD records
2.13 It can be seen that the numbers of elderly on the CCS waiting lists were generally rising and waiting times were long, reflecting a need for the Administration to keep the CCS capacity under regular review and expand it if appropriate, given the increasing demand on CCS arising from the ageing population. In October 2014, the SWD informed Audit that the waitlisting situation would improve in 2014-15 as it had planned to increase an additional 1 500 home care service places in March 2015 and these 1 500 additional places would be allocated to districts in accordance with their different demands.

2.14 As mentioned in paragraph 1.10, subsidised CCS are allocated on a district basis and are essentially provided by subvented NGOs through their centres/teams in 18 districts where the elderly live. Hence in service planning, it is important to take into account the number of waiting cases and waiting time of each district. Audit has found that:

(a) *Day care services:* Against an average of 7.7 months for day care services for the quarter ended June 2014, the average waiting time in a few districts (mostly in the New Territories) was particularly high (approaching or even exceeding 12 months) whereas that for a few districts was as low as two months or below, as shown below:

District	Average waiting time for quarter ended June 2014 (Month)
NT1	20.7
NT2	18.7
NT3	14.1
NT4	12.6
NT5	11.6
NT6	11.1
KLN1	2.3
HK1	1.6
KLN2	1.4

Source: Audit analysis of SWD records

(b) *Home care services:* Against an average of 7.3 months for home care services for the quarter ended June 2014, the average waiting time for a number of districts was particularly high whereas, in contrast, that for a few districts was quite low, as follows:

District	Average waiting time for quarter ended June 2014 (Month)
KLN3	11.6
NT7	10.1
HK2	9.7
NT3	9.5
KLN4	9.4
NT4	5.7
KLN5	2.2

Source: Audit analysis of SWD records

2.15 According to the SWD, different waiting time for different districts is reflective of a combination of factors, including the increasing population in certain districts, the number of centre/home places available, the turnover of day/home care places and the availability of premises for setting up new day care centres/units, and some of these factors are beyond the control of the Administration. The uneven waiting time for CCS in different districts however calls for concern. Whilst noting that the SWD has applied certain measures to reduce the waiting time in certain districts, such as: (a) introducing flexibility by allowing the provision of cross-district services in newly set-up day care centres; and (b) redistributing the EHCCS places among the cluster teams, Audit considers that the SWD needs to continue making more effective planning in its provision of CCS.

2.16 Unlike RCS for which the waitlisting information was regularly posted onto the SWD website (see para. 2.17), the SWD did not publicise the waitlisting information for CCS. Given the Government policy of ageing in place, the SWD needs to consider publicising the waitlisting information for CCS on its website.

Subsidised residential care services

2.17 The allocation of RCS places is on a territory-wide basis. As mentioned in paragraph 2.16, the SWD posted the RCS waitlisting information monthly onto its website. The Administration also reported to LegCo from time to time the number of applicants on the CWL and, on occasions, the waiting time for different types of subsidised RCS. The following waitlisting situation for RCS was reported/published as at different dates:

(a) Waiting list (against a capacity of some 23 000 C&A places and 3 000 NH places):

S-heidige de sourisees	No. of applicants on the CWL (Note 1) as at end of			
Subsidised services	March 2008 March 2011 (i) (ii)		August 2014 (iii)	
C&A places (Note 2)	16 700	20 340	24 250	
NH places (Note 3)	6 230	6 410	6 440	
Total	22 930	26 750	30 690	

- Source: SWD records
- Note 1: Most of the elderly on the CWL were staying at home or at non-subsidised RCS places in RCHEs while waiting for subsidised RCS places.
- *Note 2: The C&A places were mainly provided by subvented RCHEs and private RCHEs participating in EBPS.*
- *Note 3: The NH places were mainly provided by subvented and contract RCHEs.*

(b) *Waiting time:*

	Average waiting time (months)				
Subsidised places	for the three months ended				
	March 2008 (i)	March 2011 (ii)	August 2014 (iii)		
C&A places					
• Subvented/contract RCHEs	32	32	36		
• EBPS in private RCHEs	9	8	7		
Overall	21	22	20		
NH places	43	39	32 (Note)		

Source: SWD records

2.18 The waiting list and waiting time reported/published by the SWD as shown in paragraph 2.17(a) and (b) respectively however did not reflect the number of "inactive" cases on the CWL and the processing time taken for assessment. The methodology for calculating the waiting time, and revisions thereof, was also not properly documented. Taking for example, with the waiting list and waiting time reported as at end-August 2014 (see para. 2.17(a)(iii) and (b)(iii)), Audit noted the following:

Waiting list

(a) 6 800 elderly persons on the CWL <u>not</u> included as a result of their "inactive" status:

Note: As explained by the SWD, there was a reduction in the waiting time for NH places mainly because additional NH places had been provided in the 12 months to end-August 2014.

- (i) Before 5 November 2012, elderly cases which had been assessed as "RCS only" but were using CCS while waiting for RCS places were considered as "active" cases and included in waiting list for reporting. However, with effect from 5 November 2012, such elderly cases were reclassified as "inactive" in status and excluded from counting in reporting the number of elderly on the waiting list. Such revision in status was however not disclosed when reporting the number of elderly cases on the waiting list. The SWD Manual of Procedures (SWD Manual — Note 13) had also not been suitably revised to reflect such revision in "inactive" status for "RCS only" elderly cases;
- (ii) the reported number of 30 690 applicants on the CWL awaiting C&A or NH places as at end-August 2014 (see para. 2.17(a)(iii)) did not include a total of 6 800 "inactive" elderly cases which had been assessed as "RCS only" (see (i) above) or "dual option" but were meanwhile using CCS (Note 14); and
- (iii) given that the 6 800 "inactive" elderly in (ii) above can opt at any time for RCS (with their priority on the CWL not being affected by the "inactive" status), they represent a hidden, but not negligible, demand which should have been disclosed (say, by footnote) when reporting the waiting list and should have been suitably taken into account in service planning. In fact, Audit found that during January to August 2014, 560 (16%) of 3 400 RCS admissions under the CWL in the eight months were related to such "inactive" elderly cases which had reactivated their applications for RCS;
- **Note 13:** The SWD Manual on registration and allocation of subsidised LTC services is drawn up for use by all accredited assessors, RWs, RCHEs and all centre/service operators. The relevant parties are expected to observe the procedures laid down in the Manual.
- **Note 14:** As explained by the SWD, elderly cases which had been assessed as "RCS only" but were receiving CCS before 5 November 2012 were continued to be classified as active cases in the CWL. As for elderly cases which had been assessed as "dual option" (i.e. either RCS or CCS is equally appropriate for the applicant) but were receiving CCS, they had all along been classified as "inactive" cases and excluded from reporting.

(b) SWD statistics relating to elderly persons on the CWL: Based on SWD statistics, for 2013, elderly still awaiting subsidised RCS places in the CWL had an average life span of 83 years whereas elderly staying in subsidised RCS places (NH/C&A places) had an average life span of 87 years. Besides, the number of elderly on the CWL who had passed away while waiting for RCS places had increased from "4 000 to 4 500" a year before 2010 to 5 700 in 2013-14 (1 800 while waiting for NH places and 3 900 while waiting for C&A places);

Waiting time

- (c) *Methodology and revisions not properly documented:* Audit found that the SWD did not maintain proper records of the methodology it used. Upon Audit's enquiry, the SWD explained that in calculating the waiting time, the average number of days between the waitlist date and the admission date (see Steps (i) to (o) at Appendix B) for admitted cases in the past three months was taken. Even though Audit was informed by the SWD that it had revised in December 2013 the methodology for calculating the waiting time by excluding the complicated admission cases (e.g. those with history of reactivating the "inactive" status) from its calculations, the justifications for the revision and the extent to which the resultant waiting time would be affected were not properly documented; and
- (d) Processing time for assessment not taken into account: Although assessment is required before an eligible elderly is included in the CWL, the processing time for assessment had not been taken into account in calculating the waiting time. Such processing time includes the time taken for care need assessment after the elderly had given his/her consent for applying for LTC services and accepting the conduct of an assessment (see Steps (b) to (h) at Appendix B). According to the SWD, there may be time when it has to wait for the applicant's confirmation of his/her wish to be put on the CWL even after he/she had given his/her consent According to the SWD Manual, a care need for assessment. assessment, not including the time taken by SCNAMO(ES) for QC, should normally be completed within three weeks (or 21 days). Apparently because the assessment workload has kept on increasing

(Note 15), coupled with the over-concentration of the assessment workload on the accredited assessors of the SCNAMO(ES)s (see para. 2.21(b)), the five regional SCNAMO(ES)s had taken longer time in recent years to complete the assessments. In 2013-14, they had taken, on average, 27 days to complete an assessment, as compared with an average of 7 days in 2009-10, with detailed breakdown shown below:

	Average processing time for a care need assessment					
Financial	Office 1	Office 2	Office 3	Office 4	Office 5	Overall
ycai	(No. of days)					
2009-10	6	10	6	7	7	7
2010-11	7	10	7	13	7	9
2011-12	12	12	7	17	9	11
2012-13	12	17	8	28	20	17
2013-14	24	19	14	36	42	27

In particular, Audit noted that:

- (i) of 4 700 applications received in the first three months of 2014 with assessments completed by mid-August 2014, half were completed beyond 21 days, with many completed even beyond two months;
- (ii) after assessment, QC is required to be conducted by SCNAMO(ES)s (see Step (e) at Appendix B) to ascertain if there are any inconsistencies or irregularities in the assessments. Against the standard of two weeks for QC as stipulated in the SWD Manual, Audit however found that as at mid-August 2014, QC for 16% of the assessments received in the first three months of 2014 were completed in more than two weeks, with some completed even in more than two months; and
- (iii) as at end-July 2014, the SCNAMO(ES)s had accumulated a backlog of some 2 900 cases awaiting eligibility assessment and re-assessment.

Note 15: Comparing with the workload some five years ago (2008-09) of receiving 1 500 applications a month, the SWD received 2 500 applications a month in 2013-14.

Need for reviewing the assessment mechanism to cope with the growing demands

2.19 As mentioned in paragraph 1.6, the SWD has implemented a standardised care need assessment mechanism to help assess elderly persons' level of impairment which will be matched with appropriate subsidised LTC services, including "RCS only", "CCS only" or "dual option". As the assessment mechanism determines the applicants' eligibility for different types of care services, it acts as the "Gate-keeper" and plays a very important role in the Government's provision of subsidised LTC services.

2.20 Assessment results obtained from the SWD assessment mechanism have also enabled the RWs and the RCHEs/centre operators to design care plans for individual elderly according to their needs and make appropriate referrals for specialists' intervention.

2.21 Audit has however found a number of issues warranting a review of the SWD assessment mechanism, as follows:

- (a) Old version of assessment tool in use. The MDS-HC assessment tool currently in use for assessment and service matching is version 2.0 which has been employed for use since November 2000 (over 13 years). In July 2013, the SWD obtained funds from LF to commission a local university to, among others, review and update the assessment tool from version 2.0 to version 9.1 which would:
 - (i) facilitate the Government to better decide how subsidised LTC services could be matched according to the need and urgency of elderly applicants and provide a more detailed assessment on the health status of the elderly persons, based on, for example, their levels of functional impairment, cognition (e.g. consistency in thoughts), communication, pain and mood as well as social support and environmental risk; and
 - (ii) allow the elderly care service operators to have a more precise understanding of the services required for taking care of elderly persons with different levels of frailty.

In September 2014, the SWD informed Audit that the local university was commissioned under a three-year project to update the assessment tool as well as to develop a more effective standardised assessment system for better service matching. However, the tool updating process would only be completed by early 2016;

- Low percentage of accredited assessors involved in assessments. (b) According to the LDS computer system, as at June 2014, there were about 2 700 accredited assessors, but only 1 800 of whom were recorded as active ones (Note 16). An analysis of the assessments completed for the 12 months ended June 2014 as captured in the computer system however revealed that only 850 (47%) of these 1 800 active assessors had been involved in conducting assessments in the 12 months. This casts doubt on whether the other 950 (53%) accredited assessors were still active in assessment work. Another analysis revealed that 70% of the 6 800 assessments completed by mid-August 2014 in relation to applications received during the first quarter of 2014 were conducted by 36 (2% of 1 800) accredited assessors of the five regional SCNAMO(ES)s (Note 17). The low percentage of accredited assessors who are still active in assessment work and the over-concentration of the assessment workload on the 36 accredited assessors of the SCNAMO(ES)s call for The extremely uneven output may affect the quality and concern. efficiency of the assessments which determine the appropriate LTC services to be provided. They may also have accounted for why the SWD has kept on taking longer time to complete the care need assessments (see para. 2.18(d); and
- Note 16: As at June 2014, these 1 800 accredited assessors (classified as active ones) were in relevant assessment-related posts in the SWD, NGOs and HA, with the majority of them stationed in the SWD (about 1 000) and NGOs (about 650). The five regional SCNAMO(ES)s under the SWD had 47 accredited assessors in post.
- Note 17: In September 2014, the SWD informed Audit that due to division of work, the SCNAMO(ES)s had shouldered much of the assessment workload, but the situation would improve with the provision, effective from October 2014, of increased manpower to NGOs for their operation of district elderly community centres and the neighbourhood elderly centres which would share more assessment workload.

Limited random QCs conducted. In line with the recommendations made (c) by the Independent Commission Against Corruption (ICAC - Note 18) in 2009, the SWD has laid down the requirement that effective from November 2010, each regional SCNAMO(ES) would conduct, in addition to paper check for confirming the results of each assessment (see para. 2.18(d)(ii)), random QCs of a few cases by home visits or interviews in each quarter, in order to deter and detect inaccurate assessments. In this review, Audit has however found that over the 3.5 years from 2011 to 2014 (up to June 2014), only 36 random OC visits (i.e. some 10 visits a year) had been conducted by the five regional SCNAMO(ES)s, with one office not having conducted any random QC visits over the years and another office having conducted only one random QC visit (in 2011). With the growth of assessment workload in recent years (coming up to some 25 000 assessments a year), the adequacy of conducting only 10 random QCs a year should be reviewed.

2.22 Given the "Gate-keeper" role of the assessment mechanism, the SWD needs to review how the assessment procedures can be fine-tuned, with appropriate checks and balances strengthened. In September 2014, the SWD informed Audit that as part of its upcoming LDS redevelopment project and the three-year project for enhancing the infrastructure of LTC in Hong Kong (see para. 2.21(a) above and para. 5.8), the Department will review the assessment mechanism with a view to improving its efficiency and accuracy.

Marginal increase achieved in the capacity of subsidised RCS places (para. 2.1(b))

2.23 On the <u>supply</u> side, the Administration has continuously allocated substantial resources to the provision of LTC services to cope with the rising demands, particularly for RCS. For many years, the Chief Executive of HKSAR in his Policy Addresses has indicated the need to provide more subsidised RCS places for the elderly and various Government initiatives have been implemented in recent years to increase the provision of RCS places, including the following:

Note 18: In October 2009, the ICAC completed an assignment review of the SWD's administration of the CWL for subsidised LTC services for the elderly.

- **2010-11 Policy Address:** To provide additional places by building new RCS homes and making full use of the space in existing homes, and to increase the supply of higher-quality places under the EBPS.
- **2011-12 Policy Address:** To buy more RCS places to help relieve the pressure on subvented and contract homes.
- **2013** *Policy Address:* To increase the number of subsidised RCS places for the elderly through a multi-pronged approach:
 - in the short run, the Government would purchase places from private RCHEs through EBPS and make better use of space in subvented homes for provision of more subsidised places;
 - for the medium-term, the Government would build new contract RCHEs to increase the number of subsidised places, particularly places providing a higher level of nursing care; and
 - in the long run, the Government would identify sites for new homes, and would explore the feasibility of incorporating RCS facilities into redevelopment projects, and convert vacant buildings into RCHEs.

From 2013 to 2015, the SWD would provide over 1 700 new subsidised places. The Government had also earmarked sites in 11 development projects for new contract RCHEs.

• 2014 Policy Address: The Government would continue to increase the supply of subsidised RCS places for the elderly through a multi-pronged approach that included, among others, the Special Scheme on privately owned sites for welfare uses. The Government would purchase RCS places from an elderly home run by a Hong Kong NGO in Shenzhen to provide an option for the elderly on the CWL for subsidised RCS places. The Government was also discussing similar arrangements with another elderly home in Zhaoqing run by a Hong Kong NGO. The Government had also earmarked about \$800 million to meet the expenses incurred in issuing a total of 3 000 RCS vouchers in three phases from 2015-16 to 2017-18.

2.24 There has been a steady increase in the capacity of CCS over the past five years (see para. 2.12(a)). In the case of RCS, although the Administration has made great efforts to increase the provision of RCS places over the years, including the adoption of a multi-pronged approach to increase the number of subsidised RCS places, Audit however noted that the overall increase in the number of subsidised RCS places was not significant. As shown below, the number of subsidised RCS places had only increased by 20% in 14 years, i.e. from 21 600 as at end-March 2000 to 26 000 as at end-March 2014, with trend over the years shown at Appendix C:

Type of DCHEs	No. of subsidised RCS places			
Type of KCHES	End-March 2000	End-March 2014		
(a) Subvented RCHEs	18 330	16 460		
(b) Contract RCHEs	(Not yet come into operation)	1 670		
(c) Private/Self-financing RCHEs participated in EBPS or NHPPS	3 250	7 820		
Total	21 580 (say 21 600)	25 950 (say 26 000)		

Reasons for not achieving significant increase in the number of subsidised RCS places are examined below.

2.25 Service quality enhanced, but number of places reduced after conversion. There had been a significant reduction in the number of RCS places provided by homes for the aged (H/As) and self-care (S/C) hostels (Note 19). Since 2005-06, the SWD has launched a conversion programme to upgrade RCS places in H/As and S/C hostels to C&A places providing CoC. According to the SWD, it is the Government's policy to promote CoC in subsidised RCS in order to enable

Note 19: Elderly residing in H/As are assessed to be of no or mild impairment by the assessment mechanism, while elderly residing in S/C hostels need not be assessed by the assessment mechanism. Since 2005, the Administration had aimed to phase out H/A and S/C hostel places so that the resources could be redirected to provide more LTC services for the elderly. No new H/As and S/C hostels had been built since 1998 and 1992 respectively.

elderly residents to stay in the same RCHE even when their health conditions deteriorate (see para. 1.4(b)). Because of the conversion programme, some 10 000 RCS places previously provided by 74 H/As and S/C hostels were converted to some 6 100 C&A places with CoC.

2.26 To make up for the reduction of the RCS capacity by 3 900 (10 000 less 6 100) RCS places as a result of the conversion programme, the Administration should have exerted greater efforts to increase the overall RCS capacity. Audit has however found that the Administration was not able to increase timely the supply at a greater pace:

(a) Limited number of subsidised RCS places provided by contract RCHEs:

- (i) While noting that the time taken to construct a contract RCHE is not entirely under the control of the SWD, it generally took a long time (could be over 10 years) to construct a contract RCHE after a suitable site had been identified until the contract RCHE commenced operation. However, while it took a long time to set up an RCHE, the 22 contract RCHEs currently in operation could only provide in total 1 670 subsidised RCS places. Although seven new contract RCHEs are expected to commence service from 2014-15 to 2016-17 and 11 sites had been earmarked for the construction of new contract RCHEs, the SWD's preliminary estimation indicated that they could only provide additional 2 000 RCS places (subsidised and non-subsidised) over a nine-year period; and
- (ii) the capital cost for setting up a contract RCHE (which is usually purpose-built) is high (Note 20) and, as mentioned in (i) above, contract RCHEs usually took many years to set up. Under the open-tender contracts awarded, the home operators are allowed to provide a certain ratio of non-subsidised places in the RCHEs (Note 21). Since 2009, the SWD has generally adopted a ratio of
- **Note 20:** For example, the estimated construction cost of a contract RCHE with 100 RCS places and 20 day care places in Kwun Tong was \$65 million.
- **Note 21:** Operators for contract RCHEs need to seek approval of the SWD on the fees to be charged, or for any revisions thereof, on the non-subsidised RCS places they provide.

"6:4" for newly-built contract RCHEs for their subsidised and non-subsidised places provided. As at end-June 2014, ten contract RCHEs were operating at a ratio of "6:4". Audit however found that the contract RCHEs which had been in full year operation in 2013-14 had in total 95 (9%) vacant non-subsidised places (with one to 19 vacant places in each of the contract RCHEs). This indicates that there might be spare capacity in some of the contract RCHEs. However, in practice, the SWD only adjusted the ratio of subsidised places to non-subsidised places on contract extensions/renewals (which did not occur frequently). In view of the growing demand for subsidised LTC services and given the high capital cost for setting up a contract RCHE, there is a need for the SWD to take measures to secure the optimum use of the places (subsidised and non-subsidised) of each contract RCHE, including exploring the feasibility of incorporating suitable flexibility in future tenders/contracts on the ratio of subsidised to non-subsidised places; and

(b) Target numbers of EBPS and NHPPS places to be purchased not achieved/sustained:

In the ten years to end-March 2014, the SWD had substantially (i) completed six rounds of EBPS purchase targeting to purchase a total of 2 290 to 2 390 places to supplement the original 5 840 EBPS places as at end-March 2003. However, by end-March 2014, there was only a net addition of 1 820 EBPS places (76% to 79% of the target). According to the SWD's records, over the years, there were cases when the home operators had ceased to operate or decided to withdraw from the EBPS. The SWD had also reduced the number of places purchased from several operators as a means of sanction for operators not complying with conditions in the EBPS purchase agreements. Furthermore, in the more recent rounds of purchases, a few operators applying for participating in the EBPS did not accept the SWD's offer even after their applications had been approved;

- (ii) the same applied to the NHPPS which was launched in 2010. Although the SWD intended to purchase from some 40 self-financing RCHEs (see para. 4.2(e)) a total of 380 NH places which would come in service by 2011-12, it transpired that the SWD could only purchase a total of 161 NH places (42% of 380) from four self-financing RCHEs. Audit however noted that the overall enrolment rate for non-subsidised places in these 40 RCHEs was only around 75% as at end-March 2014, indicating that there was still scope for the SWD to purchase additional NH places from them; and
- (iii) the "50% cap" requirement set by the SWD since 2003 (Note 22) on the number of EBPS places to be purchased from individual RCHEs may also call for review because there were occasions when the RCHEs had vacant non-subsidised places, but the SWD could not purchase additional EBPS places from the RCHEs concerned because of the "50% cap" requirement, despite that there were demands for such subsidised places in the RCHEs concerned (paras. 4.19(c) and 4.20(c) are both relevant).

2.27 Although the Administration had made great efforts to increase the number of subsidised RCS places and to improve their service quality, Audit has however noted that it took a long time to achieve results and the results were not Given the ageing population and the growing demand for always apparent. subsidised LTC services, the marginal increase in the total number of subsidised RCS places provided as reported in paragraph 2.24 is a cause for concern. Although the elderly are encouraged to age in place, some frail ones still need institutional care for health or family reasons. Therefore, it remains a challenge for the Government to cope with the growing demand. More recently, a Special Scheme on privately owned sites for welfare uses was launched (see para. 1.15). According to the Administration, if all proposals received from welfare NGOs under the Special Scheme for in-situ expansion and redevelopment of land they owned could be implemented smoothly, a substantial number of additional elderly service places would be provided. However, the Scheme would take some time to develop and there are challenges ahead in its implementation (see para. 5.6).

Note 22: Before 2003, the SWD would purchase up to 70% of the EBPS places from individual RCHEs. According to the SWD, the reduction of the capping percentage of purchased places from 70% to 50% since 2003 aimed to allow more private RCHEs to participate in EBPS, which helped enhance the quality of the RCHEs in the private sector.

2.28 With the long waiting list and waiting time for subsidised RCS places and with the constraints faced by the Government in increasing the supply, Audit has however noted that RCHEs in the private sector which are providing the bulk of the RCS places (see para. 4.2(c) and (d)) have an overall vacancy rate of 26% (Note 23) for their non-subsidised places. It appears that there may possibly be spare capacity in these RCHEs. In this connection, the Government's initiative of issuing RCS vouchers as stated in the 2014 Policy Address (see para. 2.23) may be a way in future to allow the elderly to choose for living in self-financing and private RCHEs which provide non-subsidised places that operate up to a standard to the satisfaction of the SWD.

Need to maximise the effective use of limited subsidised RCS places available (para. 2.1(c))

2.29 Given the substantial Government resources spent on the provision of LTC services each year, coupled with the growing service demand and the constraints faced by the Government in bringing forth more rapid expansion of the RCS capacity, the Administration should make good efforts to maximise the optimum use of the limited subsidised places available, as each subsidised RCS place cost the Government \$7,900 to \$15,600 a month (see para. 2.9). Taking the 26 000 subsidised RCS places currently available, Audit has found the following inadequacies in the provision, allocation and monitoring of the limited RCS places:

- (a) purchase and allocation of EBPS places (paras. 2.30 and 2.31);
- (b) allocation, matching and admission of RCS places (paras. 2.32 to 2.36);
- (c) management of agency quota places (paras. 2.37 to 2.50); and
- (d) utilisation of subsidised infirmary unit places (paras. 2.51 to 2.60).

Note 23: The vacancy rate for non-subsidised places of an RCHE is calculated by deducting from its licensing capacity (for private RCHEs not participating in the EBPS)/actual capacity (for private RCHEs participating in the EBPS) the number of subsidised places (if any) and the number of residents residing in non-subsidised places of the RCHE.

Purchase and allocation of EBPS places (para. 2.29(a))

As at end-March 2014, 30% of the subsidised RCS places were provided by RCHEs participating in the EBPS. Each year, the SWD spent substantial resources on the purchase scheme. For example, in 2013-14, the SWD spent \$673 million on the purchase of EBPS places. Audit however noted that:

- (a) among 121 RCHEs participating in the EBPS as at end-March 2014 (excluding 14 RCHEs which had involved place purchase and case intake by phases in 2013-14), 39 (32% of 121) RCHEs could not achieve the 92% enrolment rate set by the SWD (see para. 4.19(a)). Among them, 13 RCHEs had relatively low enrolment rates, with ten of them having an average enrolment rate between 50% and 80%, and three below 50%. On average, some 550 to 590 of 7 660 EBPS places had remained vacant in 2012-13 and 2013-14; and
- (b) the SWD had introduced a place reduction mechanism since April 2012 by reducing the number of EBPS places to be purchased in the renewal of the purchase agreement if an RCHE had not achieved an average enrolment rate of 92% in its previous agreement period (Note 24). According to the SWD, resources so released could be directed to purchase of places from RCHEs with higher demand. Of the 39 RCHEs which had failed to achieve the 92% enrolment rate set by the SWD, 25 RCHEs were subject to EBPS place reductions in their 2014-16 purchase agreements. However, for the 25 RCHEs, some 140 vacant EBPS places were still found in the first three months of their renewed agreements (April to June 2014) and with 11 of the 25 RCHEs still having an enrolment rate below 90%.

2.31 According to the SWD, the objective of the EBPS is to upgrade the service standard of private RCHEs and to reduce the elderly's waiting time for subsidised C&A places. The EBPS places have remained essential to meet the RCS needs of those on the CWL. Nonetheless, it can be seen that although the EBPS has helped increase substantially the number of subsidised RCS places provided by the

Note 24: The place reduction mechanism did not apply to RCHEs which joined the EBPS after April 2012 and RCHEs with additional EBPS places purchased after April 2012.

Government, there is however scope for optimising the use of the EBPS places. This will be examined in more detail in PART 4.

Allocation, matching and admission of RCS places (para. 2.29(b))

As mentioned earlier, in 2013-14, each RCS place cost the Government \$7,900 to \$15,600 a month, i.e. some \$260 to \$520 per day for a place. To ensure optimum use of the RCS places, the SWD has required an RCHE to meet a target yearly enrolment rate ranging from 92% to 97% (which is to be calculated on the end day of each month). To facilitate the CWL matching and placement allocation, the SWD has also set up a "small pool" mechanism which aims to ensure that eligible applicants are placed to a matched RCHE promptly once vacancies are expected to be available soon (see Steps (j) to (l) at Appendix B). If a matched applicant has accepted an offer of a particular RCHE place, the LDS Office will arrange for his/her placement admission once the vacancy is available. In addition, the SWD has laid down in its Manual the lead time allowed for different stages of processing, e.g. two working days allowed for an RCHE to notify the SWD of the discharge of an elderly resident and six weeks allowed for an RW to confirm an elderly's acceptance of a call for admission to RCS small pool.

2.33 RCHE residents will be discharged from the LTC services under the following circumstances:

- (a) self-withdrawal of the elderly resident;
- (b) when an elderly resident's health conditions has improved and he/she is no longer eligible for or in need of RCS;
- (c) the elderly resident has been transferred to other services with his/her consent or that of his/her designates; or
- (d) death of the elderly resident.

According to the SWD Manual, when an RCHE resident has been discharged from LTC services, the RCHE concerned should inform the LDS Office of the SWD within 2 working days after the discharge. After matching of placement against the CWL, the LDS Office will issue a placement referral to the RCHE concerned which

should contact the elderly as soon as possible and arrange for his/her admission within 3 weeks.

2.34 From an examination of the SWD records, Audit notes the following inefficiency and wastage in the allocation of, and admission to, subsidised RCS places which call for improvement:

- Late reporting of discharge cases by RCHEs: Although the RCHEs are (a) required under the SWD Manual to inform the SWD within 2 working days of the discharge of an elderly resident, an analysis of some 300 ordinary discharge cases reported by RCHEs to the LDS Office with admission placements effected in April 2014 identified many cases which had not complied with the "2 working days" requirement. Some 50 discharge cases were reported, without explanations given, more than 7 days after the discharge, with 11 cases reported more than one month after the discharge. Among these 11 cases, in one extreme case, the SWD was notified almost two years after the discharge. There was however no evidence indicating that the SWD had taken any follow-up actions (e.g. seeking explanations and/or issuing advisory letters) on the RCHEs' belated reporting of the discharge;
- (b) No time pledge set for SWD placement referrals: As mentioned earlier, the SWD has operated a "small pool" mechanism to facilitate the CWL matching and placement allocation. The applicant should have given, during the "small pool" screening (Note 25), his/her consent for admission and have possessed valid assessment results. Once the SWD receives a vacancy notification from an RCHE, it will arrange for referring an applicant to fill the vacancy (i.e. placement referral). In the absence of any performance pledge on the processing time allowed for placement referral, Audit examined all 174 placement referrals made by the SWD to subvented and contract RCHEs in April 2014 and found that 42 (24% of 174) placement referrals were made more than one week, with seven of them made more than one month after receiving the vacancy notifications. On enquiry with staff of the LDS Office, Audit
- Note 25: During the "small pool" screening, an applicant may choose not to accept a matched offer and will be removed from the "small pool". If he/she has met certain circumstances as defined in the SWD Manual, he/she is allowed to continue to be waitlisted under the CWL (see Step (l) at Appendix B).

was informed that earlier placement admissions could not be made very often because of the time taken to await the results of pre-admission re-assessment (Note 26);

(c) Delay in admissions of applicants by RCHEs: As mentioned in paragraph 2.33, once the SWD has made a placement referral, an RCHE is expected to contact the elderly as soon as possible and arrange for his/her admission within 3 weeks. An analysis of the admission cases reported by the RCHEs, as captured in the LDS computer system, revealed that 29% (1 353 out of 4 666 admission cases handled for the 12 months to June 2014) were admitted to services more than one month after the SWD's placement referral, with 89 cases admitted two to six months thereafter:

Time for admission	No. of admission cases
> 2 months to 3 months	81
> 3 months to 4 months	4
> 4 months to 5 months	3
> 5 months to 6 months	1 (involving a time lag of 177 days)
Total	89

Again, there was no evidence indicating that the SWD had taken any follow-up actions (e.g. seeking explanations and/or issuing advisory letters) on the late admission of the cases;

- (d) Late reporting of temporary discharge cases by RCHEs: According to the SWD Manual, an RCHE should discharge an elderly resident on a temporary basis when: (i) he/she has been hospitalised for 2 or more months and no foreseeable discharge date can be fixed; or (ii) he/she is away from Hong Kong for one or more months and has no definite return date. Under the circumstances, the RCHE needs to notify the LDS Office to arrange for admission placement and, again, when the date of return for the temporarily discharged elderly is confirmed for re-admission.
- Note 26: As mentioned in paragraph 2.3, assessment results are only valid for 12 months and because of the long waiting time, re-assessment is required. Besides, the SWD had accumulated a backlog of cases awaiting assessment (see para. 2.18(d)(iii)).

Audit examined all 38 notifications of temporary discharge received by the LDS Office between January and July 2014, and found that many notifications were submitted late by the RCHEs, including 11 (29% of 38) notifications received by LDS Office some 2.5 to 10 months after the temporary discharge, with no explanations given. Among these 11 late notifications of temporary discharge cases, except for one case which was related to an elderly resident who was away from Hong Kong (and was reported after the lapse of five months), all the other 10 cases were related to hospitalisation of the elderly residents. There was however no evidence indicating that the SWD had taken any follow-up actions (e.g. seeking explanations and/or issuing advisory letters) on the late notification of the temporary discharge cases; and

(e) Lack of laid-down procedures for handling late reporting of RCS vacancies and reliance on an honour system for reporting RCS vacancies: Vacancies may arise from discharge of service users, from newly purchased places, or from additional places created as a result of in-situ expansion of the RCHE. The SWD Manual has however not laid down the procedures for handling late reporting of vacancies as well as the follow-up actions to be taken. Besides, the SWD does not maintain a proper system to keep track of the utilisation of the subsidised RCS places provided by individual RCHEs. Although RCHEs providing subsidised RCS places are required to achieve a yearly enrolment rate (e.g. 95% for subvented RCHEs), the SWD relies on the RCHEs to report accurately and timely any RCS vacancies arising. Proper checks and balances have not been put in place to ensure no non-reporting of vacancies.

As mentioned earlier, the number of subsidised RCS places is limited and such places are costly to the Government. The "small pool" mechanism, together with the target enrolment rates set by the SWD for individual RCHEs, help optimise the use of the subsidised RCS places. However, as reported in paragraph 2.34(a) to (d), Audit has found occasions when the SWD had taken longer time to arrange for admission placement while the RCHEs had also taken longer time to report vacancies and to arrange for the admission of applicants. The situation calls for improvement. In particular, the SWD needs to explore how the procedures for allocation, matching and admission of the limited RCS places can be fine-tuned to minimise the lead time, including the incorporation of appropriate checks and balances to facilitate more effective monitoring. 2.36 In response to Audit's enquiries, the SWD informed Audit in October 2014 that it would implement the following measures, starting from November 2014, to improve the current situation:

- (a) issuing notifications to the RCHEs, reminding them to timely report the discharge and temporary discharge of elderly residents to the LDS Office in accordance with the timeframe stipulated in the SWD Manual;
- (b) putting in place an acknowledgement system to ensure that the LDS Office has received the discharge notifications from the RCHEs for timely referral of cases for admission;
- (c) demanding for written explanations from relevant parties on overdue replies and belated notifications on discharge of residents for study of areas for improvement;
- (d) organising sharing sessions for relevant parties to facilitate their compliance in completing the admission procedures within the timeframe stipulated in the SWD Manual; and
- (e) putting in place a bring-up system as well as incorporating appropriate check-and-balance functions to facilitate more effective monitoring in the coming redevelopment of the LDS computer system.

Management of agency quota places (para. 2.29(c))

2.37 As mentioned in paragraph 1.8, the SWD has implemented the CWL since 2003 to centralise under its control all applications for subsidised LTC services. This streamlines the application and placement procedures, and avoids the need for the elderly to approach different organisations to apply and waitlist for different services. It also facilitates effective service planning and resource management. Audit has however found that among the 26 000 subsidised RCS places available as at June 2014, 1 812 subsidised RCS places were managed and allocated by the NGOs outside the CWL (Note 27). It involved 30 NGOs operating

Note 27: The number of 1 812 "agency quota" places had not included another 230 H/A places which were occupied as at end-June 2014 by residents admitted under AQ and would be deleted after completion of the conversion programme mentioned in paragraph 2.25.

74 subvented RCHEs. These 1 812 places, representing 11% of the 16 460 subsidised RCS places provided by the subvented RCHEs, are known as "agency quota" (AQ) places.

2.38 Whilst these 1 812 AQ places are 100% subsidised by the Government at some \$25.5 million a month (Note 28), NGOs are given full autonomy to decide when to accept/register applications for admission to such AQ places, so long as the elderly taking up the AQ places have been subject to the care need assessment under the SWD assessment mechanism. That is, only elderly found suitable for admission to RCS under the SWD assessment mechanism are allowed to take up the AQ places.

2.39 *Historical developments leading to the provision of AQ places to NGOs.* According to the SWD records, in the early days, RCHEs were operated by NGOs largely using their own resources. Placement admissions were then solely allocated by the NGOs. With gradual expansion of RCS for the elderly, the SWD took over the full funding responsibility for most of these RCHEs. Gradually, the SWD was approached by a large number of elderly people for admission to RCHEs, and subvented RCHEs were asked to admit cases from the SWD's waiting list (now known as the CWL). The NGOs operating these subvented RCHEs were also allocated separate quota, termed "AQ", for admitting their own cases (Note 29). The AQ arrangement was generally laid down as follows:

- (a) it was stipulated as a private treaty grant (PTG) condition for RCHEs that a minimum of 80% of the RCHE capacity would be reserved for applicants to be nominated by the SWD ("80% SWD quota")(Note 30); or
- **Note 28:** Based on the SWD Controlling Officer's Report for 2014-15, it cost the Government \$14,100 a month for a subsidised C&A place in a subvented RCHE. The cost of 1 812 AQ places was \$25.5 million ($$14,100 \times 1 812$) a month.
- **Note 29:** In October 2014, the SWD informed Audit that the provision of AQs to NGOs was a historical arrangement and served as an acknowledgement of the financial contribution of NGOs to the capital cost for setting up the RCHEs at that time.
- Note 30: According to the Lands Administration Office Instruction (issued before 1998) which governed PTGs for RCHEs, although a special condition was set for a minimum of 80% of the home capacity to be reserved for nomination by the SWD, it was also stated that the reserved places might not always be taken up.

(b) for RCHEs located in public housing estates, the AQ was agreed in correspondence between the SWD and the NGOs which had successfully bid for hiring the Housing Authority premises for operating RCHEs.

2.40To encourage NGOs to build and operate RCHEs, the Administration sometimes provided them with land on PTGs. The NGOs could also apply for grants from LF to defray part of the building and other capital costs of setting up the RCHEs. However, the SWD had also made it clear in its correspondence with the NGOs that the SWD quota would not automatically commit the NGOs to any subventions or LF capital grants for the operation of the RCHE. The SWD emphasised in its correspondence with the NGOs that separate application for LF grants and/or other types of SWD subventions should be made as and when appropriate and would be considered on their own merits. The provision of AQ places and the funding of such places are therefore two separate issues, and this was further confirmed in the legal advice obtained by the SWD on two occasions (Note 31). Thus the SWD had no obligation to grant or continue to grant subvention for the AQ places, and taking back the subvention for the AQ places would not constitute a breach of the PTG. The same applied to the AQ places granted to NGOs for RCHEs located in public housing estates.

2.41 *ICAC review in 2005.* In an assignment review conducted in June 2005, the ICAC had expressed concerns on the risks in the admission procedures for the AQ places, particularly concerns about possible abuse in making priority placements and manipulating the waiting lists. In that review, the ICAC found that there were 3 165 AQ places and the waiting time in 2004 for the latest placement of AQ places for six (out of nine) NGOs it visited was less than one year (Note 32), with only one visited NGO having opened up its AQ places to members of the public. The ICAC made recommendations to the SWD to step up the controls, including the need for the NGOs to adopt the SWD assessment mechanism to process applications for admission to the AQ places.

- **Note 31:** The SWD sought legal advice in 2001 on the allocation of AQ places and again in 2004 on the deletion of the AQ places previously granted to H/As and S/C hostels (see para. 2.44).
- **Note 32:** It seems that this compared favourably with the average waiting time in 2004-05 of 30 months for C&A places for applicants then on the CWL.

2.42 Following the ICAC assignment review, the SWD issued guidelines in June 2006 for NGOs with AQ places to follow. According to the SWD guidelines (which are still in force), each NGO may set the admission criteria with reference to its mission, vision, values and service strategies. While some NGOs may open up their AQ places to the elderly of the public, some may continue to admit cases referred by directors or donors, family members or relatives of staff, members of service units of the agency and elderly with the same religion as the agency, on the basis of admission criteria laid down by the NGOs.

2.43 In line with the SWD guidelines, effective since April 2008, each NGO is required to submit yearly a standard agency-based "Self-assessment Form" to the SWD to confirm compliance with its operational manual for allocation of the AQ places in the preceding financial year and state the action plan to be taken for any non-compliance and specify the timeframe for completing the actions. In other words, the SWD has adopted an honour reporting system (Note 33) and relies largely on the NGOs' own governance to manage the AQ places.

2.44 *Conversion of H/A and S/C hostel places into C&A places providing CoC.* With the phasing out of H/A and S/C hostel places since 2005 (see para. 2.25), AQs previously accorded to NGOs for these places had ceased to exist once the RCHEs kick-started conversion under the conversion programme. During the conversion programme, the SWD had also encouraged RCHEs participating in the conversion to return all or part of their C&A places under the AQ to the SWD for allocation to elderly on the CWL. With the cessation of AQ places previously accorded to H/As and S/C hostels, coupled with the voluntary return of some AQ places by a few subvented RCHEs, as at June 2014, there were 1 812 AQ places available.

Note 33: Other than the annual reporting requirement, NGOs are not required to submit to the SWD copies of their operational manuals, including information on their admission criteria, criteria for priority placement, waitlisting and monitoring mechanisms adopted for the allocation of AQ places.

Audit findings

2.45 The appropriateness of granting AQ places outside the CWL with full subsidy. The introduction of the CWL since 2003 has provided a single-entry point for the elderly to apply for subsidised LTC services. As mentioned earlier, the number of subsidised RCS places is limited and there is always a long waiting list on the CWL. The fact that the SWD has allowed some 1 800 subsidised RCS places to be allocated outside the CWL and beyond its control may have undermined the central mechanism adopted for the allocation of RCS places.

2.46 Because the AQ allocations are managed by the NGOs/RCHEs concerned and are separate from the CWL, some elderly waiting on the CWL may approach different RCHEs to queue up for AQ allocations. There are even RCHEs which have set the requirement that an applicant applying for their AQ allocations must at the same time apply for LTC services under the CWL of the SWD. The allocation of AQ places outside the CWL might provide an added advantage to some applicants who applied for AQ places more recently, but might have been admitted RCS places ahead of other needy elderly still on the CWL (Note 34). This may provide opportunities for inequitable allocations. Audit research of the websites of selected NGOs with quite a large number of AQ places for their RCHEs further found that many of the NGOs had not posted information on the availability of AQ or their latest turn of placement for AQ places onto their websites.

2.47 Audit examined copies of all 29 AQ admission forms received by the SWD in April 2014 from different NGOs. It was found that the majority (72% or 21 cases) of the elderly involved in these 29 AQ admissions were also on the CWL of the SWD. This is not in line with the Government's LTC policy of centralising all applications for subsidised LTC services under the CWL. According to the SWD guidelines, NGOs with AQ places are allowed to lay down their own admission criteria and waitlisting mechanism (see para. 2.42).

Note 34: As mentioned in paragraph 2.3, the allocation of care services for the elderly on the CWL is on a first-come-first-served basis determined according to the applicants' LTC dates and their preferences.

2.48 **Commitment made to LegCo FC in 1995.** As early as March 1995, the Administration informed the LegCo FC (Note 35) that the Government would play an active role in monitoring the admission of elderly people into RCHEs and NGOs which operated the subvented RCHEs would <u>not</u> be given any discretion to admit applicants other than those on the waiting list managed by the SWD. However, Audit noted that the Administration had still granted AQs, without keeping LegCo informed, to 25 subvented RCHEs (Note 36) which were <u>planned before 1995</u> but commenced operation between 1995 and 2002. As at June 2014, they together were providing 607 (33% of 1 812) AQ places. Although the Administration has ceased granting AQs for subvented RCHEs <u>planned after 1995</u>, it had continued allowing all RCHEs already granted with AQs to allocate their AQ places outside the CWL (see para. 2.37).

2.49 *Under-utilisation of AQ places.* As mentioned in paragraph 2.38, as at June 2014, 1 812 AQ places were allocated by NGOs outside the CWL, but they were fully subsidised by the Government. According to the SWD records, Audit noted that as at June 2014, among the 1 812 AQ places available:

- Only 1 275 (70%) of the 1 812 AQ places were successfully allocated by the NGOs themselves (with AQ enrolment rates for individual RCHEs ranging from 17% to 100%).
- Another 344 (19%) AQ places had been informally "loaned" to the SWD for taking up applicants on the CWL on a one-off basis (Note).
- The remaining 193 (11%) AQ places were not utilised.
- Note: These subvented RCHEs are required under the Funding and Service Agreements they entered with the Government to keep an overall enrolment rate of not less than 95% within one year for their subvented places, including AQ places. There were occasions when the RCHEs requested for referrals from the CWL to fill some of their vacant AQ places, in order to meet the agreed 95% enrolment rate.
- **Note 35:** Approval was then sought for a grant of \$83.8 million from LF to one NGO (which had committed to shoulder 20% of the total project cost) for setting up a new NH for the elderly.
- **Note 36:** The 25 subvented RCHEs included six NHs. AQ places were granted to these NHs on a one-off basis at the commencement of their operation in 1998 and 1999, but were phased out upon discharge of residents occupying these places.

Audit further noted that some RCHEs had, in particular, a relatively high percentage of vacant AQ places even after the one-off deployment of AQ places to the CWL. Three examples are shown in Table 1:

Table 1

SWD quota and agency quota places in three subvented RCHEs (end-June 2014)

	Subsidised RCS places						
	SWD quota			Agency quota (AQ)			
			No. enrolled				
RCHE	No. of places	No. enrolled under CWL	No. of places	No. allocated by RCHEs	No. loaned to SWD on a one-off basis	Total	
	(a)	(b) (% of (a))	(c)	(d) (% of (c))	(e) (% of (c))	((f) = (d) + (e)) (% of (c))	
1	130	130 (100%)	25	7 (28%)	10 (40%)	17 (68%)	
2	154	154 (100%)	36	18 (50%)	8 (22%)	26 (72%)	
3	97	95 (98%)	20	8 (40%)	5 (25%)	13 (65%)	

Source: SWD records

It can be seen from Table 1 that the three subvented RCHEs had achieved enrolment rates of 100%, 100% and 98% for their SWD quota places. However, the enrolment rates for their AQ places could be as low as 28%, 50% and 40% respectively if they had not loaned some of their AQ places to the SWD. In fact, in the past few years, some of the subvented RCHEs (including the above three RCHEs) reported to the SWD that they had failed to achieve the agreed 95% yearly enrolment rate, as stipulated in the Funding and Service Agreements (FSAs), for their subvented RCS places (i.e. SWD quota places plus AQ places), with one of the reasons being the under-enrolment of their AQ places.

2.50 The 193 AQ places still left unfilled as at end-June 2014 involved wastage of recurrent Government subvention of \$2.7 million a month (\$14,100 \times 193 — see Note 28 to para. 2.38). Given the acute shortfall of subsidised RCS places the Government is facing, the situation is far from satisfactory. Audit considers that the SWD needs to approach the NGOs more proactively to request the latter to deploy their unfilled AQ places to the CWL and critically review the possibility of clawing back the AQ places for central allocation under the CWL, taking into consideration the following:

- (a) the growing demand for, and the acute shortfall of, subsidised RCS places the Government is facing today and the 100% subvention provided for the AQ places;
- (b) the admission of elderly by NGOs outside the CWL may provide opportunities for inequitable allocations (see para. 2.46);
- (c) the commitment made by the Administration to the LegCo FC in March 1995 that NGOs operating subvented RCHEs would not be given any discretion to admit applicants other than those on the waiting list managed by the SWD, i.e. the CWL now in operation (see para. 2.48);
- (d) the legal advice obtained by the SWD that the latter had no obligation under the PTG to grant or continue to grant subvention for the AQ places, and taking back the AQ subvention would not constitute a breach of the PTG or the AQ commitment as agreed with the NGOs in correspondence (see para. 2.40); and
- (e) the enrolment rate of 70% for AQ places allocated by NGOs themselves as a whole, as compared with the overall target 95% yearly enrolment rate set for these subvented RCHEs (see para. 2.49).

In response, the SWD has agreed to monitor the utilisation of the AQ places closely and will request the NGOs to deploy their unfilled AQ places to the CWL. It will also review critically the possibility of clawing back the AQ places for central allocation under the CWL (see para. 5.11(m)).

Utilisation of subsidised infirmary unit places (para. 2.29(d))

2.51 As at end-June 2014, 19 subvented RCHEs were running 29 infirmary units (IUs) providing a total of 580 IU places (included as subsidised C&A places in paras. 4.2 and 4.3). The cost to the Government for these 580 IU places amounted to some \$52 million in 2013-14.

2.52 RCHEs have been taking care of infirm elderly while the latter are waiting for infirmary placement in public hospitals (Notes 37 and 38). Since 1986, IUs have been established in various subvented RCHEs with additional nursing staff provision to take care of elderly residents who have become so frail as to require infirmary care while staying in the RCHEs. According to the Administration, providing infirmary care services for medically-stable infirm elderly in a non-hospital setting will ensure that hospital-based infirmary care services are targeted for patients most in need, including elderly patients, in the long term. It will also help increase the supply of and shorten the waiting time for infirmary care places for the frail elderly.

2.53 To enhance support, the Administration has also introduced since 1996 the provision of infirmary care supplement (ICS) to RCHEs to enable them to use the supplements to employ additional staff to enhance the care for needy elderly staying in subsidised RCS places. In 2013-14, the amount of ICS was \$70,539 per case a year. In the same year, a total of \$95 million had been paid to 88 subvented RCHEs and 37 private RCHEs participating in the EBPS. Due to limited resources, ICS was allocated to RCHEs, under a quota system, in proportion to their numbers of eligible elderly as confirmed by the HA every year (Note 39).

- **Note 37:** The HA provides general infirmary services to elderly whose health conditions require long-term medical care in hospital setting which are beyond the level of care provided in welfare (i.e. non-hospital) setting. Applicants have to be assessed by the HA Community Geriatric Assessment Teams before eligible ones are put on the Central Infirmary Waiting List for placement in infirmary beds of HA hospitals.
- **Note 38:** As at March 2014, the number of HA infirmary beds available for eligible applicants on the Central Infirmary Waiting List was 1 234, but there were 2 400 applicants waiting. As informed by the HA, in 2013-14, the average waiting time for admission to these places was 27 months and some 800 eligible applicants on the waiting list passed away while waiting.
- **Note 39:** The eligibility of elderly for ICS has to be assessed by the Community Geriatric Assessment Teams of the HA.

Audit findings

2.54 As mentioned earlier, there were only 580 IU places. On one hand, Audit has found that 62 (11% of 580) IU places had, on average, been vacant for at least five years, with the vacancy particularly high for five RCHEs. Each of the five RCHEs had 4 to 14 vacant IU places, representing 22% to 53% of their IU capacity.

2.55 On the other hand, Audit noted that as at end-August 2014, some 1 290 applicants awaiting RCS places on the CWL had been assessed as in need of care at "Beyond NH". In view of the limited IU places available and given the long waiting list of infirm elderly on the CWL, the fact that 11% of the 580 IU places were continuously unoccupied calls for review.

2.56 The high vacancy of IU places in five RCHEs (see para. 2.54) could be due to the restrictive eligibility criteria set by the SWD for admission to IU places, as follows:

- (a) the infirm elderly must be existing residents of the subvented RCHEs or have taken up EBPS places in private RCHEs;
- (b) they must have been certified by the Community Geriatric Assessment Teams of the HA to be in a condition requiring infirmary placement; and
- (c) they must not have been registered for ICS (see para. 2.53).

2.57 The SWD informed Audit that the setting up of IUs in subvented RCHEs was a stop-gap measure to tackle the acute demand for infirmary places until there was an adequate supply of infirmary places. The SWD also informed Audit that residents already registered for ICS were not entitled to take up IU places in order to avoid double subsidy. Furthermore, the LWB informed Audit that the provision of IU places is part of the CoC policy and not a substitute for direct admission of elderly awaiting NH places in the CWL.

2.58 Audit further found that elderly awaiting NH places could not be directly accepted to take up the IU places because all 19 RCHEs with IUs had not been registered with the Department of Health (DH) which regulates the infirmary care services under the Hospitals, Nursing Homes and Maternity Homes Registration Ordinance (see Note 7 to para. 1.16 and Note 40). Most of the elderly currently taking up the IU places are residents previously occupying subsidised C&A places in the 19 subvented RCHEs, but their health conditions have deteriorated to the extent that they are found to be in need of infirmary care as assessed by the HA.

2.59 The provision of infirmary care services for medically stable infirm elderly in a non-hospital setting is a good initiative. It serves as a stop-gap measure and helps relieve the demand for hospital-based infirmary care services. However, there are indications that the initiative had not been effectively implemented. Audit considers that the SWD needs to review, in close collaboration with the LWB and DH, and fine-tune the existing arrangement.

As early as 2004, the SWD informed LegCo that it would launch a trial scheme to provide subsidised infirmary care services for medically stable frail elderly in purpose-built RCHE premises. However, taking into account the opinion of the welfare sector, the Administration considered that upgrading some of the places in existing subvented RCHEs to provide infirmary care services might be more cost-effective. As a result, the trial scheme was kept on hold. However, the SWD had not yet reported back to LegCo the development on this matter and the implementation of the scheme was still included as an outstanding item to be followed up by the LegCo Panel on Welfare Services.

Note 40: As explained by the SWD, the welfare sector had indicated that they were not able to employ adequate nurses to fulfil the DH's requirements for registration under the Cap. 165 Ordinance.

PART 3: COMMUNITY CARE SERVICES

3.1 This PART examines in more detail the provision of CCS by the SWD.

Community care services provided for the elderly

3.2 The Government provides a wide range of subsidised CCS to assist the elderly to age in the community. These services are essentially operated by NGOs with subventions or service fees from the Government. For CCS (Note 41), they are mainly provided by day care centres/units (for centre-based services) or at the elderly's homes by the respective services teams (for home-based services):

Centre-based services

(a) Day care centres/units. They serve elderly who have been assessed as being in a state of either moderate or severe level of impairment by the SWD assessment mechanism and are suitable for day care services. These centres/units provide personal care, nursing care, rehabilitation exercises and social activities for frail elderly (Note 42);

Home-based services

- (b) Enhanced Home and Community Care Services (EHCCS) and Integrated Home Care Services (IHCS)(Frail Cases). Both EHCCS and IHCS provide a comprehensive package of services for frail elderly, including care management, basic and special nursing care, personal care, rehabilitation exercises, counselling services, 24-hour emergency services, day respite services, home-making services, meal delivery services, escort
- **Note 41:** Besides CCS, the SWD also finances NGOs for operating 211 elderly centres, including district elderly community centres, neighbourhood elderly centres and social centres for the elderly, for providing community support services for the elderly and their carers at district and neighbourhood levels.
- **Note 42:** The services provided by a day care centre and a day care unit are largely the same, except that usually the former is a stand-alone service unit while the latter is attached to an RCHE or a district elderly community centre.

services and support services to the carer. Similar to day care centres/units, elderly have to be assessed as being in the state of either moderate or severe level of impairment by the SWD assessment mechanism in order to be eligible for the services; and

(c) *IHCS (Ordinary Cases).* It serves elderly who suffers from no or mild level of impairment and does not form part of the Government's subsidised LTC services. Unlike the above-mentioned services, elderly are not required to be assessed by the assessment mechanism. IHCS (Ordinary Cases) cover personal care, simple nursing care, meal delivery services, escort services and household cleaning. The NGOs which operate this service keep their own waiting lists for the ordinary cases.

3.3 As at end-March 2014, the numbers of day care centres/units and home care service teams, and the numbers of subsidised places they provided under CCS are shown below:

Service	No. of day care centres/units or home care teams	No. of subsidised places provided
Day care	67	2 750
EHCCS	24	5 580
IHCS (Note)	60	1 120 (for frail elderly)

Source: SWD records

Note: Each IHCS team serves both frail and ordinary cases. There is no service capacity for IHCS (Ordinary Cases). Elderly of ordinary cases need not be assessed by the SWD assessment mechanism. The NGOs support about 23,000 elder ordinary cases each year.

3.4 It is the Government's policy to encourage the elderly to age in place (see para. 1.4(a)). According to the Elderly Commission, effective CCS can encourage the elderly to age in place and avoid premature and unnecessary institutionalisation (see para. 2.5). In a 2011 study report on CCS commissioned by the Elderly Commission, it stated that effective CCS could reduce or delay institutionalisation, improve the physical functions of elderly service users and reduce the decline in cognitive status. It was also commented in a study report on RCS of 2009 that there

had been a tendency for older people (or their family members) to opt for RCS instead of CCS, which could be attributable to the inadequacy of subsidised CCS and the relative immaturity of the private CCS as compared with the subsidised market, resulting in that the older people and their family caregivers had no alternatives, but to choose RCS. Therefore, the 2009 study report recommended the promotion of CCS so as to enable the older people to remain living in their familiar community to be provided with sufficient quality service and support.

3.5 In 2013-14, the Government spent some \$970 million on the provision of subsidised CCS for the elderly. Figure 2 below shows the cost breakdown for 2013-14.





Expenditure on the provision of CCS (2013-14)

Source: SWD records

Note: As at end-March 2014, IHCS (Ordinary Cases), which does not form part of the Government's subsidised LTC services, was serving 17 300 elderly with no or mild impairment and some 5 000 elderly were waiting for such services. As mentioned earlier, elderly users of IHCS (Ordinary Cases) need not be assessed by the SWD assessment mechanism.

Government initiatives in recent years

3.6 As mentioned in paragraph 3.2, CCS is mainly provided by day care centres/units and by home-based teams under EHCCS and IHCS. In recent years, the Government has launched a number of other time-limited, but one-off schemes to supplement the existing CCS. For example:

- (a) the three-year Pilot Scheme on Home Care Services for Frail Elders (with funding amount of \$72 million) which was launched in March 2011 to provide home-based care and support services to the elderly who have been assessed as severely impaired by the assessment mechanism and are waiting for subsidised NH places. The Scheme was extended for one year to end by February 2015 and would subsume thereafter under EHCCS;
- (b) the four-year Pilot Scheme on CCS Voucher for the Elderly (Pilot CCS Voucher Scheme see para. 3.7(b)) which involved funding amount of \$380 million for the first phase of two years. It is a new form of CCS, launched in September 2013, which aims to enable eligible elderly to choose CCS that suit their individual needs freely and flexibly through the use of vouchers; and
- (c) the District-based Trial Scheme on Carer Training, a community support scheme launched in October 2007, under which a one-off seed money of \$50,000 was provided to each participating elderly centre to partner with community organisations in selected districts to provide basic training in elderly care skills and carer services at district and neighbourhood level. The Scheme was extended to all districts since 2009 and renamed as District-based Scheme on Carer Training. In total, 119 elderly centres have participated in the Scheme (with funding amount of \$6 million). The Scheme has been regularised in 2014-15 with funding amount of some \$6.7 million per year.

Audit findings

- 3.7 The following audit issues are examined in this PART:
 - (a) monitoring of CCS places (paras. 3.8 to 3.15);
- (b) implementation of the Pilot CCS Voucher Scheme (paras. 3.16 to 3.22); and
- (c) need for a more strategic approach to implement CCS (paras. 3.23 to 3.27).

Monitoring of CCS places

Discharge from services

3.8 According to the SWD Manual, service operators are required to inform the SWD <u>within 2 working days</u> after discharge of the service users. An audit analysis of the reporting of discharge cases during the 12 months from July 2013 to June 2014 shows the following results:

No. of days after discharge	No. of discharge cases reported to SWD		
	Day care services	Home care services	
Within 5	1 117 (85%)	1 691 (82%)	
>5 to 10	112 (8%)	278 (13%)	
>10 to 20	56 (4%)	78 (4%)	
>20	35 (3%) (Note)	23 (1%) (Note)	
Total	1 320 (100%)	2 070 (100%)	

Source: Audit analysis of SWD records

Note: For 7 cases (5 for day care services and 2 for home care services), the service operators had taken more than 60 days to report the discharge of the service users, with the longest of 230 days for day care services and 78 days for home care services.

3.9 Whilst the majority of the discharge cases could be reported to the SWD within five days (after allowing a few grace days to the standard of two working days as stipulated in the SWD Manual), the fact that some service operators had taken more than 20 days, with seven cases taking more than 60 days, to report the discharge is far from satisfactory. The number of CCS places is limited (see para. 2.12). As mentioned in paragraph 2.6, it cost the Government about \$7,100 a month in 2013-14 for a day care service place and about \$3,700 a month for a home care service place under EHCCS. Timely reporting of discharge cases is therefore important. The SWD needs to find out the reasons for the late reporting and take action to improve the situation. In September 2014, the SWD informed Audit that it would strengthen the current mechanism to acknowledge receipt of notifications of discharge to ensure timely and accurate information on availability of places.

Admission to services

3.10 According to the SWD Manual, service operators are required to admit an elder to services normally within 7 working days after receiving a placement referral from the SWD. An audit analysis of the admissions to day care services during the 12 months from July 2013 to June 2014 shows the following results:

No. of days after SWD placement referral	No. of admissions to day care services
Within 15	831 (52%)
>15 to 30	561 (35%)
>30 to 60	193 (12%)
>60	23 (1%)
	(with the longest of 144 days)
Total	1 608 (100%)

Source: Audit analysis of SWD records

Against the standard of 7 working days allowed for admissions, it can be seen that nearly half of the admissions were effected more than two weeks after receiving the SWD placement referrals. This indicates that there is scope for improvement.

3.11 Audit further found that as at 30 June 2014, some 148 admissions to day care services were still outstanding, i.e. SWD placement referrals had been received by the service operators but, due to one reason or another, the elderly had not yet been admitted to take up the CCS places. An ageing analysis of these 148 outstanding admissions revealed that 61 (41%) placement referrals had been outstanding for more than 15 days, as follows:

No. of days after SWD placement referral	No. of outstanding admissions to day care services
>15 to 30	44 (72%)
>30 to 60	11 (18%)
>60	6 (10%)
	(with the longest of 164 days)
Total	61 (100%)

Source: Audit analysis of SWD records

Against the standard of 7 working days allowed for admissions, it can be seen that about 30% of the SWD placement referrals had been outstanding for more than one month, with six cases even outstanding for more than two months.

3.12 As mentioned in paragraph 2.12(b), the waiting time for day care services was long. Owing to the limited CCS places available, timely admission is important. Upon Audit's enquiries with the SWD, Audit was given the explanations that on many occasions, the elderly were not timely admitted because they and/or their relatives were difficult to contact, they had been away from Hong Kong, they were sick or had been hospitalised, and sometimes time was required to persuade them for admissions and/or to arrange for the transportation to/from centres. Audit considers that the SWD needs to explore, in close collaboration with the service operators, on how earlier admissions can be arranged. In September 2014, the SWD informed Audit that it would strengthen the current mechanism for earlier admission of new cases to fill up the vacant day care places.

Community care services

3.13 For home care services provided for the 12 months from July 2013 to June 2014, whilst the service operators could effect most of the SWD placement referrals on a timely basis, Audit still noted a few cases for which the services could not be effected after the lapse of one month.

3.14 According to the SWD Manual:

- (a) after a placement referral has been made, the SWD should issue a reminder if no reply is received from the service operator within 7 working days;
- (b) if the elderly cannot be contacted within 14 working days after placement referral, the service operators should liaise with the RWs for the elderly for clarifying his/her conditions; and
- (c) if the elderly still fails in admission, the service operators should return the relevant documents of the case, with reasons, to the SWD. If admission cannot be proceeded because the elderly is hospitalised without a proposed date of discharge, is away from Hong Kong or cannot be contacted, the SWD will suspend the case for a period of up to three months automatically. The suspended case will be closed if the RW for the elderly does not provide any further information within the 3-month suspension period.

For the long outstanding cases identified in paragraphs 3.10 and 3.11, Audit has found no evidence that the SWD had taken timely actions to follow up with the service operators on the progress of the admission cases or to suspend the cases (see Case 1 as an illustration). Given the acute shortfall of subsidised CCS places, there is a need for the SWD to step up its monitoring of the allocation and admission of CCS places, including enhancing its communication with the service operators.

Case 1

1. Audit selected a placement referral from the SWD records to ascertain its follow-up actions with a day care centre to ensure that the elderly had timely taken up the vacant place. Audit found that although the SWD referral was effected in early March 2014, the elderly only commenced using the day care services four months later, i.e. in early July 2014.

2. Firstly, the SWD sent out its placement referral by mail, but the service operator only received the referral one week later. Due to one reason or another, the service operator was only successful in arranging a meeting with the elderly in late May 2014, which was more than two months after the SWD referral. In the event, the elderly started using the day care services after the lapse of another one month and ten days, i.e. in early July 2014.

Audit comments

3. In handling this placement referral, the SWD had not timely followed up its placement referral with the service operator or with the RW for the elderly, as laid down in the SWD Manual, e.g. taking steps to ensure that the placement referral had been timely received by the service operator for action, making enquiries to ascertain the progress of the placement referral and, if necessary, suspend the case and make another placement referral.

Source: SWD records

3.15 In October 2014, the SWD informed Audit that it would improve the allocation, matching and admission of CCS places by implementing with effect from November 2014 similar measures as those to be adopted for RCS (see para. 2.36(a) to (e)). These include, among others, the issue of notifications to CCS service providers to remind them of the need to timely report discharge of service users to the SCNAMO(ES)s, and to require written explanations from them for overdue replies and belated notifications on discharge of service users.

Implementation of the Pilot CCS Voucher Scheme

3.16 The Pilot CCS Voucher Scheme was to be implemented in two phases over a period of four years. The first phase, which will last for two years, was launched in September 2013 with a \$380 million grant from LF. The Scheme adopts a "money-follows-the-user" approach and provides subsidy directly to service users (instead of service providers) in the form of service vouchers. Each voucher value is set at \$6,000 per month. Eligible elderly (Note 43) may choose the service provider, the type of service and the service package that suit their individual needs. The recognised scope of services under the Scheme is similar to that provided by the day care centres and EHCCS under the CCS.

3.17 There were 62 recognised service providers providing services to the voucher holders. They were operated by 29 NGOs and two social enterprises. Service providers can seek reimbursement of the Government subsidy for services provided on a quarterly basis.

3.18 For monitoring, the SWD has set up a review programme for conducting review visits, random checks (with or without prior notice) of service providers to audit all relevant records and files of individual voucher holder, records on payment and service hours of the individual voucher holder, fee-charging, complaint investigations and compliance with 16 service quality standards.

Audit findings

3.19 The SWD planned to issue 1 200 vouchers in the first phase. The target was achieved in early April 2014. By August 2014, some 1 600 elderly had participated in the Pilot CCS Voucher Scheme. Audit notes the following characteristics in the Scheme which differ from the conventional CCS schemes implemented:

Note 43: In the first phase, eligible elderly are those who: (i) have been assessed by the SWD assessment mechanism as moderately impaired and are waiting for CCS and/or RCS on the CWL; and (ii) live in one of ten districts of the territory.

- (a) the Scheme aims at testing the viability of a new funding mode, whereby the Government has adopted a "money-follows-the-user" approach and provides subsidy directly to the service users (instead of service providers) in the form of service vouchers;
- (b) eligible elderly persons may choose the service provider, the type of service and the service package that suit their individual needs; and
- (c) whilst the services provided under the Scheme are subsidised by the Government, a sliding scale of co-payment has been put in place with five levels of Government subsidy, so that the less the user can afford, the more the Government will pay. To determine the level of co-payment made by the voucher holders, the SWD takes into account the holders' household incomes. Voucher holders receiving CSSA allowances may apply for a special grant under the CSSA Scheme to cover part of the co-payment.

3.20 As at September 2014, the Pilot CCS Voucher Scheme had only been implemented for one year. Given the short time it has developed, Audit has not conducted a comprehensive review of its operation. Nonetheless, Audit has noted the following which may call for the SWD's attention:

- (a) Vouchers issued, but not yet put into use by some of the voucher holders. As at August 2014, some 310 out of 1 200 elderly users still participating in the Scheme had not commenced using the services. For some 180 of these 310 participants, vouchers were issued to them more than three months ago and should have become void; and
- (b) Elderly users withdrawn from the Scheme. By August 2014, 433 (27% of 1 600) elderly users had withdrawn from the Scheme. Among them, 164 withdrew because they would be/had been admitted to other types of LTC services and 135 withdrew because they could not find suitable service providers/service packages.

3.21 In this regard, the SWD informed Audit in October 2014 that:

Vouchers issued, but not yet put into use by some of the voucher holders (para. 3.20(a))

- (a) it is aware that some voucher holders have not yet used their vouchers.
 Yet, under the "money-follows-the-user" funding mode, government subsidies will be disbursed to recognised service providers only after they have provided services to the voucher holders;
- (b) apart from sending reminders to the RWs and the voucher holders/carers in April 2014, the SWD had contacted them directly to find out the reasons for not using the vouchers yet and encouraged them to use the vouchers. The SWD will continue making efforts to assist the voucher holders in using the vouchers;

Elderly users withdrawn from the Scheme (para. 3.20(b))

- (c) it is also aware that 27% of the voucher users had withdrawn from the Scheme. However, given the principle of fairness in service allocation, invitation to applicants must start from the beginning of the CWL. It is understandable that applicants having a much earlier LTC date may withdraw from the Scheme shortly after their participation in the Scheme when (i) subvented RCS is offered; or (ii) they are admitted to private RCHEs due to deteriorating health; and
- (d) the SWD has commissioned a local university to conduct an evaluation study of the Pilot CCS Voucher Scheme which will examine, among others, the voucher holders' reasons for withdrawal. The findings of the study will be useful for the design of the second phase of the Scheme.

3.22 The Pilot CCS Voucher Scheme has adopted an innovative funding mode which is quite new in social service. It will take time to develop. Audit welcomes the SWD's initiative and its efforts to prepare for the second phase of the Scheme by commissioning a case mix study on CCS as well as a formative and outcome evaluation of the first phase of the Scheme. Subject to the outcome of the university's study, the SWD will fine-tune the Scheme before proceeding onwards.

Need for a more strategic approach to implement CCS

3.23 As at March 2014, community care and support services were provided by 86 NGOs which operate some 360 service units to provide multifarious types of services, including day care services (67 centres), home care services (24 EHCCS teams and 60 IHCS teams) and education, social and recreational services (211 elderly centres).

3.24 As early as 2000, the Administration commissioned a consultant to review the provision of community care and support services for the elderly living in the community. The consultant observed a number of problems, including service fragmentation, inadequate co-ordination and service duplication in the then community elderly care infrastructure. In 2003, in line with the consultant's recommendations, the Administration re-engineered the community care and support services for the elderly through upgrading elderly centres and re-engineering various home help, home care and meal teams to form the IHCS teams.

3.25 Since then, the SWD has launched various pilot schemes at different times to supplement the regular CCS in order to meet the needs of the elderly living in the community. They include the Pilot Scheme on Home Care Services for Frail Elders, and the more recent Pilot CCS Voucher Scheme (see para. 3.6(a) and (b)). Most of these schemes were however introduced at different times on a pilot/time-limited basis, e.g. for a number of years, at selected districts, or for specific elderly groups. No concrete plan has been drawn up to properly integrate, rationalise or re-engineer them to provide effective CCS for the frail elderly. In the long term, there is a need to formulate a proper strategy to provide at one-stop all the services and support required by a family which looks after a frail elderly at home.

3.26 On one hand, the Administration has made great efforts to try out different types of new CCS. On the other hand, Audit notes that similar CCS are provided to the frail elderly under three different schemes, namely the EHCCS, the IHCS and the Pilot Scheme on Home Care Services for Frail Elders, which were launched in 2001, 2003 and 2011 respectively. Although the three schemes provide similar services, they differ in various ways in their operational modes (see Table 2).

Table 2

Pilot Scheme on Home Care Services for Frail Elders **Scheme EHCCS IHCS** (Note 1) (Note 1) (Note 2) Effective date April 2001 April 2003 March 2011 Implementation Ongoing Ongoing Four years (March 2011 to period February 2015) General Revenue LF Funding source General Revenue Funding mode Service fee One-off grant Recurrent subventions by LSG Monitoring **Contract Management Subventions Contract Management** Section of Elderly Branch Branch of SWD Section of Elderly Branch of SWD and of SWD overseen by a Steering Committee (Note 3) Service operator 24 teams from 60 teams from 3 NGOs (Note 1) 14 NGOs 24 NGOs 1 453 places (April 2001) 1 120 places for 300 places since Capacity 5 579 places (March 2014) frail elderly March 2011 7 079 places (March 2015) since April 2003 Coverage 18 districts 18 districts 8 districts Target users Elderly assessed to be moderate or severely Severely impaired impaired by the SWD assessment mechanism elderly waiting for NH places on the CWL Services Essentially the same for all three Schemes. Services include care management, basic and special nursing care, personal care, rehabilitation exercises, day respite services and carer support.

Comparison of EHCCS, IHCS and Pilot Scheme on Home Care Services for Frail Elders

Source: Audit analysis of SWD records

- *Note 1: In 13 districts, the same NGOs are operating both EHCCS and IHCS, with seven EHCCS teams residing in the same premises as their associated IHCS teams.*
- Note 2: The Scheme will be integrated with EHCCS upon its expiry in February 2015.
- *Note 3:* The Steering Committee comprises staff of the SWD, LWB, DH, HA and the Hong Kong Council of Social Service.

3.27 Table 2 shows that although the three CCS schemes are similar in the scope of services they provide, they are operating in different modes. Audit notes that the Administration has plans to subsume the Pilot Scheme on Home Care Services for Frail Elders under EHCCS in 2015 (see para. 3.6(a)). A survey conducted as early as 2002 had established that EHCCS was effective in that it could lower the demand for RCS for the elderly, especially those who preferred living with their family members to being sent to RCHEs. However, as both the EHCCS and the IHCS have already been operated for over ten years, they are due for review. In order to help frail elderly living in the community to achieve ageing in place, the Administration needs to consider how to provide them with better and integrated CCS, including, among other things, how EHCCS and IHCS can be properly integrated and how their service content can be enriched, taking into consideration other factors including the funding mode and the availability of other forms of CCS in the private market (such as helpers and carers).

PART 4: RESIDENTIAL CARE SERVICES

4.1 This PART examines in more detail the provision of RCS for the elderly.

4.2 As at end-March 2014, there were 748 RCHEs providing 75 000 RCS places, with breakdown as follows:

	Type of RCHE	No. of RCHEs	No. of subsidised places (A)	No. of non-subsidised places (B)	Total ((C)=(A)+(B))
(a)	Subvented RCHEs (Note 1)	127	16 460	340	16 800
(b)	Contract RCHEs (Note 2)	22	1 670	1 200	2 870
(c)	Private RCHEs participated in EBPS (Note 3)	135	7 660	7 560	15 220
(d)	Other RCHEs in the private sector	424	_	36 310 (Note 4)	36 310
(e)	Self-financing RCHEs (i) participated in NHPPS (Note 5)	4	160	360	520
	(ii) others	36	_	3 460	3 460
	Total	748	25 950 (say 26 000)	49 230 (say 49 000)	75 180 (say 75 000)

- *Note 1:* Subvented RCHEs, providing mainly NH places or C&A places, are operated by NGOs which receive LSG subventions from the SWD.
- *Note 2: These are purpose-built RCHEs with operating contracts awarded through open tenders to NGOs/private organisations by the Government.*
- *Note 3:* The EBPS, implemented since 1998, involves the purchase of places from private *RCHEs* with the aims of increasing the provision of subsidised places and encouraging the private homes to improve their quality of care.
- *Note 4:* This is the licensed capacity of the RCHEs. As at end-March 2014, they were actually providing 31 000 places only.
- Note 5: The NHPPS, implemented since 2010, involves the purchase of places from self-financing RCHEs with an aim to increase the provision of subsidised places for elderly persons of severe impairment.

Figure 3 shows how the 2013-14 expenditure of \$3.41 billion (see para. 1.14) was spent to provide the 26 000 subsidised RCS places.





Residential care homes provided for the elderly

4.3 These 748 RCHEs (see para. 4.2) together provided some 75 000 places, of which some 26 000 were subsidised by the Government (23 000 for C&A places and 3 000 NH places). As at end-March 2014, these 748 RCHEs were serving 61 200 elderly. RCHEs in the private sector (see para. 4.2(c) and (d)) however had an overall vacancy rate of 26% for their non-subsidised places.

4.4 As mentioned in paragraph 1.14, in 2013-14, the Government spent out of the Government General Revenue \$3.41 billion on the provision of RCS. This had not taken into account:

- (a) the substantial capital expenditure incurred by the Government out of LF for setting up the contract RCHEs or renovating the subvented RCHEs in paragraph 4.2(a) and (b). For example, in 2013-14, some \$82 million were paid out of LF; and
- (b) another \$2.1 billion a year spent by the Government on allowance payments under the CSSA Scheme of the SWD to another 25 700 elderly living at non-subsidised places of RCHEs, which were receiving subsidies from the Government in another form (see para. 2.10).
- 4.5 Among the 748 RCHEs:
 - (a) 713 RCHEs are licensed and regulated by the SWD under the RCHE Ordinance (see para. 1.16);
 - (b) 10 RCHEs, which provide NH places only, are registered with the DH under the Hospitals, Nursing Homes and Maternity Homes Registration Ordinance (Cap. 165); and
 - (c) 25 RCHEs, which provide both C&A and NH places, are subject to the licensing and registration requirements of both Ordinances in (a) and (b) above.

Audit findings

4.6 Against the background that the SWD provides subsidised RCS places for the elderly as well as regulates all RCHEs licensed under the RCHE Ordinance, the following issues are examined in this PART:

(a) varying quality standards of different types of RCHEs (see paras. 4.7 to 4.15);

- (b) many elderly opted not to stay in private RCHEs under EBPS (paras. 4.16 to 4.20);
- (c) operation of RCHEs in premises subject to deed of mutual covenant (paras. 4.21 to 4.24);
- (d) granting of sites and premium concessions for RCHE purpose (paras. 4.25 to 4.29); and
- (e) inspections of RCHEs (paras. 4.30 to 4.35).

Varying quality standards of different types of RCHEs

4.7 As shown in paragraph 4.2, RCHEs in the private sector which did not offer subsidised places formed the majority of the RCHEs in the territory. Audit noted that their service quality varied and most of them differed from the other types of RCHEs which offered subsidised places (see para. 4.2(a) to (c) and (e)(i)), with obvious disparities lying in their space and staff provision, as shown in the Table 3 below.

Table 3

Spacing and staffing provisions in RCHEs providing C&A places

	RCHEs offering subsidised places			RCHEs <u>not</u> offering subsidised places	
	Subvented RCHEs	Contract RCHEs	Private RCHEs in EBPS (Note 1)	Private RCHEs <u>not</u> in EBPS	Self-financing RCHEs
	(para. 4.2(a))	(para. 4.2(b))	(para. 4.2(c))	(para. 4.2(d))	(para. 4.2(e)(ii))
Average net	17.5 m^2	20.8 m ²	8.9 m ²	7.5 m^2	17.1 m^2
floor area per resident			(EA1: 9.9 m ² EA2: 8.3 m ²)		
Average number of staff per 100 residents					
Nurse	5.1	7.7	2.6	0.2	3.2
Health worker	2.8	4.6	5.8	3.4	4.6
Care worker	16.3	18.7	14.7	8.4	15.2
Ancillary worker	12.8	8.7	7.0	3.0	9.8
Other staff (Note 2)	3.2	2.6	1.9	1.3	2.2
Total	40.2	42.3	32.0	16.3	35.0

Source: Audit analysis of SWD records

- *Note 1: There are two types of EBPS places, namely EA1 and EA2 places. EA1 places are of higher quality and are more costly to the Government.*
- Note 2: RCHEs also employ other types of staff, such as home managers, social workers, occupational therapists and physiotherapists. According to the SWD, relief workers are commonly hired by private RCHEs, but they are not included in the figures.

4.8 The disparities in quality standards (e.g. spacing and staffing requirements), as shown in Table 3, have arisen because different types of RCHEs are subject to different service quality requirements, as follows:

Type of RCHEs	Service standards to be met
Subvented/contract RCHEs (see para. 4.2(a) and (b))	In addition to the statutory minimum standards as stipulated in the RCHE Ordinance, subvented/contract RCHEs are required to meet enhanced standards in the FSAs or service contracts signed between the home operators and the Government.
Private RCHEs offering EBPS places (see para. 4.2(c))	In addition to the statutory minimum standards, RCHEs offering EBPS places are required to meet enhanced standards as stipulated in the purchase agreements. A major characteristic of the EBPS is that once a private RCHE has participated in the Scheme, the same enhanced standards apply to the entire home (including non-subsidised places), regardless of the number of places purchased by the Government.
Private/self-financing RCHEs not providing any subsidised places (see para. 4.2(d) and (e)(ii))	RCHEs in the private sector are required to meet only the statutory minimum standards.

Service standards and quality of RCHEs in the private sector

4.9 Appendix D shows in detail the differences in spacing and staffing requirements for C&A places between those stipulated in the RCHE Ordinance and those set by the SWD in planning for subvented/contract RCHEs, or for EBPS places to be purchased from private RCHEs.

4.10 As at end-March 2014, there were 424 RCHEs in the private sector, which did not participate in EBPS, providing some 31 000 non-subsidised RCS places (see Note 4 to para. 4.2(d)). Unlike subvented/contract RCHEs which are

set up in areas located in public housing estates or purpose-built complex provided by the Government, many of these private RCHEs are located in commercial or residential buildings which are relatively less spacious but more expensive in rental cost. According to the SWD records, many of these RCHEs just met the statutory minimum requirements, as follows:

- (a) *Spacing requirement:* 91 (21%) of them provided a net floor area above 8 m² (up to 24 m²) per resident, but 333 (79%) of them provided a net floor area of "6.5 m² to 8.0 m²" per resident which, albeit meeting the minimum statutory level of "6.5 m²", was far below par as compared with "16 m² to 18 m²" for a subvented/contract RCHE or with "8 m² to 9.5 m²" for a private RCHE offering EBPS places (see Appendix D); and
- (b) *Staffing requirement:* Many of them could only meet the statutory minimum staffing level requirement. For instance, the RCHE Regulation requires that:
 - unless a health worker is present, there should be one nurse for every 60 residents or part thereof from 7 am to 6 pm; or
 - unless a nurse is present, there should be one health worker for every 30 residents or part thereof from 7 am to 6 pm.

Based on their returns to the SWD, these 424 RCHEs had only employed a total of 61 nurses and 1 085 health workers, indicating that:

- a great percentage of these RCHEs had not employed any nurse as it is not a mandatory requirement under the RCHE Ordinance; and
- on average, only 1.05 health workers were employed for every 30 residents (1 085 \times 30 \div 31 000) at each RCHE, which has just met the statutory minimum requirement of "one health worker for every 30 residents" in an RCHE.

Many of the RCHEs in the private sector had high vacancy rates too, despite the high demand for subsidised RCS places.

4.11 Audit also noted that more warning letters on non-compliance with licensing requirements were issued against RCHEs in the private sector. For example, in 2013-14, 284 (81%) of 351 warning letters were issued by the SWD against these RCHEs, although they accounted for only 57% ($424 \div 748 \times 100\%$) of total RCHEs in the sector.

4.12 In October 2014, the SWD informed Audit that it had worked to upgrade the quality standards of private RCHEs through the EBPS. Measures taken to improve the EBPS have included the following:

- (a) since 2011-12, the places to be purchased from private RCHEs have been confined to EA1 level only;
- (b) since 2011-12, increased subsidy had also been provided for EA1 places to include physiotherapy service;
- (c) two exercises were conducted in 2012 and 2014 respectively to upgrade EA2 places to EA1 places; and
- (d) the unit subsidy of all EBPS places was increased in 2014-15 to strengthen the care and support of these homes for elderly persons.

4.13 The RCHE Ordinance aims to ensure the elderly residents in the RCHEs will receive services of acceptable standards that are of benefit to them physically, emotionally and socially (see para. 1.16). Under the Ordinance, the SWD has also issued a Code of Practice for RCHEs to ensure that the premises, design, staffing, operation, management, etc. of licensed RCHEs complied with the licensing requirements and that the RCHEs has the necessary resources to attend to the care needs of their residents and provide a safe hygienic living environment for them. Whilst the SWD had implemented various measures to upgrade the service quality of RCHEs, including the introduction of enhanced service standards for subvented/contract RCHEs and for RCHEs participating in the purchase schemes, and the issuing of an updated Code of Practice in 2013, Audit however noted that the statutory minimum requirements in the RCHE Ordinance (such as the spacing and staffing requirements) had not been revised in the past 18 years.

4.14 It is understood that high rentals and manpower shortage are two major problems facing many RCHEs in the private sector, which are not easy to overcome. This might also have explained why the Administration had been slow in upgrading the minimum requirements set in the RCHE Ordinance, although the Office of The Ombudsman recommended the SWD in March 2012, among others, to conduct timely and regular reviews of the relevant legislation, in particular the statutory minimum requirements in respect of RCHEs. In its progress report of October 2012 on follow-up of The Ombudsman's recommendations, the SWD said that it had reviewed the statutory minimum requirements from time to time and any proposal to introduce major changes to the Ordinance must be fully justified and must have the support of the stakeholders and the community at large.

4.15 Audit notes the SWD's commitment to keep the Ordinance under review, but is particularly concerned with the acute staffing shortage in the RCHE sector. The more recent initiative of allowing private RCHEs participating in EBPS to employ, effective since April 2014, imported care workers to serve elderly residents taking up non-subsidised RCS places could help alleviate the staffing shortage in the sector. However, the Labour Advisory Board (Note 44) needs to be consulted on individual applications for imported case workers. With the growing demand for LTC services, the Government needs to critically review how to address the root of the problem.

Many elderly opted not to stay in private RCHEs under EBPS

4.16 As mentioned earlier, 30% of the 26 000 subsidised RCS places were provided by the two purchase schemes, namely the EBPS and the NHPPS, with the latter still implemented on a very small scale (see para. 4.2(c) and (e)(i)). According to the Administration, the EBPS (or the Bought Place Scheme before 1998), apart from increasing the supply of subsidised C&A places, helps enhance the quality of RCHEs in the private sector because, once a private RCHE has

Note 44: The Labour Advisory Board, chaired by the Commissioner for Labour, is a non-statutory body to advise the Commissioner on labour matters.

participated in the Scheme, the same standards will apply to the entire RCHE. As at end-March 2014, there were 7 660 EBPS places, comprising 4 090 EA1 places and 3 570 EA2 places (Note 45). In 2013-14, cases of admission to EBPS places had accounted for 45% of all admission cases.

4.17 Although improved quality standards have been set for EBPS places (see paras. 4.7 and 4.10), they are still not on par with the quality standards set for subvented or contract RCHEs (see para. 4.7 and Appendix D). Probably as a result, the percentage of applicants on the CWL who had indicated their willingness to take up EBPS places had decreased from 7% as at end-March 2009 to 5% as at end-March 2014, and the waiting time for an EBPS place was seven months, which was much shorter than the waiting time for a subvented/contract RCHE place (see para. 2.17(b)).

4.18 Although RCHEs participating in EBPS had achieved in 2013-14 an overall enrolment rate of 95% for their EA1 places and 91% for their EA2 places, Audit noted that 13 (11% of 121) of these RCHEs had a low enrolment rate of below 80% with three below 50% (as low as 32%). Over the two financial years of 2012-13 and 2013-14, some 550 to 590 of 7 660 EBPS places purchased by the Government had remained vacant, which means that good value has not been realised for some \$50 million spent a year.

4.19 Audit also noted the following which might have affected the effectiveness of the EBPS:

(a) Place reduction mechanism introduced since April 2012 (see para. 2.30(b)): To address the issue of vacant EBPS places, the SWD introduced a place reduction mechanism since April 2012. Under the mechanism, all private RCHEs which had been offering EBPS places in April 2012 were required to achieve an average enrolment rate of 92% during the two-year agreement period from April 2012 to March 2014. If

Note 45: In 2013-14, it cost the Government some \$8,800 a month for an EA1 place and \$6,600 for an EA2 place in the urban, and \$8,000 and \$6,000 a month for the same in the New Territories.

the actual average enrolment rate was below 92%, the number of places purchased would be proportionally reduced in the succeeding 2-year agreement period (i.e. from April 2014 to March 2016). A total of 143 EBPS places, involving 25 RCHEs, had been reduced under the place reduction mechanism. Audit however noted that there was still room for further improvement. For example, in the case of one RCHE with 190 EBPS places purchased before April 2014, although the number of EBPS places purchased had been reduced to 175 places effective from April 2014, there were still 33, 35 and 41 vacant places for the three months ended June 2014, representing 19% to 23% of the 175 EBPS places purchased. In September 2014, the SWD informed Audit that the place reduction mechanism has been continuously in force under the current two-year service agreements. The SWD would closely monitor the enrolment position of the EBPS places with a view to achieving better utilisation of public resources;

- (b) Use of vacant EBPS places for residential respite services: In March 2012, the SWD introduced a measure to utilise vacant EBPS places for residential respite services for the elderly (Note 46). Audit however found that the utilisation of vacant EBPS places for such service was not high. In 2013-14, only 486 respite cases were reported, with the length of stay in each case ranging from one to 85 days. The utilisation of the vacant EBPS places for residential respite services only accounted for 6% of the total vacant EBPS places in the period. More promotion work may be required to publicise the measure; and
- (c) Need for review of the "50% cap" requirement (see para. 2.26(b)(iii)): According to the SWD, the "50% cap" requirement was set in 2003 to allow participating private RCHEs to run their non-subsidised part of business in the same RCHE, and enables more RCHEs to participate in EBPS so as to enhance the service standard of private homes as far as possible. As mentioned earlier, the "50% cap" requirement may call for review given the long waiting time in the CWL. Case 2 is an example showing the need to have the "50% cap" requirement kept under review.

Note 46: *Residential respite service is a form of temporary or short-term residential care service for the elderly. It serves the objective of providing temporary relief for family members or relatives who are the main caregivers of the elderly requiring a certain degree of personal care whilst residing in the community.*

Case 2

1. One RCHE (RCHE 4) has a capacity of 430 places and the SWD has purchased 50% of the places, i.e. 215 places from the RCHE. As at 31 March 2014, all EBPS places in RCHE 4 were fully enrolled, but 20 non-subsidised places were vacant.

2. According to the CWL as at March 2014, 37 elderly had indicated preference for admission to this RCHE. These 37 elderly were aged between 64 to 101, all of whom had been waiting for 2 to 15 months.

3. Because of the "50% cap" requirement, the SWD could not purchase additional places from RCHE 4 concerned notwithstanding that vacant non-subsidised places were available.

Source: SWD records

4.20 In October 2014, the SWD informed Audit that:

- (a) the objective of the EBPS is to upgrade the service standard of private RCHEs and to reduce the elderly's waiting time for subsidised C&A places. The EBPS places have remained essential to meet the RCS needs of those on the CWL;
- (b) it was making strenuous efforts in pushing the private RCHEs participating in the EBPS to achieve a higher enrolment rate to ensure proper use of public resources (see (c) below). Though only 5% of the applicants on the CWL as at end-March 2014 opted for admission to EBPS places (see para. 4.17), 45% of the total admission cases in 2013-14 were admitted to EBPS places; and
- (c) with a view to enhancing the attractiveness of the EBPS to both the home operators and the elderly applicants, the SWD has implemented various means, including increasing the purchase price of the EBPS places in 2014-15 and launching exercises to upgrade existing EA2 places to EA1 places in 2012-13 and 2014-15. While strenuous efforts are being made to push private RCHEs with EBPS places to achieve a higher enrolment rate, the SWD considers it too early to lift the "50% cap" requirement

mentioned in paragraph 4.19(c) and would examine the issue in tandem with the future development of the Pilot Voucher Scheme for RCS, the feasibility of which is now being studied by the Elderly Commission (see paras. 5.2(b)(ii) and 5.5).

Audit notes the SWD's comments in (c) above and considers that the SWD needs to continue keeping the "50% cap" requirement under regular review.

Operation of RCHEs in premises subject to deed of mutual covenant

4.21 The majority of the RCHEs in Hong Kong belonged to private RCHEs (see para. 4.2(c) and (d)). As reported by the Administration to LegCo in June 2003, many of the private RCHEs were located in commercial or residential buildings under co-ownership and governed by deed of mutual covenant (DMC).

4.22 On the advice of the Elderly Commission, the Lands Department had expressly disallowed since February 2001 the prohibition of RCHEs in DMCs for new residential developments where commercial uses are normally permitted in the lowest three floors. In June 2003, the Administration informed LegCo of a High Court judgment in which the incorporated owners of a building were granted an injunction refraining the operator from using the premises in the building as RCHE on the basis of a provision in its DMC. In this court case, the Judge concluded that the RCHE was a boarding house within the meaning of "boarding house" as stated in the relevant DMC. Arising from the court case, the Administration informed LegCo that as a long-term objective, RCHEs should preferably operate in purpose-built premises. In relation to a case when there was legal conflict over DMC upon the change of tenancy from one RCHE to another at a particular premises, the SWD further obtained legal advice in 2012 that the enforcement of DMC was not among the objects of the RCHE Ordinance and, even if evidence was available to show that there was a clear breach of the DMC, the SWD was not legally obliged to refuse an application for an RCHE licence.

4.23 It is noted that another government department, the Home Affairs Department (HAD), has also operated a largely similar licensing regime for the operation of hotels and guesthouses in buildings subject to DMC. The Licensing Authority is not empowered under the relevant law to consider the compliance of the

hotel/guesthouse operation with the terms of the DMC when processing a licence application for operation of a hotel or guesthouse in a building subject to DMC. Since April 2014, the Office of the Licensing Authority under the HAD has implemented a notification system by issuing letters to the owners' corporation, residents' organisation and/or property management company of the building concerned, as appropriate, thus allowing time for them to consider whether they would initiate any legal actions for any breach of the DMC. Before the licence application is approved, the Office of the Licensing Authority will issue another round of letters to the parties concerned. Meanwhile, the Administration is also reviewing the licensing requirement for hotels and guesthouses under the relevant law.

4.24 In the light of the more recent "guesthouse" development as mentioned in paragraph 4.23, Audit considers that the SWD needs to keep under close review, in collaboration with the LWB, the existing RCHE licensing requirements and assess, when appropriate, the possible impact of the "guesthouse" development on RCHEs. In response, the SWD has said that RCHEs are very different from guesthouses, in terms of business, clientele, neighbourhood acceptance, turnover of service users, etc. and are monitored under a different legislation, namely the RCHE Ordinance and a different licensing regime. According to the SWD, in the past three years, it had not encountered any case of RCHE closure due to conflicts arising from DMC. Nonetheless, the SWD indicates that it will keep close watch of the "guesthouse" development and result of the HAD review of, and possible legislative amendments to, the Hotel and Guesthouse Accommodation Ordinance (Cap. 349) concerning DMC and will assess, when appropriate, the possible impact of the development on RCHEs with reference to the legal framework and licensing regime for monitoring RCHEs.

Granting of sites and premium concessions for RCHE purpose

Granting of sites by private treaty

4.25 The Government may grant sites at nominal premium to NGOs for welfare purposes. Based on SWD records, some 50 PTG sites had been granted to NGOs for operating subvented and/or self-financing RCHEs (see para. 4.2(a) and (e)). Audit examined a number of such PTGs and found in two cases that the SWD had not exercised the rights reserved in the PTGs to nominate persons for admission

to the RCHEs established on the sites (Note 47). In these two PTGs, the SWD was allowed to nominate persons for admission in accordance with the quota to be agreed between the SWD and the grantee. The two RCHEs were self-financing ones and did not provide subsidised RCS places (an example is shown in Case 3).

Case 3

1. In January 2005, a remote site was granted by private treaty at nominal premium for operating a non-profit-making RCHE (RCHE 5). RCHE 5 commenced operation in August 2007. The PTG has stipulated, among others, that the SWD shall have the right to nominate persons for admission to the RCHE in accordance with the criteria for admission and a quota both agreed or to be agreed by the Director of Social Welfare and the grantee, and such persons nominated shall be admitted to the RCHE.

2. Based on the SWD records, RCHE 5 was a self-financing RCHE which provided 88 non-subsidised RCS places. Audit has however found that no record was available showing that the SWD had agreed with the grantee on the quota for nominating persons for admission to the RCHE.

3. Based on the SWD records, RCHE 5 had an enrolment rate of only 61% to 68% for the five financial years from 2009-10 to 2013-14.

4. In September 2014, the SWD informed Audit that since all RCS places provided by RCHE 5 were non-subsidised ones, it had not exercised the right to nominate persons for admission to the RCHE.

Audit comments

5. Given that the site was granted at nominal premium, the 30% vacancy rate of RCHE 5 is a cause for concern. In view of the acute shortfall of subsidised RCS places the Government is facing (as reported in PART 2), the SWD should also explore how to make better use of the site for the provision of additional RCS places and, in particular, agree with the grantee on the admission quota to be provided to the Government.

Source: SWD records

Note 47: For one of the two PTGs, there was evidence that the RCHE had before 1996 admitted a small number of elderly persons nominated by the SWD, but the latter had not agreed with the grantee on the quota in accordance with the lease condition.

4.26 In the light of the audit findings, the SWD needs to review all PTGs granted to ascertain if there are similar cases when its right to nominate persons for admission to the RCHEs has not been exercised and explore with the grantees on how the PTG sites can be better used including, but not limited to, using the sites for the provision of additional RCS places and other elderly facilities.

4.27 In September 2014, the SWD informed Audit that it had not lost sight of the satisfactory operation of the welfare facilities on the PTG sites concerned and had been contemplating an enhanced mechanism to step up the monitoring of sites held by NGOs under PTG including, but not limited to, those operating RCHEs.

Premium Concession Scheme

4.28 To encourage developers to provide RCHEs in new private developments, in July 2003 the Administration launched the Premium Concession Scheme, under which eligible premises will be exempted from assessment of premium for various types of land transactions (such as lease modifications, land exchange and PTGs), subject to meeting certain conditions for the delivery of the RCHE premises, such as a maximum limit of 5 400 m² for gross floor area.

4.29 When the Scheme was first introduced, the Administration undertook to keep it under review and would assess its effectiveness in due course. It was then estimated that the first RCHE under the Scheme would become available in 2006-07. Audit however found that although ten years had elapsed after the Scheme was launched, as at June 2014, no RCHE under the Scheme had come into service. Only three applications had been received and the Lands Department had only approved one application and the RCHE concerned should commence to operate within 54 months from the date of the subject land lease (i.e. before mid-2017). There was no evidence indicating that the SWD had conducted any review to assess the effectiveness of the Scheme and to improve the operation of the Scheme. As informed by the SWD in October 2014, it had plans to conduct a review on the Scheme.

Inspections of RCHEs

4.30 Under the RCHE Ordinance, all RCHEs (see para. 4.5) must be duly licensed. They have to comply with the licensing requirements relating to the RCHE's management and staffing, facilities and equipment, location, structure and design of the premises, building safety, fire precautions, health and sanitation, etc. The RCHE Ordinance also empowers the SWD to monitor RCHEs by inspecting them, directing remedial measures and ordering them to cease operation if the person employed is not a fit person to operate or manage the RCHEs, the premises of the RCHEs are not fit for the purpose, the premises do not comply with any requirements, or the RCHE is operated in a manner contrary to the public interest.

4.31 Within the SWD, there is the Licensing Office of RCHEs (LORCHE). Its duties include handling applications for licences/renewal of licenses for RCHEs, monitoring the operation of RCHEs on an ongoing basis and providing guidance and advice to the operators of RCHEs to ensure that all RCHEs continuously comply with the licensing requirements stipulated in the RCHE Ordinance, the RCHE Regulation and the Code of Practice (see para. 1.16). LORCHE comprises four professional inspectorate teams with 41 staff, including officers seconded from the Buildings Department and the Fire Services Department. They conduct inspections in building safety, fire safety, health and care, and social work.

4.32 LORCHE conducts several surprise inspections of each RCHE per year, and has adopted a risk-based approach in conducting inspections, i.e. the frequency of inspection would be adjusted based on the risk level of individual RCHEs to render closer monitoring of high risk RCHEs (e.g. more inspections for these RCHEs). RCHEs are required by LORCHE to rectify irregularities detected during inspections. Depending on the severity of the irregularities, advisory/warning letters or directions requiring remedial measures under the RCHE Ordinance will be issued to non-compliant RCHEs, and prosecution actions will be taken if needed. For the five years from 2009-10 to 2013-14, 35 RCHEs had been successfully prosecuted, involving 46 offences. Among the 46 offences, 29 offences (63%) were related to non-compliance with requirements on staff employment and 13 offences (28%) were related to non-compliance with requirements on health matters such as drug management and use of physical restraints.

Audit findings

4.33 *Inspection targets have not always been achieved.* For example:

- (a) LORCHE has set a target of conducting building safety inspections (i.e. inspections on matters such as structure and design of the premises and building safety) around once a year for each RCHE. During the 39-month period from January 2011 to March 2014, LORCHE had conducted some 2 300 such inspections. On average, LORCHE was able to meet its target, i.e. conducting three inspections for each RCHE during the period. For some RCHEs requiring attention, LORCHE conducted more than three inspections (up to seven inspections). Audit however noted that during the 39-month period, 84 RCHEs had only been inspected twice or, in the case of seven RCHEs, only once;
- (b) LORCHE has set a target of conducting fire safety inspections (i.e. inspections on matters relating to fire precautions) around once a year for each RCHE. During the 39-month period from January 2011 to March 2014, LORCHE had conducted some 2 600 such inspections. On average, LORCHE was able to meet its target, i.e. conducting three inspections for each RCHE during the 39-month period. For some RCHEs requiring attention, LORCHE conducted more than three inspections (up to eight inspections). Audit however noted that during the 39-month period, 72 RCHEs had only been inspected twice or, in the case of three RCHEs, only once; and
- (c) LORCHE has set a target of conducting one non-office hour inspection for each private RCHE every year. In 2013-14, LORCHE had conducted 582 such inspections. On average, LORCHE was able to meet its target. However, Audit noted that non-office hour inspections had not been conducted for 132 private RCHEs in operation during the year.

In October 2014, the SWD informed Audit that it adopts a risk-based approach to inspections of RCHEs and accords priority in handling complaints. It agrees that while on average the numbers of building safety and fire safety inspections as well as non-office hour inspections have exceeded the targets, inspections of individual RCHEs were not evenly distributed. It undertakes to make efforts to improve the

situation by evening out the number of inspections, so that the annual check for individual RCHEs can be better achieved and the different inspection targets can be met while taking into consideration the risk level of individual RCHEs and other operational needs.

4.34 Follow-up inspections to RCHEs of higher risk not conducted in a timely manner. After inspection of an RCHE, LORCHE assesses the risk level of the RCHE with reference to the number and nature of the non-compliant items identified. The risk level of an RCHE can be classified into high, medium or normal. Examples of severe non-compliant items that would lead to high risk assessment include staff employment not complying with the licensing requirements and unsatisfactory specialised nursing procedures. Once an RCHE is assessed by LORCHE as high or medium risk, inspection will be conducted more frequently to ensure that the non-compliant items have been rectified in a timely manner. Furthermore, for all the RCHEs assessed as high risk, the SWD would issue warning letters to formally require them to make rectifications on the non-compliant items, which would be followed up by unannounced inspections. The RCHEs have to make rectifications and be ready for follow-up inspections to be conducted anytime afterwards. If irregularity is identified again in the follow-up inspection, LORCHE would escalate actions which include taking prosecution actions as appropriate.

4.35 Audit examined the LORCHE records for 2013-14 of follow-up inspections to RCHEs which had been assessed as high risk ones and found that:

- (a) 34 RCHEs had been assessed as high risk ones;
- (b) in only 10 (29%) cases, follow-up inspections were conducted within the target timeframe; and
- (c) in the remaining 24 (71%) cases, follow-up inspections were not conducted within the target timeframe with delays ranging from one to three months.

The SWD has undertaken to make efforts to conduct follow-up inspections within the target timeframe in future.

PART 5: WAY FORWARD

5.1 This PART takes stock of the Government initiatives more recently taken on LTC services, identifies the challenges ahead and makes audit recommendations on the way forward.

Government initiatives more recently taken

5.2 Each year, substantial public resources are spent on providing subsidised LTC services to the elderly. To cope with the ageing population and the rising demand for subsidised LTC services, the Government has launched various initiatives in more recent years. They are as follows:

- (a) launching of the Special Scheme in September 2013 by inviting welfare NGOs to submit proposals to make better use of the land they owned, through in-situ expansion or redevelopment, to provide welfare facilities including elderly facilities (see paras. 1.15 and 2.27). The Government undertook to support the capital costs for feasible projects under the Scheme;
- (b) as mentioned in paragraph 1.18, tasking the Elderly Commission to:
 - (i) prepare an Elderly Services Programme Plan within two years; and
 - (ii) conduct a feasibility study of introducing an RCS voucher scheme. In this connection, the Government has earmarked \$800 million to meet the expenses incurred in issuing a total of 3 000 RCS vouchers in three phases from 2015-16 to 2017-18;
- (c) the implementation in mid-2014 of the Pilot Residential Care Services Scheme in Guangdong to provide about 400 RCS places at two RCHEs situated at Guangdong province and operated by Hong Kong NGOs. The Scheme aims to provide an additional option (in addition to the EBPS, etc.) for the elderly on the CWL for subsidised C&A places;

- (d) provision of \$172 million in the 2014-15 Estimates to provide an additional 1 500 home-based CCS places under the EHCCS to supplement the 5 600 EHCCS places then available; and
- (e) the LWB would allocate additional resources to NH places to provide CoC as announced in the 2014 Policy Address.

Challenges ahead

5.3 Despite the vigorous efforts exerted by the Administration in recent years to tackle the long waiting lists and waiting times posed by an ageing population and growing demand, Audit notes the following challenges ahead for the Government in its provision of subsidised LTC services for the elderly:

- (a) need to expand the subsidised CCS and RCS to keep pace with the rising demand (in particular, the long waiting lists and waiting times);
- (b) need to strengthen CCS with a view to encouraging the elderly to age in place and avoid their premature or unnecessary institutionalisation;
- (c) need to improve the efficiency and reduce wastage in the provision, matching and allocation of subsidised CCS and RCS places;
- (d) need to cope with the acute labour shortage in the RCHE sector (see para. 4.15);
- (e) need to upgrade the service standards and quality of RCHEs in the private sector which provides the bulk of RCS places, and tap on the spare capacity in the private market (see paras. 2.28 and 4.10);
- (f) need to draw experience from the implementation of the pilot CCS Voucher Scheme (see para. 3.22) and explore the feasibility of introducing an RCS voucher scheme (see para. 5.2(b)(ii));
- (g) need to formulate the long-term strategy for the provision of better and integrated CCS, taking into consideration the need to properly integrate EHCCS, IHCS and other pilot/time-limited schemes in place, in order to meet the genuine needs of the elderly (see para. 3.27);

- (h) need to timely and effectively implement the various Government initiatives recently embarked (see para. 5.2) to meet their intended objectives (paras. 5.4 to 5.8 are also relevant); and
- (i) need to enhance the LDS computer system to effectively support the registration and allocation of LTC services under the CWL (see para. 5.9).

5.4 *Pilot Residential Care Services Scheme in Guangdong (see para. 5.2(c)).* With the implementation of this Scheme in Guangdong, which is estimated to involve annual recurrent cost of \$32.64 million on the basis that about 400 RCS places could be provided in the two RCHEs, it aims to provide an alternative choice for elderly who choose to retire in the Mainland. Upon the launching of the Scheme in late June 2014, the SWD had sent out 7 000 invitations. As informed by the SWD, the Administration had well taken note of the possible concerns of the elderly persons and their family, and had already paid special attention on the provision of healthcare service in designing the service package under the Scheme.

5.5 Pilot Voucher Schemes for CCS and RCS (see paras. 3.16 and 5.2(b)(ii)). The Administration has implemented the Pilot CCS Voucher Scheme since September 2013, targeting at eligible frail elderly who are on the CWL and are living in 10 of the 18 districts. It helps test the viability of a new funding mode, whereby the Government adopts a "money-follows-the-user" approach and provides subsidy directly to the service users (instead of service providers) in the form of service vouchers. Subject to the outcome of a case mix study and an evaluation of the first phase of the Scheme (see para. 3.22), the SWD will fine-tune the Scheme for its second-phase implementation in two years' time. The experience to be gained from the implementation to proceed with the implementation of the RCS voucher scheme, the feasibility study of which is underway by the Elderly Commission. Nonetheless, the Administration needs to be conscious of the different characteristics between the RCS and the CCS.

5.6 Special Scheme on privately owned sites for welfare uses (see para. 5.2(a)). The LWB informed LegCo in February 2014 that the response of welfare NGOs to the Special Scheme was overwhelming and preliminary proposals were received from about 40 welfare NGOs involving more than 60 in-situ

expansion, redevelopment or development projects. According to the Administration, based on the rough estimation of the applicant NGOs, there can be an increase of a maximum of about 9 000 RCS and CCS places if all the proposals received could be implemented smoothly. Audit welcomes the Special Scheme which, if successfully implemented, can considerably relieve the pressure on service demand and shorten the waiting time. Nonetheless, there are various challenges ahead in its implementation, e.g. the Scheme may take some time to achieve results. As the Administration informed LegCo FC in February 2014, it might take several years or even longer to implement the projects given the time required to complete the necessary development and planning procedures (e.g. outline zoning plan amendment, planning permission or lease modification). Close monitoring is therefore required. Guidelines are also needed to be developed to facilitate the welfare NGOs to implement their projects under the Special Scheme to be funded by LF, including how to liaise with different Government departments and optimise the use of the sites.

5.7 Contract RCHEs to be constructed on 11 earmarked sites (see para. 2.26(a)). The difficulties faced in the Special Scheme similarly apply to the construction of contract RCHEs on 11 sites earmarked for the purpose. Given the long lead time taken in the past for setting up contract RCHEs and to bring them into operation, how to ensure that the new contract RCHEs can be timely set up, and can come into operation and bring to optimum use as soon as possible are again challenges ahead for the Administration.

5.8 *Project on enhancing the infrastructure of LTC services.* As mentioned in paragraph 2.21(a), the Administration had commissioned a local university in 2013 to implement a three-year project to, among others, review and update the care need assessment tool and develop better service matching, assessment and coordination systems for LTC services, with a view to enhancing the LTC infrastructure.

5.9 *The LDS computer system is overdue for redevelopment.* The existing LDS computer system, implemented in 2003, supports the registration and allocation of LTC services for the elderly. Its users include the five regional SCNAMO(ES)s of the SWD, LWB and HA. Although the system is mission-critical, it is not that efficiently and effectively operated. Both the hardware

and system software have become obsolete and the application work flow is complex (Note 48). There is an urgent need to redevelop the computer system (e.g. a web-based one) to more effectively support the registration and allocation of LTC services under the CWL (Note 49). As informed by the SWD in October 2014, a feasibility study for the redevelopment was completed in March 2012 and it would commence redevelopment of the LDS computer system in November 2014.

Audit recommendations and response from the Administration

PART 2: Growing demand for subsidised long-term care services

5.10 Audit has *recommended* that the Director of Social Welfare should, in collaboration with the Secretary for Labour and Welfare:

- (a) continue striving to expand the subsidised CCS and RCS to meet the rising demand, shorten the waiting lists and reduce the waiting times for subsidised LTC services (see paras. 2.12 to 2.15 and 2.17);
- (b) continue to make more effective planning in the provision of CCS in different districts (see para. 2.15);
- (c) publicise the waitlisting information for CCS on the SWD website (see para. 2.16);
- (d) disclose the methodology used for calculating the waiting list and waiting time when reporting the waitlisting information to LegCo and/or posting the information onto the SWD website, including the proper disclosure of those "inactive" cases on the CWL (see para. 2.18(a)) and the need for suitably taking such "inactive" cases into account in service planning (see para. 2.18(a)(iii));
- **Note 48:** For example, the five regional SCNAMO(ES)s of the SWD have to manually input extensive data into the computer system based on the applications/information received from RWs, home/service operators, NGOs and HA and have to communicate with them in paper forms (e.g. by facsimile).
- **Note 49:** The SWD obtained funding approval of \$9.7 million in February 2013 to redevelop the LDS computer system, which was originally scheduled to be in live run in December 2014, but deferred more recently to early 2016.

- (e) maintain proper records of the methodology used for calculating the waiting time, and make proper disclosure of revisions made to the methodology (see para. 2.18(c));
- (f) review and fine-tune the SWD's care need assessment procedures taking into account the various inadequacies Audit identified in the effectiveness of the SWD assessment mechanism (see para. 2.22);
- (g) explore the feasibility of incorporating suitable flexibility in future tenders/contracts on the ratio of subsidised to non-subsidised RCS places and take measures to ensure the optimum use of individual contract RCHEs (see para. 2.26(a)(ii)); and
- (h) address the various inadequacies mentioned in paragraphs 2.30 to
 2.60 with a view to maximising the effective use of the limited subsidised RCS places available, including the need to:
 - (i) improve the effectiveness of the EBPS by optimising the use of the places and minimising the number of vacant places (see para. 2.30(a) and (b));
 - (ii) explore how the procedures for the allocation, matching and admission of the limited RCS places can be fine-tuned to minimise the lead time, including the incorporation of appropriate checks and balances to facilitate effective monitoring (see paras. 2.34 and 2.35);
 - (iii) approach the NGOs more proactively to request them to deploy their unfilled AQ places to the CWL and critically review the possibility of clawing back the AQ places for central allocation under the CWL (see para. 2.50);
 - (iv) take measures to follow up on the 11% vacancy of the limited IU places available and review, in close collaboration with the Director of Health, how the IU places in subvented RCHEs can more effectively be used as a stop-gap measure to tackle the acute demand for infirmary places (see paras. 2.54 and 2.59); and
(v) report back to LegCo the development of providing infirmary care to elderly in non-hospital setting as proposed by the SWD in 2004 (see para. 2.60).

5.11 *Response from the Administration.* The Director of Social Welfare, supported by the Secretary for Labour and Welfare, agrees with the audit recommendations. In addition, she has said that:

 (a) the Administration notes that Hong Kong is facing an ageing population and a rapidly rising trend in the demand for CCS and RCS for the elderly. Strenuous efforts have been made by the Government to increase both CCS and RCS places;

For CCS:

- (b) the capacity has increased by 35% over the five years from 2009-10 to 2013-14 (see para. 2.12(a)). The Pilot CCS Voucher Scheme launched in September 2013 had provided 1 200 CCS places and had attracted different types of service providers to enter the market, thereby further developing the capacity of CCS. The SWD is planning to conduct the second phase of the Pilot Scheme targeting more frail elderly persons by September 2015. It has also planned to increase an additional 1 500 EHCCS places in 2014-15;
- (c) the SWD will continue to make effective planning in the provision of CCS in different districts. It has taken various measures to expand the provision of CCS in different districts to meet the high service demand, including:
 - (i) introducing flexibility by allowing the provision of cross-district services in two newly set-up day care centres in 2012 (see para. 2.15(a));
 - (ii) allowing recognised service providers in selected districts to provide services for cross-district voucher users under the first phase of the Pilot CCS Voucher Scheme which commenced in September 2013; and

- (iii) re-distributing the EHCCS places among three cluster teams upon contract variation in March 2014 (see para. 2.15(b)) and allocating the new 1 500 EHCCS places in accordance with the demands in different districts in 2014-15 (see para. 2.13);
- (d) the SWD has reserved various development sites, including some of the districts with high service demand, for setting up new day care centres/units;
- (e) the SWD plans to upload the average waiting time and number of waiting cases of day care and home care services onto the SWD website by November 2014;

For RCS:

- (f) there were over 1 600 additional subsidised places from 2012 to 2014. The SWD plans to increase about 530 subsidised RCS places through new contract RCHEs (which would also provide about 270 subsidised day care places) from 2014-15 to 2016-17 and has earmarked sites in 11 development projects (see para. 5.7) for the construction of new contract RCHEs for provision of about 710 subsidised RCS places (and also about 310 subsidised day care places);
- (g) the Special Scheme launched since September 2013 would provide a maximum of about 9 000 RCS and CCS places if all the proposals received could be implemented smoothly;
- (h) as announced in the 2014 Policy Address, the Elderly Commission will conduct a study on the feasibility of introducing an RCS voucher scheme (see para. 5.5). If it is considered feasible, the scheme will provide a total of 3 000 RCS vouchers in three years' time;
- the Pilot RCS Scheme in Guangdong introduced in June 2014 (see para. 5.2(c)) provides an additional option for the elderly who are on the CWL for subsidised C&A places to choose to live in two RCHEs operated by Hong Kong NGOs in Guangdong;

- (j) regarding the reflection of the number of "inactive" cases on the CWL and the processing time taken for assessment when reporting the waiting time, and the disclosure of the methodology used for calculating the waiting list and waiting time when reporting the waitlisting information (see paras. 2.18 and 5.10(d) and (e)), it is the SWD's view that:
 - the methodology used in calculating the waiting time is well known in the sector. To better report the waitlisting information, the SWD will post additional notes to explain the methodology in calculating the waiting time, including the exclusion of "inactive" cases on the CWL;
 - (ii) the adoption since November 2012 of the "inactive" status for elderly cases which had been assessed as "RCS only" but were receiving CCS (see para. 2.18(a)(i) to (iii)) was made in response to the appeal of the elderly applicants after extensive consultation with stakeholders, such that their applications for RCS could be handled in the shortest time when there is a need in future (Note 50). Documentation was kept on the consultation and endorsement process; and
 - (iii) in the coming redevelopment of the LDS computer system (see para. 5.9), the SWD will consult stakeholders on the methodology in calculating the waiting time and the information required to be generated from the system for better reporting and service planning;
- (k) regarding the need to review and fine-tune the SWD's care need assessment procedures (see para. 5.10(f)), the SWD has already secured a LF grant in July 2013 to commission a local university to implement a three-year project to, among others, update the assessment tool and revise the Clinical Assessment Protocols as well as a set of updated service matching decision making tree to facilitate better service matching (para. 5.8 is also relevant);

Note 50: RCS applicants with "active" status would have the chance of being called for admission to "small pool" from time to time and their applications might be closed if they reject a placement offer at the "small pool" stage (except under certain circumstances). However, if such RCS applicants are reclassified as "inactive" ones on the CWL (as currently adopted), they will not be called for admission until they reactivate their applications with priority on the CWL not being affected.

- (l) the SWD will put in place measures in the LDS computer system about to be redeveloped to monitor the reporting by the SCNAMO(ES)s of the conduct of random QCs on a quarterly basis (para. 2.21(c) is relevant);
- the SWD will monitor the utilisation of the AQ places closely and will (m) request the NGOs to deploy their unfilled AQ places to the CWL. The SWD will also review critically the possibility of clawing back the AQ places for central allocation under the CWL. The SWD has further indicated that providing AQs to subvented RCHEs is a historical arrangement and serves as an acknowledgement of the financial contribution of NGOs to the capital cost for constructing and setting up the RCHEs at that time. The Administration has ceased granting AO for subvented RCHEs planned after 1995 and has already taken measures to get back some of the AQ places in the past years, such as phasing out all H/A and S/C hostel places under AQ once the RCHEs kick-started conversion under the conversion programme (see para. 2.44). As mentioned in Note 36 to paragraph 2.48, the AQ places granted on a one-off basis to six subvented NHs had been phased out upon discharge of residents occupying these places;
- (n) as mentioned in paragraph 2.57, the setting up of IUs in subvented RCHEs was a stop-gap measure to enable the frail elderly to continue receiving care services before infirmary placement by the HA is available. The SWD has issued a circular letter to all subvented RCHEs and private RCHEs participating in EBPS in April 2014 to promote the IU services and will continue with such promotion on a regular basis. To better interface the mechanism of application for IU and infirmary care supplement (ICS — see para. 2.53) and to optimise the utilisation of the IU places, the SWD will explore a measure to proactively offer IU places, where available, to elderly residents in subsidised RCS place whose need for infirmary care is confirmed by the Community Geriatric Assessment Teams of the HA prior to allocation of ICS to the RCHEs which are taking care of the elderly concerned; and
- (o) the Administration will report back to LegCo on the development of providing infirmary care to elderly in non-hospital setting as proposed by the SWD in 2004 (see para. 2.60).

PART 3: Community care services

5.12 Audit has *recommended* that the Director of Social Welfare should, in collaboration with the Secretary for Labour and Welfare:

- (a) step up the SWD's monitoring of the allocation and admission of limited subsidised CCS places available, and fine-tune the procedures, including revision, if required, of the SWD Manual, in close collaboration with the NGOs operating the day/home care services (see para. 3.14);
- (b) continue monitoring the effectiveness of the Pilot CCS Voucher Scheme, taking note of the fact that 27% of the elderly users had withdrawn from the Scheme within the first year of operation (see para. 3.20(b)); and
- (c) formulate a long-term strategy for the provision of better and integrated CCS to meet the genuine needs of the frail elderly who prefer ageing in place, including the need to explore how EHCCS and IHCS can be properly integrated (see paras. 3.25, 3.27 and 5.3(g)).

5.13 *Response from the Administration.* The Director of Social Welfare, supported by the Secretary for Labour and Welfare, agrees with the audit recommendations. She has said that:

- (a) similar measures as those for RCS will be implemented for CCS commencing November 2014 to improve the allocation, matching and admission of CCS places (see paras. 2.36 and 3.15);
- (b) the SWD has commissioned a local university to conduct an evaluation study on the Pilot CCS Voucher Scheme which will examine, among others, the voucher holders' reasons for withdrawal (see para. 3.21(d)); and
- (c) the SWD will explore the feasibility of integrating IHCS and EHCCS, but this has to be handled with care. Owing to historical development of the two services, IHCS includes both ordinary cases and frail cases whereas EHCCS covers only frail cases. The care need of the non-frail cases has to be examined carefully in any planning for integration.

PART 4: Residential care services

5.14 Audit has *recommended* that the Director of Social Welfare should, in collaboration with the Secretary for Labour and Welfare:

- (a) address the disparities in quality standards of different types of RCHEs as far as possible, paying particular attention to the acute manpower shortage in the RCHE sector (see paras. 4.10 and 4.15);
- (b) endeavour to improve the effectiveness of the EBPS and optimise the use of the EBPS places, including keeping under regular review the "50% cap" requirement (para. 5.10(h)(i) is also relevant);
- (c) keep under close review the more recent development of the Government's regulation of hotels and guesthouses in premises subject to DMC and assess, when appropriate, the possible impact of the development on RCHEs (see paras. 4.23 and 4.24);
- (d) examine all PTGs granted for operating RCHEs to ascertain if there are similar cases when the SWD's right to nominate persons for admission to the RCHEs has not been exercised, and explore with the grantees on how the PTG sites can be better used including, but not limited to, using the sites for the provision of additional subsidised RCS places (see para. 4.26);
- (e) conduct an effectiveness review of the Premium Concession Scheme which has been launched for over ten years and explore appropriate measures to improve it (see para. 4.29); and
- (f) ensure that the inspection targets for individual RCHEs are met, and carry out more timely follow-up inspections of RCHEs with higher risk (see paras. 4.33 to 4.35).

5.15 *Response from the Administration.* The Director of Social Welfare, supported by the Secretary for Labour and Welfare, agrees with the audit recommendations. She has said that:

- (a) the SWD will work closely with relevant bureaux and departments to continue addressing the manpower shortage problem. In this regard, the Administration has taken various measures to tackle the problem, including the following:
 - the Steering Committee on Strategic Review on Healthcare Manpower Planning and Professional Development under the Chairmanship of the Secretary for Food and Health is conducting a strategic review of healthcare manpower planning and professional development in Hong Kong;
 - (ii) with the support of the University Grants Committee, the student intakes for occupational therapy, physiotherapy and nursing programme have been substantially increased in the 2012-15 triennium;
 - (iii) a "first-hire-then-train" pilot scheme under LF was launched in 2013 to recruit young persons to provide care services at RCHEs while receiving on-the-job training, with subsidies from the Government to pursue a two-year part-time diploma course;
 - (iv) a project named "Navigation Scheme for Young Persons in Care Services", providing an additional 1 000 places in phases from 2015-16 will be implemented;
 - (v) the SWD will continue with the Enrolled Nurse Training Programme for the Welfare Sector which seeks to provide over 900 places in the coming years. The training fee is fully sponsored by SWD and all trainees have to sign an undertaking to work for the welfare sector for at least two years after satisfactory completion of the training; and

- (vi) the Training Sponsorship Scheme was launched through funding support for NGOs so that they could sponsor students enrolled in a two-year entry level Master in Occupational Therapy/Master in Physiotherapy programme. These students have to undertake serving the sponsoring NGOs for no less than two consecutive years immediately after graduation;
- (b) in addition to measures taken to optimise the use of EBPS places as mentioned in paragraphs 4.19 and 4.20, the SWD will continue the promotion work on residential respite service available in different types of subsidised places, including those in private RCHEs joining the EBPS;
- (c) as mentioned in paragraph 4.24, the SWD will keep close watch of the development and result of the review of and possible legislative amendments to the Hotel and Guesthouse Accommodation Ordinance concerning DMC and will assess the possible impact of the development on RCHEs with reference to the legal framework and licensing regime for monitoring RCHEs;
- (d) the SWD has been working on an enhanced mechanism to step up the monitoring of sites held by NGOs under PTG including, but not limited to, those operating RCHEs;
- (e) the SWD plans to conduct a review on the Premium Concession Scheme (see para. 4.29); and
- (f) as mentioned in paragraphs 4.33 and 4.35, the SWD, adopting a risk-based approach, undertakes to even out the number of inspections and conduct follow-up inspections within the target timeframe.

PART 5: Way forward

5.16 Audit has *recommended* that the Director of Social Welfare should, in collaboration with the Secretary for Labour and Welfare:

- (a) address the various challenges identified in paragraphs 5.3 to 5.8, including the monitoring of the various pilot CCS and RCS voucher schemes, the Special Scheme for in-situ expansion or redevelopment of privately owned sites for welfare uses, and the setting up of contract RCHEs on 11 sites;
- (b) redevelop the LDS computer system as early as possible to enable it to more effectively support the registration and allocation of LTC services under the CWL (see para. 5.9); and
- (c) keep on monitoring the waiting lists and waiting times for LTC services from time to time to ensure that the situation has not deteriorated.

5.17 Audit has also *recommended* that the Secretary for Labour and Welfare should take on board the audit findings and recommendations in this Audit Report in formulating and implementing the Elderly Services Programme Plan which is meanwhile under preparation by the Elderly Commission (see para. 1.18).

Response from the Administration

5.18 The Director of Social Welfare, supported by the Secretary for Labour and Welfare, agrees with the audit recommendations. She has said that:

 (a) the SWD will keep in view the findings of the evaluation study on the Pilot CCS Voucher Scheme and the consultancy study on RCS voucher scheme;

- (b) for the Special Scheme on privately owned sites for welfare uses, the SWD will continue to liaise with the applicant NGOs and departments concerned closely to ensure that the use of the sites will be optimised and comply with relevant requirements for provision of the welfare facilities and that the projects be completed as soon as practicable;
- (c) the SWD will make every effort to streamline the work procedures with a view to bringing the new contract RCHEs (see para. 5.7) into operation as soon as possible; and
- (d) the LDS redevelopment project has been scheduled to commence in November 2014 with the areas of improvement including, among others, proper tracking and record of form submission, e-form transmission and workflow enhancement to strengthen compliance in processing applications and service allocation in accordance with the manual of procedures and business rules, etc.

5.19 Regarding the audit recommendation in paragraph 5.17, the Secretary for Labour and Welfare has said that the Elderly Commission is currently in the process of engaging stakeholders and interested parties in setting the scope of the Elderly Services Programme Plan. He has undertaken to forward Audit's findings and recommendations to the Elderly Commission for it to take into account as it deems appropriate when formulating the Programme Plan.

Elderly Branch of Social Welfare Department Organisation Chart (extract) (31 August 2014)



Source: SWD records

Note: The five SCNAMO(ES)s serve the regions of Hong Kong, East Kowloon, West Kowloon, New Territories East and New Territories West of the SWD. They are responsible for the monitoring of the operations of the assessment mechanism.

Simplified work flow for processing applications under the Central Waiting List



Remarks: Applicant may request, through the RW, for re-assessment to update his/her latest care need and for change, if required, of LTC services.

Appendix C (para. 2.24 refers)

Trend in the number of subsidised RCS places provided by the Government over the years from 2000 to 2014



Source: SWD records

Spacing	Subvented/ Contract RCHE	Private RCHE participating in the EBPS providing EA1 places	Private RCHE participating in the EBPS providing EA2 places	Statutory minimum requirements for RCHE providing C&A places	
Net floor area per resident	16 m ² to 18 m ²	9.5 m ²	8 m ²	6.5 m ²	
Staffing level	Notional staffing requirement for a 40-place C&A home	Staffing requirement with reference to a 40-place C&A home on the basis of 8 working hours per staff member per day		A minimum of two shifts of workers. Number of working hours of each staff member subject to employer-employee agreement.	
Home Manager	1	1	1	1	
Registered/ Enrolled Nurse	4	2	Not required	(unless a health workeris present) 1 for every60 residents or part thereof(7 am to 6 pm)	
Health Worker	Not required	2	4	(unless a nurse is present) 1 for every 30 residents or part thereof (7 am to 6 pm)	
Care Worker	9	8	8	 1 for every 20 residents or part thereof (7 am to 3 pm) 1 for every 40 residents or part thereof (3 pm to 10 pm) 1 for every 60 residents or part thereof (10 pm to 7 am) 	
Ancillary Worker	8	8	6	1 for every 40 residents or part thereof (7 am to 6 pm)	
Total	22	21	19		

Spacing and staffing level requirements of different types of RCHEs for providing "care and attention" places

Source: SWD records

Appendix E

Acronyms and abbreviations

AQ	Agency quota
Audit	Audit Commission
CCS	Community care services
CoC	Continuum of care
CSSA	Comprehensive Social Security Assistance
CWL	Central Waiting List for subsidised LTC services
C&A	Care and attention
DH	Department of Health
DMC	Deed of mutual covenant
EBPS	Enhanced Bought Place Scheme
EHCCS	Enhanced Home and Community Care Services
FC	Finance Committee
FSAs	Funding and service agreements
H/A	Home for the aged
НА	Hospital Authority
HAD	Home Affairs Department
HKSAR	Hong Kong Special Administrative Region
ICAC	Independent Commission Against Corruption
ICS	Infirmary care supplement
IHCS	Integrated Home Care Services
IU	Infirmary unit
LDS	Long-term care services delivery system
LegCo	Legislative Council
LF	Lotteries Fund

Appendix E (Cont'd)

LORCHE	Licensing Office of RCHEs
LSG	Lump Sum Grant
LTC	Long-term care
LWB	Labour and Welfare Bureau
MDS-HC	Minimum Data Set-Home Care
NGO	Non-governmental organisation
NH	Nursing home
NHPPS	Nursing Home Place Purchase Scheme
PAC	Public Accounts Committee
PTG	Private treaty grant
QC	Quality check
RCHE	Residential care home for the elderly
RCS	Residential care services
RW	Responsible worker/Referring worker
SCNAMO(ES)	Standardised Care Need Assessment Management Office (Elderly Services)
S/C	Self-care
SWD	Social Welfare Department

CHAPTER 2

Department of Health Hospital Authority

Provision of health services for the elderly

Audit Commission Hong Kong 30 October 2014 This audit review was carried out under a set of guidelines tabled in the Provisional Legislative Council by the Chairman of the Public Accounts Committee on 11 February 1998. The guidelines were agreed between the Public Accounts Committee and the Director of Audit and accepted by the Government of the Hong Kong Special Administrative Region.

Report No. 63 of the Director of Audit contains 10 Chapters which are available on our website at http://www.aud.gov.hk

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PROVISION OF HEALTH SERVICES FOR THE ELDERLY

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PROVISION OF HEALTH SERVICES FOR THE ELDERLY

Executive Summary

1. Public health services for the elderly are mainly provided by the Department of Health (DH) and the Hospital Authority (HA). The DH provides the services through its 18 Elderly Health Centres (EHCs), 9 non-governmental organisations (NGOs) under the Elderly Health Assessment Pilot Programme (EHAPP), 18 Visiting Health Teams (VHTs) and the Elderly Health Care Voucher Scheme (EHCVS). The 2014-15 estimated expenditure for the services was \$1,034 million. In addition to public hospitals, the HA provides services through its 73 General Out-patient Clinics (GOPCs) and 47 Specialist Out-patient Clinics (SOPCs) in seven clusters. Expenditure for the operation of the HA in 2013-14 was \$50 billion. The expenditure spent on elderly patients amounted to around 46% of the HA's total expenditure in 2013-14. The Audit Commission (Audit) has recently conducted a review of the provision of health services for the elderly by the DH and the HA.

Elderly health assessment services of DH

2. The 18 EHCs provide health assessments (first-time and subsequent) in the morning and curative treatments in the afternoon to the elderly (aged 65 or above), who need to apply for enrolment as members of individual EHCs to be eligible for the services (paras. 2.2 and 2.9).

3. *EHC capacity not timely expanded to cope with the demand for elderly health assessment services.* In the ten years from 2004 to 2013, the elderly population increased from 831,000 to 1,049,000, but the 18 EHCs provided less than 40,000 health assessments a year to the elderly, without timely expansion. It was only in 2013 that funds for the creation of two additional clinical teams were approved to increase the EHC capacity commencing 2014-15 and 2015-16 (paras. 2.6 and 2.7).

4. Significant disparity among the EHCs in allocating manpower resources between first-time and subsequent health assessments. In the absence of top-down strategic directions from the DH management, the mix of first-time and subsequent health assessments in 2013 varied significantly among the EHCs. If the mix remained unchanged and assuming zero additional intake and attrition, it would take many years (more than seven years for five EHCs) to clear their backlogs of first-time assessments. First-time assessments are important because 32% of the elderly were found to have medical conditions in their first-time assessments whereas only 7% of them had new medical conditions in their subsequent assessments (paras. 2.5(b) and 2.10).

5. Significant disparity in the number of curative treatments conducted by the EHCs. Although the manpower of the 18 EHCs was the same (with a clinical team of four staff in each EHC), there was significant disparity in the number of curative treatments conducted by the 18 EHCs whereas each EHC conducted roughly 2,150 health assessments a year. For example, in the period from 2009 to 2013, the Kwai Shing EHC conducted on average 16 curative treatments per day whereas the Shek Wu Hui EHC conducted 33 treatments per day. This suggests that some EHCs might have spare capacity for conducting more health assessments (paras. 2.7, 2.9 and 2.14).

6. *Implementation of EHAPP.* The EHAPP is a two-year programme launched in collaboration with nine NGOs in July 2013 to provide subsidised health assessments to 10,000 elderly, who should be recruited by the NGOs through their community networks. Up to mid-July 2014, against the target of 10,000 elderly, only 2,274 had been enrolled. The low enrolment of elderly calls for the DH's attention (paras. 2.28 and 2.29).

Educational and advisory health services provided by VHTs of DH

7. *Health promotion activities for elderly.* In 2013, the VHTs conducted 9,176 health promotion activities (HPAs) for the elderly. As no limit is set on the number of HPAs each residential care home for the elderly (RCHE) or non-RCHE (such as District Elderly Community Centre and Neighbourhood Elderly Centre) can receive, 25 RCHEs and 92 non-RCHEs were each provided with a large number of elderly HPAs in the year (ranging from 15 to 38) even when attendances were low.

Furthermore, for some elderly HPAs, carers should accompany the elderly so as to provide them with assistance during the HPAs. Audit noted that in one case, 9 of 10 such HPAs provided to a social centre had no carer attendance (paras. 3.4 to 3.6).

8. *Comprehensive review of the provision of HPAs.* The conduct of HPAs accounted for 90% of the VHTs' activities. However, since the establishment of the VHTs in 1998, no review has been conducted to evaluate the effectiveness of the VHTs' provision of the HPAs except for the client satisfaction surveys conducted in 2001 and before to assess the performance of the VHTs (para. 3.10).

Administration of DH's Elderly Health Care Voucher Scheme

9. The EHCVS was first established as a pilot scheme in 2009, and became a recurrent programme in 2014. Elderly aged 70 or above holding a Hong Kong identity card are eligible to join the EHCVS, which aims to subsidise elderly in their use of healthcare services in the private sector. Annual voucher amount was increased from \$1,000 for 2013 to \$2,000 for 2014. As at 31 March 2014, 556,000 elderly had joined the EHCVS, representing a joining rate of 75%. Estimated expenditure for 2014-15 for settling voucher claims amounted to \$846 million (paras. 4.2 and 4.11).

10. *Participation of private healthcare service providers.* As at 31 March 2014, of the 29,044 private healthcare service providers, 4,108 had enrolled in the EHCVS. The enrolment rates for Medical Practitioners and Chinese Medicine Practitioners were 34% and 23% respectively. Their services had accounted for 93% of the voucher claims. Audit's analysis of the distribution of the enrolled Medical Practitioners (EMPs)/enrolled Chinese Medicine Practitioners (ECMPs) by districts and the number of eligible elderly residing in each district indicated that the ratios of medical practitioners to eligible elderly in some districts were quite low, even though it is recognised that some elderly residing in one district might receive services in a different district. For example, the ratio in Southern District was one EMP to 770 eligible elderly while that in Yau Tsim Mong District was one EMP to 110 eligible elderly (paras. 4.3 to 4.6).

11. Monitoring of voucher claims. The DH has adopted a "post-payment approach" in monitoring voucher claims made by enrolled healthcare service providers (EHCPs). It conducts routine checking, which covers all EHCPs by calling from them the elderly's consent forms (for the use of vouchers) relating to a fixed number of claims for a particular month for examination. The standard pattern of routine checking without surprise element should be avoided. Despite that similar errors/omissions were detected in follow-up inspections, the DH had not taken escalated action by issuing advisory letters or warning letters to the EHCPs. Audit examination of consent forms relating to 5,031 claims made by 15 EHCPs revealed that there were errors/omissions in consent forms of 640 (13%) claims, involving a total voucher amount of \$171,250. Such errors/omissions included missing/incomplete witness information, missing signature of the elderly, missing date of visiting EHCP or missing personal information of the elderly. Audit also identified a number of unsatisfactory practices. For example, one EMP, instead of requiring the elderly to sign one consent form and specify the total number of vouchers used, required the elderly to sign one consent form for each voucher used, with only one signed form having specified the total number of vouchers used. On the remaining consent forms, the space for filling in the number of vouchers used was left blank. In one case, the elderly signed as many as 59 such "blank forms" for just one consultation. This practice could lead to false claims through using the pre-signed "blank forms" (paras. 4.23, 4.24, 4.27, 4.29 and 4.31 to 4.34).

12. *Comprehensive review of EHCVS.* With the increasing financial implications of the EHCVS, it is an opportune time for the Administration to conduct another comprehensive review of the EHCVS. On various occasions, the Food and Health Bureau informed the Legislative Council that a comprehensive review of the EHCVS would be conducted (para. 4.39).

HA's provision of Specialist Out-patient service to elderly patients

13. According to the HA, elderly patients may generally be defined as those aged 65 or above for planning purposes. For its Specialist Out-patient (SOP) service, priority is given according to assessment of individual needs, rather than a person's age. Seven of the eight Specialties provide SOP service to elderly patients. Nonetheless, the elderly have accounted for 34% of the SOP attendances in all Specialties of the HA although they represent only 14% of the population (paras. 5.2, 5.4 and 5.11).

14. Elderly patients' waiting time for their first SOPC consultation. The GOPCs reserve quotas of consultation for elderly patients. Over 90% of elderly patients can secure an appointment at GOPCs and attend a consultation within two working days. The SOPCs triage patients (including elderly patients) into Priority 1 (urgent), Priority 2 (semi-urgent) and Routine cases based on their individual needs and clinical conditions. In the period from 2009-10 to 2013-14, the HA was able to meet the target median waiting time of Priority 1 and Priority 2 cases. However, the waiting time for first consultation for Routine cases of elderly patients had generally increased. Audit also noted that the elderly patients' waiting time varied significantly among different clusters. Audit found that the disparity was greater among three of the seven Specialties. For these Specialties, the differences between the longest waiting time and the shortest waiting time among the seven clusters were 97, 102 and 104 weeks respectively. With the expected rise in the proportion of elderly population, the demand for SOP service is bound to increase significantly. Management of waiting time at SOPCs will be an escalating challenge for the HA (paras. 5.2 to 5.6, 5.9, 5.10 and 5.12).

15. *Geriatric SOPCs.* Geriatrics is a subspecialty under the Medicine Specialty, which has the highest elderly patients' attendance. As at 31 August 2014, the HA had 12 Geriatric SOPCs. Audit visited three of them. The 90th percentile waiting time of Routine cases at the three SOPCs ranged from 78 to 103 weeks. Audit also found that different approaches were used by different SOPCs in scheduling appointments. For example, one SOPC allocated the earliest available appointment slots to Routine cases whereas another scheduled appointment slots to the end of the queue and the third SOPC scheduled appointment slots according to the dates specified by the Medical Officers. Additionally, Audit is concerned that some appointment slots released due to cancellation of appointment might not be put to use in an efficient manner (paras. 5.15, 5.16, 5.18 and 5.19).

16. *Cross-cluster arrangements.* To shorten the waiting time for first consultation and reduce the disparity in waiting time among clusters, the HA launched in August 2012 a cross-cluster referral arrangement for SOP service on a pilot basis. Audit noted that currently, the cross-cluster referral arrangement is available for only three of the seven Specialties. Although the HA allows patients to choose an SOPC for first consultation in any cluster according to their preferences, Audit's telephone enquiries to 21 SOPCs in the seven clusters revealed that some clusters did not allow patients from other clusters to attend their SOPCs (paras. 5.30, 5.31, 5.33 and 5.34).

Audit recommendations

17. Audit recommendations are made in the respective sections of this Audit Report. Only the key ones are highlighted in this Executive Summary. Audit has *recommended* that the Director of Health should:

Elderly health assessment services of DH

- (a) critically review the EHC capacity to ascertain if it has been aligned with the growth of the elderly population (para. 2.18(a));
- (b) set strategic directions, taking on board the audit observations, to assist EHCs to allocate their resources to cope with the growing demand for health assessment services (para. 2.18(c));
- (c) explore ways to enhance the elderly's enrolment in the EHAPP and fine-tune the programme (para. 2.32(a));

Educational and advisory health services provided by VHTs of DH

(d) conduct a comprehensive review of the modus operandi for the provision of HPAs to enhance the service effectiveness, taking on board the audit observations (para. 3.11);

Administration of DH's Elderly Health Care Voucher Scheme

- (e) continue to encourage more private healthcare service providers to join the EHCVS, especially in districts with a relatively small number of EMPs or ECMPs vis-à-vis a large number of eligible elderly residing in the districts (para. 4.9);
- (f) review the effectiveness of conducting follow-up inspections to deter errors/omissions and, where warranted, take escalated action by issuing advisory letters or warning letters to the EHCPs (para. 4.37(d)); and
- (g) plan for the conduct of another comprehensive review of the EHCVS (para. 4.40).

18. Audit has also *recommended* that the Chief Executive, HA should:

HA's provision of Specialist Out-patient service to elderly patients

- (a) shorten the waiting time for Routine cases at the SOPCs as far as possible (para. 5.13(a));
- (b) conduct a comprehensive review of the appointment scheduling practices of the SOPCs (para. 5.22(a)); and
- (c) consider extending the cross-cluster referral arrangement to other Specialties and to benefit more elderly patients (para. 5.35(b)).

Response from the Administration and the Hospital Authority

19. The Secretary for Food and Health, the Director of Health and the Chief Executive, HA agree with the audit recommendations.

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PART 1: INTRODUCTION

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

Background

1.2 Hong Kong is undergoing a demographic transformation with a significant increase in both the proportion and number of elderly, generally defined as aged 65 or above, in the population (see Figure 1). According to the Census and Statistics Department (C&SD), the number of elderly will increase from one million in 2013 to 1.45 million in 2021 and further to 2.2 million in 2031. This poses challenges to the existing healthcare system as elderly are more prone to health problems than other age groups.

Figure 1



Proportion and number of elderly in Hong Kong (2010 to 2031)

Source: C&SD Population estimates in 2010

Introduction

1.3 Public health services for elderly are mainly provided by the Department of Health (DH) and the Hospital Authority (HA).

1.4 The DH provides the following major elderly health services:

(a)	Elderly Health Centres (EHCs)	:•	To provide health assessments and curative treatments (if health problems are found in the assessment) for elderly aged 65 or above holding a Hong Kong identity (HKID) card or a Certificate of Exemption (COE — Note 1) who are enrolled as members of the EHCs
		•	First EHC started operation in 1994
		•	Number of centres: 18 (one in each district)
		•	Estimated expenditure for 2014-15: \$123.2 million
(b)	Elderly Health Assessment Pilot Programme (EHAPP)	:•	To engage non-governmental organisations (NGOs) to recruit 10,000 elderly who are aged 70 or above holding a HKID card or a COE and are not members of the EHCs, and provide health assessment to them
		•	In operation since July 2013 (two-year programme)
		•	Programme expenditure: \$12 million

Note 1: Under the Registration of Persons Regulations (Cap. 177A), the aged, the blind or the infirm who satisfy a registration officer that their personal attendance for registration of HKID cards will injure their health or the health of others, are not required to register or apply for the issue or renewal of an identity card. They can instead apply for a COE.

(c)	Visiting Health Teams (VHTs)	:•	To carry out health education and promotion activities for elderly and their carers at community and residential care settings
		٠	In operation since 1998
		•	Number of teams: 18 (one in each district)
		•	Estimated expenditure for 2014-15: \$53.1 million
(d)	Elderly Health Care Voucher Scheme (EHCVS)	:•	To subsidise use of healthcare services in the private sector by elderly aged 70 or above holding a HKID card or a COE
		•	Launched in 2009 as a pilot scheme and became a recurrent programme in 2014
		•	Estimated expenditure for 2014-15: \$846 million

1.5 The HA mainly provides primary care through its 73 General Out-patient Clinics (GOPCs), while secondary care and tertiary care are provided through its 47 Specialist Out-patient Clinics (SOPCs) and hospitals. As elderly people are not a homogenous group and the experience of ageing varies from person to person, curative treatments of the GOPCs and SOPCs are provided according to assessment of individual needs, rather than a person's age. The GOPCs reserve quotas of consultation for elderly patients (aged 65 or above). The SOPCs triage their patients for first consultation, including elderly patients, into three categories, namely Priority 1 (urgent), Priority 2 (semi-urgent) and Routine cases, based on their clinical conditions and no separate quotas are reserved for elderly patients.

1.6 In 2013-14, the GOPCs and SOPCs had 5.81 million and 7.04 million attendances respectively, including 2.22 million (38% of 5.81 million) for GOPC attendances and 2.41 million (34% of 7.04 million) SOPC attendances by elderly patients. Expenditure for the operation of the HA in 2013-14 was \$50 billion, of which \$2,200 million and \$9,900 million were spent for the operation of the GOPCs and SOPCs respectively. The expenditure spent on elderly patients by the HA amounted to around 46% of the HA's total expenditure in 2013-14.

Audit review

1.7 The Audit Commission (Audit) has recently conducted a review of the DH's and HA's provision of health services for the elderly. The audit has focused on the following areas:

- (a) elderly health assessment services of DH (PART 2);
- (b) educational and advisory health services provided by VHTs of DH (PART 3);
- (c) administration of the DH's EHCVS (PART 4); and
- (d) HA's provision of Specialist Out-patient (SOP) service to elderly patients (PART 5).

General response from the Administration and the Hospital Authority

1.8 The Secretary for Food and Heath, the Director of Health and the Chief Executive, HA agree with the audit recommendations. The Secretary for Food and Health appreciates the effort of Audit in conducting a thorough review on this subject. He has said that the audit recommendations provide useful reference for the DH and the HA to improve elderly health services.

Acknowledgement

1.9 Audit would like to acknowledge with gratitude the full cooperation of the staff of the DH and the HA during the course of the audit review.

PART 2: ELDERLY HEALTH ASSESSMENT SERVICES OF DH

2.1 This PART examines the elderly health assessment services of the DH. Such services are mainly provided by the 18 EHCs, supplemented since July 2013 by a two-year pilot programme, namely the EHAPP. Focus is placed on the following issues:

- (a) EHC capacity not coping with the demand for health assessment services (paras. 2.4 to 2.19);
- (b) waiting time and elderly not showing up for allied health counselling services (paras. 2.20 to 2.27); and
- (c) implementation of EHAPP (paras. 2.28 to 2.33).

Operation of Elderly Health Centres

2.2	Background	information	on the	operation	of EHCs is	s shown	below:
	0			1			

(a)	Establishment	:	•	18 I territ	EHCs tory)	(one	in	each	district	of	the
			•	First	EHC	establi	shec	l in 19	94		
(b)	Eligibility for services	:	Eld or a	lerly a a COI	aged 6 E	5 or a	bov	e holdi	ing a HK	ID c	ard
(c)	Services provided	•	•	Heali at ic disea the a result provi	th asse dentify ases. U assessn ts of t ide hea	ing he Usually nent, the assoluth adv	<i>ut.</i>] ealth y, tw a de sessi vice	Health n risks wo to octor ment a to the	assessmo s and c four wee will exp and a nu elderly.	ent a letect ks a lain rse v	ims ting fter the will

•	Curative treatments. Curative treatments
	have been provided since 1998. If health
	problems are found in the assessment, the
	elderly will be given curative treatments.
	The elderly can also approach EHCs for
	general out-patient service when necessary.

- *Health counselling.* Whenever necessary after health assessment, the elderly is given health counselling by the EHCs' nurses and allied health staff comprising clinical psychologists, dietitians, occupational therapists, and physiotherapists.
- *Health promotion and education.* To increase the health awareness of elderly and their self-care ability, the nurses and allied health staff provide health talks on common health problems/risk factors and weight control in EHCs.
- (d) Way to obtain services : An elderly needs to apply for enrolment as a member at an EHC of his choice. Owing to the great demand for the services, the elderly needs to wait for membership enrolment. A health assessment will be conducted on the day the elderly enrol as a member.
- (e) Fees for services
 : Members are required to pay an annual membership fee of \$110. During the membership period, they receive health assessment service. They can also receive curative treatments at a charge of \$45 per consultation.
| (f) | Major statistics of services | : • | Attendances for health assessment in 2013:
38,737 (4,124 first-time assessments and
34,613 subsequent assessments) |
|-----|-----------------------------------|-------|---|
| | | • | Attendances for curative treatments in 2013: 91,602 |
| | | • | Number of members as at 31 March 2014: 118,000 (12% of the elderly population in Hong Kong) |
| (g) | Manpower | :• | As at 1 June 2014, the 18 EHCs were
headed by a Consultant, who reported to the
Deputy Director of Health. The EHCs had
an establishment of 164 staff comprising:
- 6 Senior Medical and Health Officers; |
| | | | 18 Medical and Health Officers; |
| | | | — 18 Nursing Officers; — 36 Registered Nurses; |
| | | | 1 Senior Dispenser; |
| | | | — 4 Dispensers; |
| | | | 32 allied health staff; and |
| | | | — 49 Clerical and Workman grade staff. |
| | | • | Each EHC is manned by a clinical team comprising a Medical and Health Officer and three nursing staff (a Nursing Officer and two Registered Nurses). |
| (h) | Estimated expenditure for 2014-15 | : \$1 | 23.2 million |

Importance of DH's health assessment services

2.3 The health assessment services provided by the EHCs to elderly play an important role in the healthcare system, as evidenced by the following:

- (a) according to the "Primary Care Development in Hong Kong: Strategy Document" published by the Food and Health Bureau (FHB) in 2010, chronic diseases are taking up more and more of the capacity of Hong Kong's healthcare system. They are also the major causes of death. Hong Kong needs to adopt a more preventive approach to tackle disease burden; and
- (b) according to the "Hong Kong Reference Framework for Preventive Care for Older Adults in Primary Care Settings" (the Reference Framework) published in 2012 by the Working Group on Primary Care (Note 2), the significant increase in the number of older people and the associated age-related disabilities and chronic diseases create challenges to the existing healthcare system. It has been shown that targeted, proactive and community-based preventive care is more cost-effective than downstream acute care. Therefore, targeted intervention for various health risks at their early stages is of paramount importance not only to the healthcare system, but also to individual older adult's active ageing.

EHC capacity not coping with the demand for health assessment services

2.4 Table 1 shows the output of the 18 EHCs in 2013.

Note 2: The Working Group on Primary Care is chaired by the Secretary for Food and Health with members including healthcare professionals. The Reference Framework provides a common reference for all healthcare professionals in Hong Kong on the provision of continuous, comprehensive, and evidence-based care for older adults in the community.

Table 1

Output of EHCs (2013)

	Number	r of health asses	ssments	Number of sessions for	
ЕНС	First-time	Subsequent	Total	explaining assessment results	Number of curative treatments
Kowloon City	98	2,095	2,193	1,838	4,503
Yau Ma Tei	104	1,975	2,079	2,343	4,515
Sai Ying Pun	120	2,000	2,120	2,060	4,453
Aberdeen	163	1,961	2,124	2,101	6,472
Tseung Kwan O	163	1,973	2,136	2,011	5,768
Nam Shan	166	2,027	2,193	2,544	4,890
San Po Kong	175	1,947	2,122	1,968	5,273
Wan Chai	183	1,973	2,156	2,076	4,576
Kwai Shing	184	2,028	2,212	2,201	3,785
Tai Po	192	1,933	2,125	2,069	5,423
Shau Kei Wan	204	1,992	2,196	2,207	4,444
Shek Wu Hui	264	1,855	2,119	2,572	8,370
Lam Tin	268	1,950	2,218	2,010	3,960
Tuen Mun	275	1,834	2,109	2,220	5,310
Yuen Long	332	1,866	2,198	2,083	4,304
Tsuen Wan	386	1,706	2,092	1,773	6,014
Tung Chung	407	1,817	2,224	2,074	3,873
Lek Yuen	440	1,681	2,121	1,499	5,669
Total	4,124	34,613	38,737	37,649	91,602

Source: DH records

- 2.5 Audit found that:
 - (a) the capacity of the EHCs had not been timely expanded to cope with the demand for health assessment services by the elderly (see paras. 2.6 and 2.7);
 - (b) in the absence of top-down strategic directions from the DH management, there was significant disparity among the EHCs in the allocation of their manpower resources between first-time and subsequent health assessments (see paras. 2.8 to 2.13);
 - (c) there was significant disparity in the number of curative treatments conducted by individual EHCs, suggesting that some EHCs might have spare capacity for conducting more health assessments (see para. 2.14); and
 - (d) in view of the backlog of first-time health assessments currently accumulated by individual EHCs and the fact that curative treatments are also provided by the HA, there is a need for the DH to critically review its justifications for the EHCs' provision of curative treatments (see paras. 2.15 to 2.17).

EHC capacity not timely expanded to cope with the demand for elderly health assessment services (see para. 2.5(a))

2.6 Table 1 in paragraph 2.4 shows the output of individual EHCs in 2013. It can be seen that individual EHCs had conducted a total of 2,100 to 2,200 health assessments (first-time and subsequent) a year. Figure 2 shows that in the ten years from 2004 to 2013, the elderly population increased from 831,000 in 2004 to 1,049,000 in 2013, but the 18 EHCs provided less than 40,000 health assessments a year to the elderly with limited expansion over the years. This indicates that the EHC capacity has <u>not</u> been timely expanded to align with the growth of the elderly population.







Source: DH and C&SD records

2.7 In the same period, the manpower of the 18 EHCs had remained unchanged. Each EHC continued to maintain a clinical team of four staff, comprising one Medical and Health Officer, one Nursing Officer, and two Registered Nurses. In 2013, the DH's bid for additional manpower for the EHCs was successful and provisions of \$3.3 million and \$6.5 million were approved for the creation of one additional clinical team in the Lek Yuen EHC in 2014-15 and another clinical team in the Wan Chai EHC in 2015-16. Audit considers that the DH needs to critically review the EHC capacity to align with the growth of the elderly population.

Significant disparity among the EHCs in allocating manpower resources between first-time and subsequent health assessments (see para. 2.5(b))

2.8 As mentioned in paragraph 2.2(d), an elderly needs to apply for enrolment as a member at an EHC to receive services of the EHC. Owing to great demand, an elderly needs to wait for membership enrolment and a first-time health assessment will be conducted on the day of enrolment. Two types of health assessments are provided to the elderly, namely first-time health assessment and subsequent health assessments. An elderly who has undergone the first-time health assessment can book an appointment for subsequent health assessments 12 months after the previous assessment. The subsequent assessment will be arranged as far as possible within six months from the date of booking. It is the DH's intention to provide health assessment for every member once about every 18 months.

2.9 *Mix of first-time and subsequent health assessments.* Every EHC follows largely the same working pattern, as follows:

- (a) in the morning (from 8:30 am to 1:00 pm), the 4-staff clinical team conducts health assessments (first-time and subsequent) and explains assessment results; and
- (b) in the afternoon (from 2:00 pm to 5:30 pm), the team conducts curative treatments and one to two extra health assessments per day.

The DH plans to conduct 38,600 health assessments (first-time and subsequent) each year, i.e. each EHC is to conduct about 2,150 health assessments a year. Table 1 in paragraph 2.4 shows that in 2013, the EHCs conducted a total of 38,737 health assessments, i.e. an average of 2,150 health assessments for each EHC.

2.10 Audit found that the mix of first-time and subsequent health assessments varied significantly among the EHCs and it would take years for most of the EHCs to clear their first assessments' backlogs (see Table 2).

Table 2

Health assessments conducted by EHCs (2013)

	Num	iber of assessi	nents	Tingt times	Number of elderly on	Normhan af	
ЕНС	First-time	Subsequent	Total	assessments as a percentage of total assessments	for first-time assessment as at 31.12.2013	years required to clear the waiting list	
	(a)	(b)	(c) = (a) + (b)	(d) = $\frac{(a)}{(c)} \times 100\%$	(e)	$(\mathbf{f}) = (\mathbf{e}) \div (\mathbf{a})$	
Kowloon City	98	2,095	2,193	4.5%	746	7.6	
Yau Ma Tei	104	1,975	2,079	5.0%	997	9.6	
Sai Ying Pun	120	2,000	2,120	5.7%	965	8.0	
Aberdeen	163	1,961	2,124	7.7%	463	2.8	
Tseung Kwan O	163	1,973	2,136	7.6%	1,228	7.5	
Nam Shan	166	2,027	2,193	7.6%	880	5.3	
San Po Kong	175	1,947	2,122	8.2%	347	2.0	
Wan Chai	183	1,973	2,156	8.5%	1,760	9.6	
Kwai Shing	184	2,028	2,212	8.3%	465	2.5	
Tai Po	192	1,933	2,125	9.0%	713	3.7	
Shau Kei Wan	204	1,992	2,196	9.3%	1,196	5.9	
Shek Wu Hui	264	1,855	2,119	12.5%	340	1.3	
Lam Tin	268	1,950	2,218	12.1%	533	2.0	
Tuen Mun	275	1,834	2,109	13.0%	946	3.4	
Yuen Long	332	1,866	2,198	15.1%	331	1.0	
Tsuen Wan	386	1,706	2,092	18.5%	973	2.5	
Tung Chung	407	1,817	2,224	18.3%	832	2.0	
Lek Yuen	440	1,681	2,121	20.7%	1,426	3.2	
Overall	4,124	34,613	38,737	10.6%	15,141	3.7	

Source: Audit analysis of DH records

Take the Kowloon City EHC, Lek Yuen EHC and Yau Ma Tei EHC in Table 2 as illustrations:

- (a) the Kowloon City EHC had allocated only 4.5% of its health assessment sessions to first-time assessments whereas the Lek Yuen EHC had allocated 20.7% to first-time assessments. As a result, despite the fact that the Lek Yuen EHC had a waiting list of 1,426 elderly awaiting membership enrolment and first-time assessments, it would take only 3.2 years to clear the waiting list whereas the Kowloon City EHC had a waiting list of 746 and it would take 7.6 years assuming zero additional intake and attrition over the period; and
- (b) some EHCs would take a long time to clear their waiting list of elderly awaiting membership enrolment and first-time assessments (see Column (f) in Table 2). For example, in the case of the Yau Ma Tei EHC, if the 2013 assessment mix remained unchanged, it would take some nine years (997 elderly \div 104 first-time assessments a year) to clear its waiting list of 997 elderly, assuming zero additional intake and attrition over the period.

First-time assessments are important because an analysis of the 38,927 elderly health assessment cases of 2012 indicated that 32% of the 5,067 elderly were found to have medical conditions in their first-time assessments whereas only 7% of the 33,860 elderly had new medical conditions in their subsequent assessments (see para. 2.13(b)). According to the DH, the EHCs had conducted more subsequent assessments than first-time assessments because it was the DH's intention of allowing all members to receive their subsequent health assessments about once every 18 months (see para. 2.8), with the remaining capacity made available for first-time assessments. Audit considers that the DH needs to explore the feasibility of setting a performance pledge for the waiting time for first-time assessment.

2.11 *Waiting time for first-time health assessment.* As at 31 December 2013, 15,141 elderly were waiting for first-time health assessments (see Column (e) in Table 2). In the past few years, both the number of elderly waiting for first-time health assessments and the average median waiting time had been rising (see Table 3).

Table 3

Number of elderly waiting for first-time health assessment and the average median waiting time (2011 to 2014)

Year	Number of elderly waiting for first-time health assessment (as at 31 December)	Average median waiting time (Note) (Month)
2011	10,401	10.4
2012	12,525	12.3
2013	15,141	16.6
2014 (Up to 31 March)	15,702	18.2

Source: DH records

Note: The waiting time refers to the duration between the date when an elderly applies for enrolment at an EHC to the date of enrolment (which is also the date of first-time health assessment).

Table 4 further shows that in 2013, the median waiting time for first-time health assessments for individual EHCs ranged from 8.7 to 28.6 months, indicating that all the 18 EHCs had a backlog of elderly waiting for membership enrolment and first-time health assessments.

Table 4

Median waiting time for first-time health assessment (31 December 2013)

ЕНС	Number of elderly waiting for first-time health assessment	Median waiting time
		(Month)
Tai Po	713	28.6
Wan Chai	1,760	27.8
Yau Ma Tei	997	25.4
Kowloon City	746	23.4
Lek Yuen	1,426	22.8
Sai Ying Pun	965	22.8
Shau Kei Wan	1,196	21.5
Tseung Kwan O	1,228	20.5
Nam Shan	880	17.3
San Po Kong	347	15.9
Tuen Mun	946	15.0
Tsuen Wan	973	12.7
Aberdeen	463	11.5
Lam Tin	533	11.1
Shek Wu Hui	340	10.8
Kwai Shing	465	10.4
Tung Chung	832	10.4
Yuen Long	331	8.7
Overall	15,141	16.6

Source: DH records

2.12 *Waiting time for subsequent health assessments.* The DH has set a target of allowing the elderly to receive their subsequent health assessments once every 18 months. In the period from 2004 to 2013, the average waiting time for subsequent health assessments in different EHCs ranged from 16.3 to 18.8 months. The target of once every 18 months for subsequent health assessment had largely been met.

2.13 *Need for a critical review of the assessment mix for individual EHCs.* There was wide disparity among the EHCs in the mix of first-time health assessments and subsequent health assessments, and a long waiting list of elderly awaiting first-time health assessments as reported in Table 2 (see para. 2.10). Audit considers that the DH needs to set top-down strategic directions on how individual EHCs should allocate their health assessment sessions, so that the EHCs can adjust their individual assessment mix taking into account the local elderly needs. In this connection, it should be noted that:

- (a) according to the Reference Framework (see para. 2.3(b)), the frequency of health assessment on different groups (such as those with or without risk factors like smoking) of the elderly may vary from once every one to three years;
- (b) first-time assessment is important because, as mentioned in paragraph 2.10, an analysis of the health data of all the 38,927 elderly who had undergone health assessments in 2012 indicated that 32% of the 5,067 elderly who had undergone first-time assessments were found to have medical conditions. By comparison, only 7% of the 33,860 elderly who had undergone subsequent assessments were found to have new medical conditions; and
- (c) some years ago, the DH reshuffled some of the EHC sessions for subsequent assessments to first-time assessments and successfully reduced the waiting time from 38.3 months in 2007 to 10.4 months in 2011.

Significant disparity in the number of curative treatments conducted by the EHCs (see para. 2.5(c))

2.14 As mentioned in paragraph 2.9(b), the EHCs conducted curative treatments in the afternoons. Audit found that there was significant disparity in the

number of curative treatments conducted by individual EHCs (see Table 5). This suggests that some EHCs might have spare capacity in the afternoon. For example, in the past five years, the Kwai Shing EHC conducted on average 16 curative treatments per day whereas the Shek Wu Hui EHC conducted 33 treatments per day. Given the long waiting list of elderly for first-time assessment, the DH can consider making effective use of the spare capacity for conducting more health assessments.

Table 5

FIIC	Average number								
ЕНС	2009	2010	2011	2012	2013	Overall			
Shek Wu Hui	31	33	33	33	34	33			
Aberdeen	28	27	26	27	26	27			
Lek Yuen	28	27	28	25	23	26			
Tseung Kwan O	26	25	25	25	24	25			
Tsuen Wan	26	26	25	25	25	25			
San Po Kong	23	23	23	23	22	23			
Tai Po	25	23	23	22	22	23			
Tuen Mun	23	22	22	22	22	22			
Sai Ying Pun	22	24	21	19	18	21			
Kowloon City	20	21	20	19	18	19			
Wan Chai	18	19	19	19	19	19			
Yau Ma Tei	19	19	18	19	18	19			
Shau Kei Wan	16	18	19	18	18	18			
Nam Shan	16	16	17	21	20	18			
Lam Tin	20	19	18	17	16	18			
Tung Chung	15	15	16	17	16	16			
Kwai Shing	16	15	16	16	15	16			
Yuen Long	16	16	16	17	18	16			
Total	388	388	385	384	374	384			

Average number of daily curative treatments of 18 EHCs (2009 to 2013)

Source: DH records

Remarks: The EHCs do not limit the number of curative treatments provided in the afternoons.

Need for the DH to critically review the justifications for the provision of curative treatments by the EHCs (see para. 2.5(d))

2.15 The EHCs provide curative treatments to members. Likewise, the HA provides such service through its GOPCs. At a meeting of the Legislative Council (LegCo)'s Panel on Health Services held in 1997, the DH indicated that the two systems would run in parallel during the initial operation of the EHCs, and undertook to conduct a review of the operation of both systems at a later stage. Audit, however, noted that no such review has been conducted.

2.16 Audit notes that the DH has adopted a multi-disciplinary approach to provide comprehensive healthcare to elderly using a family medicine perspective (see para. 2.2(c)). However, in view of the importance of the health assessment services and given the long waiting list for health assessment service for each EHC, the DH needs to critically review the justifications for the provision of curative treatments.

2.17 In September 2014, the DH informed Audit that starting from a few years ago, the EHCs had already devoted more emphasis to health assessment as evidenced by the fact that 7 of the 18 EHCs had conducted one to two more health assessments in the afternoon (originally devoted to providing curative treatments) per week. Starting from June 2014, two more EHCs had followed suit.

Audit recommendations

- 2.18 Audit has *recommended* that the Director of Health should:
 - (a) critically review the EHC capacity to ascertain if it has been aligned with the growth of the elderly population;
 - (b) explore the feasibility of setting a performance pledge for the waiting time for the elderly who wish to enrol for EHC membership and first-time health assessment;

- (c) set strategic directions, taking on board the audit observations (see paras. 2.6 to 2.17), to assist the EHCs to allocate their resources to cope with the growing demand for health assessment services; and
- (d) keep the strategic directions in (c) above under regular review and monitor the waiting list of elderly awaiting membership enrolment and first-time health assessment in each EHC.

Response from the Administration

2.19 The Director of Health agrees with the audit recommendations. She has said that the DH will review the EHC capacity and strategic directions to cope with the growing demand with a view to reducing the waiting time for those who wish to enrol for membership.

Waiting time and elderly not showing up for allied health counselling services

2.20 Apart from the 4-staff clinical team manning each EHC, four groups of allied health staff, comprising eight staff members in each group, visit the EHCs on a regular basis to provide health counselling services in group sessions, as follows:

- (a) *Clinical Psychologists.* They assist elderly in practising self-management of health behaviours, sustaining mental wellness, coping with ageing, chronic pain, bereavement and common stresses of late life;
- (b) *Dietitians.* They conduct nutrition assessment of elderly and provide them with diet counselling on their nutrition-related problems;
- (c) *Occupational Therapists.* They assist elderly to manage their conditions through proper body mechanics, energy conservation technique, and work simplification skills, and to maximise their independence in activities of daily living; and

(d) *Physiotherapists*. They promote wellness, health, physical fitness, and prevention of injury and dysfunction among elderly. They also facilitate elderly in self-management of chronic diseases, pain, and injury prevention.

Waiting time for allied health counselling

2.21 The four groups of allied health staff provide counselling to elderly at the 18 EHCs according to a duty roster. For example, in the Aberdeen EHC, counselling services of Physiotherapist, Dietitian, Occupational Therapist and Clinical Psychologist were provided on Mondays, Wednesdays, Thursdays and Fridays respectively. In 2013, the average median waiting time for counselling for the 18 EHCs was about five weeks.

2.22 Audit noted that there was significant disparity among the EHCs in the waiting time for allied health counselling services, ranging from 1.1 to 11 weeks (see Table 6). The DH needs to ascertain the reasons for the significant disparity and take measures to improve the situation.

Table 6

Waiting time for elderly seeking allied health counselling services
(31 December 2013)

FIIC	Waiting time (Week)									
EHC	Clinical Psychologist	Dietitian	Occupational Therapist	Physiotherapist						
Sai Ying Pun	5.6	5.0	4.1	3.1						
Shau Kei Wan	1.7	5.0	2.2	3.3						
Wan Chai	11.0	5.2	5.9	6.5						
Aberdeen	6.3	8.2	9.4	8.8						
Nam Shan	4.2	4.3	6.3	6.3						
Lam Tin	2.9	2.6	4.1	1.6						
Yau Ma Tei	5.3	4.3	3.3	6.3						
San Po Kong	3.5	7.3	6.3	3.8						
Kowloon City	2.0	3.5	4.3	3.4						
Lek Yuen	2.5	6.1	10.2	5.7						
Shek Wu Hui	6.0	6.4	2.9	5.5						
Tseung Kwan O	4.8	2.6	5.8	4.4						
Tai Po	2.6	6.7	5.9	5.7						
Tung Chung	4.2	4.5	6.3	5.5						
Tsuen Wan	1.1	6.0	7.8	5.5						
Tuen Mun	8.5	4.0	3.4	3.1						
Kwai Shing	1.8	5.5	5.1	3.5						
Yuen Long	6.5	7.6	3.7	5.0						

Source: DH records

2.23 To improve the situation, Audit considers that the DH needs to review the working arrangements of the allied health staff and adjust their duty rosters so that more frequent visits can be made to those EHCs with long waiting time.

Elderly not showing up for allied health counselling services

2.24 Audit noted that although the EHC staff would remind the elderly (or their carers) to attend the counselling one day before the appointment, not all the elderly attended the counselling as scheduled. In 2013, the overall no-show rate of the 18 EHCs was 14.6% (contrasted sharply with 1.2% for health assessments). For six EHCs, the no-show rates were even over 25%. Examples of the EHCs with high no-show rates are shown in Table 7.

Table 7

		Т	otal number	of		Average number of
Allied health staff	ЕНС	sessions (Note)	elderly counselled	no-show elderly	No-show rate	elderly per session
		(a)	(b)	(c)	(d) = $\frac{(c)}{(b)+(c)} \times 100\%$	(e) = (c) ÷ (a)
Clinical	Aberdeen	78	204	96	32.0%	1.2
Psychologist	Tuen Mun	38	81	35	30.2%	0.9
	Nam Shan	78	203	78	27.8%	1.0
Dietitian	Yuen Long	60	327	100	23.4%	1.7
	Shek Wu Hui	39	217	54	19.9%	1.4
	Aberdeen	72	388	94	19.5%	1.3
Occupational	Lek Yuen	103	610	130	17.6%	1.3
Therapist	Aberdeen	69	273	81	22.9%	1.2
	Tung Chung	36	151	33	17.9%	0.9
Physiotherapist	Lek Yuen	71	350	55	13.6%	0.8
	Aberdeen	83	347	80	18.7%	1.0
	Tuen Mun	49	262	47	15.2%	1.0

Examples of EHCs with high no-show rates of allied health counselling services (2013)

Source: Audit analysis of DH records

Note: Usually a number of elderly were counselled in a session.

2.25 To enhance the efficient use of the counselling resources, the DH needs to take measures to minimise the number of elderly not showing up. In this connection, Audit noted that the SOPCs of the HA had adopted a practice of expanding the clinics' booking capacities, taking into account past no-show rates (i.e. making provision to allow for overbooking of appointments). According to overseas studies, overbooking would address patient no-shows and enable clinics to serve more patients. The studies found that many clinics achieved positive results after allowing overbooking of appointments.

Audit recommendations

- 2.26 Audit has *recommended* that the Director of Health should:
 - (a) ascertain the reasons for the significant disparity among the EHCs in the waiting time for the elderly who wish to seek allied health counselling services;
 - (b) review the working arrangements of the allied health staff and adjust their duty rosters to allow more frequent visits to those EHCs with long waiting time; and
 - (c) take measures (e.g. allow for overbooking of appointments) to minimise the no-show wastage for allied health counselling services as far as possible.

Response from the Administration

2.27 The Director of Health agrees with the audit recommendations. She has said that the DH will review the reasons for the disparity in waiting time, the working arrangements of the allied health team, and the reasons for no-shows, with a view to implementing measures to improve the situation.

Implementation of Elderly Health Assessment Pilot Programme

2.28 Background information on the EHAPP is shown below:

(a)	Establishment	:	A nin	two-year programme launched in collaboration with e NGOs in July 2013
(b)	Eligibility	:	Eld and	lerly aged 70 or above holding a HKID card or a COE I not being members of the EHCs
(c)	Objectives	:	To hea NC	provide voluntary, protocol-based, and subsidised alth assessments to 10,000 elderly recruited by the GOs through their community networks
(d)	Services provided by	:	•	A health assessment for each elderly (Note)
	NGOs		•	One to two follow-up consultations for discussing findings of the assessment and a tailor-made healthcare plan, and follow-up of the health problems identified
			•	Health promotion sessions
(e)	Phases of implementation	:	•	Phase 1: Six-month period from 17 July 2013 to 16 January 2014 for those eligible elderly who meet any of the following conditions: (i) no health assessment received before; (ii) not receiving regular follow-up by healthcare services; or (iii) living alone
			•	Phase 2: 18-month period from 17 January 2014 to 16 July 2015 for all eligible elderly
(f)	Funding	:	•	\$12 million (\$1,200 per elderly \times 10,000 elderly) for two years
			•	As at 31 July 2014, \$2.28 million paid to the nine NGOs
(g)	Manpower	•	•	The DH's Health Care Voucher Unit is responsible for administering the EHAPP (and also the EHCVS — see PART 4).

- As at 1 June 2014, the Unit was headed by an Assistant Director of Health, who reported to the Deputy Director of Health. The Unit had an establishment of 17 staff comprising:
 - 1 Senior Medical and Health Officer, 1 Medical and Health Officer and 1 Nursing Officer;
 - 4 Executive Officer grade staff;
 - 1 Assistant Manager;
 - 6 Administrative Assistants; and
 - 3 Project Assistants.
- For 2013-14, the Unit's expenditure was \$9.6 million.
- Note: Elderly need to contribute a sum of \$100, which can be settled by healthcare vouchers (see PART 4). The sum will be waived and be borne by the Government for elderly receiving the Comprehensive Social Security Assistance and those already under the medical fee waiver mechanism of the medical social services unit of public hospital/clinic, or the Integrated Family Service Centres or Family & Child Protective Services Unit of the Social Welfare Department.

Enrolment of elderly

2.29 The objective of the EHAPP is to provide subsidised health assessment to the elderly. Audit noted that up to mid-July 2014, only 2,274 elderly, against a target of 10,000 elderly, had been enrolled in the pilot programme. One of the nine NGOs which participated in the pilot programme had only enrolled 89 elderly, against its target of 1,000 elderly. The low enrolment of elderly calls for the DH's attention.

2.30 The NGOs informed the DH that according to the information they obtained from the elderly, the reasons for the low enrolment were as follows:

- (a) elderly considered themselves in good health;
- (b) elderly were afraid that health assessment might reveal health problems for which nothing could be done because of their old age;

- (c) elderly were not eligible for joining the pilot programme because they were aged below 70; and
- (d) elderly preferred to go to nearby public clinics or hospitals to seek out-patient services when they got sick or needed body check services.

2.31 In April 2014, the DH commissioned a research organisation to evaluate the implementation of the pilot programme. The organisation is required to submit an interim report and a final report by the fourth quarter of 2014 and the end of 2015 respectively. Up to September 2014, the pilot programme had only been implemented for about one year. It would take time to develop.

Audit recommendations

- 2.32 Audit has *recommended* that the Director of Health should:
 - (a) explore ways to enhance the elderly's enrolment in the EHAPP and fine-tune the programme in the light of experience, taking into account the feedback from the NGOs (see para. 2.30) and taking on board the recommendations made by the research organisation after its review of the EHAPP (see para. 2.31); and
 - (b) take into account the result of the implementation of the EHAPP in reviewing the EHC capacity to ascertain if it has been aligned with the growth of the elderly population (see para. 2.18(a)).

Response from the Administration

2.33 The Director of Health agrees with the audit recommendations. She has said that the DH will make reference to:

- (a) the review results, as well as the feedback from the elderly and participating NGOs to fine-tune the pilot programme; and
- (b) the result of the implementation of the EHAPP when reviewing the capacity of the EHCs.

PART 3: EDUCATIONAL AND ADVISORY HEALTH SERVICES PROVIDED BY VISITING HEALTH TEAMS OF DH

3.1 This PART examines the educational and advisory health services provided by the VHTs of the DH, focusing on the following issues:

- (a) health promotion activities (HPAs paras. 3.3 to 3.12); and
- (b) review of health records of residential care homes for the elderly (RCHEs paras. 3.13 to 3.17).

Background

3.2 Background information on the VHTs is shown below:

(a)	Establishment	:	• 18 VHTs serving the 18 districts in Hong Kong
			• Started operation in 1998
(b)	Mission	:	To conduct outreach health promotion and education activities to strengthen the healthcare of elderly and to improve their self-care ability and health awareness
(c)	Service recipients	:	The VHTs conducted on-site HPAs mainly for the elderly and carers of the RCHEs and other elderly-related institutions, such as District Elderly Community Centres, Neighbourhood Elderly Centres, Day Care Centres (collectively referred to as "non-RCHEs").

- (d) Services
 i: All RCHEs must be licensed under the Residential Care Homes (Elderly Persons) Ordinance (Cap. 459). The Social Welfare Department (SWD) is responsible for enforcing the statutory provisions under the Ordinance (a separate audit report on the provision of long-term care services for the elderly is included in Chapter 1 of the Director of Audit's Report No. 63). The services of the VHTs are advisory in nature.
 - *Educational health services*. The VHTs conduct on-site HPAs in the form of health talks, skill training and support groups. There are 224 topics of HPAs comprising:
 - *Elderly HPAs.* These HPAs are provided on-site to elderly of RCHEs and non-RCHEs. There are 160 topics. Examples of these HPAs include "Influenza", "Hypertension" and "Scabies". Carers of elderly are also welcome to attend the elderly HPAs;
 - Carer HPAs. These HPAs are provided on-site to carers of RCHEs and non-RCHEs. There are 55 topics including mainly special skills for carers such as "Drug management skills" and "Lifting and transfer"; and
 - *Elderly-cum-carer HPAs.* There are 9 topics which could be provided for both elderly and carers. These HPAs include "Social isolation" and "Management of anger".
 - *Advisory services*. The VHTs conduct reviews of RCHE health records annually to assess RCHEs' standards of keeping elderly health records with a view to identifying areas of improvement. The VHTs also conduct Integrated Assessments annually to ascertain the RCHEs' standards of healthcare measures such as infection control, drug management and fall prevention with a view to identifying areas of improvement.



Health promotion activities

3.3 The VHTs conduct on-site HPAs. A list of topics of HPAs is available on the DH's website at http://www.elderly.gov.hk. It is the VHTs' practice to provide HPAs on the request of RCHEs and non-RCHEs as far as possible. No limit is imposed on the number or frequency of HPAs paid to each RCHE or non-RCHE, so long as they made the request. The attendances of HPAs in the years from 2009 to 2013 are shown in Table 8.

Table 8

		Number of attendees										
Year	Elderly	Carer	Informal carer (mainly family member)	Others (Note)	Total							
2009	199,008	54,250	4,688	415	258,361							
2010	222,605	59,383	5,471	547	288,006							
2011	233,333	56,509	4,033	284	294,159							
2012	233,672	56,971	6,039	619	297,301							
2013	233,618	62,229	5,324	566	301,737							
Total	1,122,236 (77.9%)	289,342 (20.1%)	25,555 (1.8%)	2,431 (0.2%)	1,439,564 (100%)							

Attendances of HPAs (2009 to 2013)

Source: DH records

Note: "Others" refers to members of the public, such as volunteers who attended the HPAs conducted by the VHTs.

Health promotion activities for elderly

3.4 *Elderly HPAs for non-RCHEs.* The VHTs keep a complete and updated list of RCHEs (748 as at 31 March 2014). To ensure that all RCHEs are provided with health education, the VHTs initiate HPAs for RCHEs which do not make such requests. The VHTs, however, do not maintain a list of non-RCHEs. Audit noted

that lists of several types of non-RCHEs such as District Elderly Community Centres, Neighbourhood Elderly Centres, Social Centres for the Elderly, Enhanced Home and Community Care Services, and Integrated Home Care Services were available on the SWD's website. In Audit's view, the VHTs need to make reference to the SWD's website to maintain an updated list of non-RCHEs so that elderly as well as carers in all non-RCHEs have the opportunities to receive health education.

3.5 **Some elderly HPAs had low attendance.** In 2013, the VHTs conducted a total of 9,176 HPAs for the elderly, comprising 3,431 (37%) at RCHEs and 5,745 (63%) at non-RCHEs. As no limit is set on the number of HPAs each RCHE or non-RCHE can receive, Audit noted that some RCHEs and non-RCHEs were provided with a large number of elderly HPAs even when attendances were low. For example, 25 RCHEs were each provided with 15 to 29 elderly HPAs in 2013 (with an average of 18) while 92 non-RCHEs were each provided with 15 to 38 elderly HPAs (with an average of 21), despite that some of the HPAs were poorly attended by the elderly and/or the carers. For example, in the case of one small private RCHE (with only nine elderly residents), 15 HPAs were conducted in 2013, but 1 of the 15 HPAs was attended by only one elderly and each of the remaining 14 HPAs was attended by only two carers (no elderly attended).

3.6 *Elderly HPAs requiring carer attendances.* For some elderly HPAs, carers should accompany the elderly in order to provide assistance to them during the HPAs. An example of such HPAs is "Exercise for Frail Elderly". Audit however noted that in the case of one self-financed social centre, ten HPAs of this kind were provided repeatedly to the elderly of the centre but, with the exception of one HPA (which was attended by two carers), the other nine HPAs had no carer attendance.

3.7 *Contents of HPAs not revised or updated.* Audit reviewed 160 topics of elderly HPAs and noted that the contents of 70 of them were produced ten years ago. The DH needs to regularly review the contents of the HPAs and update them if necessary.

3.8 *Attendance by elderly's family members.* The VHTs encourage the elderly's family members to attend the elderly HPAs. Audit, however, noted that in the five years from 2009 to 2013, the attendance of the elderly's family members was consistently low. The DH needs to explore ways to encourage family members to attend the HPAs. This is particularly useful for those HPAs held at non-RCHEs in order to strengthen the family members' support for the elderly who prefer to age at home. One possible way to facilitate family members' attendance is for the DH to conduct some of the HPAs on Saturdays, Sundays or public holidays as far as practicable.

Health promotion activities for carers

3.9 One main objective of the VHTs is to offer on-site training to carers working in RCHEs so as to enhance their health knowledge and skills in taking care of the elderly. In 2013, the VHTs conducted 1,985 carer HPAs, 93% of which were held at RCHEs. Audit analysis of the carer HPAs revealed that:

- (a) although the VHTs had provided carer HPAs to all the RCHEs, not all non-RCHEs had been provided with carer HPAs. Among the 628 non-RCHEs for which the VHTs had provided elderly HPAs, carer HPAs had not been provided to 543 of them;
- (b) carer attendance to some of the 1,985 carer HPAs conducted in 2013 was extremely low. For example, 143 (7% of 1,985) carer HPAs were attended by nil to two carers; and
- (c) the contents of 25 of the 55 topics on carer HPAs were produced ten years ago.

The DH needs to make reference to the lists of non-RCHEs maintained by the SWD on its website and initiate carer HPAs for them where there are carers in the non-RCHEs. The DH also needs to ascertain the reasons for the low carer attendance for some of the carer HPAs.

Comprehensive review of the provision of HPAs

3.10 The conduct of HPAs accounted for 90% of the VHTs' activities (see para. 3.2(e)). However, since the establishment of the VHTs in 1998, no review has been conducted to evaluate the effectiveness of the VHTs' provision of the HPAs except the conduct of client satisfaction surveys in 2001 and before to assess the performance of the VHTs. To improve the HPAs, the DH needs to conduct a comprehensive review and consider resuming the conduct of client satisfaction survey.

Audit recommendation

3.11 Audit has *recommended* that the Director of Health should conduct a comprehensive review of the modus operandi for the provision of HPAs to enhance the service effectiveness, taking on board the audit observations (see paras. 3.3 to 3.10).

Response from the Administration

3.12 The Director of Health agrees with the audit recommendation. She has said that the DH will review the mode of operation of the VHTs in conducting HPAs with a view to introducing service improvements.

Review of health records of RCHEs

3.13 The proper documentation of medical problems, medications and nursing care using an integrated health record is indispensible in improving the standard of care in RCHEs. A proper health record not only facilitates medical decision making but also enhances the communication among the carers. In 1999, the DH found that less than 40% of private RCHEs had individual health record system for their residents. More than 60% of private RCHEs did not have adequate information recorded. The VHTs developed a standard individual health record and introduced it to all private RCHEs in August 1999 with a view to improving and standardising the health record keeping in private RCHEs. Since then, the VHTs have conducted review of health records of the private RCHEs annually to assess their standards of record keeping and to give advice and training to them.

Coverage of review of health records

3.14 In 2013, the VHTs visited 564 private RCHEs to review their health records. However, the following types of RCHEs were not reviewed by the VHTs:

- (a) 195 non-private RCHEs (such as those subsidised by the Government), despite the fact that some 22,000 elderly resided in these RCHEs. They represented 35% of the elderly residents of all RCHEs in 2013; and
- (b) ten private RCHEs which had computerised their health records.

3.15 Upon enquiry, the DH informed Audit in July 2014 that non-private RCHEs were not reviewed because the DH considered that they generally had maintained a higher standard of health record-keeping. It was also the VHTs' practice of not reviewing private RCHEs which had computerised their health records. Audit considers that the DH needs to review whether the existing practice of <u>not</u> reviewing the health records of non-private RCHEs and those private RCHEs which had computerised their health records (see para. 3.14) should be revised. The DH may consider reviewing such RCHEs on, say, a five-year cycle.

Audit recommendation

3.16 Audit has *recommended* that the Director of Health should review and revise the existing practice of <u>not</u> reviewing the health records of non-private RCHEs and those private RCHEs which had computerised their health records.

Response from the Administration

3.17 The Director of Health agrees with the audit recommendation. She has said that the DH will conduct an overall review.

PART 4: ADMINISTRATION OF DH'S ELDERLY HEALTH CARE VOUCHER SCHEME

4.1 This PART examines the administration of the DH's EHCVS, focusing on the following issues:

- (a) participation of private healthcare service providers (paras. 4.3 to 4.10);
- (b) participation of elderly in the EHCVS (paras. 4.11 to 4.22);
- (c) monitoring of voucher claims (paras. 4.23 to 4.38); and
- (d) comprehensive review of the EHCVS (paras. 4.39 to 4.41).

Background of EHCVS

4.2 Background information on the EHCVS is shown below:

(a)	Establishment	:	• Established on 1 January 2009 as a pilot scheme		
			• Became a recurrent programme on 1 January 2014		
(b)	Eligibility	:	Elderly aged 70 or above holding a HKID card or a COE		
(c)	Objectives	:	To subsidise elderly in their use of healthcare services in the private sector with emphases on:		
			• providing additional choices for elderly on top of the existing public primary healthcare services with a view to enhancing the primary healthcare services for elderly		
			• implementing the "money-follow-patient" concept to enable elderly to choose within their local communities the private primary healthcare services that best suit their needs		

		•	through providing partial subsidy, helping promote the concept of sharing the costs of healthcare with patients, thus ensuring appropriate use of the primary healthcare services
		•	with better access and a continuum of care from chosen providers, enhancing the primary healthcare services provided for elderly
(d)	Coverage	: •	Eligible elderly can use the healthcare vouchers for services provided by private healthcare service providers enrolled in the EHCVS (i.e. enrolled healthcare service providers (EHCPs)).
		•	Ten categories of private healthcare service providers registered in Hong Kong can apply for enrolment: Medical Practitioners, Chinese Medicine Practitioners, Dentists, Chiropractors, Medical Laboratory Technologists, Occupational Therapists, Optometrists with Part I registration (added to EHCVS in 2012), Physiotherapists, Radiographers, and Registered Nurses and Enrolled Nurses.
		•	EHCPs are issued a logo (see below) for displaying outside their places of practice. A list of EHCPs is available on the EHCVS's website.
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Administration of DH's Elderly Health Care Voucher Scheme

(e)	Face value of voucher	:	\$1 per voucher effective July 2014 (previously \$50 per voucher)	
(f)	Annual voucher amount	:	\$2,000 for 2014 (previously \$250 for 2009, 2010 and 2011, \$500 for 2012, and \$1,000 for 2013)	
(g)	Accumulation limit of vouchers	:	Unused vouchers can be accumulated up to the accumulation limit of \$4,000 (effective June 2014, previously \$3,000 effective January 2014).	
(h)	How to use the vouchers	:	An elderly needs to open a voucher account at an EHCP's place of practice by presenting his HKID card or COE. Once opened, vouchers (in electronic form) are issued and can be used at any EHCP's place of practice through the DH's web-based eHealth System. The EHCP will then make voucher claims from the DH.	
(i)	Number of EHCPs as at 31 March 2014	:	4,108 involving 5,731 places of practice (some EHCPs had more than one place of practice)	
(j)	Number of elderly joined EHCVS as at 31 March 2014	:	556,000	
(k)	Voucher claims paid during the period from 1 January 2009 to 31 March 2014	:	\$770 million	

(1)	Estimated expenditure for 2014-15 (for settling voucher claims)	:	\$846 million
(m)	Manpower	:	The DH's Health Care Voucher Unit, with an establishment of 17 staff, is responsible for administering the EHCVS (and also the EHAPP — see para. 2.28(g)).

Participation of private healthcare service providers

Enrolment of private healthcare service providers

4.3 *Overall enrolment*. The DH estimated that as at 31 March 2014, there were 29,044 private healthcare service providers available in the private practice (Note 3). Of these service providers, 4,108 had enrolled in the EHCVS. The enrolment rates ranged from 1% to 34% for different categories of service providers (see Table 9).

Note 3: In its estimation, the DH had excluded: (a) those practising overseas or not practising in the profession for reasons such as retired or working in other professions; (b) academics; and (c) those working in the DH or the HA. Nonetheless, the DH did not expect all the 29,044 private healthcare service providers to enrol in the EHCVS. For instance, nurses working in private hospitals are unlikely to enrol.

Table 9

Enrolment rates of private healthcare service providers (31 March 2014)

Healthcare service provider	Estimated number of service providers in private practice (a)	Number of EHCPs (b)	Enrolment rate (Note) (c)=(b)÷(a)×100%
Medical Practitioner	4,815	1,655	34%
Chiropractor	152	46	30%
Dentist	1,670	447	27%
Optometrist	699	170	24%
Chinese Medicine Practitioner	5,820	1,342	23%
Physiotherapist	1,273	280	22%
Occupational Therapist	653	40	6%
Medical Laboratory Technologist	992	24	2%
Radiographer	787	19	2%
Registered Nurse and Enrolled Nurse	12,183	85	1%

Source: DH records

Note: Based on the estimated number of service providers in private practice, the DH compiles the enrolment rates regularly for monitoring purposes.

4.4 The services of enrolled Medical Practitioners (EMPs) and enrolled Chinese Medicine Practitioners (ECMPs) are most in demand by the elderly. Their services had accounted for 93% of the voucher claims made by EHCPs.

4.5 **Distribution of EMPs/ECMPs' places of practice by districts.** One objective of the EHCVS is to enable the elderly to choose the private primary healthcare services within their local communities. As the services of EMPs and ECMPs were most in demand by the elderly, Audit analysed the distribution of the EMPs/ECMPs by districts and the number of eligible elderly residing in each district. The result is shown in Table 10. There are limitations in the analysis, as the DH has no readily available information on the number of eligible elderly who had joined the EHCVS in different districts. Besides, the elderly may choose to visit the EMPs/ECMPs with places of practice not in their districts. Therefore, Table 10 only shows an indication of the distribution by districts of the EMPs/ECMPs participating in the EHCVS vis-à-vis the number of eligible elderly residing in the districts.

Table 10

	Number of eligible	Number of places of practice (Note 2)		Ratio of EMPs to	Ratio of ECMPs to	
District	elderly (Note 1)	EMPs ECMPs		eligible elderly (Note 2)	eligible elderly (Note 2)	
	(a)	(b)	(c)	(d) = 1:(a) \div (b)	(e) = 1:(a) \div (c)	
Southern	30,800	40	48	1:770	1:642	
Wong Tai Sin	57,600	77	104	1:748	1:554	
Sham Shui Po	51,300	92	128	1:558	1:401	
Kwai Tsing	55,900	102	75	1:548	1:745	
North	25,900	52	80	1:498	1:324	
Sha Tin	54,600	117	117	1:467	1:467	
Eastern	72,300	155	140	1:466	1:516	
Kowloon City	50,200	129	93	1:389	1:540	
Kwun Tong	77,900	210	191	1:371	1:408	
Islands	11,300	32	24	1:353	1:471	
Tai Po	25,000	81	105	1:309	1:238	
Yuen Long	42,700	138	70	1:309	1:610	
Tuen Mun	35,300	116	135	1:304	1:261	
Sai Kung	30,400	115	72	1:264	1:422	
Tsuen Wan	31,300	132	137	1:237	1:228	
Central and Western	28,900	167	112	1:173	1:258	
Wan Chai	19,700	136	171	1:145	1:115	
Yau Tsim Mong	35,900	325	329	1:110	1:109	
Overall	737,000	2,216	2,131	1:333	1:346	

Number of eligible elderly, EMPs and ECMPs in 18 districts (August 2014)

Source: Audit analysis of DH and Planning Department records

- *Note 1:* No statistics were available for the number of elderly in each district who had joined the EHCVS.
- Note 2: Some EMPs/ECMPs had more than one place of practice.
4.6 Table 10 shows that the ratios of medical practitioners to eligible elderly in some districts were quite low, even though it is recognised that some elderly residing in one district might receive services in a different district. For example, the ratio in Southern District was one EMP to 770 eligible elderly and that in Kwai Tsing District was one ECMP to 745 eligible elderly, as compared to one EMP to 110 eligible elderly in Yau Tsim Mong District and one ECMP to 115 eligible elderly in Wan Chai District. The distribution of the EMPs and the ECMPs by districts vis-à-vis the number of elderly residing in the districts calls for the DH's ongoing monitoring.

4.7 According to an interim review of the EHCVS completed in February 2011 by the FHB and the DH (the 2011 interim review), the non-enrolment of private healthcare service providers whom the elderly usually visited was the major reason for the elderly not using the vouchers. Given the growing ageing population, Audit considers that the DH needs to take measures to continue encouraging more private healthcare service providers to join the EHCVS. This may help enhance the popularity of the EHCVS.

4.8 In the period from November 2011 to May 2012, the DH launched a six-month publicity programme to encourage private healthcare service providers to enrol in the EHCVS. As a result of the publicity programme, coupled with other enhancements to the EHCVS (Note 4), the enrolment grew by 18% in 2012. With the annual voucher amount increased to \$2,000 for 2014 (see para. 4.2(f)), the DH needs to continue its promotion efforts.

Audit recommendation

4.9 Audit has *recommended* that the Director of Health should continue to encourage more private healthcare service providers to join the EHCVS, especially in districts with a relatively small number of EMPs or ECMPs vis-à-vis a large number of eligible elderly residing in the districts.

Note 4: For example, the gradual increase in the annual voucher amount and the inclusion of Optometrists in the EHCVS since 2012 were factors which had, among others, contributed to the increase in enrolment in 2012.

Response from the Administration

4.10 The Director of Health agrees with the audit recommendation. She has said that the DH will take additional measures and step up publicity further to encourage the participation of private healthcare service providers in the EHCVS.

Participation of elderly in EHCVS

Elderly joining EHCVS

4.11 As at 31 March 2014, 556,000 elderly had joined the EHCVS, net of 100,000 elderly who had already passed away. This represented a joining rate of 75%. Given that not every eligible elderly will join the EHCVS, the DH needs to ascertain whether the 75% joining rate is approaching its optimum level. Audit further noted that the joining rate for elderly in the age group of "70 to below 75" was comparatively lower than that of other age groups (see Table 11). This calls for the DH's attention.

Table 11

	Aged 70 to below 75 ('000)	Aged 75 to below 80 ('000)	Aged 80 to below 85 ('000)	Aged 85 and above ('000)	Overall ('000)
Number of eligible elderly (a)	212	210	164	151	737
Number of elderly joined EHCVS (b)	133	164	136	123	556
Joining rate (c)=(b) \div (a) \times 100%	63%	78%	83%	81%	75%

Elderly joined the EHCVS (31 March 2014)

Source: DH and C&SD records

Elderly's use of vouchers

4.12 *Unused vouchers*. Audit examination revealed that as at 31 December 2013:

- (a) 415,000 elderly had vouchers which remained unused. The value of these unused vouchers amounted to \$491 million (see Table 12); and
- (b) 41,844 (10%) of the 415,000 elderly had never used any of the vouchers issued to them. The value of such unused vouchers amounted to \$83 million.

Table 12

Elderly with unused vouchers (2009 to 2013)

As at	Number of elderly joined EHCVS (a) ('000)	Number of elderly with unused vouchers (b) ('000)	Percentage of elderly with unused vouchers (c) = (b) ÷ (a) × 100% (%)	Cumulative number of unused vouchers (d) ('000)	Cumulative amount of unused vouchers (e) = (d) × \$50 (\$ million)
31.12.2009	271	150	55%	569	28
31.12.2010	362	233	64%	1,487	74
31.12.2011	423	275	65%	2,358	118
31.12.2012	477	337	71%	4,534	227
31.12.2013	530	415	78%	9,825	491

Source: Audit analysis of DH records

Remarks: Deceased elderly were excluded from Audit's analysis.

Administration of DH's Elderly Health Care Voucher Scheme

4.13 *Forfeited vouchers.* As at 1 January 2014, 53,000 elderly (excluding deceased elderly) had their vouchers forfeited because the value of their unused vouchers had exceeded the accumulation limit (see para. 4.2(g)). These elderly represented 10% of elderly who had joined the EHCVS. The value of vouchers forfeited amounted to \$9.6 million.

4.14 *Promoting the use of vouchers.* The DH needs to do more to promote the use of the vouchers. In this connection, Audit noted that the DH publicises the EHCVS through the EHCVS's website, TV, radio, as well as broadcasting TV advertisements on buses and Mass Transit Railway trackside/concourse. Promotion materials (including leaflets, posters and DVDs) are also disseminated through channels such as District Elderly Community Centres, Neighbourhood Elderly Centres, EHCs, places of practice of EHCPs, the HA's GOPCs, and the SWD's Senior Citizen Card Office.

4.15 In promoting the use of vouchers, Audit, however, noted that there were incidents when information disseminated was not always up-to-date or there were omissions, as follows:

- (a) in early September 2014, Audit visited six EHCs and found that one EHC did not display any promotion materials of the EHCVS;
- (b) Audit noted in late August 2014 that an EHCVS poster displayed on a Health Care Voucher Unit notice board located one floor below the Unit publicised outdated EHCVS information. In early June 2014, the DH announced the revision of the annual voucher amount to \$2,000. However, the poster showed the old annual voucher amount of \$1,000; and
- (c) in early September 2014, the name of one ECMP who had passed away in early 2014 was still included in the list of EHCPs on the EHCVS's website.

Audit considers that the DH needs to continue stepping up the promotion of use of vouchers through, for example, other popular media (such as free newspapers) and take steps to ensure that information disseminated is always up-to-date and correct.

4.16 *Use of vouchers for preventive care*. Audit noted that in the five years from 2009 to 2013, vouchers were mainly used by elderly for settling medical fees for treating acute episodic conditions. Only a small percentage (less than 9%) of vouchers was used for preventive care purpose such as health assessment (see Table 13).

Table 13

Purposes of vouchers used (2009 to 2013)

Year	Preventive care (Note 1)	Treating acute episodic conditions (Note 2)	Monitoring of long-term conditions/ rehabilitative care (Note 3)
2009	7.9%	66.8%	25.3%
2010	7.1%	67.5%	25.4%
2011	7.8%	66.8%	25.4%
2012	7.7%	67.6%	24.7%
2013	8.8%	63.7%	27.5%

Source: DH records

- *Note 1: Preventive care included giving health advice, health assessment and immunisation.*
- *Note 2: Treating acute episodic conditions included treating acute infections, pain and trauma.*
- Note 3: Monitoring of long-term conditions included management of chronic medical conditions (such as diabetes and hypertension) and physiotherapy for functional restoration. Rehabilitative care included post-operative care, and rehabilitation for trauma and mental health problems.

4.17 The Government has always emphasised the importance of preventive care in the context of the EHCVS. For example:

 (a) at a meeting of the LegCo's Panel on Health Services held in 2007, the FHB emphasised that the EHCVS aims to encourage elderly, among other things, to attach more importance to disease prevention through health checks;

- (b) at another meeting of the Panel held in 2011, the FHB emphasised that the EHCVS aims to encourage elderly to seek private healthcare services, in particular preventive care, with a view to improving the health of elderly population; and
- (c) as stated in the 2011 interim review (see para. 4.7), "the elderly are less willing to pay for preventive care than episodic care. This is a conception that has taken root among the elderly, and takes time and the concerted efforts of all Government, healthcare service providers, the media, etc to gradually induce a cultural change that puts more value and emphasis on preventive care."

4.18 The elderly could have used some of their vouchers which would otherwise be forfeited for preventive care. The DH needs to enhance the promotion of the use of vouchers by elderly to this effect.

Deceased elderly

4.19 The DH conducts monthly record matching with the Immigration Department to identify elderly who have been deceased. For deceased elderly, the DH will insert a remark in the eHealth System and EHCPs will not be able to make any voucher claims from the account of the deceased elderly.

4.20 Audit, however, noted that the eHealth System will not close the deceased elderly's voucher accounts, but will continue issuing vouchers to the deceased elderly. As a result, as at 31 March 2014, the 100,000 deceased elderly (see para. 4.11) had accumulated unused vouchers amounting to \$262 million. Besides, in making provision for the EHCVS in the 2014-15 Estimates, the DH had inadvertently included the number of vouchers held by deceased elderly. Audit reckons that the 2014-15 provision had been inflated by some \$92 million (Note 5).

Note 5: *The calculation is as follows:*

Elderly who had made use of vouchers (a basis used by the DH for preparing the estimated expenditure for the EHCVS for 2014-15) and were deceased as at 31 December 2013 × annual voucher amount for 2014-15 × voucher utilisation rate (estimated by the DH based on historical data) = 68,000 deceased elderly \times \$2,000 × 67.5% = \$92 million

Audit recommendations

- 4.21 Audit has *recommended* that the Director of Health should:
 - (a) continue stepping up the promotion of the EHCVS, particularly among the elderly aged 70 to below 75, and encouraging the elderly to make more use of vouchers for preventive care;
 - (b) in promoting the use of vouchers, ensure that the information is always correct and up-to-date, and reaches as many elderly as possible;
 - (c) enhance the eHealth System so that the deceased elderly's voucher accounts will be closed; and
 - (d) adjust the amount to take into account the deceased elderly, when making provision for the EHCVS in the Estimates.

Response from the Administration

4.22 The Director of Health agrees with the audit recommendations. She has said that:

- (a) the DH will continue stepping up the promotion of the EHCVS and ensure that the promotion information is correct by distributing up-to-date publicity materials and reminding stakeholders to use only the new materials when promoting the EHCVS to the elderly; and
- (b) since August 2014, the DH has started working on implementing changes to the eHealth System to manage the voucher accounts of deceased elderly such that they will be excluded when preparing the Estimates for the EHCVS.

Monitoring of voucher claims

4.23 The DH has adopted a "post-payment approach" in monitoring voucher claims made by EHCPs. EHCPs are required to submit claims on-line through the eHealth System. After receiving the claims, the DH will make payments to EHCPs in about one month. It will later on conduct inspections to verify the validity of the claims.

- 4.24 The DH's inspections mainly include the following:
 - (a) routine checking covering all EHCPs. In the checking, the DH examines the propriety of the consent forms signed by elderly to confirm the value of vouchers used for the healthcare service, which should match the amount of claims submitted by the EHCPs; and
 - (b) targeted investigation with focus on the EHCPs with abnormal pattern of voucher claims, such as those with unusually large number of daily claims (as alerted by the eHealth System) and those subject to complaints.

Inspections are conducted by an inspection team headed by an Assistant Manager, supported by six Administrative Assistants.

4.25 For anomalous claims identified in inspections, the DH may seek repayments from the EHCPs, delist them from the EHCVS, and refer their cases to the police (if false claims are suspected) and the relevant professional organisations (for disciplinary investigation).

4.26 In the period from 1 January 2009 to 31 March 2014, the DH had conducted some 7,700 inspections, involving a total of 141,000 claims made by some 3,440 EHCPs (see Table 14).

Table 14

Inspection	Number of inspections	Number of claims involved	Number of EHCPs involved
Routine checking	7,200	122,000	3,180
Targeted investigation	500	19,000	260
Total	7,700	141,000	3,440

Inspections conducted by DH (1 January 2009 to 31 March 2014)

Source: DH records

According to the inspection results, 1,950 claims related to 99 EHCPs, with claim values ranging from \$50 to \$255,750 per EHCP, were considered anomalous. In the period from 1 January 2009 to 31 March 2014, the DH had reported six cases to the police for investigation of suspected false claims under the EHCVS and had delisted six EHCPs (three EMPs and three ECMPs). Discounting one case which was still under investigation, the five EHCPs made a total of 1,045 anomalous claims, involving \$313,400, which had involved non-compliance with the EHCVS requirements. In September 2014, one ECMP was sentenced to eight months in prison because of making false claims involving some 60 vouchers.

Routine checking

4.27 During the routine checking (see para. 4.24(a)), the DH examines the propriety of consent forms. Under the EHCVS, each time after receiving the service of an EHCP, an elderly is required to complete a standard consent form of the EHCVS at the EHCP's place of practice. The form records the following:

- (a) information on the healthcare service provided, such as date of visit, the EHCP's name, value of vouchers used, and co-payment made by the elderly (i.e. amount paid to top up the value of vouchers for the healthcare service bill);
- (b) a statement that the elderly consents to the value of vouchers used for the healthcare service provided;

- (c) personal information of the elderly (i.e. name, HKID card number and telephone number); and
- (d) the signature of the elderly or, if the elderly is illiterate, the signature and personal particulars of the witness (i.e. name and HKID card number) or, if the elderly is mentally incapacitated, the signature and personal particulars of the guardian (i.e. name and HKID card number).

The EHCPs are required to keep these consent forms for a period of seven years. The DH has regarded the examination of these consent forms an important control to deter improper voucher claims.

4.28 The DH has set a target of examining the selected claims of all EHCPs in its routine checking over a defined period of 15 months. The first 15-month period was from May 2011 to July 2012. Audit however noted that the DH's routine checking had always fallen short of the target (see Table 15).

Table 15

	Num	ber of			
15-month period	EHCPsEHCPswithcovered byclaimsroutinesubmittedchecking(a)(b)		Coverage (c)=(b)÷(a)×100%	Target achieved	
May 2011 to July 2012	2,290	2,109	92.1%	No	
August 2012 to October 2013	2,787	2,191	78.6%	No	

Coverage of routine checking conducted by DH (May 2011 to October 2013)

Source: Audit analysis of DH records

Remarks: As at time of audit in September 2014, the DH was conducting routine checking for the 15-month period from November 2013 to January 2015.

The DH needs to expedite its routine checking and cover the examination of selected claims of all EHCPs over a 15-month cycle as far as possible.

Examination of consent forms by DH

4.29 In conducting routine checking, to reduce inconvenience to the EHCPs, the DH telephones the EHCPs in advance and goes to their places of practice to bring the elderly's consent forms back to the DH office for examination. The DH calls for the consent forms relating to a fixed number of claims for a particular month for examination. Audit considers that the DH should avoid adopting a standard pattern of routine checking. For example, it may consider occasionally conducting surprise checking, and selecting claims for different months.

Follow-up inspections

4.30 In addition to routine checking and targeted investigations, the DH conducts follow-up inspections from time to time, e.g. when errors/omissions are detected in the consent forms examined in routine checking. In the period from 1 January 2009 to 31 March 2014, the DH conducted 221 follow-up inspections arising from routine checking, involving 200 EHCPs (Note 6).

4.31 Audit examined the eight follow-up inspections conducted from January to March 2014, and noted that in four of the eight inspections, errors/omissions were still detected. In two of the four inspections, similar errors/omissions (Note 7) as identified in routine checking were still detected in the follow-up inspections (see Table 16). The DH needs to take escalated action by issuing advisory letters or warning letters to the EHCPs. Moreover, the DH needs to enhance the education to be provided to the EHCPs as well as provide more guidelines to help them complete the consent forms and submit the claims properly.

Note 6: For some EHCPs, the DH conducted more than one follow-up inspection.

Note 7: The DH classifies errors/omissions into major and minor errors/omissions. Major errors/omissions include witness information and elderly's signature missing. Minor errors/omissions include date of visiting the EHCP and name of the EHCP missing. For major errors/omissions detected in routine checking, the DH would take actions such as making telephone calls to the elderly to ascertain whether the healthcare services have actually been provided and reminding the EHCPs to avoid errors/omissions in future. For minor errors/omissions, the DH would ask the EHCPs to provide correct information for the claims.

Table 16

		Percentage of consent forms examined		
ЕНСР	Date of visit	With errors/omissions found	With similar major errors/omissions found	
Physiotherapist	10.5.2013 (routine checking)	70%	60% (Witness information missing)	
	25.2.2014 (follow-up inspection)	45%	10% (Witness information missing)	
Chinese Medicine Practitioner	12.3.2013 (routine checking)	45%	35% (Elderly's signature missing)	
	20.2.2014 (follow-up inspection)	18%	15% (Elderly's signature missing)	

Follow-up inspections with repeated errors/omissions

Source: Audit analysis of DH records

Audit examination of consent forms

4.32 *Errors/omissions in consent forms.* In early August 2014, Audit examined the consent forms for the three months from April to June 2014 kept by 15 EHCPs. These EHCPs comprised five EMPs, five ECMPs (denoted as EMP 1 to 5 and ECMP 1 to 5 hereinafter), four enrolled Dentists, and one enrolled Optometrist. Audit examined consent forms of 5,031 claims involving a total voucher amount of \$1.65 million. The results are as follows:

- (a) major errors/omissions were found in consent forms of 303 (6%) claims, involving a total voucher amount of \$69,950; and
- (b) minor errors/omissions were found in consent forms of 337 (7%) claims, involving a total voucher amount of \$101,300.

4.33 Table 17 shows the errors/omissions identified by Audit.

Table 17

Errors/omissions identified in consent forms of 5,031 claims examined by Audit (1 April to 30 June 2014)

Error/omission identified in consent forms	Nun errors ide	nber of /omissions ntified
Major error/omission		
Witness information missing/incomplete	268	(38%)
Consent form missing	8	(1%)
Number of vouchers recorded in consent form inconsistent with that in eHealth System	11	(2%)
Elderly's signature missing	17	(2%)
Sub-total	304	(43%)
Minor error/omission		
Date of visiting EHCP missing/inconsistent with that in eHealth System	284	(40%)
Elderly's personal information (e.g. name or HKID card number) missing/inconsistent with that in eHealth System	38	(6%)
Transaction number (Note) missing/inconsistent with that in eHealth System	77	(11%)
EHCP's name missing	1	(0%)
Sub-total	400	(57%)
Total	704	(100%)

Source: Audit examination of consent forms

Note: The eHealth System generates a transaction number for each claim.

Remarks: Consent forms of 640 (13%) of 5,031 claims were found to have errors/omissions. Consent forms of some claims were found to have more than one error/omission. Therefore, the number of errors/omissions was greater than the number of claims with errors/omissions.

The DH needs to keep statistics for the number and percentage of the major and minor errors/omissions to help it identify patterns of deficiencies and devise reminders/guidelines to help the EHCPs reduce errors/omissions.

Administration of DH's Elderly Health Care Voucher Scheme

4.34 *Unsatisfactory practices adopted by some EHCPs.* In examining the consent forms, Audit identified a number of unsatisfactory practices which had not been classified as errors/omissions by the DH. Examples are shown below:

- Signing excessive consent forms. Before July 2014, each time an elderly (a) received service from an EHCP, the elderly was required to sign one consent form and specify the total number of vouchers used. EMP 4, however, required the elderly to sign one consent form for each voucher used (each voucher represented a value of \$50). Furthermore, although the elderly had signed many consent forms, EMP 4 specified the total number of vouchers used in one form only. On the remaining consent forms, the space for filling in the number of vouchers used was left blank. For example, an elderly had signed four consent forms for four vouchers used, and one of the four consent forms specified that he had used four vouchers, while the other three consent forms had a blank space for the number of vouchers used. In the period from 1 April to 30 June 2014, the elderly who visited EMP 4 had signed over 2,000 consent forms for 586 medical consultations (involving a total voucher amount of \$110,150). In one case, the elderly signed as many as 59 such "blank forms" for just one consultation. Audit considers this practice unacceptable because the potential risk of abuse is high as an unscrupulous EHCP can make false claims through using the pre-signed "blank forms";
- (b) Telephone numbers of elderly missing. Elderly are required to state their telephone numbers on the consent forms (see para. 4.27(c)). According to the DH, if major errors/omissions are detected in routine checking, it would contact the elderly to ascertain whether they have actually received services from the EHCPs and used the value of vouchers specified in the consent forms. The DH may also select some elderly during routine checking (even when there are no errors/omissions detected) and contact them to ascertain the genuineness of voucher claims. Audit, however, noted that the telephone numbers of the elderly were missing on 133 consent forms (98% of forms examined by Audit) of ECMP 3, involving a total voucher amount of \$25,700, and 89 consent forms (97% of forms examined by Audit) of ECMP 4, involving a total voucher amount of \$24,250; and

(c) *Modification of standard consent forms by EHCP*. EMP 5 sometimes modified the standard consent form. Such modified consent forms did not include the statement that the elderly consented to the number of vouchers used for the healthcare service provided. The modified consent forms had been used for 118 claims involving a total voucher amount of \$30,900.

The identification of various errors/omissions by Audit calls for the DH's attention and follow-up.

Utilisation of identity card readers

4.35 When an elderly visits an EHCP, the EHCP needs to either input the particulars of the elderly on his HKID card into the eHealth System manually or capture the particulars by means of an identity card reader. Since August 2010, the DH has distributed identity card readers to all EHCPs. By using card readers, it can ensure that the personal particulars of the elderly are accurately input into the eHealth System and can help prevent EHCPs from making incorrect claims.

4.36 Audit, however, noted that in the period from 1 January 2011 to 31 March 2014, a substantial number of claims were prepared using manual input of the elderly's personal particulars (see Table 18).

Table 18

Claims which used manual input of elderly's personal particulars (2011 to 2014)

	Manual claims					
Year	Number	As a percentage of total number of claims in the year				
2011	450,440	73%				
2012	713,106	76%				
2013	1,173,031	80%				
2014 (up to March)	500,397	83%				

Source: Audit analysis of DH records

Audit considers that the DH needs to promote the use of the identity card readers.

Audit recommendations

- 4.37 Audit has *recommended* that the Director of Health should:
 - (a) expedite the DH's routine checking to cover the examination of selected claims of all EHCPs over a 15-month cycle as far as possible;
 - (b) avoid adopting a standard pattern of routine checking;
 - (c) keep statistics for the number and percentage of the major and minor errors/omissions to help it identify patterns of deficiencies and devise reminders/guidelines to help the EHCPs reduce errors/omissions;
 - (d) review the effectiveness of conducting follow-up inspections to deter errors/omissions and, where warranted, take escalated action by issuing advisory letters or warning letters to the EHCPs;
 - (e) follow up Audit's findings on consent forms (see paras. 4.32 to 4.34); and
 - (f) encourage the EHCPs to use identity card readers as far as possible and provide assistance to the EHCPs who have difficulties in using the readers.

Response from the Administration

4.38 The Director of Health agrees with the audit recommendations. She has said that the DH will:

- (a) review the inspection protocol, taking into consideration the audit recommendations;
- (b) consider taking measures to enhance the EHCPs' compliance with the requirements, including issuing guidelines for them on the proper completion of consent forms, and issuing advisory letters or warning letters where warranted;
- (c) follow up Audit's findings on consent forms; and

(d) continue encouraging the EHCPs to use identity card readers when making claims.

Comprehensive review of EHCVS

4.39 In February 2011, the FHB and the DH had completed an interim review of the EHCVS, with recommendations suitably incorporated into the design of the EHCVS as it developed with time. With the increasing financial implications of the EHCVS (amounting to \$846 million in 2014-15), it is an opportune time for the Administration to conduct another comprehensive review of the EHCVS. In fact, on various occasions, as shown below, the FHB informed LegCo that a comprehensive review of the EHCVS would be conducted.

(a)	November 2012	:	The FHB informed the Panel on Health Services that a further review of the EHCVS would be initiated after experience was accumulated on its operation.
(b)	December 2012	:	The FHB informed the Finance Committee that the EHCVS would be reviewed after its conversion into a recurrent programme.
(c)	February and December 2013	:	The FHB reiterated to LegCo Members that a review would be conducted to assess the effectiveness of the EHCVS after it had been regularised for a period of time.

Audit recommendation

4.40 Audit has *recommended* that the Director of Health should plan for the conduct of another comprehensive review of the EHCVS.

Response from the Administration

4.41 The Director of Health agrees with the audit recommendation. She has said that the Administration already has plans to conduct an evaluation of the EHCVS in mid-2015 after the enhancements of the EHCVS in 2014 have been launched for some time.

PART 5: HA'S PROVISION OF SPECIALIST OUT-PATIENT SERVICE TO ELDERLY PATIENTS

5.1 This PART examines the SOP service (Note 8) provided by the HA, focusing on the following issues:

- (a) elderly patients' waiting time for first SOPC consultation (paras. 5.5 to 5.14);
- (b) Geriatric SOPCs (paras. 5.15 to 5.23);
- (c) Community Geriatric Assessment Teams (paras. 5.24 to 5.28);
- (d) cross-cluster arrangements (paras. 5.29 to 5.36); and
- (e) waiting time information (paras. 5.37 to 5.42).

Background

5.2 According to the HA, elderly patients may generally be defined as those aged 65 or above for planning purposes. Moreover, the HA considers that defining their need by reference to age is not always an effective strategic response as the experience of ageing varies from person to person. Therefore, the SOP service is provided according to assessment of individual needs, rather than a person's age.

5.3 Background information on the HA's SOPCs is shown below:

Note 8: A major concern of elderly patients is how fast they can obtain an appointment for medical consultation. As GOPCs reserve quotas of consultation for elderly patients (see para. 5.5), this audit review focuses on the work of the SOPCs.

(a)	Establishment	:	• 47 SOPCs provide specialist consultations for patients referred by general practitioners. The following eight Specialties accounted for the great majority of consultations at the SOPCs:
			 Ear, Nose & Throat (ENT); Gynaecology; Medicine; Ophthalmology; Orthopaedics & Traumatology; Psychiatry; Surgery; and Paediatrics.
			• The 47 SOPCs are organised into seven clusters, namely:
			 Hong Kong East and West; Kowloon Central, East and West; and New Territories East and West.
(b)	Attendances	:	In 2013-14, there were 5.91 million attendances (by elderly and non-elderly patients) at the eight Specialties.
(c)	SOP service costs for all Specialties in 2013-14	:	\$9,900 million.

Elderly patients' attendance at SOPCs

5.4 In the period from 2009-10 to 2013-14, the attendance of elderly patients (i.e. patients aged 65 or above) at the SOPCs of the seven major Specialties (excluding Paediatrics as the patients were children) increased by 12% from 1.88 million to 2.11 million. In 2013-14, the 2.11 million attendance represented 37% of all attendances (at the seven Specialties) of 5.67 million. Among the seven major Specialties, the Medicine Specialty had the highest elderly patients' attendance of 846,538 (see Figure 3).



Elderly patients' attendance at SOPCs (2013-14)

Figure 3

Number of attendees





Elderly patients' waiting time for first **SOPC consultation**

Triage system of SOPCs

5.5 Elderly patients can obtain out-patient service at the GOPCs and SOPCs of the HA. The GOPCs are primarily targeted at serving the elderly, people of low-income, and those who are chronically ill. The GOPCs reserve quotas of consultation for elderly patients. The number of quotas reserved at the GOPCs is adjusted from time to time based on factors such as service demand from elderly patients. According to the HA, over 90% of elderly patients are able to secure an appointment at the GOPCs and attend a consultation within two working days.

5.6 Unlike the GOPCs, the SOPCs do not reserve quotas specifically for elderly patients. The SOP service is provided to patients (including elderly patients) according to the assessment of individual needs and clinical conditions, rather than solely their age. Patients referred to SOPCs for first consultation are triaged into one of the three categories of Priority 1 (urgent), Priority 2 (semi-urgent) or Routine based on their clinical conditions. To ensure that urgent cases will not be overlooked, referrals classified as Routine cases are reviewed by a Senior Medical Officer within seven working days. If patients' conditions become acute, they should seek immediate treatment at the Accident and Emergency Departments of hospitals.

Increase in waiting time for first SOPC consultation

5.7 *Target waiting time*. Waiting time for medical consultation is always a concern of patients. For follow-up SOPC consultations, the waiting time varies according to the clinical needs of the patients. For first SOPC consultations, the HA sets target median waiting time of 2 and 8 weeks for Priority 1 and Priority 2 cases respectively. No target waiting time is set for Routine cases.

5.8 *Measures taken to shorten the waiting time.* Over the years, the HA has implemented a number of improvement measures to shorten the waiting time for first SOPC consultations, including:

- (a) *Retention of medical staff.* The HA introduced initiatives such as improving working conditions and strengthening the supporting workforce (e.g. phlebotomists) to alleviate the workload of medical staff;
- (b) *Temporary measures.* In 2013-14, the HA engaged some 300 part-time doctors and "limited registration" doctors to improve the manpower strength. The HA also paid around \$70 million as special honorarium to increase the service capacity, including that of the SOPCs, within the HA;
- (c) *Cross-cluster referrals.* The HA provides options for patients to be channelled to clusters with shorter waiting times;
- (d) *Enhancing transparency*. The HA recognises the importance to enhance transparency in waiting time performance and has posted waiting time information of SOPCs on its website;
- (e) *Collaboration with Family Medicine*. The HA has used Family Medicine to help attend newly referred patients who suffered from problems (such as low back pain) that can be dealt with at primary care levels; and
- (f) *Improvement of management tool.* In the first quarter of 2014, the HA launched an electronic referral system to facilitate clinicians in making referrals to SOPCs.

5.9 In the five years from 2009-10 to 2013-14, the HA was able to meet the target median waiting time of Priority 1 and Priority 2 cases. In respect of Routine cases of elderly patients, the waiting time for first consultation had generally increased (see Table 19). Audit noted that:

- (a) the 90th percentile (Note 9) waiting time of the ENT, Ophthalmology and Surgery Specialties had been shortened. However, for the other four Specialties namely, Gynaecology, Medicine, Orthopaedics &
- **Note 9:** The 90th percentile waiting time is an index adopted internationally to denote the longest waiting time of patients for consultations. The HA monitors waiting time by regularly compiling the waiting times in median (50th percentile) and the 90th percentile waiting time. Nevertheless, from time to time, the HA provides the Legislative Council with information on the lower quartile (25th percentile), median (50th percentile), upper quartile (75th percentile) and the longest (90th percentile) waiting time.

Traumatology and Psychiatry, the 90th percentile waiting time had increased. The increase was particularly significant in the Orthopaedics & Traumatology and Psychiatry Specialties — 48 and 21 weeks respectively; and

(b) the 25th percentile waiting time of five major Specialties namely ENT, Gynaecology, Medicine, Orthopaedics & Traumatology and Psychiatry, had increased by 1 week to 12 weeks.

Table 19

Specialty	25th per	centile wai (Week)	iting time	90th percentile waiting time (Week)			
Specialty	2009-10	2013-14	Increase/ (Decrease)	2009-10	2013-14	Increase/ (Decrease)	
1. ENT	2	14	12	72	61	(11)	
2. Gynaecology	10	11	1	47	61	14	
3. Medicine	9	14	5	60	75	15	
4. Ophthalmology	16	15	(1)	114	69	(45)	
5. Orthopaedics & Traumatology	20	25	5	78	126	48	
6. Psychiatry	1	6	5	45	66	21	
7. Surgery	13	13	0	122	111	(11)	

Waiting time of elderly patients categorised as Routine cases (2009-10 and 2013-14)

Source: HA records

Disparity in waiting time among clusters

5.10 Audit analysis of the 90th percentile waiting time for Routine cases of the seven Specialties revealed that the elderly patients' waiting time varied significantly among different clusters. For the three Specialties namely, Orthopaedics & Traumatology, Psychiatry, and Surgery, elderly patients of the Kowloon East Cluster had to wait about 100 weeks longer than those of the Hong Kong East Cluster (see Table 20).

HA's provision of Specialist Out-patient service to elderly patients

Table 20

Disparity in elderly patients' waiting time for Routine cases at SOPCs of different clusters (2013-14)

	Shortes percentile w	st 90th vaiting time	Longest percentile wa		
Specialty	Cluster	Number of weeks (a)	Cluster	Number of weeks (b)	Disparity (c) = (b) $-$ (a)
					(Week)
1. ENT	Kowloon Central	27	HK West	95	68
2. Gynaecology	HK West	19	Kowloon East	94	75
3. Medicine	HK East	46	NT East	85	39
4. Ophthalmology	HK West	21	NT East	99	78
5. Orthopaedics & Traumatology	HK East	52	Kowloon East	149	97
6. Psychiatry	HK East	30	Kowloon East	132	102
7. Surgery	HK East	47	Kowloon East	151	104

Source: HA records

Remarks: HK denotes Hong Kong and NT denotes New Territories.

Further efforts to meet demand for SOP service

5.11 Elderly's attendance at SOPCs is generally higher than that of the non-elderly. According to the HA, while only 14% of the population belongs to the elderly group, they account for 34% of the SOP attendances in all Specialties. The elderly group has an SOP attendance rate three times of that of the non-elderly group.

5.12 The ability of the HA to manage the waiting time for SOP service hinges on manpower and service capacity. With the expected rise in the proportion of elderly population from 14% in 2013 to 19% in 2021 and further to 26% in 2031, the demand for SOP service is bound to increase significantly. Management of waiting time at SOPCs will undoubtedly be an escalating challenge for the HA. The HA needs to take further action to meet the demand for SOP service by elderly patients.

Audit recommendations

5.13 Audit has *recommended* that the Chief Executive, HA should formulate an action plan and step up efforts to:

- (a) shorten the waiting time for Routine cases at the SOPCs as far as possible; and
- (b) reduce the disparity in the waiting time for first consultation at SOPCs of different clusters (for example by extending the scope of cross-cluster referral arrangement see para. 5.29).

Response from the Hospital Authority

5.14 The Chief Executive, HA has said that the HA agrees in principle with the audit recommendations. He has also said that the HA:

- (a) has been striving to shorten the waiting time for Routine cases subject to manpower availability, and will continue to monitor the overall waiting time; and
- (b) will review the disparity of waiting time in different clusters, and will extend the cross-cluster referral arrangement in appropriate clinical context.

Geriatric SOPCs

Audit's visits to Geriatric SOPCs

5.15 Geriatrics is a subspecialty under the Medicine Specialty, which has the highest elderly patients' attendance (see para. 5.4). Geriatric SOPCs provide specialist consultation service exclusively to elderly patients with specific medical problems such as incontinence and memory loss. As at 31 August 2014, there were 12 Geriatric SOPCs in the 7 clusters of the HA. In August 2014, Audit visited three Geriatric SOPCs located at the Caritas Medical Centre (CMC), the Princess Margaret Hospital (PMH) and the Queen Mary Hospital (QMH) to examine their waiting time and appointment booking procedures.

Waiting time of Geriatric SOPCs visited by Audit

5.16 In 2013-14, the longest (i.e. 90th percentile) waiting time of Routine cases at the three Geriatric SOPCs visited by Audit ranged from 78 weeks to 103 weeks (see Table 21).

Table 21

Waiting time (90th percentile) of Routine cases at three Geriatric SOPCs visited by Audit (2013-14)

Geriatric SOPC	Waiting time	
	(Week)	
CMC	85	
РМН	78	
QMH	103	

Source: HA records

Appointment scheduling for first and follow-up consultations

5.17 The number of appointment slots available for booking at an SOPC is decided by the cluster management and the doctors and nurses in charge of the SOPC. Factors taken into account in determining the number of available appointment slots include past utilisation statistics, seasonal factors (such as winter surge), and manpower factors (such as maternity leave of staff). The number of appointment slots available for booking are preset in the Out-patient Appointment System (OPAS), which is a system designed to assist the daily booking operation. The booking clerks of the SOPCs are responsible for scheduling appointment slots in the OPAS.

5.18 Audit conducted an analysis of the appointment scheduling practices of the three Geriatric SOPCs in 2013-14 (see Table 22).

Table 22

	First cor	sultation	Follow-up consultation		
Geriatric SOPC	Total number of slots	Number of slots unscheduled	Total number of slots	Number of slots unscheduled	
СМС	1,851	538 (29%)	28,777	0 (0%)	
РМН	731	222 (30%)	14,378	676 (5%)	
QMH	312	66 (21%)	1,692	0 (0%)	

Scheduling of appointment slots in OPAS in three Geriatric SOPCs visited by Audit (2013-14)

Source: Audit analysis of HA records

Upon enquiry, the HA informed Audit in September 2014 that to cater for unexpected fluctuation in service demand particularly from patients with urgent and serious conditions (i.e. those categorised as Priority 1 and Priority 2 patients) and the uncertainties, the SOPCs had factored in certain reserves in their bookings and a certain level of unscheduled appointment slots in the OPAS was unavoidable. According to the HA, there was no capacity wastage in SOPCs in general because some of the unscheduled appointment slots were subsequently used for attending to urgent and serious cases and other unforeseeable cases. However, Audit noted that as shown in Table 22, the number of unscheduled appointment slots for the three Geriatric SOPCs varied. This indicated that the scheduling practices among the three clinics could have contributed to the less than optimal utilisation of appointment slots in the OPAS. There is room for improvement in the monitoring and booking of appointment slots in the SOPCs.

5.19 *Appointment slots available due to cancellation of appointments.* Audit observed the booking processes of the three Geriatric SOPCs and found that different booking practices were adopted by them. The booking clerk of the Geriatric SOPC at the QMH allocated the earliest available appointment slots to Routine cases. However, the booking practice of the SOPCs at the PMH and that at the CMC were different:

- (a) the booking clerk of the Geriatric SOPC at the PMH scheduled the appointment slots of Routine cases to the end of the queue; and
- (b) the booking clerk of the Geriatric SOPC at the CMC scheduled appointment slots of Routine cases according to the dates specified by the Medical Officers. However, the Medical Officers kept manual booking records and therefore did not have the up-to-date information on appointment slots released due to cancelled appointments.

Under the practices of the SOPCs at the PMH and the CMC, some appointment slots released due to cancellation of appointment might not be put to use in an efficient manner.

5.20 To ensure that appointment slots for bookings are optimally utilised, the booking of appointment slots through the OPAS requires close monitoring. The HA needs to review the appointment booking procedures of the Geriatric SOPCs and implement measures to improve the appointment scheduling as far as possible, with reference to the practice of Geriatric SOPC of the QMH.

Practices adopted to clear backlog of Routine cases

5.21 Audit further noted that the Geriatric SOPC of the PMH has adopted the following practices to clear the backlog of Routine cases:

- (a) Family Medicine Specialists attend Routine cases. Since October 2013, the PMH's Family Medicine Specialists have helped attend Routine cases involving patients who suffered from problems that can be dealt with at primary care levels (such as low back pain). Up to June 2014, 820 Routine cases had been transferred to the Family Medicine Specialists. The 90th percentile waiting time of these patients was shortened from 78 weeks to 17 weeks; and
- (b) Transfer Routine RCHEs' cases to the Community Geriatric Assessment Teams (CGATs). Since December 2011, all Routine cases involving elderly residing in the RCHEs have been transferred to the CGATs (see para. 5.24). The Visiting Medical Officers of the CGATs provide medical consultation service to elderly residing in the RCHEs twice a week.

In view of the good practices of the Geriatric SOPCs at the PMH in clearing the backlog of Routine cases, the HA needs to consider encouraging other SOPCs to adopt similar practices.

Audit recommendations

- 5.22 Audit has *recommended* that the Chief Executive, HA should:
 - (a) conduct a comprehensive review of the appointment scheduling practices of the SOPCs;
 - (b) in the light of the results of the review, implement measures to optimise the use of the earliest available appointment slots in scheduling appointments for patients;
 - (c) take action to ensure that the appointment slots from cancelled appointments are timely released and are put to effective use as far as possible; and
 - (d) disseminate the good practices for clearing backlog of Routine cases, and encourage SOPCs to adopt such good practices.

Response from the Hospital Authority

5.23 The Chief Executive, HA has said that the HA agrees with the audit recommendations. He has also said that the HA will consider measures to optimise the scheduling arrangements for SOPCs.

Community Geriatric Assessment Teams

5.24 The CGATs were set up under the Department of Medicine in 1994 to provide outreach medical consultation service to elderly residing in the RCHEs. Each CGAT consists of a team of medical, nursing, physiotherapy, occupational therapy, and social work professionals. In 2006 and 2010, the HA evaluated the CGATs' service and concluded that the service was effective in reducing Accident and Emergency attendances, and hospital admissions of elderly residents of the RCHEs. The service costs of the CGATs for 2013-14 were \$314 million.

5.25 As at 31 March 2014, there were 13 CGATs. They provided service to 638 (89%) of the 715 licensed RCHEs in Hong Kong (Note 10). There were some 4,500 elderly residing in the remaining 77 RCHEs (715 minus 638) who did not receive CGATs' service. According to the HA, in the past few years, the service coverage of the CGATs had not been changed.

5.26 According to the HA, a Working Group set up under the Geriatrics Subcommittee (Note 11) conducts on-going review to address service and operational issues and proposes clinical service programs to enhance the quality of healthcare of residents in RCHEs. In 2012, the Working Group completed a review of the service of the CGATs. The review focused on the objectives, service scope, target groups, mechanism for prioritisation of new RCHEs to be covered, as well as exploring alternative service models to support the care of RCHE residents.

- **Note 10:** *Twenty-one RCHEs, which had their own medical practitioners to provide medical consultation for their elderly residents, were excluded.*
- **Note 11:** The Geriatrics Subcommittee comprises doctors from the Department of Medicine and Geriatrics of various HA clusters/hospitals. The Subcommittee meets quarterly to discuss professional matters related to geriatric services, including service development, quality assurance, workforce and training.

The Working Group concluded that when resources were available through the HA's annual planning mechanism, the CGATs would adopt a set of criteria for prioritising new RCHEs to be covered.

Audit recommendations

- 5.27 Audit has *recommended* that the Chief Executive, HA should:
 - (a) formulate a long-term plan for delivering the service of the CGATs; and
 - (b) in formulating the long-term plan, consider extending the service coverage of the CGATs with a view to enhancing the quality of healthcare of elderly residing in RCHEs.

Response from the Hospital Authority

5.28 The Chief Executive, HA has said that the HA agrees with the audit recommendations. He has also said that:

- (a) the HA has in recent years extended its service coverage of the CGATs to RCHE residents; and
- (b) the HA will continue to review its service model and provision as appropriate with a view to enhancing the quality of healthcare of elderly residing in RCHEs.

Cross-cluster arrangements

5.29 Under the HA's cross-cluster arrangements, a patient may attend an SOPC with shorter waiting time at another cluster. There are two kinds of cross-cluster arrangements. One is the cross-cluster referral arrangement and the other is the patient-initiated cross-cluster appointment booking.

Cross-cluster referral arrangement

5.30 In August 2012, the HA launched the cross-cluster referral arrangement for SOP service on a pilot basis to shorten the waiting time for first consultation and reduce the disparity in waiting time among clusters. Under the arrangement, patients of Routine cases may be offered an appointment at an SOPC in a cluster with shorter waiting time.

5.31 The cross-cluster referral arrangement is currently only available for three Specialties namely, ENT, Gynaecology and Ophthalmology. Up to 31 May 2014, the arrangement had benefited 3,438 patients (see Table 23).

Table 23

	Cross-cluster		90th percentile waiting time for Routine cases			Average number of	Total number	Number
Specialty	From	То	Before After referral referral	Waiting time shortened	patients benefited per month (Note)	of patients benefited	of elderly patients benefited	
			(a)	(b)	(c) = (a) - (b)			
			(Week)	(Week)	(Week)			
1. ENT	Kowloon East	Kowloon Central	79	25	54	136	3,002	642
2. Gynaecology	NT East	HK East	127	22	105	11	151	1
3. Ophthalmology	NT East	HK West	69	22	47	36	285	94
						Overall	3,438	737

Patients benefited from cross-cluster referral arrangement (31 May 2014)

Source: HA records

Note: Up to 31 May 2014, the cross-cluster referral arrangement for the Specialties of ENT, Gynaecology and Ophthalmology had been implemented for 22, 14 and 8 months respectively. The average number of patients benefited for each of the three Specialties is calculated by dividing the corresponding total number of patients benefited by 22, 14 and 8 months.

Remarks: HK denotes Hong Kong and NT denotes New Territories.

Audit noted that the average number of patients of the two Specialties (Gynaecology and Ophthalmology) benefited from the cross-cluster referral arrangement was significantly less than that of the ENT Specialty.

5.32 To enable more patients (including elderly patients) to benefit from the cross-cluster referral arrangement and in view of the significant disparity in the elderly patients' waiting time among clusters for Specialties (see para. 5.10), Audit considers that the HA needs to encourage the clusters of the three Specialties to initiate more referrals where the patient cases are found suitable and to consider extending the arrangement to other Specialties.

Patient-initiated cross-cluster appointment booking

5.33 In general, the HA allows patients to select an SOPC for first consultation in any cluster according to their preferences. In August 2014, Audit made telephone enquiries to 21 SOPCs (one SOPC for each of the three Specialties of Medicine, Ophthalmology and Surgery in each of the seven clusters). Audit noted that of the 21 SOPCs:

- (a) one SOPC in each of the Hong Kong East Cluster, the Kowloon Central Cluster, the New Territories East Cluster, and the New Territories West Cluster refused patients residing in other clusters to attend their SOPCs; and
- (b) one SOPC in each of the Hong Kong West Cluster, and the Kowloon Central Cluster replied that the Medical Officer would decide whether the patients are allowed to receive consultations at the SOPC after screening the patients' referral letters (see Table 24).

Table 24

Results of Audit's telephone enquiries for cross-cluster appointment booking (August 2014)

	Cross-cluster appointment booking					
Specialty	Accepted	To be decided by Medical Rejected Officer		Total		
Medicine	5	0	2	7		
Ophthalmology	3	4	0	7		
Surgery	7	0	0	7		
Total	15	4	2	21		

Source: Audit's telephone enquiries in August 2014

5.34 The results of Audit's telephone enquiries revealed that some clusters did not allow patients from other clusters to book appointments in their SOPCs. The HA needs to take measures to remind clusters to allow patients to attend SOPCs of their choices whenever clinical condition and capacity afford.

Audit recommendations

- 5.35 Audit has *recommended* that the Chief Executive, HA should:
 - (a) initiate more cross-cluster referrals where the patient cases are found suitable;
 - (b) consider extending the cross-cluster referral arrangement to more Specialties and to benefit more elderly patients; and
 - (c) take measures to remind staff of SOPCs in all clusters to allow patients to attend SOPCs of their choices whenever clinical condition and capacity afford.

Response from the Hospital Authority

5.36 The Chief Executive, HA has said that the HA agrees with the audit recommendations. He has also said that the HA will review the disparity of waiting time in different clusters, and will extend the cross-cluster referral arrangement in appropriate clinical context.

Waiting time information

5.37 The disclosure of waiting time information facilitates patients to make informed decisions in treatment choices and plans (including initiating cross-cluster arrangements). At the meeting of the LegCo's Panel on Health Services held in January 2013, the HA committed to report the waiting time information of the SOP service in the public domain by phases.

Waiting time information displayed at SOPCs

5.38 In June 2014, Audit visited seven SOPCs of the ENT Specialty and found that the ways the SOPCs displayed waiting time information were very different (see Table 25). For example, SOPC 1 displayed the waiting time information of all other clusters' SOPCs while SOPC 7 only displayed its own waiting time information. Displaying waiting time information of the SOPCs in all clusters would help patients (including elderly patients and their family members or carers) make informed decisions in treatment choices and plans. Audit considers that the HA needs to take measures to ensure that waiting time information displayed at SOPCs is comprehensive, consistent and is updated regularly.

Table 25

Waiting time information displayed by seven SOPCs of the ENT Specialty (June 2014)

		Display of waiting time				Waiting
SOPC	Cluster	Own SOPC	Other SOPCs in same cluster	Other SOPCs in all clusters	Location of display	time position last updated
1	HK East	Yes	Yes	Yes	Registration counter	April 2014
2	NT East	Yes	Yes	No	Registration counter	Not shown
3	Kowloon East	Yes	Not applicable (Note)	No	Registration counter	Not shown
4	HK West	Yes	No	No	SOPC entrance	April 2014
5	Kowloon Central	Yes	No	No	Registration counter	Not shown
6	Kowloon West	Yes	No	No	Registration counter	May 2014
7	NT West	Yes	No	No	Registration counter	Not shown

Source: Audit visits to the SOPCs in June 2014

Note: There was only one SOPC of the ENT Specialty in the Kowloon East Cluster.

Waiting time information posted on HA's website

5.39 In August 2014, Audit also reviewed the waiting time information posted on HA's website. Audit found that only the waiting time information of five Specialties, namely ENT, Gynaecology, Ophthalmology, Orthopaedics and Traumatology, and Paediatrics for the period from July 2013 to June 2014 was posted on the website.
5.40 To facilitate patients to make informed treatment choices and better planning, Audit considers that the HA needs to expedite action to disclose the waiting time information of all the Specialties on its website.

Audit recommendations

- 5.41 Audit has *recommended* that the Chief Executive, HA should:
 - (a) implement measures to ensure that comprehensive and updated waiting time information is displayed at all SOPCs; and
 - (b) expedite action to disclose the waiting time information of all the Specialties on the HA's website to facilitate patients to make informed treatment choices and better planning.

Response from the Hospital Authority

5.42 The Chief Executive, HA has said that the HA agrees with the audit recommendations. He has also said that the HA will take measures to display comprehensive and updated waiting time information as appropriate in a timely manner.

Appendix

Acronyms and abbreviations

Audit	Audit Commission			
CGAT	Community Geriatric Assessment Team			
СМС	Caritas Medical Centre			
COE	Certificate of Exemption			
C&SD	Census and Statistics Department			
DH	Department of Health			
ECMP	Enrolled Chinese Medicine Practitioner			
EHAPP	Elderly Health Assessment Pilot Programme			
EHC	Elderly Health Centre			
ЕНСР	Enrolled healthcare service provider			
EHCVS	Elderly Health Care Voucher Scheme			
EMP	Enrolled Medical Practitioner			
ENT	Ear, Nose & Throat			
FHB	Food and Health Bureau			
GOPC	General Out-patient Clinic			
НА	Hospital Authority			
HKID card	Hong Kong identity card			
HPAs	Health promotion activities			
LegCo	Legislative Council			
NGO	Non-governmental organisation			

Appendix (Cont'd)

OPAS	Out-patient Appointment System
РМН	Princess Margaret Hospital
QMH	Queen Mary Hospital
RCHE	Residential care home for the elderly
SOP	Specialist Out-patient
SOPC	Specialist Out-patient Clinic
SWD	Social Welfare Department
VHT	Visiting Health Team

CHAPTER 3

Civil Aviation Department Architectural Services Department

New Civil Aviation Department Headquarters

Audit Commission Hong Kong 30 October 2014 This audit review was carried out under a set of guidelines tabled in the Provisional Legislative Council by the Chairman of the Public Accounts Committee on 11 February 1998. The guidelines were agreed between the Public Accounts Committee and the Director of Audit and accepted by the Government of the Hong Kong Special Administrative Region.

Report No. 63 of the Director of Audit contains 10 Chapters which are available on our website at http://www.aud.gov.hk

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NEW CIVIL AVIATION DEPARTMENT HEADQUARTERS

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NEW CIVIL AVIATION DEPARTMENT HEADQUARTERS

Executive Summary

1. The development of a new Civil Aviation Department (CAD) headquarters on the Airport Island was an initiative in the 2006-07 Policy Agenda to house a new air traffic control (ATC) system to meet traffic growth up to 2025 and to accommodate under one roof the CAD's various operational divisions. In January 2008, the Finance Committee of the Legislative Council (LegCo) approved funding of \$1,997 million to construct the new headquarters with a construction floor area of about 65,000 square metres (m^2) and net operational floor area (NOFA) of about 22,775 m^2 . In May 2009, a design-and-build contract was awarded for the construction of the new headquarters.

2. To ensure the timely completion of the new CAD headquarters project, the CAD set up a dedicated project team to oversee its implementation. The new headquarters was commissioned on schedule (in December 2012) and the actual expenditure was also within the approved provision. The Audit Commission (Audit) has recently conducted a review of the provision of office accommodation and facilities in the new headquarters with a view to identifying room for improvement.

Provision of reserve space for future expansion

3. According the Accommodation Regulations, schedules to of accommodation must be vetted by the Government Property Agency (GPA) and approved by the Property Vetting Committee (PVC) for departmental specialist accommodation. In October 2007, the PVC approved a NOFA of 22,775 m^2 (including 3,240 m² reserved for future expansion) for the new headquarters. Earlier, in September 2007 when the GPA was vetting the draft schedule of accommodation for the new CAD headquarters (including reserve area for future expansion), the Transport and Housing Bureau (THB) had written to the PVC to express its support of the CAD's request for more reserve space to the extent of $1,500 \text{ m}^2$, which would be used for expansion beyond 2025. However, the THB only requested the PVC to consider the possibility of making provision in the

building's foundation and design to cater for the construction of this reserve space in the future. While the CAD specified in the Employer's Requirements of the tender documents that provision should be made in the building's foundation and design to allow for a further expansion in NOFA of 1,500 m², it also specified that the $1,500 \text{ m}^2$ expansion area should form part of the established offices. In the event, the 1,500 m² expansion area, in addition to the NOFA of the 3,240 m² approved for future expansion, was built. With the exception of the Architectural Services Department (ArchSD), other PVC members (namely the GPA and Financial Services and the Treasury Bureau - FSTB) had not been informed of the change in user requirements. The incident highlights inadequacies in the control over change of user requirements and the decision making arrangements within the PVC. Moreover, the Panel on Economic Development, Public Works Subcommittee and Finance Committee of LegCo were not informed specifically of the construction of the 1,500 m² expansion area. While the 1,500 m² expansion area was not expected to be required for use by the CAD until some years later, no provision was made in the building design to facilitate its interim use by third parties (paras. 2.2, 2.5 to 2.7, 2.10, 2.15 to 2.17 and 2.23).

Control over deviations from approved schedule of accommodation

4. The laid-down procedures for vetting and approving schedules of accommodation for new government buildings are to ensure compliance with the established space standards by user departments, and that provision of accommodation is fair and adequate to meet user departments' operational needs. Three of the facilities in the new CAD headquarters were not built in accordance with the approved schedule of accommodation, and not conforming to the Accommodation Regulations. The discrepancies in the provision of toilet/shower facilities in the Director-General of Civil Aviation's office and the rest rooms for accident investigators could have been avoided if both the CAD and ArchSD had enhanced the checking mechanism to ensure that the user requirements to be included in the design-and-build contract were consistent with the approved schedule of accommodation. The CAD also had not sought the PVC's prior approval before it converted the space originally planned for use as a viewing gallery of the education path into a multi-function room for meeting and recreational purposes. There was no record to show how such converted use and the fixture requirements of the multi-function room were determined (paras. 3.7, 3.13, 3.14 and 3.17).

Provision of furniture and equipment

5. Up to May 2014, the CAD had spent \$97.04 million on the purchase of furniture and equipment under the project. Financial Circular No. 9/90 sets out the arrangements for seeking approval for the purchase of furniture and equipment for public works projects. The CAD had not complied with the Circular's requirements in seeking the FSTB's prior approval for its purchase of the security and electronic systems at \$67.45 million under the design-and-build contract. The CAD also purchased more liquid crystal display (LCD) video display units than that mentioned in its application to the FSTB for approval. Some of the LCD video display units were installed in venues and individual officers' rooms which were not mentioned in the CAD's application. There also appears to be scope for reducing the LCD video display unit requirements as some venues were already provided with other equipment serving similar display functions. Additional expenditure of \$156,000 was incurred in purchasing seven LCD video display units to replace those not fully meeting user requirements (paras. 4.2 to 4.4, 4.7, 4.8 and 4.13).

Provision and utilisation of car parking spaces

6. The new CAD headquarters has a total of 209 parking spaces. The CAD had not compiled statistics on the utilisation of parking spaces until April 2014. From April to July 2014, the utilisation of these parking spaces only ranged from 21% to 23% for weekdays. While the utilisation of the parking spaces might improve after the relocation of the Air Traffic Management Division of the CAD to the new headquarters, there is a need to put the under-utilised parking spaces into gainful use during the interim and keep the utilisation rate under review after the relocation. Regarding the provision of parking spaces, there was room for improvement in the CAD's provision of usage information in the draft schedule of accommodation for the GPA's assessment. There was also room for improvement in the ArchSD's specification of the GPA's approved parking space provision in the tender documents (paras. 5.6 to 5.8, 5.10, 5.11 and 5.13).

Audit recommendations

7. Audit recommendations are made in the respective sections of this Audit Report. Only the key ones are highlighted in this Executive Summary. Audit has *recommended* that the Director-General of Civil Aviation should:

- (a) take measures to ensure that:
 - (i) the tender specifications for new building projects adhere strictly to the PVC's approval (para. 2.26(a)(i));
 - (ii) for building projects with reserve areas to be built on day one for expansion in the distant future, allowance is made in the building design to facilitate interim use by third parties (para. 2.26(a)(iii)); and
 - (iii) full information on expansion area of building projects is included in the funding and Administration papers submitted to LegCo (para. 2.26(b));
- (b) step up the checking of user requirements to be included in the tender documents of building projects to ensure consistency with the approved schedules of accommodation and seek the PVC's approval before making any significant changes to the approved provision (para. 3.19(a) and (b));
- (c) critically review the operational needs for the LCD video display units purchased and seek covering approval from the FSTB, where appropriate (para. 4.18(a));
- (d) take measures to ensure that timely approval is sought from the FSTB for procuring equipment in accordance with the requirements laid down in Financial Circular No. 9/90 and that in seeking approval from the FSTB, details of the equipment to be purchased are provided (para. 4.18(b)); and
- (e) continue to monitor the utilisation of the parking spaces and take effective measures to put any under-utilised parking spaces into gainful use (para. 5.15(a) and (b)).

8. Audit has *recommended* that the Director of Architectural Services should take measures to ensure that:

- (a) **PVC** meetings should be convened for members to exchange views and to clarify understanding on important matters which could be subject to different interpretation (para. 2.25(b)(i));
- (b) full information on expansion area of building projects is included in the funding and Administration papers submitted to LegCo (para. 2.25(b)(ii));
- (c) for building projects with reserve areas to be built on day one for expansion in the distant future, allowance is made in the building design to facilitate interim use by third parties (para. 2.25(b)(iii));
- (d) any discrepancies between room data sheets and approved schedules of accommodation are reconciled before tender invitations (para. 3.18); and
- (e) the exact number of parking space provisions according to the approved schedule of accommodation is specified in the tender documents (para. 5.14(a)).

9. Audit has also *recommended* that the Secretary for Financial Services and the Treasury and the Government Property Administrator should promulgate the lessons learnt from the new CAD headquarters project for reference of other bureaux/departments (para. 6.11).

Response from the Administration

10. The Administration agrees with the audit recommendations.

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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 The Civil Aviation Department (CAD) is committed to a safe, efficient and sustainable air transport system. Its primary functions are three-fold:

- (a) Provision of air traffic control (ATC) services. It provides ATC services and flight information to flights arriving and departing the Hong Kong International Airport (HKIA Note 1) and aircraft flying over the 276,000 square kilometres Hong Kong Flight Information Region;
- (b) *Regulation of the civil aviation industry.* As a regulator, it sets aviation safety and security standards, oversees the compliance by the Airport Authority, airlines and aircraft maintenance organisations with such standards, and maintains a licensing system for aviation professionals; and
- (c) *Investigation of aircraft accidents or serious incidents.* It conducts the investigation of civil aircraft accidents or serious incidents that occurred in Hong Kong with the objective of preventing recurrence.

Need for a new CAD headquarters

1.3 Since the opening of the HKIA at Chek Lap Kok in 1998, the number of aircraft movements in the HKIA had increased by 72% to reach 280,000 movements in 2006. Over the same period, over-flight traffic through the Hong Kong Flight Information Region had also grown by 95% to reach 140,000 movements. In 2006, the Chief Executive of the Hong Kong Special Administrative Region announced in

Note 1: The responsibilities to develop and manage the HKIA rest with the Airport Authority which is a statutory body established under the Airport Authority Ordinance (Cap. 483).

the 2006-07 Policy Agenda an initiative to replace the ATC system and develop a new CAD headquarters on the Airport Island. The need for a new CAD headquarters arose because of the following:

- (a) *Need to house a new ATC system.* The existing ATC system was designed in early 1990s and was approaching its full design/handling capacity. A new ATC system to cope with traffic growth up to 2025 would require a space three times the size of the existing ATC centre on the air-side (i.e. the restricted area) of the HKIA. Expansion of the existing ATC centre was not viable because of the lack of adjoining land and the disruption that might be caused to the existing services; and
- (b) *Need to house all operational divisions under one roof.* The CAD's headquarters and five functional divisions were scattered among four different locations (Note 2). Scattered accommodation was undesirable from operational angle as it hindered efficient communication, duplicated support services, lengthened emergency response time and prevented the CAD from providing convenient one-stop service to the aviation industry.

Implementation of the new CAD headquarters project

1.4 With the consent of the Airport Authority, a site of 28,000 square metres (m^2) at the southeastern part of the Airport Island was identified for the construction of the new CAD headquarters. In November 2006, the Architectural Services Department (ArchSD) completed a study confirming that the construction project at the selected site was technically feasible.

Note 2: The Director-General of Civil Aviation's Office, the Administration Division, the Finance Division and the Air Services and Safety Management Division were located in Queensway Government Offices, the Air Traffic Management Division in the ATC centre, the Airport Standards Division in the rent-free premises provided by the Airport Authority in the Passenger Terminal Building, the Air Traffic Engineering Services Division and the Flight Standards and Airworthiness Division in leased accommodation in the Air Freight Forwarding Centre of the HKIA.

1.5 Approval of schedule of accommodation. Provision of office space and ancillary facilities in government buildings (Note 3) is governed by the procedures and space standards laid down in the Accommodation Regulations (Note 4). The aim is to provide accommodation that leads to maximum efficiency and value for money taking into account the operational, spatial, locational and timing requirements of the departments and the resources available. In October 2007, the Property Vetting Committee (PVC — Note 5) approved the schedule of accommodation of the new CAD headquarters which set out the floor area and facilities to be constructed therein.

1.6 *Funding approval.* In January 2008, the Administration obtained the Legislative Council (LegCo) Finance Committee's approval of \$1,997 million to construct a new CAD headquarters with construction floor area (CFA — Note 6) of about 65,000 m² and NOFA (Note 7) of about 22,775 m². Of the 22,775 m² NOFA, about 3,240 m² was reserved for future expansion while about 19,535 m² was provided for:

- **Note 3:** For a departmental specialist building which is purpose-built for specialised operations (such as the ATC centre in the case of the new CAD headquarters), the user department is responsible for seeking the approval of its proposed space and facilities requirements (in the form of a draft schedule of accommodation) and the funding for construction works.
- **Note 4:** The Accommodation Regulations, made with the authority of the Chief Executive, form an integral part of the Government Regulations which regulate matters relating to the conduct of Government business. The sole authority for the interpretation and application of the Accommodation Regulations has been delegated to the Secretary for Financial Services and the Treasury who has overall policy responsibilities on accommodation matters.
- **Note 5:** The PVC is established under the Accommodation Regulations to vet and approve schedules of accommodation for departmental specialist buildings. It is chaired by an Assistant Director of the ArchSD and comprises representatives of the Financial Services and the Treasury Bureau (FSTB) and Government Property Agency (GPA) as members.
- **Note 6:** *CFA* includes all areas within the building structure envelope. Besides net operational floor area (NOFA), it includes areas for facilities such as toilets, shower rooms, lift lobbies, stair halls, public corridors, escalators, flat roofs, plant rooms and carparks.
- **Note 7:** *NOFA refers to the floor area actually allocated to the users for carrying out the intended activities.*

- (a) housing a new ATC centre and its supporting equipment, systems and facilities;
- (b) relocating the CAD's functional divisions under one roof; and
- (c) adding new facilities to meet operational requirements, including:
 - (i) dedicated facilities for aircraft accident investigation;
 - (ii) a multi-purpose auditorium and conference facilities for meetings and group briefings for industry partners and staff, as well as for international and regional aviation conferences and meetings; and
 - (iii) an ATC tour presentation room and an education path to promote understanding and cultivate interest in aviation among the general public.

1.7 **Project team.** To ensure the timely completion of the new CAD headquarters project and a seamless transition to the new ATC system upon its targeted commissioning in December 2012, the CAD set up a dedicated project team to oversee the preparation and implementation of both projects. The project team headed by an Assistant Director-General of Civil Aviation was supported by a group of multi-disciplinary staff including Air Traffic Control Officers, Air Traffic Flight Services Officers, Aeronautical Communications Officers, Electronics Engineers, Senior Architect, Senior Electrical and Mechanical Engineer and non-civil service contract staff (Note 8). For the new CAD headquarters project, the project team was responsible for:

Note 8: The team leader and 21 team members' civil service posts, including 19 Air Traffic Control Officers and 2 Electronics Engineers, were created on a time-limited basis for various periods between 2007 and 2015 at an annual staff cost of about \$29 million. Other team members were existing staff temporarily redeployed within the CAD or appointed on non-civil service contract terms. In addition, a Senior Architect and a Senior Electrical and Mechanical Engineer were temporarily seconded from the ArchSD and Electrical and Mechanical Services Department respectively to support the project team with their professional advice under the supervision of the CAD.

- (a) providing input in its planning, tendering and design, taking into account the specialised accommodation requirements of the new ATC system; and
- (b) liaising with the works agents and monitoring the progress of the construction works.

1.8 *Construction works.* In May 2009 (Note 9), the ArchSD awarded a design-and-build contract for the construction of the new CAD headquarters with a contract sum of \$1,922 million. Contract works commencing in May 2009 were substantially completed in June 2012 (Note 10). Up to August 2014, the project account had not been finalised (Note 11).

1.9 *Commissioning of the new CAD headquarters.* In June 2012, the new CAD headquarters comprising a seven-storey Office and Training Block, a four-storey ATC Centre Block, a basement carpark, a four-storey Facilities Block and a two-storey Antenna Farm Block, was handed over to the CAD. Pictures of the new CAD headquarters and its layout plan are shown in Photographs 1 and 2, and Figure 1 respectively. With the exception of the Air Traffic Management Division (Note 12), all other functional divisions were relocated to the new CAD headquarters in phases in December 2012. In May 2013, the new CAD headquarters was officially opened.

- **Note 9:** Tenders for the design-and-build contract of the new headquarters were invited in February 2008. However, as none of the bids met the tender requirements, the contract was re-tendered in September 2008.
- **Note 10:** The original contract completion date was March 2012 which was extended to June 2012 due to inclement weather during the construction period and its subsequent effects.
- Note 11: The contract payment made up to March 2014 was \$1,872 million which had included the net additional cost of \$3.5 million arising from 38 variation orders. Of the 38 variation orders issued, 18 involved additional works (costing \$29.6 million), 16 involved omitted works (saving of \$26.1 million) and four had no cost implications.
- Note 12: Due to the delay in the new ATC system project, the new ATC centre had not been commissioned. Up to August 2014, three of the four sections of the Air Traffic Management Division were still operating in the old ATC centre on the air-side of the HKIA. The new ATC system project is covered in Chapter 4 of the Director of Audit's Report No. 63.

Photograph 1

Office and Training Block and ATC Centre Block of the new CAD headquarters



Source: ArchSD records

Photograph 2

Facilities Block of the new CAD headquarters



Source: ArchSD records

Figure 1

Layout plan of the new CAD headquarters



- Legend: A: Facilities Block (Low Block)
 - B: Facilities Block (High Block)
 - C: Office and Training Block
 - D: ATC Centre Block
 - E: Decked Connection
 - F: Antenna Farm Block

Source: ArchSD records

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Audit review

1.10 The Audit Commission (Audit) has recently conducted a review of the provision of office accommodation and facilities in the new CAD headquarters with a view to identifying room for improvement. The review has focused on the following areas:

- (a) provision of reserve space for future expansion (PART 2);
- (b) control over deviations from approved schedule of accommodation (PART 3);
- (c) provision of furniture and equipment (PART 4);
- (d) provision and utilisation of car parking spaces (PART 5); and
- (e) way forward (PART 6).

Audit has found room for improvement in the above areas and has made a number of recommendations to address the issues.

Acknowledgement

1.11 Audit would like to acknowledge with gratitude the full cooperation of the staff of the CAD and ArchSD during the course of the audit review.

PART 2: PROVISION OF RESERVE SPACE FOR FUTURE EXPANSION

2.1 This PART examines the following issues relating to the provision of reserve space for future expansion in the new CAD headquarters:

- (a) authority for providing reserve space for expansion (paras. 2.2 to 2.14);
- (b) areas for improvement (paras. 2.15 to 2.18);
- (c) optimising the use of area reserved for future expansion (paras. 2.19 to 2.22); and
- (d) areas for improvement (paras. 2.23 and 2.24).

Authority for providing reserve space for expansion

Procedures for approving schedule of accommodation

2.2 *Accommodation Regulations.* According to the Accommodation Regulations, schedules of accommodation must be approved by the PVC (see para. 1.5) for departmental specialist accommodation before funds are sought for any proposed additional accommodation. The laid-down procedures for processing schedule of accommodation through the PVC are shown in Chart 1.

Chart 1

Processing of schedule of accommodation

User department prepares a draft schedule of accommodation setting out its proposed space and facilities requirements together with justifications for submission to the Chairman, PVC.

The Chairman, PVC arranges a preliminary study of the submission in consultation with the department and/or its design agency (ArchSD) as necessary, and circulates draft to the members (representatives from the FSTB and GPA) with any comments he considers relevant.

- The GPA will examine the schedule with regard to accommodation standards (including space utilisation) and site utilisation in consultation with the ArchSD.
- The FSTB will examine the schedule with regard to its capital and recurrent funding implications.

Comments will be sent to the Chairman, PVC by memorandum with copies to other members, the design agency and the user department.

The schedule may be approved by circulation. Otherwise, the Chairman, PVC will call a meeting of the Committee, to be attended by the members, representatives of the user department and the design agency.

After the PVC's approval of the schedule, the design agency prepares preliminary drawings and forwards these to the user department for consideration.

Where, for any reason after the design of the building, the area of any individual items varies by more than 10% from the area agreed by the PVC or the total net usable floor area varies from the approved total by more than 5%, a resubmission to the PVC needs to be made.

Source: Accommodation Regulations

- 2.3 *GPA Manual.* According to the GPA Manual:
 - (a) the objectives of the GPA's vetting of schedules of accommodation are to ensure:
 - (i) compliance with the established space standards by user departments; and
 - (ii) that provision of government accommodation is fair and adequate to meet user departments' operational requirements; and
 - (b) in vetting schedules of accommodation, the GPA will take into consideration factors including:
 - (i) current/proposed staffing/space provision, policy/funding support for proposed new posts/facilities/services, mode of operation, special/operational requirements, current/expected utilisation of proposed facilities/services; and
 - (ii) professional rules/guidelines/code of practice governing space provision of departmental specialist buildings.

Reserve area for future expansion in the new CAD headquarters

2.4 In April 2007, the CAD submitted a draft schedule of accommodation for its new headquarters proposing space requirements totalling $31,774 \text{ m}^2$ in terms of NOFA, comprising 26,318 m² for meeting the operational needs at the time of commissioning its new headquarters and 5,456 m² reserve area for future expansion.

2.5 When the vetting of the draft schedule of accommodation was in progress, the CAD made a further request to the GPA for an additional reserve area of $1,500 \text{ m}^2$ for expansion to cater for air traffic growth beyond 2025 (Note 13). On

Note 13: As far as could be ascertained, there was no written documentation for the *CAD's* request.

21 September 2007, the Transport and Housing Bureau (THB) wrote to the PVC offering its support to the CAD's request as follows:

"I (the THB) understand CAD and GPA will shortly finalise the proposed schedule of accommodation of the above project, and would like to offer our support to CAD's proposal to reserve sufficient space for future expansion to meet the demand of the aviation industry.

3..... When we briefed the Legislative Council Panel on Economic Services on the project in February 2007, Members expressed general support to the project and urged that sufficient space be provided in the new CAD building to cater for future expansion commensurate with the forecast air traffic growth.....

4..... Whilst CAD and GPA are finalising the details, I would appeal to the PVC to give the proposed schedule of accommodation favourable consideration, taking into account the strong demand of the aviation industry and the general support from LegCo.

5. Furthermore, I understand CAD is also exploring with GPA a possible further 6% (approximately $1,500 \text{ m}^2$) reserve in expansion space to cater for air traffic growth beyond 2025. When considering this proposal, I should be grateful if the PVC will take into account the site's constraints and the expected continuing growth of the industry. Whilst the provision of this further reserve space at day one may not be justifiable, it should be possible, without significant increase in construction costs, to make provisions in the building's foundation and design to provide flexibility for this in future. In doing so, we should be able to maximise the use of the allocated land and achieve economy of scale, subject to maintaining the originally planned CFA of $65,000 \text{ m}^2$."

2.6 On 3 October 2007, the GPA completed its vetting of the draft schedule of accommodation and informed the CAD and the PVC by a memorandum that:

(a) the supported NOFA requirement was 22,775 m² (see Table 1 for a summary); and

(b) the GPA noted that Members of the LegCo Panel on Economic Development (Note 14) had urged the provision of sufficient space to cater for future expansion and that the THB supported the CAD's proposal in this regard. The GPA therefore had no objection to include in the schedule of accommodation the expansion requirements based on the CAD's operational plan for this project.

On the same day, the CAD provided the ArchSD with the Employer's Requirements for inclusion in the tender documents (see para. 2.15(a)).

Table 1

	Area requirer			
Existing area used by the CAD	For meeting operational needs upon commissioning of the new CAD	For future		Percentage
in 2007-08	headquarters	expansion	Total	of increase in area
(a)	(b)	(c)	(d) = (b) + (c)	(e) = $\frac{(d) - (a)}{(a)} \times 100\%$
9,192 m ²	19,535 m ²	3,240 m ²	22,775 m ²	148%

NOFA supported by the GPA

Source: CAD records

Note 14: In October 2007, the Panel on Economic Services was renamed as the Panel on Economic Development.

2.7 On 22 October 2007, the PVC informed the CAD (with copies of the memorandum sent to the GPA, FSTB, THB and ArchSD) that the schedule of accommodation for the new CAD headquarters was approved subject to comments in the GPA's memorandum of 3 October 2007 (see para. 2.6) among others (Note 15).

Funding approval

2.8 After briefing the Panel on Economic Development in November 2007 about the public works project to design and construct a new CAD headquarters, the Administration invited the Public Works Subcommittee in December 2007 to recommend to the Finance Committee the upgrading of the project to Category A (Note 16). In both the Administration's papers for the Panel and the Public Works Subcommittee, Members were informed that the proposed funding of \$1,997 million was for the construction of 65,000 m² CFA, which included 22,775 m² NOFA (i.e. the area supported by the GPA and approved by the PVC).

2.9 Upon the request of Members of the Public Works Subcommittee, the Administration provided the Finance Committee in January 2008 with supplementary information on the new CAD headquarters including a comparison between the NOFA of the then existing accommodation for the CAD's functional divisions and that of the new CAD headquarters, and justifications for the additional areas required, including but not limited to information on the area required to cope with future expansion arising from the growth in air traffic (see Table 2). As shown in Table 2, the Finance Committee was informed that the area provided for future expansion was about $3,240 \text{ m}^2$. The provision of another $1,500 \text{ m}^2$ expansion area (see para. 2.5) had not been specifically mentioned.

- Note 15: On 15 October 2007, the FSTB submitted its comments to the PVC on the schedule of accommodation with regard to the recurrent funding implications. On 18 October 2007, the GPA also submitted its comments to the PVC on the utilisation of space that would be vacated by the CAD after its relocation to the new headquarters.
- **Note 16:** Directors of Bureaux may schedule to seek the endorsement of the Public Works Subcommittee and the approval of the Finance Committee to upgrade a project to Category A when all necessary pre-construction preparation has been completed or substantially completed.

Table 2

Comparison between NOFA of existing accommodation for the CAD's functional divisions and NOFA of its new headquarters

			NOFA of existing accommodation	NOFA of new CAD headquarters		lquarters
		Offices/facilities	Existing area (m²)	Area required (m²)	Area provided for future expansion (m ²)	Total area (m²)
(A)	Offic	ces (for staff)	3,068.1	3,428.1	-	3,428.1
(B)	ATC (i) (ii)	facilities ATC Centre Supporting equipment, systems and facilities of the ATC Centre	545.0 2,162.0	900.0 7,207.5	540.0 1,200.0	
	(iii)	Aeronautical Information Centre	400.0	315.0	_	
	(iv)	Aircraft Search and Rescue Coordination Centre	200.0	300.0	100.0	
	(v)	Aeronautical Network Centre Sub-total	115.0 3,422.0	200.0 8,922.5	160.0 2,000.0	10,922.5
(C)	Othe (i)	r facilities Aircraft accident investigation	_	700.5	_	
	(ii)	facilities Training and examination facilities	665.0	1,827.2	464.0	
	(iii)	Operational evaluation, research and development facilities	100.0	350.0	400.0	
	(iv)	Multi-purpose auditorium	-	675.0	-	
	(v)	Conference facilities	335.0	564.0	-	
	(vi)	Library cum resource centre	100.0	338.0	-	
	(vii)	ATC tour presentation room and education path	_	368.0	_	
	(viii)) Ancillary facilities	1,501.5	2,361.8	375.3	
		Sub-total	2,701.5	7,184.5	1,239.3	8,423.8
		Total	9,191.6	19,535.1	3,239.3	22,774.4

Source: CAD records

GPA's queries about extra future expansion area built

2.10 In October 2013 (after the official opening of the CAD new headquarters), the CAD sought the PVC's covering approval for the conversion of a part of the education path's circulation area into a multi-function room (see para. 3.7). In examining the CAD's request, the GPA noted that $1,500 \text{ m}^2$ reserve area for future expansion had been built in the new CAD headquarters in addition to the 3,240 m² stated in the approved schedule of accommodation (see Table 1 in para. 2.6). The GPA raised queries about the authority of building the extra 1,500 m² for future expansion as follows:

- (a) the total NOFA approved by the PVC for the new CAD headquarters on
 22 October 2007 was 22,775 m² which had taken into consideration the
 THB's policy support for inclusion of future expansion capabilities in the
 design and foundation of the new headquarters buildings; and
- (b) the approved funding by the Finance Committee was for the construction of 22,775 m^2 which had included 3,240 m^2 for designated expansion purposes supported by the PVC. The 1,500 m^2 area built for future expansion was extra accommodation not approved by the PVC.
- 2.11 In response to the GPA's queries, the CAD said that:
 - (a) drawing on the experience of the relocation from Kai Tak Airport to the HKIA when sufficient space was not reserved for the rapid expansion of the CAD's operations, the CAD included proposed expansion areas in the draft schedule of accommodation. In fact, in a number of LegCo Panel and Committee meetings, Members had urged the Government to ensure sufficient space be reserved for the CAD's long-term development in the new CAD headquarters project; and
 - (b) in September 2007, the THB expressed its support for provision to be made in the building's foundation and design to provide flexibility for the construction of an additional space of $1,500 \text{ m}^2$ (i.e. in addition to the proposed space requirements in the CAD's draft schedule of accommodation then being vetted by the GPA) when needed in future. The THB's support was acknowledged by the GPA which did not raise any objection. It was therefore the understanding of both the CAD and ArchSD that the new building should have the provision of an additional area of $1,500 \text{ m}^2$ that could be converted for future expansion.

Audit enquiry with the ArchSD

2.12 Between May and October 2014, Audit sought clarification from the ArchSD (with an Assistant Director chairing the PVC and as works agent of the CAD) on the authority for building the extra $1,500 \text{ m}^2$ area for future expansion. In response, the ArchSD said that:

- (a) the 1,500 m^2 future expansion area was supported as evident in the following documents:
 - (i) the THB's memorandum of 21 September 2007 to the PVC registering support for the inclusion of further 1,500 m² reserve in expansion space (see para. 2.5);
 - (ii) the GPA's memorandum of 3 October 2007 to the CAD noting that the THB supported the proposal and that Members of the LegCo Panel on Economic Development urged that sufficient space be provided to cater for future expansion, based on which the GPA therefore expressed no objection to include in the schedule of accommodation the expansion requirements based on the CAD's operational plan for this project (see para. 2.6); and
 - (iii) the PVC's memorandum of 22 October 2007 to the CAD for the approval of the schedule of accommodation subject to the GPA's memorandum of 3 October 2007 (see para. 2.7 and (ii) above);
- (b) it was the ArchSD's understanding that the 1,500 m² undesignated future expansion area was not explicitly stated in the approved schedule of accommodation because it could not correlate to any approved future manpower provision at the time;
- (c) the feasibility of providing the additional $1,500 \text{ m}^2$ future expansion area on day one or by making provision in the building foundation and structure and the design to provide flexibility were explored from the technical and operational points of view, as follows:

- according to the CAD's requirements, it would be necessary to (i) maintain the connectivity and serviceability of the future expansion area in relation to the individual divisions of the CAD. The CAD specified in the Employer's Requirements that the future expansion area should be allocated to individual divisions of the CAD as parts or sub-division parts of the established office in the form of common pocket spaces that could be easily converted into offices or operational areas. Making provision in the building foundation and not building the additional $1,500 \text{ m}^2$ on day one would impede the future addition of adjacent space required for the expansion of individual functional divisions of the CAD. That is the reason why the future expansion area was provided as unenclosed (open-plan) pocket spaces at various locations in the building and included in the tender documents as part of the CFA of $65,000 \text{ m}^2$;
- (ii) other considerations included the site constraints and unavailability of usable land in the adjacent area that would limit the potential for future extension to the building; the airport height restrictions which limited the height of the building as well as the temporary construction plants and hoisting equipment and would constrain the buildability, especially for additional structure and major alteration works;
- (iii) the specialist nature of the ATC services required continuous and uninterrupted operation. This limited the feasibility of constructing additional structure as the construction works would cause excessive vibration and noise nuisance that would affect the ATC facilities and disrupt the operation; and
- (iv) construction-wise, if only provision was made in the foundation system and the structure, the foundation system design would need to allow extra loading for the uncertain locations of the additional areas, which would result in ineffective design of the foundation system and the structure, hence higher cost. Additional structure and major alteration for the additional areas required after completion of the construction works would also result in double handling and abortive works for modification of the already constructed structure, which would lead to higher cost and disruption to the continuous and uninterrupted operation of the CAD;

- (d) based on the above technical considerations and the understanding that support from the GPA and PVC had been given, the 1,500 m² future expansion area was included in the tender documents as unenclosed pocket spaces at various locations in the building that could be easily converted and partitioned into offices or operational areas for future use according to the Employer's Requirements while maintaining the CFA at about 65,000 m²; and
- (e) the cost of building the 1,500 m² expansion area was included in the project estimates of the funding application submitted to the Public Works Subcommittee/Finance Committee but could not be separately identified.

Audit enquiry with the CAD

2.13 Audit also sought clarification from the CAD regarding the issue of $1,500 \text{ m}^2$ expansion area in July 2014. The CAD informed Audit that:

- (a) having considered the views of the LegCo Members expressed during the Panel on Economic Development meeting held in February 2007 and based on the GPA's support and the PVC's approval as well as technical advice from the ArchSD, the CAD had proposed to include the 1,500 m² future expansion area in the contract (see para. 2.15(a)) and the arrangement was agreed by the ArchSD; and
- (b) the provision of 1,500 m² further expansion area had not been specifically mentioned in the papers submitted to the Finance Committee because it was an undesignated expansion area not correlated to any approved future manpower provision for carrying out intended activities at the time (see Note 7 to para. 1.6).

Audit enquiry with the THB

2.14 Regarding the issue of $1,500 \text{ m}^2$ reserve space, in September 2014, the THB informed Audit that:

(a) its memorandum of 21 September 2007 (see para. 2.5) should not be construed as the basis for the construction of additional area beyond the PVC's approval; and

(b) the THB only requested consideration of flexibility in the foundation and design to allow for future expansion when warranted. The PVC is the authority in approving the schedule of accommodation for the new CAD headquarters, and its approval should be strictly observed by the CAD and ArchSD. The construction of the 1,500 m² on day one was in contradiction to the THB's policy support vide its memorandum of 21 September 2007.

Areas for improvement

Approval of schedule of accommodation

2.15 In late 2013 (over one year after the new CAD headquarters was built), it transpired that there were fundamental differences in the understanding between the ArchSD/CAD and the GPA on whether the extra 1,500 m² area built for future expansion had been approved by the PVC. The situation was unsatisfactory as according to the Accommodation Regulations, any proposed new accommodation should have been approved by the PVC before funding was sought in January 2008. In this connection, Audit noted that:

- the THB acknowledged in its memorandum of 21 September 2007 that the (a) provision of further reserve space of $1,500 \text{ m}^2$ for expansion beyond 2025 on day one might not be justifiable. It only requested the PVC to consider the possibility of making provisions in the building's foundation and design without significant increase in construction costs to provide flexibility for this in future. Although the CAD had specified in the Employer's Requirements of the tender documents on 3 October 2007 that provision should be made in the building foundation and design to allow a further expansion in NOFA of up to 1,500 m², it also specified that the expansion area of 1,500 m² should either form a detachable part of established offices or part of common areas (see para. 2.19). The requirement was subsequently included in the contract by the ArchSD (see para. 2.12(d)) which in effect required the area to be built as part of the construction project on day one;
- (b) there was no record to show that PVC members (the GPA and FSTB) had been informed of the change in requirement from making provision in the foundation and design as requested by the THB to building the 1,500 m² expansion area as day-one facilities. In fact, the GPA stated in its queries

to the CAD of October 2013 that it had no knowledge of the 1,500 m² expansion area built. In Audit's view, as the additional 1,500 m² constituted close to 50% of the space approved for future expansion, there is a need to draw PVC members' attention to significant change in user requirements so that they can make an informed decision on whether to support such change in the schedule of accommodation; and

(c) the schedule of accommodation of the new CAD headquarters was approved by circulation of papers. The different understanding between the ArchSD/CAD and the GPA on whether the 1,500 m² area for expansion had been approved by the PVC highlighted the risk that the circulated papers could be subject to different interpretation. In Audit's view, the PVC needs to convene meetings for members to exchange views and seek clarifications on matters that could be subject to misunderstanding.

Information to LegCo for funding application

2.16 In October 2007 when preparing an Administration paper for briefing the Panel on Economic Development on the new CAD headquarters project, the THB consulted the CAD on whether the paper should mention that provision would be made in the building's foundation and design to allow a further expansion in NOFA up to 1,500 m² if needed in future. On 8 October 2007, the CAD advised the THB that it would suffice to inform Members that adequate provision for future expansion had been made as the cost for such provision would not be significant. In the event, the Panel on Economic Development was informed that the proposed funding of \$1,997 million was for the construction of 22,775 m² NOFA, and additional space had been earmarked to cater for the replacement of the new ATC system in the future and further expansion requirements arising from the growth in air traffic. There was no specific mentioning of the 1,500 m² expansion area which would also be built as specified in the Employer's Requirements in the tender documents (see para. 2.15(a)).

2.17 Similarly, the Public Works Subcommittee and the Finance Committee were also not informed specifically of the provision of $1,500 \text{ m}^2$ expansion area in the funding application (see paras. 2.8 and 2.9). It is unsatisfactory that such information was not included when preparing the Administration's papers on all three occasions. This was particularly so in respect of the Information Note for the
Finance Committee as Members had specifically requested the Administration to provide justifications for the additional areas required, including but not limited to information on the area required to cope with future expansion. The Finance Committee was informed that the area provided for expansion was $3,240 \text{ m}^2$ (see Table 2 in para. 2.9) when in fact a total of $4,740 \text{ m}^2$ (3,240 plus 1,500) would be built for future expansion.

2.18 According to Financial Circular No. 2/2006 (Note 17), the CAD and ArchSD were responsible for drafting the funding papers of the new CAD headquarters project for the Public Works Subcommittee/Finance Committee and the THB had responsibility for finalising these draft papers. The CAD and ArchSD need to draw lessons from this case and provide complete and accurate information to facilitate the THB in finalising the submissions to the LegCo Committees/Panels.

Optimising the use of area reserved for future expansion

Layout of the reserve area for expansion

2.19 Unlike the reserve area of $3,240 \text{ m}^2$ included in the approved schedule of accommodation, the additional $1,500 \text{ m}^2$ was not designated for specific expansion purposes until 2025. In October 2007, the GPA reminded the CAD that any reserve area not in active use should be made available to other users with a view to maximising the utilisation of resources. It follows that the reserve area should as far as possible be centrally located to facilitate their use by other users in the run up to 2025. However, the Employer's Requirements in the tender documents specified that:

- (a) of the 1,500 m² additional reserve area, 650 m² should form part of the established offices in the form of common spaces that could be easily converted into offices. These spaces should preferably be positioned in between divisions and sections; and
- (b) the remaining 850 m^2 should be connected to circulation spaces with at least 20% of the area distributed to each of the floors with offices as pocket spaces for informal gathering or meeting.
- **Note 17:** Financial Circular No. 2/2006 has been superseded and the requirements therein are now contained in Financial Circular No. 4/2010.

2.20 In the event, the 1,500 m² additional reserve area was built as 22 pockets of space scattered over eight different floors of the Office and Training Block, and the Facilities Block. A summary of the pocket spaces and their positions are shown in Table 3 and Appendix A respectively. Photograph 3 is a picture of the largest pocket space (278 m²) on the fourth floor of the Office and Training Block.

Table 3

Area no.	Location	Area			
		(m ²)			
Office and Training Block					
1		72.7			
2	2/E	53.0			
3	Z/Γ	151.6			
4		40.0			
5		72.5			
6	3/F	70.0			
7		42.0			
8		278.0			
9	4/F	56.0			
10		96.0			
11		46.5			
12	5/E	62.0			
13	5/1	39.0			
14		42.0			
15		41.5			
16		95.7			
17	6/F	22.5			
18		20.0			
19		40.0			
	Sub-total	1,341.0			
Facilities Block					
20	1/F	66.0			
21	2/F	57.0			
22	3/F	36.0			
	Sub-total	159.0			
	Total	1,500.0			

Summary of reserve areas for future expansion at CAD headquarters

Source: CAD records

Photograph 3

Area reserved for future expansion on the fourth floor of the Office and Training Block



Source: Photograph taken by Audit on 11 July 2014

Recent developments

2.21 According to Accommodation Circular No. 3/2008, the CAD as owner of the new headquarters (a departmental specialist building) has primary responsibility and is accountable for its optimal utilisation. In May and June 2014, the CAD proposed to the GPA some possible options for using the 1,500 m² additional reserve area, i.e. about 1,000 m² for 131 additional staff (Note 18), 300 m² for storing inactive records pending disposal and 200 m² for surplus furniture and equipment identified after relocation to the new CAD headquarters. In July 2014, the GPA provided the following comments on the CAD's proposal:

Note 18: The 131 additional staff comprised 41 CAD posts created since 2008, 15 staff appointed on non-civil service contract terms, 36 additional maintenance staff of the Electrical and Mechanical Services Department and a technical services contractor, 21 agency workers and 18 proposed staff for the third runway project.

- (a) the GPA had reminded the CAD in October 2012 not to replace furniture items unless they were of the former style or completely worn out. The furniture listed in the CAD's proposal should be accommodated within the approved area and should not constitute a reason for additional spaces; and
- (b) store rooms had been included in the approved schedule of accommodation. The CAD should consider off-site storage of the records pending disposal.

2.22 In August 2014, the CAD informed the GPA that the proposed use of the area for storing surplus furniture and inactive records was temporary in nature. The CAD also requested more office space as the number of additional staff had increased from 131 to 133. The GPA sought further clarifications from the CAD on the additional posts and received the CAD's response on 8 and 17 October 2014 confirming that the number of staff requiring additional accommodation should be 119. On 24 October 2014, the PVC approved the CAD's request to use 926 m² of the 1,500 m² reserve area for accommodating 119 additional staff. Thereafter, the GPA has reminded the CAD to carry out an overall review of the space utilisation of the new CAD headquarters with a view to identifying any other vacant space that should be put into optimal use in addition to the remaining reserve area of 574 m² (1,500 minus 926).

Areas for improvement

Need to consider interim use of reserve area built for future expansion

2.23 The PVC approved in 2007 an area of 3,240 m² for the CAD's future expansion. This expansion space together with the area of 19,535 m² planned for meeting operational needs upon commissioning of the new CAD headquarters, represented a 148% increase in area over the area used by the CAD in 2007-08. Planned for meeting air traffic growth beyond 2025, the 1,500 m² reserve area was not expected to be required by the CAD for some years after the commissioning of its new headquarters in 2013. This reserve area was built as 22 pockets of space scattered over eight different floors of the CAD headquarters on the basis that they would allow for future expansion of different divisions while keeping the necessary replanning and renovation works to a minimum. However,

such arrangement is not conducive to gainful interim use by other users. The incident highlights the need to give due consideration to interim use of reserve areas built for expansion in the distant future to ensure optimal utilisation of accommodation.

Need for a review of space utilisation in the CAD premises

2.24 In 2014, the CAD proposed to the GPA various options for using the $1,500 \text{ m}^2$ additional reserve area (see paras. 2.21 and 2.22). However, the CAD had not provided a full account of how the reserve space of $3,240 \text{ m}^2$ included in the approved schedule of accommodation for expansion had been utilised. Audit's field visits in July 2014 revealed that some of the 3,240 m² reserve space had not been Examples included the expansion areas of 200 m^2 for "trial fully utilised. equipment room" and 305 m^2 for "operational evaluation and human machine interface development" on the ground and second floors of the Office and Training Block (see Photographs 4 and 5). Audit also noted that the relocation of the entire Air Traffic Management Division to the new ATC centre might take place in 2015 (see para. 1.9). After the relocation, some 1,960 m² NOFA would be vacated in the old ATC centre on the air-side of the HKIA (Note 19). In Audit's view, there is a need for an overall review of the space utilisation of the CAD premises taking into account the timing and operational requirements in its latest expansion plan with a view to identifying any surplus space that should be made available to other users.

Note 19: According to the CAD, in response to a request from the GPA in 2007, the CAD had approached potential users of the space to be vacated but received no request at that time. In 2013, the CAD received a request from the Hong Kong Observatory for some office spaces.

Photograph 4

Trial equipment room



Source: Photograph taken by Audit on 11 July 2014

Photograph 5

Area designated for operational evaluation and human machine interface development



Source: Photograph taken by Audit on 23 July 2014

Audit recommendations

2.25 Audit has *recommended* that the Director of Architectural Services should:

- (a) remind client departments to timely inform the PVC of significant changes in user's accommodation requirements so that the PVC can make an informed decision on whether to support such changes in the schedule of accommodation; and
- (b) take measures to ensure that:
 - (i) **PVC** meetings should be convened for members to exchange views and to clarify understanding on important matters which could be subject to different interpretation;
 - (ii) full information on expansion area of building projects is included in the Public Works Subcommittee/Finance Committee submissions and in the Administration papers for prior consultation with the relevant LegCo Panels; and
 - (iii) for building projects with reserve areas to be built on day one for expansion in the distant future, allowance is made in the building design, after consultation with the user departments, to facilitate interim use of the areas by third parties.

2.26 Audit has *recommended* that the Director-General of Civil Aviation should:

- (a) take measures to ensure that:
 - (i) the tender specifications for new building projects adhere strictly to the approval given by the PVC;
 - (ii) in case of subsequent significant changes in user requirements, a resubmission is made to the PVC; and

- (iii) for building projects with reserve areas to be built on day one for expansion in the distant future, allowance is made in the building design to facilitate interim use of the areas by third parties;
- (b) take steps to ensure that full information on expansion area of building projects is included in the Public Works Subcommittee/Finance Committee submissions and in the Administration papers for prior consultation with the relevant LegCo Panels; and
- (c) in consultation with the Government Property Administrator, conduct an overall review of the space utilisation of the CAD premises taking into account the timing and operational requirements in the CAD's latest expansion plan with a view to identifying any surplus space that should be made available to other users.

2.27 Audit has *recommended* that the Secretary for Transport and Housing should regularly remind departments under his purview to take steps to ensure that full information on expansion area of building projects is provided in the Public Works Subcommittee/Finance Committee submissions and in the Administration papers for prior consultation with the relevant LegCo Panels.

2.28 Audit has also *recommended* that the Secretary for Financial Services and the Treasury and the Government Property Administrator should remind user departments and works agents of building projects with reserve areas to be built on day one for expansion in the distant future to make allowance in the building design to facilitate interim use of the areas by third parties.

Response from the Administration

2.29 The Director of Architectural Services agrees with the audit recommendations in paragraph 2.25. He has said that the Chairman, PVC has reminded Heads of Department the importance of timely submission of schedules of accommodation to the PVC for approval. The ArchSD will also remind officers of the lessons learnt and the audit recommendations.

2.30 The Director-General of Civil Aviation agrees with the audit recommendations in paragraph 2.26.

2.31 The Secretary for Transport and Housing accepts the audit recommendation in paragraph 2.27.

2.32 The Secretary for Financial Services and the Treasury accepts the audit recommendation in paragraph 2.28. He has said that:

- (a) under the Government's accommodation policy, the provision of office accommodation should achieve maximum efficiency and value for money, and take into account the resources available and the operational, spatial, locational and timing requirements of the departments concerned. As an established practice, requests for areas for future expansion are considered on a case-by-case basis by the GPA for general office accommodation and the PVC for departmental specialist accommodation. The GPA and PVC will support a request only if it is fully justified on policy or practical grounds; and
- (b) to ensure optimal use of limited land and accommodation resources, departments are required, and regularly reminded, to take expeditious action to put to use any surplus accommodation, including accommodation which is surplus in the short term. The FSTB will accordingly ask the GPA and PVC to include a note in the approval memorandum to remind the user departments and the works agents to make allowance in the building design to facilitate interim use of any areas for future expansion by third parties. The design flexibility to facilitate interim use should be practicable and driven by cost-effectiveness considerations, with due regard to the relocation costs for both the user department(s) and the interim user(s), and the interim period envisaged.

2.33 The Government Property Administrator accepts the audit recommendation in paragraph 2.28. He has said that requests for areas for future expansion are considered on a case-by-case basis subject to justifications. For general office accommodation, a note will be included in the approval memorandum to remind the user departments and the works agents to make allowance in the building design to facilitate interim use of the areas concerned by third parties.

PART 3: CONTROL OVER DEVIATIONS FROM APPROVED SCHEDULE OF ACCOMMODATION

3.1 This PART examines the provision of the following three facilities in the new CAD headquarters which were not approved items in the schedule of accommodation and suggests areas for improvement in the control over such deviations:

- (a) toilet/shower facilities in the Director-General of Civil Aviation's office (paras. 3.2 to 3.5);
- (b) recreational facilities in the multi-function room (paras. 3.6 to 3.8);
- (c) rest rooms for accident investigators (paras. 3.9 to 3.12); and
- (d) areas for improvement (paras. 3.13 to 3.17).

Toilet/shower facilities in the Director-General of Civil Aviation's office

3.2 According to the Government's laid-down guidelines, the provision of shower facility for staff requires the approval of the GPA/PVC whereas toilet facility to be designed by the project architect is exempted. In the draft schedule of accommodation (see Chart 1 in para. 2.2) of April 2007, the CAD proposed the provision of toilet/shower facilities in the Director-General of Civil Aviation's office (Note 20). In June 2007, pending the result of the GPA's vetting of the draft

Note 20: In justifying its proposal, the CAD said that as the Chief Inspector of Accidents who would take charge of the Accident Investigation Division in the event of aircraft accident, the Director-General of Civil Aviation would be in the office at small hours or overnight. The shower facility was also necessary when he was required to attend official functions or meet the media from time to time and sometimes within short notice.

schedule of accommodation, the CAD submitted room data sheets (Note 21) to the ArchSD for preparing tender documents in order to meet the programme of the new CAD headquarters project. The room data sheet for the Director-General's office which was prepared based on the draft schedule of accommodation included the proposed toilet/shower facilities. However, in August and September 2007, the GPA informed the CAD that it did not support the proposed shower facility having regard to the provision for other Heads of Department with similar roles and ranks. As a result, the schedule of accommodation approved by the PVC in October 2007 did not include a shower facility in the Director-General's office.

3.3 Upon receipt of the approved schedule of accommodation, the CAD forwarded the same to the ArchSD together with the unrevised room data sheet for the Director-General's office (i.e. still incorporating the toilet/shower facilities) which were included as part of the Employer's Requirements in the tender documents. Upon award of the design-and-build contract for the new CAD headquarters in May 2009, the Employer's Requirements became part of the contract requirements. From 2009 to 2012, the design drawings for the Director-General's office with toilet/shower facilities submitted by the contractor were approved by the ArchSD after consulting the CAD. In the event, the Director-General's office was built with the toilet/shower facilities.

3.4 In August 2013, there were media reports on the provision of the toilet/shower facilities in the Director-General's office. Noting that the toilet/shower facilities were not included in the approved schedule of accommodation, the FSTB requested the CAD to clarify the situation. In September and December 2013, the CAD informed the FSTB and THB that:

(a) while it was understood that the shower facility was not supported by the PVC, it was retained in the room data sheet in order to make a reserve in the contract on the assumption that the CAD would further pursue the request with the GPA;

Note 21: The room data sheet is a standard template designed by the ArchSD for the user department to specify its requirements such as finishes, fixtures and furniture, lighting provision and other special needs. The room data sheet facilitates the ArchSD in the collection, checking, alignment and control of room requirements.

- (b) while the CAD project team had not further pursued the request with the GPA, they assumed that queries about the discrepancies between the approved schedule of accommodation and the room data sheet would be raised during the tender preparation. Notwithstanding the discrepancies, tender preparation continued on the understanding that request for the GPA's support of the toilet/shower facilities would be pursued further;
- (c) the detail design and construction stage proceeded according to the information included in the contract as it was believed that the works carried forward in the previous stages were in order; and
- (d) the failure to amend the room data sheet to reflect the provision allowed in the approved schedule of accommodation had led to the provision of the toilet/shower facilities. After consulting the ArchSD and GPA, it was suggested to convert the toilet/shower facilities into a store room (Note 22).

Audit enquiry with the ArchSD

3.5 In July 2014, Audit sought the ArchSD's clarification on the reasons for including in the tender documents and contract the toilet/shower facilities which were not approved by the PVC. In response, the ArchSD said that:

- (a) the provision was made on the understanding that the CAD would further pursue the GPA's acceptance of the shower facility and would align the room data sheet and the approved schedule of accommodation afterwards. Including such requirement in the tender documents would avoid subsequent claims from the contractor for variation works should the shower facility be accepted by the GPA; and
- (b) during the contract stage, detail design and construction also proceeded on the understanding that the CAD would continue to pursue the provision with the GPA for approval. It would be judicious and technically sound to reserve the space and the provision in the design, especially for this
- **Note 22:** In December 2013, works for converting the toilet/shower facilities into a store room were completed at a cost of \$4,200.

project with a tight programme, for purposes such as locating the toilet/shower facilities away from the water sensitive accommodation and making provision for water carrying services. Otherwise, rework of complicated building services (hence abortive works) would be resulted if the GPA's approval was obtained after commencement of works based on a design without such facilities. From late 2009 to 2011, the CAD was consulted on several occasions about the layout plans of the Director-General's office with the toilet/shower facilities prepared by the contractor.

Recreational facilities in the multi-function room

3.6 In accordance with the space standards laid down in the Accommodation Regulations, a recreation room totalling 77.6 m^2 was included in the approved schedule of accommodation. For the purpose of holding meetings, 11 conference rooms and a multi-purpose auditorium totalling 1,164 m^2 were also provided. However, in addition to the aforesaid recreation room and conference facilities, a multi-function room of 70 m^2 (for recreational and meeting purposes) not included in the approved schedule of accommodation was also built. In August 2013, there were media reports questioning the recreational facilities installed in the multi-function room, i.e. mirrors with handrails and timber floor resembling those of a dance room.

3.7 According to CAD records, the multi-function room was built at a space which had originally been a part of the education path (Note 23) as follows:

- (a) in the approved schedule of accommodation of October 2007, two areas totalling 350 m^2 were endorsed for education purposes, i.e. a visitor lounge to receive visitors on arrival and an ATC tour presentation room
- Note 23: The education path in the new CAD headquarters is configured into three different sections, each with a particular theme illustrated by the related exhibits. The first section provides the visitors with a general view of Hong Kong's aviation history and principal functions of the CAD. The second section focuses on aviation safety and the third section provides basic information on air traffic management and accident investigation. The education path involves a total area of 735 m². The numbers of visitors were 5,163 in 2013 and 6,370 in 2014 (up to June).

to brief them before they tour around various facilities along the education path. In the course of discussion of the draft schedule of accommodation, the CAD informed the GPA (which did not raise any objection) that some circulation areas linking up the visitor lounge and facilities along the education path would be determined by the project architect (of the contractor) to satisfy the design requirements, i.e. their capacity must be adequate to handle the tour and group movements;

- (b) in 2010, the project architect in consultation with the ArchSD determined that a control tower simulator viewing gallery (on the third floor of the Office and Training Block) would be provided to enable visitors to view the ATC training in progress inside the new control tower simulator (which would be housed in a double-storey room spanning the second and third floors). The arrangement was based on the design of the then control tower simulator. However, in late 2010 during the detail design of the new control tower simulator, it was noted that due to a different technology adopted for the new simulator, visitors would not be able to view the training sessions in the originally planned viewing gallery; and
- (c) in January 2011, the CAD requested the ArchSD to convert the viewing gallery into a multi-function room. However, there was no record to show how the recreational facilities in the multi-function room and their intended usages were determined, and why the GPA's approval for the conversion was not sought at that time.

3.8 In its reports on the multi-function room submitted to the FSTB and THB in September and December 2013, the CAD said that:

(a) the multi-function room was equipped with a basic multi-media presentation unit to play back recorded videos of the ATC training inside the control tower simulator. When not in use by visitors, the room could be used for meetings and staff recreation to maximise utilisation. To accommodate staff recreational activities which included lunchtime yoga and other de-stress exercises, mirrors and timber floor were adopted;

- (b) since the change was only intended to achieve a more flexible use of available resources, the GPA's approval was not sought at that time. In hindsight, the CAD should have exercised a higher degree of prudence with any variation in the use of the approved area and sought the GPA's approval in advance; and
- (c) to allay the public's concern about the usage of the room, it was suggested to remove the handrails and permanently cover the mirrors.

With the PVC's agreement in November 2013 to convert the multi-function room into a meeting room, the conversion works were completed at a cost of \$1,800 in December 2013.

Rest rooms for accident investigators

3.9 After the media reports of August 2013 on the toilet/shower facilities and the multi-function room, the CAD reviewed other room data sheets and the approved schedule of accommodation. The review revealed a further case of deviation from the approved schedule of accommodation in relation to the provision of rest rooms for accident investigators.

3.10 According to CAD records, the sequence of events leading to the deviation was as follows:

- (a) in the draft schedule of accommodation of April 2007, the CAD proposed the provision of 20 rest rooms (totalling 360 m²) for overseas accident investigators (Note 24). In early June 2007, the GPA requested the CAD to provide cost-and-benefit analysis for its proposal having regard to the fact that the need for accident investigation was not frequent and that there were alternative options like hotels;
- (b) in mid-June 2007, the CAD provided further justifications to the GPA and submitted the room data sheets for the entire new headquarters to the ArchSD for processing. The room data sheet for the accident investigators' rest rooms required the provision of shower and toilet facilities but without specifying the number of rooms;
- **Note 24:** According to the CAD, the investigators might not be able to return to their hotels to take rest during the first two days of an accident when the collection of evidence was time critical.

Control over deviations from approved schedule of accommodation

- (c) after further discussions, the GPA and CAD finally agreed in September 2007 on the provision of a common rest area of 123 m² (accommodating a total of 22 investigators) which was approved by the PVC. In October 2007, the CAD submitted the approved schedule of accommodation and updated room data sheets to the ArchSD for preparing tender documents. In the front cover of the room data sheet for the investigators' rest rooms, the number of room was specified to be one;
- (d) in November 2007, the CAD amended the number of rooms in the front cover of the room data sheet from one to seven and added in the inner page a requirement that this schedule of accommodation item consisted of six rest rooms each with individual toilet and one common room with a toilet. However, the reason for the amendment was not documented; and
- (e) in May 2008, the front cover of the room data sheet was amended from seven rooms to one room by the CAD. However, the inner page was not amended, i.e. the requirement of six rest rooms and one common room each with a toilet was not removed. Upon award of the design-and-build contract for the new CAD headquarters in May 2009, the room data sheet became part of the Employer's Requirements in the contract. In the event, six rest rooms and one common room (totalling 131 m²) were built instead of the common rest area (of 123 m²) approved by the PVC.

Audit enquiry with the ArchSD

3.11 In July 2014, Audit sought the ArchSD's clarification on the discrepancy in building the rest rooms for accident investigators. In response, the ArchSD said that:

(a) during the tender preparation, it was understood that individual rest rooms for the investigators were not supported. However, the room data sheet provided by the CAD specified six rest rooms. Based on the understanding that the CAD would further pursue the GPA's acceptance of the rest rooms and would align the room data sheet and the approved schedule of accommodation afterwards, the requirement for six rest rooms was retained in order to make a reserve in the contract. Including such requirement in the tender documents would avoid subsequent claims from the contractor for variation should the individual rest rooms be accepted by the GPA; and

(b) during the contract stage, detail design and construction also proceeded on the understanding that the CAD would continue to pursue the provision with the GPA for approval. It would be judicious and technically sound to make a reserve in the design, especially for this project with a tight programme. Otherwise, abortive works would be resulted if the GPA's approval was obtained after commencement of works based on a design without such facilities. From late 2009 to 2010, the CAD was also consulted on several occasions about the layout plans of the investigators' rest rooms prepared by the contractor.

Recent developments

3.12 Up to August 2014, the CAD had not informed the GPA or FSTB about the deviation from the approved schedule of accommodation in relation to the provision of rest rooms for accident investigators. According to the CAD, it had been discussing with the ArchSD on ways to rectify the deviation, and would provide a written report to the GPA and FSTB as soon as the corrective action plan was finalised with the ArchSD.

Areas for improvement

3.13 The laid-down procedures for vetting and approving schedules of accommodation for new government buildings are to ensure compliance with the established space standards by user departments, and that provision of accommodation is fair and adequate to meet user departments' operational needs. It is unsatisfactory that three of the facilities in the new CAD headquarters were not built in accordance with the approved schedule of accommodation, not conforming to the Accommodation Regulations.

Need to tighten the control over room data sheet

3.14 In design-and-build contracts, user departments are required to prepare room data sheets to specify their detailed fixture and finishing requirements for individual rooms. For both the provision of toilet/shower facilities in the Director-General of Civil Aviation's office and the rest rooms for accident investigators, the room data sheets prepared by the CAD were at variance with the approved schedule of accommodation. However, the ArchSD incorporated these room data sheets as part of the Employer's Requirements in the contract based on the understanding that the CAD would seek the GPA's acceptance. In response to Audit's enquiry, the ArchSD said that there could be contractual claim and/or abortive works if provision was not made in the contract and the GPA's approval was eventually obtained. However, it should be noted that there was also a risk of contractual claim and/or abortive works if the CAD failed to obtain the necessary approval for the contracted works and additional works had to be done to revert to the approved condition. In Audit's view, the ArchSD needs to draw lessons from these two cases and tighten the control over room data sheets to ensure that any discrepancies with the approved schedule of accommodation are reconciled before tender invitation.

3.15 In this connection, the ArchSD has informed Audit that it has developed and implemented an electronic-room data sheet information system since May 2014 to facilitate the collection and alignment of room requirements for a project through the use of the electronic room data sheet. The system has a built-in automated checking mechanism to compare the accommodation requirements in the approved schedule of accommodation with the room data sheet. The checking mechanism can highlight discrepancies between the approved schedule of accommodation and room data sheet in respect of incorrect room sizes, accommodation without schedule of accommodation approval and incorrect form of accommodation (cellular office versus open plan). In using the system, the discrepancies can be clarified before completion of the tender documents. In addition, the Chairman, PVC has also reminded Heads of Department the importance of timely submission of schedules of accommodation to the PVC for approval.

Need for PVC's approval for deviations from the approved schedule of accommodation

3.16 According to the CAD and ArchSD, the provision of toilet/shower facilities in the Director-General of Civil Aviation's office and the rest rooms for accident investigators was made on the understanding that the CAD would seek the GPA's acceptance of the deviations from the approved schedule of accommodation. However, it turned out that the CAD did not follow up on the matters and there was no record to show why it had not done so.

3.17 In the case of the multi-function room which was built on the space originally planned for a viewing gallery, there was no record on how its converted use (for recreation and meetings) and fixture requirements were determined. Given that areas for recreation and meeting purposes had already been provided for in the approved schedule of accommodation (see para. 3.6), change in the use of the viewing gallery area for these purposes constituted an increase in the approved provision. The CAD should have obtained the PVC's prior approval in this regard.

Audit recommendations

3.18 Audit has *recommended* that the Director of Architectural Services should keep under review the implementation and effectiveness of the electronic-room data sheet information system to ensure that any discrepancies between room data sheets and approved schedules of accommodation are reconciled before tender invitations.

3.19 Audit has *recommended* that the Director-General of Civil Aviation should:

- (a) step up the checking of user requirements to be included in the tender documents of building projects to ensure consistency with the approved schedules of accommodation;
- (b) seek the PVC's approval before making any significant changes to the allowed facilities/provision in the approved schedules of accommodation when handling similar building projects in future;
- (c) take measures to ensure that important decisions made in building projects are properly documented; and
- (d) consult the GPA and FSTB on the way forward in dealing with the discrepancy in the provision of rest rooms for accident investigators.

Response from the Administration

3.20 The Director of Architectural Services agrees with the audit recommendation in paragraph 3.18. He has said that the Chairman, PVC has reminded Heads of Department the importance of timely submission of schedules of accommodation to the PVC for approval. The ArchSD will continue to review the electronic-room data sheet information system to ensure that client departments will reconcile the discrepancies between room data sheets and approved schedules of accommodation before tendering.

3.21 The Director-General of Civil Aviation agrees with the audit recommendations in paragraph 3.19.

3.22 The Government Property Administrator has said that the discrepancy in the area of the rest rooms for accident investigators is about 8 m² (see para. 3.10(e)). It may not be cost-effective to reinstate the rest rooms back to one common room. The GPA will ask the CAD to ensure that the area would be able to accommodate a minimum of 22 investigators (i.e. the purpose of the provision of a common rest area as approved by the PVC) at any one time.

PART 4: PROVISION OF FURNITURE AND EQUIPMENT

4.1 This PART examines the provision of furniture and equipment for the new CAD headquarters and suggests areas for improvement.

Approval for purchase of furniture and equipment

4.2 Financial Circular No. 9/90 sets out the arrangements for seeking approval for the purchase of furniture and equipment for projects in the Public Works Programme as follows:

- (a) Controlling Officers for Capital Works Reserve Fund heads may not allocate funds to user departments or commit funds themselves for the purchase of furniture and equipment without the prior approval from the following authorities:
 - (i) in the case of standard office furniture and appliances including telephone systems, the Controlling Officer/user department should seek approval from the GPA by providing details of the items required, their estimated cost and the justification for the requirement; and
 - (ii) in the case of other furniture requirements (i.e. non-standard furniture) and all equipment items, the Controlling Officer/user department should seek approval from the FSTB; and
- (b) where, as a result of increases in prices, under-estimation or changes in requirements, the amount approved becomes insufficient, the Controlling Officer/user department must seek approval of the FSTB/GPA for the allocation of additional funds, giving full justification for the increase sought.

4.3 Of the \$1,997 million approved by the Finance Committee in January 2008 for the construction of the new CAD headquarters (see para. 1.6), \$140 million was earmarked for the purchase of furniture and equipment. From

2010 to 2012, the CAD obtained approvals from the FSTB and GPA to deploy funds from the project vote for the purchase of furniture and equipment at an estimated cost of \$106.2 million. Up to May 2014, the expenditure in this regard totalled \$97.04 million. Table 4 is a breakdown of the approved items and the related expenditure.

Table 4

Approved purchase of furniture and equipment and amount spent (as at 31 May 2014)

Item	Approval date	Approved item	Approved amount (\$ million)	Actual expenditure (\$ million)				
Non-st	Non-standard furniture and equipment items approved by the FSTB							
1	3.9.2010	Four electronic systems	23.96	21.77				
2	31.5.2012	Security and electronic systems to be provided by the design-and-build contractor, including integrated security management systems, public address and intercommunication systems, and miscellaneous furniture and equipment items for the ATC tour presentation room and education path	67.45	64.54				
3	31.5.2012	Specialised furniture and equipment for examination rooms	1.14	1.12				
4	19.7.2012	Non-standard furniture for conference facilities, general offices and canteen	4.64	2.70				
5	13.8.2012	Specialised furniture and equipment for accident investigation facilities and training facilities	7.66	5.58				
Standard furniture items approved by the GPA								
6	31.10.2012	Standard furniture items	1.35	1.33				
		Total	106.20	97.04				

Source: CAD records

Remarks: Pursuant to the requirements set out in Financial Circular No. 9/90, the CAD was authorised by the ArchSD (i.e. Controlling Officer of the new CAD headquarters project vote) to purchase items 1 and 3 to 6 through allocation warrants. The provision of the security and electronic systems (item 2 above) was included in the design-and-build contract.

Security and electronic systems purchased under the design-and-build contract

4.4 The security and electronic systems to be provided by the design-and-build contractor (see item 2 of Table 4 in para. 4.3) were specified in the Employer's Requirements in the tender documents. In May 2009 when the new CAD headquarters contract was awarded to the design-and-build contractor, the Government was contractually bound to acquire the specified systems at the tendered price of \$67.45 million. However, the CAD did not seek the FSTB's approval for the purchase of such systems until February 2011 (21 months later), which did not conform to the requirements of Financial Circular No. 9/90 that funds should not be committed for the purchase of equipment without the prior approval of the FSTB. Both the CAD (the user department) and the ArchSD (the Controlling Officer) should draw lessons from this case.

Video display equipment for electronic systems

4.5 In November 2009, the CAD sought approval from the FSTB for the procurement of four electronic systems (see item 1 of Table 4 in para. 4.3). In justifying the proposed purchase, the CAD informed the FSTB of the following:

- (a) *Multi-media presentation system*. The system (estimated to cost \$16.99 million) would be provided at various venues (20 locations) including the auditorium, conference rooms, lecture rooms, workshops and ATC tour presentation room to facilitate high quality presentation, interactive training, holding of meetings and conferences with representatives from overseas authorities, international organisations and airline operators. Depending on the functional need of each venue, the system would include a combination of different equipment such as video projector and screen, video and tele-conferencing system, and audio/video playback and recording system;
- (b) *Simultaneous interpretation system*. The system (estimated to cost \$3.98 million) would facilitate holding international conferences in the auditorium;

- (c) Integrated information display system. The system (estimated to cost \$1.99 million) would include the provision of 50 liquid crystal display (LCD) video display units in common areas such as main entrance, lift lobbies, canteen, conference rooms, training and examination rooms. The sizes of the LCD video display units would mainly be 22-inch, with some of 26-inch for large lobbies and main entrance. The system would disseminate departmental announcements/news to staff, serve as a web-based room booking system and display meeting/event details for visitors not familiar with the CAD venues; and
- (d) *Radio frequency identification library management system.* The system (estimated to cost \$1 million) would provide self-service library management system for registration, tracking and inventory control of library items.

4.6 Regarding the integrated information display system, in January 2010, the FSTB questioned whether it was more cost-effective if meeting details were displayed in lift lobbies on a floor basis instead of outside each conference/meeting room, and requested the CAD to consider reducing its requirement for 50 LCD video display units. In response, the CAD said that as the office layout was longitudinal in shape, it would be difficult for visitors to walk back a long distance to view information in lift lobby. The CAD maintained the view that 50 LCD video display units were the minimum requirement for effective information dissemination.

4.7 After obtaining the FSTB's approval for the purchase of the four electronic systems in September 2010, the CAD engaged the Electrical and Mechanical Services Trading Fund (Note 25) as its procurement agent. Through the Electrical and Mechanical Services Trading Fund and its Supplies Section, the CAD purchased a total of 143 LCD video display units, i.e. 93 units more than the 50 mentioned in the CAD's applications to the FSTB for approval (see Table 5). In other words, the justifications for these extra units had not been vetted by the FSTB. Audit's findings and the CAD's explanations on these purchases are detailed in paragraphs 4.8 to 4.13 below.

Note 25: The Electrical and Mechanical Services Trading Fund is the trading arm of the Electrical and Mechanical Services Department, providing electrical and mechanical services to other government departments.

Table 5

Date of purchase	Procurement through	Number of LCD video display units purchased		FSTB's approved quantities	
November 2011	Electrical and Mechanical Services Trading Fund	(a)	for multi-media presentation system	79	0 (see para. 4.8(a))
		(b)	for integrated information display system	57	50
November and December 2012	CAD Supplies Section	(c)	for upgrading	7	0
			Total	143	50

LCD video display units purchased and the FSTB approved quantities

Source: Audit analysis of CAD records

Video display equipment for multi-media presentation system

4.8 Of the 143 LCD video display units purchased, 79 (Note 26) with a total cost of \$1.4 million were used for the multi-media presentation system. Audit found that:

- (a) LCD video display unit was not specifically mentioned in the CAD's equipment list for the multi-media presentation system which was approved by the FSTB in September 2010 (see para. 4.5(a) and the CAD's explanations in para. 4.9(a) and (b));
- Note 26: The sizes of the 79 LCD video display units vary, i.e. 5 units are of 22-inch, 27 units of 42-inch, 10 units of 46-inch, 17 units of 52-inch, 4 units of 55-inch and 16 units of 65-inch.

- (b) in January 2011, the Electrical and Mechanical Services Trading Fund advised the CAD that some of the venues for installing multi-media presentation system (such as the auditorium and conference rooms) would be provided with other equipment (such as video projector/screen set) serving the same display function. The Electrical and Mechanical Services Trading Fund suggested the CAD to review the operational need for LCD video display units in these venues to see if there was scope for cost saving. However, Audit noted that 14 venues were equipped with both video projector/screen sets and LCD video display units (see Table 6 and the CAD's explanation in para. 4.9(c)); and
- (c) according to the CAD's funding application to the FSTB, the multi-media presentation system would be provided at various locations (such as the multi-purpose auditorium, conference rooms, lecture rooms and other special purpose common facilities) to facilitate high quality presentation, interactive training and holding of meetings. However, Audit noted that only 41 of the 79 LCD video display units were provided in dedicated meeting/training facilities. The remaining 38 display units were provided in the following locations:
 - (i) 28 display units were installed in individual offices of 22 senior staff (Note 27) and 6 accident investigator rest rooms (which are not approved items on the schedule of accommodation see para. 3.9). Of these 22 senior staff, 9 were accommodated on the sixth floor of the Office and Training Block where there were two meeting rooms equipped with LCD video display units (see the CAD's explanation in para. 4.9(b)); and
 - (ii) 10 display units were installed in the following four venues that were not used for training and meeting: four units (three units of 65-inch and one unit of 46-inch) in the canteen, three units (42-inch) in the common room of the ATC Centre Block; two units (65-inch) in the recreation room, and one unit (52-inch) in the library/aviation resources centre (see the CAD's explanation in para. 4.9(d)).

Note 27: They were installed inside the offices of the Director-General of Civil Aviation, Deputy Director-General of Civil Aviation, 5 Assistant Directors-General, 6 Chief Operations Officers, 5 Chief Air Traffic Control Officers, 2 Chief Electronics Engineers, the Chief Treasury Accountant and the Departmental Secretary.

Table 6

Venues equipped with both video projector/screen sets and LCD video display units

Building	Venue	Number of video projector/ screen sets	Number of LCD video display units (size in inch)
Facilities Block	Accident Investigation Command Centre (Note 1)	2	4 (55-inch)
	Auditorium	3	5 (22-inch) (Note 2)
	Conference Room A	2	2 (52-inch)
	Conference Room 1A	1	1 (52-inch)
	Conference Room 1B	1	1 (52-inch)
	Conference Room 1C	1	1 (52-inch)
Office and Training	Conference Room 1D	1	1 (52-inch)
Block	Lecture Room 1	1	1 (52-inch)
	Lecture Room 2	1	1 (52-inch)
	Lecture Room 3	1	1 (52-inch)
	Debriefing Room	1	1 (52-inch)
	Strategic Flow Management Centre	1	1 (65-inch)
	Communication System Simulator	1	1 (65-inch)
ATC Centre Block	Rescue Coordination Centre (Briefing Room)	1	3 (52-inch)
	Total	18	24

Source: Audit analysis of CAD records

- *Note 1: A video-wall was also installed in the Centre. The item was approved by the FSTB in August 2012 (see item 5 of Table 4 in para. 4.3).*
- *Note 2: Four additional LCD video display units would also be deployed for use during meetings in the auditorium (see paras. 4.12 and 4.13).*

4.9 In response to Audit's findings in paragraphs 4.6 to 4.8, the CAD informed Audit during August and October 2014 that:

- (a) the LCD video display units were connected with the audio/video playback and recording systems for playback purposes, as well as with the projection systems for display of information, and were in line with the funding application to the FSTB (see para. 4.5(a)). As LCD video display units were an essential and integral part of the multi-media presentation system, the CAD considered that the information provided in the funding application to the FSTB was sufficient and it had complied with Financial Circular No. 9/90 by providing details of items required, the estimated costs and justification for the requirements to its best knowledge when making the application to the FSTB;
- (b) installing the LCD video display units in the Directorate-grade officers' offices would enable them to receive the latest news and real-time information on aircraft movements within the Hong Kong Flight Information Region and at the airport/runways to facilitate prompt decision-making especially during the disruption of airport and ATC operations, and adverse weather situation. Besides, these LCD video display units could also facilitate viewing of real time LegCo meetings, holding ad hoc small group meetings, joint preparation of urgent situation reports and common viewing of PowerPoint presentations. Since LCD video display units installed at the directorate offices were used for small group meetings within the scope of the multi-media presentation system, the CAD did not consider it necessary to specifically highlight this requirement in the funding application to the FSTB;
- (c) upon receipt of the Electrical and Mechanical Services Trading Fund's advice, the CAD reviewed the scope and considered that both video projector/screen sets and LCD video display units at some venues were required to cater for different seating plans to ensure that the viewing of presentation would not be blocked, and to cater for operational needs where both video projector/screen sets and LCD video display units would be used at the same time; and

(d) the LCD video display units installed in the canteen, common room of the ATC Centre Block and the library were used to disseminate information to CAD staff in common areas within the CAD headquarters, whereas the LCD video display units in the recreation room were used to display information to participants during luncheon meetings and/or departmental activities under the scope of the multi-media presentation system. If needed, they could also be used to broadcast meetings and/or activities held inside the CAD headquarters.

4.10 According to Financial Circular No. 9/90, Controlling Officers/user departments should seek the FSTB's prior approval for the purchase of equipment by providing details of items required, their estimated costs and the justification for the requirements. Regarding the purchase of the 79 LCD video display units for the multi-media presentation system, Audit noted the CAD's explanations in paragraph 4.9. In September 2014, the FSTB informed Audit that approval had not been given for procuring these units. It is unsatisfactory that the requirements for these LCD video display units and justifications were not specifically mentioned in the CAD's application to the FSTB for vetting and approval. The CAD needs to take measures to ensure that details of equipment to be purchased are provided when seeking the FSTB's approval.

Video display equipment for integrated information display system

4.11 While the FSTB approved the purchase of 50 LCD video display units for the integrated information display system, a total of 57 units were purchased. Of the 57 units, 30 were of larger size than the approved 22-inch and 26-inch (i.e. 23 units of 37-inch, 5 units of 42-inch, 1 unit of 52-inch and 1 unit of 65-inch). According to the CAD, these changes in requirements had not resulted in the allocated funds being exceeded (see para. 4.2(b)).

Purchase of video display equipment for upgrading

4.12 In November and December 2012, the CAD purchased seven more LCD video display units for upgrading purpose. According to the CAD, these LCD video display units equipped with video conferencing and Internet access functions were used to replace those originally installed inside the senior management's offices (including the Director-General of Civil Aviation, the Deputy

Director-General of Civil Aviation and five Assistant Directors-General) under the multi-media presentation system to facilitate the conduct of meetings between the CAD's senior management and their teams, and external parties. The seven displaced LCD video display units (2 of 52-inch and 5 of 46-inch) were redeployed as follows:

- (a) one 52-inch unit and two 46-inch units were used to upgrade the three 42-inch units in the common room of the ATC Centre Block. One of the three displaced 42-inch units was installed in the waiting area outside the Director-General and Deputy Director-General of Civil Aviation's offices, another one in the driver's room and the third one was deployed for use during meetings in the auditorium; and
- (b) one 52-inch unit was treated as a spare item, and three 46-inch units were deployed for use during meetings in the auditorium.

4.13 Audit is concerned that the user requirements were not well defined before making purchase of LCD video display units resulting in additional expenditure in purchasing seven replacement units (\$156,000). In September 2014, the FSTB informed Audit that approval had not been given for procuring these replacement units. Regarding the redeployment of the surplus LCD video display units, Audit noted that four units were deployed for use in the auditorium notwithstanding that the auditorium had been provided with three video projector/screen sets and five (22-inch) LCD video display units (see Table 6 in para. 4.8). To optimise use of resources and minimise the risk of obsolescence for electronic equipment, the CAD needs to consult the Government Logistics Department on proper disposal of any surplus LCD video display units.

Video-wall

4.14 The video-wall costing 5.03 million was installed on the first floor of the Office and Training Block (see Photograph 6). According to the procurement contract, the video-wall was for dissemination of multi-media messages to staff and visitors (similar to the integrated information display system — see para. 4.5(c)), but its cost was charged to the project commitment for the replacement of the ATC system (for which the CAD was the Controlling Officer) instead of the project vote for the new CAD headquarters (for which the ArchSD was the Controlling Officer).

Photograph 6



Video-wall installed on the first floor of the Office and Training Block

Source: Photograph taken by Audit on 8 August 2014

4.15 The project vote for the new CAD headquarters was funded under Head 703 (Buildings) of the Capital Works Reserve Fund and any purchase of equipment and furniture is subject to the approval of the FSTB in accordance with Financial Circular No. 9/90. The project commitment for the replacement of the ATC system was funded under Head 708 (Capital Subventions and Major Systems and Equipment) of the Capital Works Reserve Fund for which the Financial Secretary has delegated to the Controlling Officers of the relevant procuring departments (the CAD in this case) the power to authorise expenditure for major systems and equipment projects (i.e. not requiring the FSTB's approval).

4.16 In response to Audit's enquiry, the CAD informed Audit in August and September 2014 that:

- (a) both funding papers for the new CAD headquarters and replacement of the ATC system had not specifically mentioned the video-wall which served multiple functions; and
- (b) the CAD considered that it was appropriate to charge the expenditure for the video-wall under the ATC project commitment because it was connected to safety-critical ATC systems via relevant networking equipment and was mainly for display of ATC and related information (Note 28).
- 4.17 However, there was an element of ambiguity in this case because:
 - (a) according to the Finance Committee paper of May 2007, the ambit of the ATC project commitment was to procure equipment/systems necessary for the provision of ATC services to aircraft using the HKIA or overflying Hong Kong airspace. Neither video-wall nor audio-visual equipment was mentioned in the list of equipment/systems of the paper; and
 - (b) according to the Public Works Subcommittee paper for the new CAD headquarters project of December 2007, audio-visual systems for the ATC tour presentation room and education path were included in the indicative list of equipment required. The video-wall is not just used for dissemination of ATC information but also information related to meetings held in the auditorium and other information for the education path which is similar to other display units purchased under the furniture and equipment item of the new CAD headquarters project vote.

In Audit's view, the CAD should have sought the FSTB's advice on the appropriate financial arrangement for charging the expenditure for the video-wall.

Note 28: According to the CAD, ATC information includes aircraft movements inside the Hong Kong Flight Information Region, real-time closed-circuit television images of aircraft movements on runways and airfield, information downloaded from the Airport Collaborative Decision Making System, airport security alert status and relevant meteorological information. The video-wall can also display information related to meetings being held in the auditorium and support the education path by displaying information such as future development roadmap of the HKIA, airframe design/construction and Hong Kong ATC operation to arouse interest of visitors in aviation.

Audit recommendations

4.18 Audit has *recommended* that the Director-General of Civil Aviation should:

- (a) critically review the operational needs for the LCD video display units purchased under the multi-media presentation system and seek covering approval from the FSTB, where appropriate;
- (b) take measures to ensure that timely approval is sought from the FSTB for procuring equipment in accordance with the requirements laid down in Financial Circular No. 9/90 and that in seeking approval from the FSTB, details of the equipment to be purchased are provided;
- (c) seek the FSTB's advice in case of doubt on the ambit of approved commitment items and subheads of expenditure under his charge;
- (d) clearly define user requirements before procuring furniture and equipment;
- (e) exercise strict economy in purchasing equipment with due regard to actual operational need; and
- (f) consult the Government Logistics Department on ways to dispose of any surplus LCD video display units.

4.19 Audit has *recommended* that the Director of Architectural Services should tighten control over the compliance with Financial Circular No. 9/90 requirements by user departments.

4.20 Audit has also *recommended* that the Secretary for Financial Services and the Treasury should step up control to ensure that the furniture and equipment purchased by bureaux/departments (B/Ds) have been approved by the FSTB/GPA. Consideration may be given to requiring the B/Ds to submit to the FSTB/GPA a return listing the details of items purchased after a project is completed.

Response from the Administration

4.21 The Director-General of Civil Aviation agrees with the audit recommendations in paragraph 4.18.

4.22 The Director of Architectural Services agrees with the audit recommendation in paragraph 4.19. He has said that the ArchSD will tighten control over the compliance with Financial Circular No. 9/90 requirements by user departments and if funding approval is not available by the time of tender, the furniture and equipment items will only be included as provisional sums (Note 29) to avoid premature funding commitment.

4.23 The Secretary for Financial Services and the Treasury accepts the audit recommendation in paragraph 4.20. He has said that:

(a) the Administration has been making the best endeavour to ensure that the furniture and equipment items purchased represent value for money and public funds are well spent. B/Ds concerned should ensure that the furniture and equipment requirements are reasonable and necessary to meet their operational needs. In the event that additional funding is required after the FSTB's or GPA's approval, B/Ds should seek to increase the approval ceiling with full justification in accordance with Financial Circular No. 9/90. The FSTB will consider issuing a full and final approved furniture and equipment list for each project to facilitate post-implementation checking by the user departments. Resource permitting, the FSTB may consider conducting random checks on the furniture and equipment position upon project completion; and

Note 29: *Provisional sum is a sum provided in the contract for work or expenditure which shall only be used upon the written instruction of the Architect/Supervising Officer of the contract.*

(b) regarding the audit recommendation in paragraph 4.18(c), Controlling Officers are responsible and accountable for all expenditure from any heads or subheads under their purview, and for all public moneys and government properties in respect of the departments or services for which they are responsible. From the value for money perspective, the FSTB would expect Controlling Officers to justify the need for and cost of the procurement in the first place. From the regularity and accounting perspective, the FSTB agrees with Audit that if an item may be charged to more than one subhead of expenditure and Controlling Officers require clarification on the ambit of the approved expenditure commitment and subheads, the advice of the FSTB should be sought. In this regard, the typical factors for consideration are the exact scope, nature or function of the item, accounting rules and established practice.

4.24 The Government Property Administrator has said that regarding paragraph 4.20, the Controlling Officer of a project vote has the authority to control and approve spending under the project vote. The GPA proposed to ask the user B/Ds to prepare and submit a return to the Controlling Officer on office furniture and appliances purchased under the project vote and to confirm that the items purchased correspond to those approved by the GPA or FSTB.

4.25 The Director of Government Logistics has said that regarding the LCD video display units (see para. 4.18(f)), the disposal of store items that have become surplus to requirements should be dealt with according to the procedures set out in the Stores and Procurement Regulations. The Government Logistics Department will offer advice/assistance to the CAD, if required.

PART 5: PROVISION AND UTILISATION OF CAR PARKING SPACES

5.1 This PART examines the provision and utilisation of car parking spaces for the new CAD headquarters and suggests areas for improvement.

Provision of parking spaces

5.2 The allocation of parking spaces in government buildings is governed by the Accommodation Regulations as follows:

- (a) priority is given to government vehicles, followed by essential users and directorate staff in that order. Essential users are defined as officers who need to use their cars on official business more than 13 days on average in one month. Disabled officers who have been certified by a medical officer as having problem in using public transport are regarded as essential users. Adequate spaces should also be reserved as necessary for loading/unloading and guest parking; and
- (b) provision of parking facilities for all users is free of charge.

5.3 In April 2007, the CAD proposed in the draft schedule of accommodation the provision of 178 parking spaces (comprising 18 for government vehicles, 33 for essential users and directorate staff, 15 for contractors' vehicles, 20 for visitors' vehicles and 92 for non-essential users). In justifying its proposal, the CAD informed the GPA that:

(a) there was in fact operational need for the non-essential users (mostly ATC staff) who had to drive to work on shift duties, in inclement weather and in emergency; and
(b) the requested 125 parking spaces for staff (33 essential users and 92 non-essential users) were a reduction from the 155 parking permits (Note 30) then held by CAD staff after taking into account the estimated effect of shared use of parking spaces by staff of different shifts and the reduction in travelling among CAD offices after the co-location of all functional divisions in the new CAD headquarters.

In October 2007, with the support of the GPA, the PVC approved the provision of 178 parking spaces in the new CAD headquarters.

5.4 Regarding the provision of parking spaces, the Employer's Requirements in the tender documents included the following provisions:

- (a) a minimum of 178 covered car parking spaces and at least two lorry parking spaces for loading/unloading area shall be provided;
- (b) car parking spaces in addition to the 178 numbers requirement should be designed for saloon and would be a merit of design (Note 31); and
- (c) in addition to the contract requirements, the design shall comply with the requirements of the Hong Kong Planning Standards and Guidelines issued by the Government.

Note 30: Of these permits, 147 were for using the Government Carpark provided by the Airport Authority near the Passenger Terminal Building of the HKIA.

Note 31: According to the ArchSD, in anticipation of the future expansion, where possible, the contractor may provide additional car parking spaces in its design proposal.

5.5 Subsequently, the ArchSD approved the contractor's proposals to provide 29 additional parking spaces comprising 5 for private cars, 16 for motorcycles and 8 for lorries (Note 32). The standards of provision of parking spaces for motorcycles and lorries in new development are laid down in the Hong Kong Planning Standards and Guidelines. As a result, a total of 209 (180 plus 29) parking spaces were provided in the new CAD headquarters.

Utilisation of parking spaces

5.6 The CAD had not compiled statistics on the utilisation of the parking spaces in the new CAD headquarters soon after the office relocation in December 2012. According to the CAD:

- (a) although there was an electronic access system for controlling vehicle entry, the system was not originally designed to cater for compilation of utilisation statistics. The access records could not be readily used for statistical purpose because of duplicate entries resulting from some users placing their access cards at the card reader more than once when the gate did not respond. Moreover, the system could not capture usage by visitor cars for which access cards were not used; and
- (b) to monitor the utilisation in a more effective manner, the CAD subsequently arranged its building management contractor to collect utilisation data manually twice a day (at 10:00 am and 3:00 pm) with effect from April 2014.
- **Note 32:** According to the ArchSD, the provision of additional parking spaces was to maximise the use of floor area of the car parking floor. Even if the additional parking spaces were not provided, the size of the car parking floor could not be reduced as it would not be justified nor cost-effective to change the design and the structural design of the whole building. The additional provision of the motorcycle and lorry parking spaces was to comply with the requirements of the Hong Kong Planning Standards and Guidelines issued by the Government. The parking spaces for motorcycles are delineated by line markings on floor within a small recessed area on the car parking floor. The spaces are small (each measuring 2.4 metres \times 1 metre) and cannot be used for other useful purpose. Some of the lorry parking spaces for loading and unloading purposes are located on the ground floor open area.

5.7 Based on the data collected by the building management contractor, the average monthly utilisation of the 209 parking spaces from April to July 2014 ranged from 21% to 23% for weekdays and from 6% to 7% for weekends and public holidays (Note 33). The utilisation of the parking spaces in August 2014 remained at a low level (see an example in Photograph 7).

Photograph 7



Utilisation of parking spaces in the Office and Training Block

Source: Photograph taken by Audit on 6 August 2014

Note 33: Of the 209 parking spaces, 151 are designated for use by private cars and the remaining spaces are for motorcycles, lorries and light buses. Although the data collected by the building management contractor did not have a breakdown by vehicle type, the CAD considered that the data mainly reflected the utilisation of parking spaces by private cars. According to the CAD, lorries and light buses only used the parking spaces for short durations and such utilisation might not be captured during the time of data collection. Therefore, in terms of the 151 private car parking spaces, the CAD calculated that the utilisation rates from April to July 2014 would range from 29% to 32% for weekdays and from 9% to 10% for weekends and public holidays.

5.8 Audit understands that the utilisation data collected by the CAD's contractor from April to July 2014 might not have taken into full account the staff parking need of the Air Traffic Management Division and the maintenance contractors due to the delayed commissioning of the new ATC centre (see Note 12 to para. 1.9). According to the CAD:

- (a) the Air Traffic Management Division and the maintenance contractors comprised over 60% of the working population in the CAD headquarters;
- (b) while some of these staff had been issued with parking permits in the new CAD headquarters, they preferred to keep their permits for using the Government Carpark near the Passenger Terminal Building to facilitate their discharge of duties inside the airport restricted area. As the number of CAD staff working inside the airport restricted area would reduce significantly after the full operation of the new ATC centre in the CAD headquarters, a review on the need of the parking permits for the Government Carpark would be conducted in due course; and
- (c) it expected that the utilisation of the parking spaces in the new CAD headquarters would increase substantially after the full operation of the new ATC centre.

5.9 Audit notes that the Government Carpark near the Passenger Terminal Building has 200 parking spaces for shared-use by 12 government departments (including the CAD). For 2014, a total of 740 parking permits have been issued, including 117 for staff of the Air Traffic Management Division. On average, each parking space is share-used by 3.7 permit holders (Note 34). In Audit's view, there is a need to keep under review the utilisation of the parking spaces at the new CAD headquarters after the relocation of the Air Traffic Management Division to the new ATC centre.

Note 34: According to the minutes of meeting of user departments of the Government Carpark held in July 2013, the allocation of parking permits was sufficient to meet all departments' parking demand.

Areas for improvement

Provision of parking spaces

5.10 Existing usage information. In 2007 when vetting the CAD's proposed parking space requirements, the GPA requested information on the actual number of parking spaces that were made available to the 147 CAD staff then holding parking permits at the Government Carpark of the HKIA. In response, the CAD informed the GPA that the 230 parking spaces then available in the Government Carpark were share-used by permit holders of different departments. However, the GPA was not informed of the total number of parking permits issued for the Government Carpark to determine the average number of permit holders served by each parking space thereat. The lack of sufficient information on the parking arrangement at the Government Carpark might render it difficult for the GPA to accurately assess the required provision at the new CAD headquarters to meet the parking need of the 147 CAD staff to be diverted from the Government Carpark. In Audit's view, there is a need for the GPA to remind user departments of new building projects to provide detailed information on their existing parking space usage to support their proposed requirement in the new projects.

5.11 **Deviation from approved provision.** The 178 approved parking spaces in the schedule of accommodation were determined after the GPA's vetting of the CAD's proposed requirement and should be taken as the exact provision. However, the Employer's Requirements in the tender documents specified that a minimum of 180 parking spaces should be provided (see para. 5.4). In the event, five more private car parking spaces were provided (see para. 5.5). While the ArchSD confirmed that in this case, the provision of additional parking spaces was to maximise the use of the car parking floor without purposely enlarging the floor plate of the carpark, there is a need for the ArchSD to specify the exact number of parking space provisions according to the approved schedule of accommodation in the Employer's Requirements in future.

5.12 **Provision of parking spaces for motorcycle.** According to the Hong Kong Planning Standards and Guidelines, the parking space provision for motorcycles in new development is 5% to 10% of that for private cars. The Employer's Requirements in the tender documents for the new CAD headquarters did not specify the required percentage of motorcycle parking spaces (but stipulated

that the contractor should comply with statutory requirements, standards and guidelines). In the event, 16 parking spaces were provided (i.e. 10.6% of the 151 private car parking spaces provided — Note 35). However, for 2014, only four parking permits were issued for motorcycles indicating that the demand was low. In Audit's view, there is a need for the ArchSD to consult user departments of new building projects about their actual demand for motorcycle parking spaces and include the appropriate requirement in the tender documents.

Utilisation of parking spaces

5.13 The consistently low utilisation of the parking spaces in the new CAD headquarters from April to July 2014 (see para. 5.7) indicated a need for the CAD to take effective measures to ensure the gainful use of the spare capacity before the relocation of the Air Traffic Management Division to the new ATC centre. There is also a need to keep under review the utilisation of the parking spaces after the relocation.

Audit recommendations

5.14 Audit has *recommended* that the Director of Architectural Services should:

- (a) take measures to ensure that the exact number of parking space provisions according to the approved schedule of accommodation is specified in the Employer's Requirements of the tender documents; and
- (b) consult user departments of new building projects about their actual demand for motorcycle parking spaces and include the appropriate requirement in the tender documents.
- **Note 35:** The 151 private car parking spaces comprised 146 numbers specified in the Employer's Requirements of the tender documents and five spaces subsequently added (see para. 5.11).

5.15 Audit has *recommended* that the Director-General of Civil Aviation should:

- (a) continue to monitor the utilisation of the parking spaces; and
- (b) take effective measures to put any under-utilised parking spaces into gainful use.

5.16 Audit has also *recommended* that the Government Property Administrator should remind user departments of new building projects to provide detailed information on their existing parking space usage to support their proposed requirement in the new projects.

Response from the Administration

5.17 The Director of Architectural Services agrees with the audit recommendations in paragraph 5.14.

5.18 The Director-General of Civil Aviation agrees with the audit recommendations in paragraph 5.15.

5.19 The Government Property Administrator accepts the audit recommendation in paragraph 5.16. He has said that the GPA has been asking user B/Ds to provide justifications for parking spaces requested (including their existing space usage) to support their proposed requirement in the new projects.

PART 6: WAY FORWARD

6.1 This PART summarises the major audit observations identified in earlier PARTs and examines the way forward.

The new CAD headquarters project

6.2 The new CAD headquarters project was both a complex and time-critical project. On one hand, it had to cater for the specialised requirements of a modern ATC system and to reserve sufficient spaces to cater for future expansion of services. On the other hand, it had to be completed under a tight schedule in order to ensure a seamless transition to the new ATC system upon its targeted commissioning in December 2012.

6.3 Without the experience and expertise in the handling of a complex building project, the CAD set up a dedicated project team to oversee the implementation of the new CAD headquarters project. Arrangement was also made with the ArchSD and Electrical and Mechanical Services Department for the secondment of a Senior Architect and a Senior Electrical and Mechanical Engineer respectively to support the project team (see Note 8 to para. 1.7). The new CAD headquarters was commissioned on schedule (in December 2012). The actual expenditure was also within the approved provision of \$1,997 million. However, this audit review has identified lessons that should be learnt for better managing similar departmental specialist building projects in future.

Major audit observations

6.4 In PART 2, Audit found that while the THB only supported the making of provision in the new CAD headquarters building's foundation and design for a reserve space of 1,500 m² for expansion beyond 2025, the reserve space was built as day-one facilities. With the exception of the ArchSD, other PVC members (namely the GPA and FSTB) had not been informed of such change in user requirements. There were fundamental differences in the understanding between the CAD/ArchSD and the GPA on whether the construction of the reserve space of 1,500 m² had been approved by the PVC (see para. 2.15). The incident highlights inadequacies in the control over change of user requirements and decision making arrangements within the PVC. Moreover, the Public Works Subcommittee and the Finance Committee were not informed specifically of the construction of $1,500 \text{ m}^2$ expansion area in the funding application (see para. 2.17). While the reserve space was not expected to be required for use by the CAD until some years later, no provision was made in the building design to facilitate its interim use by third parties (see para. 2.23).

6.5 In PART 3, Audit noted that three of the facilities in the new headquarters were not built in accordance with the approved schedule of accommodation, not conforming to the Accommodation Regulations. The discrepancies in the provision of toilet/shower facilities in the Director-General of Civil Aviation's office and the rest rooms for accident investigators could have been avoided if both the CAD and ArchSD had enhanced the checking mechanism to ensure that the user requirements to be included in the design-and-build contract were consistent with the approved schedule of accommodation (see para. 3.14). The CAD also had not sought the PVC's prior approval before it converted the space originally planned for use as a viewing gallery of the education path into a multi-function room for meeting and recreational purposes despite the fact that conference and recreational facilities had already been provided for in the approved schedule of accommodation (see para. 3.17).

6.6 In PART 4, Audit found that the CAD had not complied with Financial Circular No. 9/90 requirements in seeking the FSTB's prior approval for the purchase of the security and electronic systems at \$67.45 million under the design-and-build contract (see para. 4.4). As regards the equipment for two electronic systems, the CAD purchased more LCD video display units than that mentioned in the CAD's application to the FSTB for approval (see para. 4.7). Some of the LCD video display units were installed in venues and individual officers' rooms also not mentioned in the CAD's application (see para. 4.8(c)). There also appears to be scope for reducing the LCD video display unit requirements as some venues were already provided with other equipment serving similar display functions (see paras. 4.8(b) and 4.9). Additional expenditure was incurred in purchasing seven LCD video display units to replace those not fully meeting user requirements (see para. 4.12). Audit also found that the cost of a video-wall (\$5.03 million) was charged to the project commitment for the ATC system instead of the project vote for the new CAD headquarters (see paras. 4.14 and 4.16). The FSTB's advice should have been sought on the appropriate financial arrangement for charging the expenditure for the video-wall.

6.7 In PART 5, Audit noted that from April to July 2014, the utilisation of the 209 parking spaces in the new headquarters only ranged from 21% to 23% (see para. 5.7). While the utilisation rate might improve after the relocation of the Air Traffic Management Division to the new CAD headquarters, there is a need to put the under-utilised parking spaces into gainful use during the interim and keep the utilisation rate under review after the relocation. Regarding the provision of parking spaces, there was room for improvement in the CAD's provision of usage information in the draft schedule of accommodation for the GPA's assessment. There was also room for improvement in the ArchSD's specification of the GPA's approved parking space provision in the tender documents (see paras. 5.10 to 5.13).

6.8 The observations in various parts of this Audit Report indicate a number of incidents of non-compliance with various government regulations and circulars in the implementation of the new CAD headquarters project. There is a need for the CAD to strengthen internal controls to prevent recurrence of similar problems in future building projects and to raise awareness of its staff on the need to comply with government regulations in managing accommodation matters and public funds. There is also a need for the ArchSD to tighten control on compliance with the approved schedule of accommodation and requirements in relevant government circulars by user departments in future.

Audit recommendations

6.9 Audit has *recommended* that the Director-General of Civil Aviation, in managing building works projects, should:

- (a) strengthen internal controls over compliance with government regulations and guidelines; and
- (b) take measures to raise the awareness of CAD staff on the need to comply with government regulations and procedures in managing accommodation matters and public funds.

6.10 Audit has *recommended* that the Director of Architectural Services should tighten control on compliance with the approved schedule of accommodation and requirements in relevant government circulars by user departments in future. 6.11 The lessons learnt from the new CAD headquarters project would be of benefit to other B/Ds in managing similar departmental specialist building projects in the future. Audit has also *recommended* that the Secretary for Financial Services and the Treasury and the Government Property Administrator should promulgate these lessons for their reference.

Response from the Administration

6.12 The Director-General of Civil Aviation agrees with the audit recommendations in paragraph 6.9.

6.13 The Director of Architectural Services agrees with the audit recommendation in paragraph 6.10.

6.14 The Secretary for Financial Services and the Treasury, and the Government Property Administrator accept the audit recommendation in paragraph 6.11. They have said that the FSTB/GPA have recently completed a review on the Accommodation Regulations which will take effect on 1 December 2014. The updated Accommodation Regulations will facilitate a better and clearer understanding of the rules and regulations related to government accommodation, so that B/Ds can better manage new building or refurbishment projects in future. The Government Property Administrator has also said that briefings were held in mid-October to explain to B/Ds the proposed amendments and to impress on them the need to strictly observe the various rules and regulations set out in the Accommodation Regulations.

Appendix A (para. 2.20 refers)

Layout plans showing locations of reserve space for future expansion



Second floor of the Office and Training Block

Third floor of the Office and Training Block



Appendix A (Cont'd) (para. 2.20 refers)

Fourth floor of the Office and Training Block



Fifth floor of the Office and Training Block



Appendix A (Cont'd) (para. 2.20 refers)

Sixth floor of the Office and Training Block



First floor of the Facilities Block



Appendix A (Cont'd) (para. 2.20 refers)



Second floor of the Facilities Block

Third floor of the Facilities Block



Legend: Pocket spaces for future expansion

Source: CAD records

Appendix B

Acronyms and abbreviations

ArchSD	Architectural Services Department
ATC	Air traffic control
Audit	Audit Commission
B/Ds	Bureaux/departments
CAD	Civil Aviation Department
CFA	Construction floor area
FSTB	Financial Services and the Treasury Bureau
GPA	Government Property Agency
HKIA	Hong Kong International Airport
LCD	Liquid crystal display
LegCo	Legislative Council
m ²	Square metres
NOFA	Net operational floor area
PVC	Property Vetting Committee
THB	Transport and Housing Bureau

CHAPTER 4

Civil Aviation Department

Administration of the air traffic control and related services

Audit Commission Hong Kong 30 October 2014 This audit review was carried out under a set of guidelines tabled in the Provisional Legislative Council by the Chairman of the Public Accounts Committee on 11 February 1998. The guidelines were agreed between the Public Accounts Committee and the Director of Audit and accepted by the Government of the Hong Kong Special Administrative Region.

Report No. 63 of the Director of Audit contains 10 Chapters which are available on our website at http://www.aud.gov.hk

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ADMINISTRATION OF THE AIR TRAFFIC CONTROL AND RELATED SERVICES

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ADMINISTRATION OF THE AIR TRAFFIC CONTROL AND RELATED SERVICES

Executive Summary

The Civil Aviation Department (CAD) is committed to a safe, efficient 1. and sustainable air transport system. The Air Traffic Management Division (ATMD) of the CAD is responsible for the provision of air traffic control (ATC) services for aircraft arriving/departing the Hong Kong International Airport (HKIA) and aircraft overflying within the Hong Kong Flight Information Region. From 1998-99 (the commencement of the HKIA's operation at Chek Lap Kok) to 2013-14, the air traffic handled by the CAD had increased by 113% for HKIA traffic and 217% for overflying traffic. The Air Traffic Engineering Services Division (AESD) of the CAD is responsible for the planning, provision and maintenance of ATC facilities, including the ATC system and radar systems. The CAD has about 580 staff working in its ATMD and AESD. For 2014-15, their estimated expenditure totalled \$668 million. The Audit Commission (Audit) has recently conducted a review of the CAD's administration of the ATC and related services, and in particular the implementation progress of the Air Traffic Management System (ATMS) contract, with a view to identifying issues that warrant attention and the key challenges ahead.

Management of the new ATC system project

2. In 2007, the CAD obtained funding of \$1,565 million to replace its ATC system. According to the Finance Committee paper, the existing ATC system would be approaching the end of its usable life by 2012 and the new ATC system was targeted for commissioning in December 2012. The CAD implemented the new ATC system project through eight major contracts. While seven of the eight contracts were substantially completed within their scheduled times, there was delay in implementing the ATMS contract. To-date, the ATMS contract had two contract variations totalling \$89 million. The Factory Acceptance Tests of the ATMS contract initially scheduled for completion in July 2012 were accepted in June 2013, on the condition that the then 127 outstanding deficiencies/observations would be followed up during the Site Acceptance Tests of the ATMS contract. Since then, a significant number of comments were submitted by users during user's training

and testing sessions. As at June 2014, there were still 76 outstanding deficiencies/observations and 420 comments from users to be followed up. The Site Acceptance Tests of the ATMS contract only commenced in mid-August 2014. As a result, the new ATC system was not yet in operation as at October 2014 and the latest estimate was that the new system would only be ready for operation in 2015. Meanwhile, the existing ATC system was operating above its planned capacity, with frequency of surveillance data display problems increasing since 2011 (paras. 2.1, 2.3, 2.4, 2.12 to 2.15, 2.17 to 2.19 and 2.20).

Management of the precision runway monitor project

3. In June 1996, the CAD obtained funding approval from the Finance Committee to procure a precision runway monitor (PRM) radar. The Finance Committee was informed that the PRM radar was required for independent mixed mode of operation of the two runways of the HKIA with a view to maximising the The PRM radar costing \$101.4 million was utilisation of their capacity. commissioned in 2000. Audit found that before funding approval was sought, the CAD had been made aware of the constraints in adopting independent mixed mode of operation by two consultancy studies in 1990 and 1994, (i.e. the International Civil Aviation Organization's requirements on independent mixed mode of operation could not be met due to terrain obstructions, south and northeast of the HKIA). However, the CAD proceeded with the PRM project in the belief that there might be advancement in technology to permit simultaneous independent operations and the PRM radar could then support independent mixed mode of operation. In the event, the expected changes in technology did not happen. As a result, the PRM radar was only put into use for purposes other than supporting the independent mixed mode of operation of the HKIA's runways. Such other uses also turned out to be supplemental and were discontinued after some 20 months to 4 years. The PRM radar has been put into standby mode since 2005 (paras. 3.2, 3.3, 3.6(c), 3.9(a) and 3.13).

Administration of ATC service related charges

4. Under the Government's "user pays" principle, the full cost of providing ATC services is to be recovered through the ATC service charges for aircraft using the HKIA and en-route navigation charges for aircraft using the Hong Kong airspace only. Since the setting of the en-route navigation charge at \$4.8 per nautical mile flown in 2000, the CAD completed four reviews of the charge level. However,

Audit found that after implementing the en-route navigation charge level as recommended in each fees and charges review, the CAD had not reviewed the implementation results to ensure that the charge level is conducive to achieving full-cost recovery. Audit also found that the amount of overdue en-route navigation charges had increased since 2009-10. There is a need to implement measures (such as security deposit) to provide coverage against revenue loss in default cases (paras. 4.3, 4.6 to 4.8, 4.10 and 4.13).

Administration of the mandatory occurrence reporting scheme

5. Safety has always been a top priority in the civil aviation industry. To improve the level of flight safety, the CAD has monitored hazardous or potentially hazardous incidents through a mandatory occurrence reporting (MOR) scheme. MOR cases are required to be reported within four days of occurrence. The CAD uses a database to capture information from receipt of reports to closure of the cases. Audit has found that there is a need to strengthen the management of the MOR database to ensure that it can provide accurate and up-to-date information to support MOR case management and trend analysis of significant aviation safety issues. Audit has also found that there is room for improving the timeliness of reporting MOR cases, and closer monitoring of the progress of long outstanding MOR cases (paras. 1.9, 1.12, 5.3(a), 5.7, 5.10, 5.11 and 5.21).

Way forward

6. From time to time, the CAD has to undertake major procurement projects to upgrade/replace its ATC equipment in order to provide safe, reliable, effective and efficient ATC services. The problems identified in the projects for procuring the new ATC system and the PRM radar indicate the need for conducting post-completion reviews to draw lessons for the benefit of future similar projects (para. 6.6).

Audit recommendations

7. Audit recommendations are made in the respective sections of this Audit Report. Only the key ones are highlighted in this Executive Summary. Audit has *recommended* that the Director-General of Civil Aviation should:

- (a) in conjunction with the ATMS contractor, expedite action in rectifying the outstanding deficiencies/observations in the ATMS and closely monitor the remaining contract work to minimise further project delay (para. 2.23(a));
- (b) continue the efforts to deal with the issues of operating the existing ATC system until the new ATC system is available (para. 2.23(c));
- (c) strengthen project appraisal to ensure that all uncertainties/risks impacting on project viability are fully evaluated in a cost-benefit analysis before making procurement decisions (para. 3.16(a));
- (d) conduct a review after implementing the en-route navigation charge level recommended in each fees and charges review to ensure that the charge level is conducive to achieving full-cost recovery (para. 4.17(a));
- (e) take effective measures to prevent the loss of revenue in default en-route navigation charge cases (para. 4.17(c));
- (f) strengthen the management of the MOR database to ensure that it can support the monitoring of follow-up actions on reported MOR cases (para. 5.22(a));
- (g) closely monitor the timeliness of reporting MOR cases and take targeted action in warranted cases such as cases of frequent and long delay in reporting (para. 5.22(b));
- (h) closely monitor the long outstanding MOR cases to ensure that timely follow-up actions have been taken and properly recorded (para. 5.22(f)); and
- (i) conduct post-completion reviews of major procurement projects undertaken by the CAD (para. 6.7).

Response from the Administration

8. The Administration agrees with the audit recommendations.

PART 1: INTRODUCTION

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

Background

1.2 The Civil Aviation Department (CAD) is committed to a safe, efficient and sustainable air transport system. Its primary functions are three-fold:

- (a) Provision of air traffic control (ATC) services. It provides ATC services and flight information to flights arriving and departing the Hong Kong International Airport (HKIA Note 1) and aircraft overflying the 276,000 square kilometres Hong Kong Flight Information Region;
- (b) *Regulation of the civil aviation industry.* As a regulator, it sets aviation safety and security standards, oversees the compliance by the Airport Authority, airlines and aircraft maintenance organisations with such standards, and maintains a licensing system for aviation professionals; and
- (c) *Investigation of aircraft accidents or serious incidents.* It conducts the investigation of civil aircraft accidents or serious incidents that occurred in Hong Kong with the objective of preventing recurrence.

1.3 The Air Traffic Management Division (ATMD) of the CAD is responsible for the provision of ATC services for aircraft movements at the HKIA and aircraft overflying within the Hong Kong Flight Information Region. To maintain a safe, orderly and expeditious flow of air traffic, the air traffic controllers of the ATMD are assisted by facilities including the ATC system, radar systems, navigation aids, communication equipment and information technology systems. The Air Traffic Engineering Services Division (AESD) is responsible for the planning, provision and maintenance of ATC facilities. The CAD has about

Note 1: The responsibilities to develop and manage the HKIA rest with the Airport Authority which is a statutory body established under the Airport Authority Ordinance (Cap. 483).

580 staff working in its ATMD and AESD. For 2014-15, their estimated expenditure totalled \$668 million. An organisation chart of the CAD is shown in Appendix A.

1.4 Figure 1 shows that the air traffic (in terms of aircraft movements) handled by the CAD from 1998-99 (the commencement of the HKIA's operation at Chek Lap Kok) to 2013-14 had increased from 177,759 by 113% to 378,617 for HKIA traffic and from 70,561 by 217% to 223,775 for overflying traffic. According to the CAD, for the same period, the number of staff working in its ATMD and AESD had increased by 7.7%. In its latest long-term development plan, the Airport Authority has forecasted that the aircraft movements at the HKIA would reach 602,000 in 2030, more than triple the number recorded in 1998-99.

Figure 1





Source: Audit analysis of CAD records

ATC system

1.5 The ATC system, comprising advanced electronic systems, is an essential tool enabling air traffic controllers to provide safe, reliable, effective and efficient ATC services. In 2006, the Chief Executive of the Hong Kong Special Administrative Region announced in the 2006-07 Policy Agenda an initiative to replace the ATC system and develop a new CAD headquarters on the Airport Island (Note 2). The need to replace the existing ATC system arose because:

- (a) from the opening of the HKIA in 1998 to end of 2006, the number of aircraft movements at the HKIA had increased by 72%. Over the same period, over-flight traffic through the Hong Kong Flight Information Region had also grown by 95%;
- (b) the existing ATC system was designed in early 1990s and was approaching its full design/handling capacity. Some components of the existing system were already out of production and the system was being sustained through the redeployment of existing parts where possible. There was limited scope for system upgrading and enhancement; and
- (c) without replacing the existing ATC system by a more up-to-date system, there would be insufficient system capacity to cope with traffic growth.

1.6 In May 2007, the Administration obtained the Legislative Council (LegCo) Finance Committee's approval of \$1,565 million to replace the ATC system. The new ATC system was targeted for commissioning in December 2012. To ensure the timely completion of the new CAD headquarters project (see para. 1.5) and a seamless transition to the new ATC system, the CAD set up a dedicated project team (Note 3) to oversee the preparation and implementation of

- **Note 2:** One of the reasons for developing the new CAD headquarters was to house the new ATC system which would require a space three times that for the existing ATC system. The new CAD headquarters project is covered in Chapter 3 of the Director of Audit's Report No. 63.
- Note 3: The project team headed by an Assistant Director-General of Civil Aviation was supported by a group of multi-disciplinary staff including Air Traffic Control Officers, Air Traffic Flight Services Officers, Aeronautical Communications Officers, Electronics Engineers, Senior Architect, Senior Electrical and Mechanical Engineer and non-civil service contract staff.

Introduction

both projects. While the construction works of the new CAD headquarters project were completed in June 2012 as scheduled (Note 4), as at October 2014, the contract work for the new ATC system was still in progress. The latest estimate in July 2014 was that the new ATC system would be ready in 2015.

Other ATC equipment to support the HKIA's runway operation

1.7 The HKIA has two parallel runways which were put into operation by phases, i.e. the first one in 1998 and the second one in 1999. Over the years, the CAD has installed a number of ATC equipment to support the operation of the two runways. One of the equipment known as the precision runway monitor (PRM) radar costing \$101.4 million was commissioned in 2000. However, the PRM radar has been put in standby mode since 2005.

ATC service related charges

1.8 Under the Government's "user pays" principle, the amortised capital cost and the recurrent cost for providing ATC services are recovered through:

- (a) ATC service charges collected by the Government from the Airport Authority (which in turn will take into account the ATC service charges when determining the airport charges it collects from the airline operators); and
- (b) en-route navigation charges (for overflying aircraft without landing at the HKIA) collected directly from airlines by the Government.

In 2013-14, the CAD collected ATC service charges of \$755 million from the Airport Authority and en-route navigation charges of \$265 million from airlines.

Note 4: There was a delay in tendering the design-and-build contract of the new CAD headquarters (as none of the bids received in response to the first tender invitation met the tender requirements). However, the subsequent contract works were completed on schedule.

Monitoring aviation safety

1.9 Safety has always been a top priority in the civil aviation industry. Hong Kong's aviation related safety legislations, rules and regulations are set in accordance with the International Civil Aviation Organization (ICAO — Note 5) standards and recommended practices. The CAD has also promulgated regulatory requirements and guidance materials for the industry to follow.

1.10 The CAD has different teams of professional grade officers to discharge its various safety regulatory functions. The CAD provides these staff with the necessary training and also publishes internal procedures for them to follow. Various CAD regulatory offices have their respective sets of audit and inspection programmes to verify if the industry partners are in compliance with the corresponding regulatory requirements. The CAD has set up an Air Traffic Management Standards Office under its Air Services and Safety Management Division (ASMD) to oversee the safety of the ATC operations on an on-going basis.

1.11 In the universal safety oversight audit conducted by ICAO in 2009, Hong Kong was found to have maintained a very high standard of safety oversight system (i.e. achieving an overall score of 94.47% as against a global average of 57.74%). Hong Kong was ranked 6th amongst over 180 states or administrations that had been audited by ICAO.

1.12 In addition to its comprehensive safety oversight system, the CAD also monitors any hazardous or potentially hazardous incidents through a mandatory occurrence reporting (MOR) scheme with a view to maintaining a close surveillance on the level of aviation safety.

Note 5: *ICAO was established under the Convention on International Civil Aviation with the objective to promote development of international civil aviation in a safe and orderly manner. It publishes standards and recommended practices in various aspects for civil aviation.*

Audit review

1.13 The Audit Commission (Audit) has recently conducted a review of the CAD's administration of the ATC and related services with a view to identifying room for improvement. The review has focused on the following areas:

- (a) management of the new ATC system project (PART 2);
- (b) management of the PRM project (PART 3);
- (c) administration of ATC service related charges (PART 4);
- (d) administration of the MOR scheme (PART 5); and
- (e) way forward (PART 6).

Audit has found room for improvement in the above areas and has made a number of recommendations to address the issues.

Acknowledgement

1.14 Audit would like to acknowledge with gratitude the full cooperation of the staff of the CAD during the course of the audit review.

PART 2: MANAGEMENT OF THE NEW ATC SYSTEM PROJECT

2.1 In 2007, the CAD obtained funding of \$1,565 million to replace its ATC system. According to the LegCo Finance Committee paper, the new ATC system (with a planned capacity for handling 490,000 aircraft movements in 2025 as forecast by the Airport Authority) was targeted for commissioning in December 2012. The new ATC system is a safety-critical and complex system, comprising 14 sub-systems and 3 training/simulator systems. To facilitate project management and benefit from being able to select from a wider pool of suitable individual equipment/systems in the market, the CAD implemented the new ATC system project through eight major contracts. The contracts were awarded by the Government Logistics Department (GLD) on behalf of the CAD. Details of these contracts are shown in Table 1.

Table 1

Eight major contracts for implementing the new ATC system project (31 August 2014)

Contract	Contract commencement date	Contract status as at 31.8.2014	Total estimated contract value (\$ million)	Actual expenditure up to 31.8.2014 (\$ million)
 (a) Air Traffic Management System (ATMS) Contract variation No. 1 Contract variation No. 2 	2 February 2011	Contract work in progress (Note 1)	486.0 42.4 46.8 575.2	154
(b) Air Traffic Services Data Management System	16 September 2011	(Note 2)	135	44
(c) Aeronautical Information Management System	9 December 2011		55	31
(d) Aeronautical Messaging System	13 January 2012		23	13
(e) Communication Backbone	23 April 2010	Contract work	31	27
(f) Communications and Recording System	18 February 2011	completed as scheduled with	126	36
(g) Relocation and Expansion of Air Traffic Services Message Handling System	16 July 2012	Acceptance Certificates issued	23	11
(h) Ancillary and Technical Support Systems	31 October 2011		65	57
		Total	1,033.2	373 (Note 3)

Source: CAD records

- Note 1: The ATMS contract work comprised two phases. Phase 1 contract work for operating the new ATC centre in the CAD headquarters was in progress. Completion date of Phase 1 work was originally scheduled for June 2013, which was subsequently extended to December 2013 (see para. 2.11). After completion of Phase 1 work, the transition from the existing system to the new ATC system would take another six months. Phase 2 contract work refers to the conversion of the existing air-side ATC centre into a back-up centre.
- *Note 2: Contract work for the system has been substantially completed except for the system integration with the ATMS.*
- *Note 3:* The difference between the total estimated contract value and the actual expenditure is attributed to:
 - (a) optional maintenance service charges of \$128 million have been included in the total contract value of the eight contracts which would only be payable if the maintenance service is procured;
 - (b) contract (a) has not yet been completed; and
 - (c) for contract (b), after the satisfactory completion of the system integration with the ATMS, a further contract payment of \$61 million would be made.

2.2 The tender documents for the eight major contracts were prepared by the CAD, and vetted by the GLD and Department of Justice (DoJ). Except one contract which was let out by single tender as approved by the Director of Government Logistics, the other seven contracts were let out by open tenders in accordance with the Stores and Procurement Regulations. Approval of the Central Tender Board (Note 6) was given for the use of marking schemes for tender evaluation for five contracts, while no marking scheme was used for the other three contracts. Tender Assessment Panels with experienced engineering and ATC personnel were established by the CAD to evaluate the tender offers. After completion of the tender evaluation for each contract by the respective Tender Assessment Panel, each recommended tender was considered by the Central Tender Board. All the eight contracts were approved by the Permanent Secretary for Financial Services and the Treasury (Treasury) on the advice of the Central Tender Board.

2.3 Of the eight major contracts, the ATMS contract (see item (a) in Table 1 in para. 2.1) is the most complex in terms of scope, design, system software development, functional and system interoperability requirements. As shown in Table 1, the ATMS contract had experienced delay in implementation and there were two contract variations totalling \$89 million (i.e. 18% of the original contract value). The other seven major contracts were substantially completed within their scheduled times and with minor contract variations.

2.4 In the funding application for the new ATC system in 2007, the Finance Committee was informed that the existing ATC system would reach the end of its usable life in 2012 and that some components of the existing system were already out of production and the system was being sustained through redeployment of existing parts where possible. However, as at October 2014, the new ATC system was not yet in operation as the ATMS contract had not yet been completed. This review examined the implementation progress of the ATMS contract with a view to identifying issues that warrant attention and the key challenges ahead.

Note 6: From 2010 to 2012, the Board was chaired by the Permanent Secretary for Financial Services and the Treasury (Treasury), and comprised four members including the Director of Government Logistics, Deputy Secretary for Development (Works)2, Legal Adviser (Works), Development Bureau and Deputy Secretary for Financial Services and the Treasury (Treasury)3.

Implementation progress of the ATMS contract

2.5 In 2007, the CAD set up a dedicated project team to oversee the preparation and implementation of new ATC system project (see para. 1.6). In 2007 and 2008, the project team conducted six visits of various aviation authorities to learn from their experiences in planning and operating the ATC centres and state-of-the-art systems for drawing up suitable requirements in the tender documents. Table 2 is a chronology of key events in implementing the ATMS contract.

Table 2

Date	Key event
November 2009	Tender invitation
February 2011	Contract awarded
May 2011	Detailed Design Review
January 2012	The CAD submitted a request for contract variation No. 1 to the GLD for the GLD Tender Board (Note)'s approval
June 2012	The GLD Tender Board approved contract variation No. 1
July 2012	Factory Acceptance Tests conducted
February 2013	The ATMS contractor submitted Site Acceptance Tests Procedures
June 2013	 The CAD submitted a request for contract variation No. 2 to the GLD for the GLD Tender Board's approval Factory Acceptance Tests conditionally accepted by the CAD
October 2013	The GLD Tender Board approved contract variation No. 2
August 2014	Site Acceptance Tests started

Chronology of key events in implementing the ATMS contract

Source: CAD records

Note: The GLD Tender Board chaired by the Director of Government Logistics is the authority for approving contract variation with accumulated values up to 30% of the original contract value.
Contract variation No. 1

2.6 At the Detailed Design Review stage in mid-2011, the CAD and the ATMS contractor identified areas for improvement in the ATMS on operational efficiency and safety grounds. After various discussions with the ATMS contractor, the CAD in January 2012 submitted a request to the GLD to seek the GLD Tender Board's approval for acquiring the following additional requirements in the ATMS by way of contract variation:

- (a) enhancement of the scope of data synchronisation between the live system and the ultimate fallback system;
- (b) enhancements of aircraft arrival sequence logic and human-machine interface for handling of missed approach flights, and improving operational efficiency of coordination among various operational units within the CAD as well as interoperability with the neighbouring ATC centres; and
- (c) simulator system expansion by increasing the number of simulator training and input operator positions from 32 to 48.

2.7 According to the CAD, the additional requirements were not included in the original ATMS contract because:

- (a) the enhancement of the ultimate fallback system (item (a) of para. 2.6) and new ICAO requirements (such as adequate Air Traffic Management contingency arrangements for the Asia-Pacific Region) were introduced after the tender closing of the ATMS contract;
- (b) the system enhancements (item (b) of para. 2.6) were related to new functions added to the existing ATC system/operation over a three-year period after the tendering of the ATMS in 2009. Therefore, these functions were not included in the original contract; and
- (c) the simulator system (item (c) of para. 2.6) was originally planned for share-use for training of air traffic controllers and evaluating the ATC procedures. After award of the ATMS contract, detailed training need analysis for the new system had been conducted and more training time

than originally planned was found necessary for the newly introduced features/functionalities. As regards procedure evaluation, due to steady air traffic growth in the Hong Kong Flight Information Region and positive development in Pearl River Delta airspace in recent years, additional efforts in procedure evaluation were required which could not be foreseen when inviting tenders for the ATMS contract in 2009.

2.8 The CAD also provided the following justifications to the GLD Tender Board for meeting the additional requirements through a contract variation:

- (a) the ATMS was a complex and mission-critical system. Modifications on the proprietary software supplied by the ATMS contractor were required. The software was covered by exclusive intellectual property rights over the source codes. There was no other potential and suitable supplier with such technical expertise who could provide the service;
- (b) for compatibility/interchangeability of the additional requirements with the existing equipment and services of the ATMS, it was not cost-effective and had risks if the variations were managed/implemented under a separate contract; and
- (c) variation of the existing contract, instead of entering into a new contract with the ATMS contractor, was preferred as the requirements could be met under the same terms and conditions of the current contract (i.e. the target completion date of contract would remain unchanged).

In June 2012, the GLD Tender Board approved contract variation No. 1 at a cost of \$42.4 million (or 8.7% of the original contract value).

Contract variation No. 2

2.9 During the procedure evaluation and training sessions of the ATMS (commencing in August 2012), the CAD identified the need to implement further system enhancements to improve the operational efficiency (see para. 2.10(a)) as well as to meet new requirements of the ICAO Global Air Navigation Plan

(GANP - Note 7) and Regional Performance-based Navigation Implementation Plan (PBN - Note 8) (see para. 2.10(b)).

2.10 In June 2013, the CAD submitted a request to the GLD to seek the GLD Tender Board's approval for a second contract variation to implement further system enhancements. According to the CAD, these enhancements were not covered in the original contract or contract variation No. 1 because:

- (a) with the evolution of the project and more insight gained from the hands-on experience during the training sessions, new or enhanced functionalities (in particular functions in air traffic flow management and human-machine interface) were found necessary to improve the operational efficiency and competency of the air traffic controllers in managing the increased airspace capacity which would in turn enhance flight safety; and
- (b) the enhancements were related to meeting the new requirements of ICAO viz. the GANP (which was endorsed in November 2012) and PBN.
- 2.11 The CAD also informed the GLD Tender Board that:
 - (a) the acquisition of the enhancements through a contract variation was appropriate for reasons similar to those of contract variation No. 1 (see para. 2.8); and
 - (b) the revised contract implementation plan (i.e. a deferment of the Phase 1 completion date of the ATMS by six months from June to December 2013) was acceptable.

In October 2013, the GLD Tender Board approved contract variation No. 2 at a cost of \$46.8 million (or 9.6% of the original contract value).

- **Note 7:** The ICAO's GANP sets out the regulatory requirements, procedures and technology associated with performance improvement initiatives. Through the implementation of Aviation System Block Upgrades framework in the GANP, it is expected that civil aviation could achieve global harmonisation, increased capacity, enhanced operational efficiency and improved environment globally.
- **Note 8:** The PBN for the Asia and Pacific Region provides a high-level strategy for the evolution of the navigation applications to be implemented in the short term (2008-2012) and medium term (2013-2016).

Longer time taken for system testing than scheduled

2.12 After the issue of contract variation No. 2 in October 2013, the target completion dates of some milestones in the contract were correspondingly adjusted. A comparison of the target and actual completion dates is shown in Table 3, generally reflecting slippages.

Table 3

Milestone	Target/contractual date of completion	Actual date of completion
Contract commencement	2 February 2011	2 February 2011
Detailed Design Review	11 May 2011	25 May 2011
Submission of Detailed Design Document for Government's approval	10 August 2011	7 December 2011 (see para. 2.6)
System design/manufacturing	8 February 2012	13 June 2012
Submission of Factory Acceptance Tests Procedures for Government's approval	7 March 2012	3 February 2012
Submission of Site Acceptance Tests Procedures for all equipment for Government's approval	11 April 2012	1 February 2013
Factory Acceptance Tests	18 July 2012	21 June 2013 (see para. 2.13)
Site Acceptance Tests for Phase 1 ATMS	18 October 2013*	Tests started in August 2014
Completion date of Phase 1 ATMS and system integration	20 December 2013*	Not yet commenced

Target and actual completion dates of various milestones of the ATMS contract (as at October 2014)

Source: CAD records

Remarks: Revised contractual milestone dates (i.e. by an extension of six months) due to contract variation No. 2 are marked with asterisks.

Factory Acceptance Tests. According to the contract provision, the 2.13 purpose of the Factory Acceptance Tests was to demonstrate that under the simulated environment specified in the agreed test procedures, the ATMS would generally be compliant with the technical and operations requirements specified in The Factory Acceptance Tests were initially the Final System Specification. scheduled for completion on 18 July 2012. However, during the Factory Acceptance Tests conducted between 18 June and 18 July 2012, a total of 204 deficiencies/observations were recorded. The CAD requested the ATMS contractor to rectify the problems and conducted further tests between July and October 2012 to verify the rectification work. However, it turned out that the further test results were not up to the CAD's expectation. The ATMS contractor continued its rectification work, and by June 2013, 181 of the above 204 deficiencies/observations had been rectified with only 23 still outstanding. On the other hand, another 104 deficiencies/observations were newly identified during the verification process. In view of the successful rectification of a large number (181) of deficiencies/observations and the ATMS contractor's undertaking to rectify and verify all the remaining 127 outstanding deficiencies/observations (23 plus 104) by the Site Acceptance Tests stage, the CAD conditionally accepted the Factory Acceptance Tests results.

2.14 *Site Acceptance Tests.* According to the contract provision, the purpose of the Site Acceptance Tests was to demonstrate that the system was capable of complying with every clause of contract specifications. The Site Acceptance Tests Procedures were due for submission on 11 April 2012. However, the first set of Site Acceptance Tests Procedures was not submitted until 1 February 2013 (see Table 3 in para. 2.12). According to the CAD, with experience gained during the Factory Acceptance Tests, it was agreed between the CAD and the ATMS contractor that scenario-based test should be included in the Procedures. The scenario-based test, using live traffic as far as practicable, would enable more thorough checks on the system functions, performance and reliability as it would emulate live operations. Since March 2013, the ATMS contractor had made several submissions of the Site Acceptance Tests Procedures and they were agreed in May 2014. The Site Acceptance Tests commenced in mid-August 2014 (Note 9).

Note 9: According to the CAD, the tests commenced after necessary site preparation and demonstration by the ATMS contractor of its readiness for the tests.

2.15 *Delay in commissioning the new ATC centre.* In July 2013, in response to enquiries from a Member of the LegCo Panel on Economic Development, the Transport and Housing Bureau said that:

- (a) due to delay in tendering the contract of the new CAD headquarters (which houses the ATC system — see Note 4 to para. 1.6) coupled with the need to optimise the new ATMS and the longer time taken to test and evaluate the system than expected, commissioning of the new ATC centre (of 900 square metres) could not commence in December 2012 as originally scheduled (in the Finance Committee's paper of May 2007). Installation of other systems had been substantially completed and acceptance tests were in progress; and
- (b) it was expected that enhancement and functional testing of the ATMS would be completed in the first quarter of 2014 and the earliest operation of the new ATC centre was estimated to be in the second half of 2014.

However, due to longer time taken to rectify the deficiencies (see paras. 2.16 to 2.18), in July 2014, the ATMS contractor estimated that the new ATC system would only be ready for operation in 2015. Photograph 1 is a picture of the new ATC centre with ATC equipment installed but not yet put into use.

Photograph 1



New ATC centre

Source: CAD records

Challenges ahead

Outstanding deficiencies/observations in the ATMS

2.16 According to the conditions of the CAD's acceptance of the Factory Acceptance Tests results in June 2013, the rectification and verification of the 127 outstanding deficiencies/observations were scheduled for completion by the Site Acceptance Tests stage. Audit noted that the CAD had been continuously monitoring the progress of the rectification/verification work, and had raised concern with the ATMS contractor on whether these deficiencies/observations could be cleared prior to the commencement of the Site Acceptance Tests. In response, the ATMS contractor informed the CAD that:

- (a) the outstanding items had been reviewed and action would be taken to address the software changes prior to the commencement of the Site Acceptance Tests; and
- (b) additional personnel resources would be added to address the deficiency/observation backlog.

2.17 Based on CAD records, between July 2013 and June 2014, only 51 (40%) of the 127 outstanding deficiencies/observations had been rectified. Meanwhile, during user's training and testing sessions, the CAD collected some 1,100 comments from its staff. As at mid-June 2014, 420 of these comments remained outstanding and required follow-up with the ATMS contractor. According to the CAD, it is not unusual to have a considerable number of non-safety critical system observations for a highly complicated and large-scaled system.

2.18 Site Acceptance Tests are on the critical path of the ATMS contract. The revised target completion date of the Site Acceptance Tests was October 2013. However, the Tests only commenced in mid-August 2014 (see para. 2.14). The considerable number of outstanding deficiencies/observations in the ATMS remaining to be followed up during the Site Acceptance Tests is a risk area that needs to be properly managed to ensure the successful delivery of the new ATC system and to minimise further project delay.

Operation issues of the existing ATC system

2.19 In the funding application of 2007, the Finance Committee was informed that the existing ATC system would reach the end of its usable life in 2012 and that some components of the system were already out of production and the system was being sustained through redeployment of existing parts where possible (i.e. limiting the scope for expansion of capacity and posing constraints on maintenance). However, due to the delay in implementing the ATMS contract mentioned above, the existing ATC system will have to be used until the new ATC system is available, possibly up to 2015 (see para. 2.15). This is another risk area that needs to be addressed as evidenced by the following operational issues:

(a) *Operating above the planned capacity.* The planned capacity of the existing ATC system in terms of the number of active flight plans it can handle at any one time is 1,000. Based on the CAD's statistics, during the period from January to June 2014, there were a total of 122 days (67% of the 181 days) on which the number of active flight plans actually handled was above the planned capacity of 1,000 (see Table 4). According to the CAD, since flight plans are required to be submitted well before the actual flight departures/arrivals, effective measures have been taken to even out the flight plans processing work by putting them in the wait queue if the number of flight plans received is above the processing capacity of the system; and

Table 4

Number of days with active flight plans handled above the planned capacity of 1,000 (January to June 2014)

Month	Number of days with active flight plans handled above 1,000	Range of flight plans handled	Average number of hours in a day with active flight plans above 1,000
January 2014	21	1,014 - 1,086	3.0
February 2014	24	1,002 - 1,104	3.9
March 2014	21	1,006 - 1,074	1.8
April 2014	25	1,002 - 1,110	3.6
May 2014	17	1,004 - 1,060	1.3
June 2014	14	1,016 - 1,120	3.0
Overall	122	1,002 - 1,120	2.8

Source: Audit analysis of CAD records

Increasing number of surveillance data display problems. Since 2000, (b) the CAD has introduced a system availability target of 99.9% to measure and give an early alert of the performance of the ATC system. One of the functions of the ATC system is to display various data (including flight data and surveillance data) for air traffic controllers' operation. In 2011, the CAD also introduced a safety performance indicator to measure the 12-month moving average of the number of surveillance data display problems (i.e. frozen/hang-up) on individual console positions. Based on the CAD's statistics, while the ATC system availability had been consistently above 99.9% which was in full compliance with the international best practice, there was an increasing trend in the number of display problems of the existing ATC system from January 2011 to June 2014 (see Figure 2). During the 12-month period from September 2012 to August 2013, there were actually 10 months in which the number of display problems had exceeded the then safety performance indicator of "six". The CAD considered that the increasing number of display problems was attributable to:

- (i) insufficient cooling/ventilation at surveillance data display consoles due to inherent weaknesses in the design of existing building layout which might not provide the best operating environment, particularly for 24-hour operation of the ageing hardware equipment;
- (ii) continuous increase in air traffic leading to higher system loading in terms of more frequent key strokes and heavier local area network traffic, especially at busy control positions; and
- (iii) ageing effect in the hardware of surveillance data display after continuous operations of almost 16 years with spare parts no longer available from the market, but from the CAD's stock.



12-month moving average number of surveillance data display problems (January 2011 to June 2014)



Source: Audit analysis of CAD records

Remarks: Since January 2014, the CAD has revised the safety performance indicator from six to eight until the commissioning of the new ATC system.

2.20 While the CAD had put in place measures to meet the 99.9% ATC system availability target, the ageing effect of the existing ATC system was becoming more apparent as evidenced by the increasing number of surveillance data display problems. There were also occasions that flight plans had to be put in the wait queue. The CAD needs to take measures to address these issues.

Areas for improvement

Additional requirements after contract award

2.21 In September 2013 when processing the application for contract variation No. 2, the GLD Tender Board queried if the CAD had critically reviewed its requirement to procure all essential items during the first contract variation. The Board pointed out that the practice to seek multiple contract variations was very unsatisfactory as the CAD should have included all essential requirements in the tender specifications of the ATMS in the first place and to ensure value-for-money purchase for the Government. The Board suggested that the CAD should review its tendering strategy and better plan its purchases in the future to take into account additional requirements in the pipeline. In this connection, Audit noted that for the PBN related enhancement (see para. 2.9) included in contract variation No. 2, the PBN was endorsed by ICAO in September 2011, i.e. before the CAD sought approval for contract variation No. 1 in January 2012. In response to Audit enquiry, the CAD said that it had taken some 9 to 12 months to develop and finalise the operational procedures prior to establishing the technical and functional requirements and hence the CAD could not incorporate the requirements into contract variation No. 1. In Audit's view, the CAD needs to make greater efforts to include additional user requirements in the contract work at the earliest possible opportunity.

Need for a ceiling on project estimate

2.22 The CAD obtained the Finance Committee's approved funding of \$1,565 million for the new ATC system project. It turned out that the total contract value of the eight major contracts under this project (including contract variations) only amounted to \$1,033.2 million. Audit understands from the CAD that while there would be further procurement of spares, operational and technical training packages and other ancillary systems/facilities such as front-end processor system under the ambit of the new ATC system project commitment, it is likely that significant unused funds would remain in the project commitment. To tighten financial control, the Financial Services and the Treasury Bureau (FSTB) needs to consider imposing an expenditure ceiling on the project estimate of the ATC system where the spending is projected to be significantly lower than the approved project estimate.

Audit recommendations

2.23 Audit has *recommended* that the Director-General of Civil Aviation should:

- (a) in conjunction with the ATMS contractor, expedite action in rectifying the outstanding deficiencies/observations in the ATMS and closely monitor the remaining contract work to minimise further project delay;
- (b) step up maintenance efforts to address surveillance data display problems (frozen/hang-up) in the existing ATC system;
- (c) continue the efforts to deal with the issues of operating the existing ATC system until the new ATC system is available; and
- (d) include all user requirements with time implication in a contract so that the contractor can factor in such requirements in his work programme, and for those requirements arising after the award of contract, make greater efforts to include them in the contract work at the earliest possible opportunity.

2.24 Audit has *recommended* that the Secretary for Financial Services and the Treasury should consider imposing an expenditure ceiling on the unused project estimate of the ATC system.

Response from the Administration

2.25 The Director-General of Civil Aviation agrees with the audit recommendations in paragraph 2.23. He has said that:

(a) the CAD had been tracking the progress with the ATMS contractor on the outstanding items from the Factory Acceptance Tests (see para. 2.16) for early rectification through various channels, including the weekly teleconference between senior management of the two parties;

- (b) with the measures taken to even out the flight plans processing work (see para. 2.19(a)), the system availability had been consistently above 99.9% which was in full compliance with the international best practice; and
- (c) regarding the display problems in paragraph 2.19(b), the CAD had taken proactive maintenance programme since 2010 to maintain the surveillance data display availability consistently above 99.9%. To minimise disruption to air traffic controllers' work, the CAD had put in place both operational and engineering arrangements such that air traffic controllers could make use of the adjacent data display or backup data display to continue with the work in the event of a display problem, which could be resolved within a short period of time.

2.26 The Secretary for Financial Services and the Treasury agrees with the audit recommendation in paragraph 2.24. He has said that he has no objection to imposing an expenditure ceiling on the revised project estimate of the ATC system given that ATC system is one of the very few capital non-works projects with a commitment involving more than \$1,000 million. That said, he would like to supplement with the following information on the ATC system as a capital non-works project:

- (a) according to Financial Circular No. 2/2012 "Procedures for making changes to the Estimates of Capital Works Reserve Fund", the CAD is not allowed to deploy any surplus in the project estimate to fund other expenditure items outside the ambit;
- (b) the CAD is required to indicate the estimated cash flow requirement for the project on a yearly basis in the context of the draft estimates for Capital Works Reserve Fund for the budget year. The difference between the approved project estimate and the current estimate upon award of contract is not a genuine surplus which the CAD could make use of for any other purposes; and
- (c) the existing mechanism of imposing an administrative cap on capital works projects is only an internal arrangement as bureaux/departments are allowed the flexibility of seeking to increase the cap where necessary. This should also apply to the ATC system.

PART 3: MANAGEMENT OF THE PRM PROJECT

3.1 This PART examines the CAD's management of the PRM project and suggests areas for improvement.

Implementation of the PRM project

3.2 In June 1996, the Administration obtained funding of \$602 million in money-of-the-day prices (Note 10) from the Finance Committee to procure additional special equipment and systems and construct additional government facilities to support the operation of the second runway of the HKIA. Included in the funding application was a PRM radar and a building cum tower (subsequently known as ATC back-up tower) to house the PRM radar and an ancillary ATC centre for contingency use, and to provide space for office and equipment rooms for the CAD and other government departments. The estimated cost was \$90.1 million for the PRM radar. In the funding application submitted to the Public Works Subcommittee (PWSC) of the Finance Committee, Members were informed that:

"The PRM radar is required to monitor aircraft to guard against any deviations from their flight paths under independent operation (i.e. landings and departures on both runways) enabling full utilisation of the capacity of the two runways. Without this PRM radar, the airport can only be operated under restricted segregated mode (i.e. one runway used exclusively for aircraft landings and the other used exclusively for aircraft departures but not at the same time, i.e. staggered use of the two runways will be necessary) and its capacity will be limited to 50 movements per hour which is

- **Note 10:** *Money-of-the-day prices were the estimated costs of the project after allowing for forecast increases in prices. The capital cost of works of the \$602 million was made up of:*
 - (a) PRM radar and other ATC equipment for the CAD (\$229.4 million);
 - (b) meteorological equipment for the Hong Kong Observatory (\$34.9 million);
 - (c) building and airfield facilities including the tower to house the PRM radar (\$192.9 million);
 - (d) contingency (\$22.8 million); and
 - (e) inflation allowance (\$122 million).

expected to be exceeded by the forecast traffic demand around 2000-01. The PRM must therefore be available before traffic demand exceeds runway capacity under restricted segregated mode."

3.3 The target commissioning of the PRM radar was September 1999, i.e. about a year after the target commissioning of the second runway in October 1998. In the event, the second runway and the PRM radar were commissioned in May 1999 and January 2000 respectively. The actual expenditure of the PRM radar was \$101.4 million (i.e. \$11.3 million more than the estimated cost due to higher than expected tender prices). A picture of the PRM radar on top of the ATC back-up tower is shown in Photograph 2.

Photograph 2

The PRM radar on top of the ATC back-up tower



Source: CAD records

3.4 **Runway operation mode.** Ever since the second runway came into operation in 1999, the segregated mode of operation has been adopted, i.e. with the north runway used exclusively for arrival and the south runway for departure (see Figure 3). Only when weather conditions permit would the south runway be used for landing (mainly freighters and light aircraft), i.e. the operation on the south runway is similar to dependent mixed mode of operation (see para. 3.8(b)).

Figure 3

Segregated mode of operation of the HKIA's runways



Source: CAD records

Remarks: The direction of runway operation depends on the wind direction. Under normal circumstances, aircraft have to take-off and land against the direction of wind. In simple terms, when the wind blows from the southwest direction, aircraft will land and take-off from the northeast. When northeasterly winds prevail, the runways have to be operated in reverse direction (i.e. southwest) for take-off and landing.

Utilisation of the PRM radar

3.5 In September 1999, the CAD started to explore the functions of the PRM radar and associated operation procedures with a view to resolving any safety-related issues before implementing the PRM project. The CAD noted that the PRM radar could be used for monitoring the arrival of aircraft in the following three ways:

- (a) *Providing essential distance information.* The two runways of the HKIA were each equipped with an instrument landing system to provide accurate guidance signals for use by aircraft for landing under all weather conditions. An integral part of the instrument landing system was a distance measurement equipment which provided essential distance information to pilots. The PRM radar could provide such essential distance information when the distance measurement equipment was out of service (e.g. under maintenance);
- (b) *Monitoring final approaches.* When the north runway was used for landing from the northeast (see Remarks of Figure 3 in para. 3.4) during a busy traffic session, there could be occasions when arrival aircraft were each separated with a minimum distance of three nautical miles. The high speed and high precision performance of the PRM radar would be of considerable help to the air traffic controllers in monitoring and ensuring the minimum separation between aircraft on final approach; and
- (c) *Monitoring missed approaches in relation to departures.* Because of the terrains around the airport, there was insufficient airspace to meet the ICAO's requirement of a 30 degrees divergence between a missed approach aircraft (towards the north runway) and a departing aircraft (from the south runway) when the two runways were used in the southwest direction (see Figure 4). The CAD expected that with the PRM radar, it could closely monitor the departing aircraft and the aircraft on missed approach to ensure safety by giving prompt warning to aircraft deviating off track.





The ICAO requirement on missed approach flight path in relation to departure flight path

Source: Adapted from ICAO manual

3.6 The PRM radar was used for the above three purposes commencing from March 2001 (i.e. about 15 months after the commissioning of the PRM radar — Note 11). However, in December 2002 (20 months later), the use of the PRM radar for monitoring missed approaches in relation to departures (see para. 3.5(c)) was discontinued because the CAD found an alternative solution for meeting the ICAO's requirement by streamlining the flight procedures. In January 2005 (another two years later), the CAD also discontinued the use of the PRM radar for the remaining two purposes (see para. 3.5(a) and (b)). According to the CAD:

Note 11: According to the CAD, during January 2000 and March 2001, time was spent on optimising the system for operational use, evaluating and finalising the ATC PRM operations procedures, publishing internal and flight operations notifications, and training up air traffic controllers. All the tasks were completed in mid-February 2001.

- (a) air traffic controllers responsible for monitoring approaching aircraft could also provide essential distance information to pilots by using other radars when the distance measurement equipment was not in working order;
- (b) because of operational experience gained, pilots and air traffic controllers had become more conversant with the landing procedures and the speed control measures. As a result, deviation from the target minimum spacing was rare and separation assurance could be achieved without PRM monitoring; and
- (c) under the circumstances, the PRM radar had been put into standby mode from January 2005 onwards. As a result, the annual maintenance cost of the PRM radar had been reduced from the previous \$1.1 million to the present level of \$0.2 million.

3.7 Audit noted that since its commissioning in 2000, the PRM radar had not been used to support the independent mixed mode operation of the HKIA's runways, i.e. the intended use of the PRM radar to maximise the runway capacity stated in the funding application of June 1996 (see para. 3.2). The HKIA's runways had continued to be operating under the segregated mode (see Figure 3 in para. 3.4). Audit examination of CAD records and enquiries with the CAD revealed that there were various constraints (such as terrain and technology limitations) that needed to be overcome before the independent mixed mode could be put into operation for any capacity gain (see paras. 3.8 to 3.12).

Constraints in adopting independent mixed mode of operation

1990 New Airport Master Plan Study

3.8 In 1990, the then Provisional Airport Authority (Note 12) commissioned a consultancy study (i.e. the 1990 New Airport Master Plan Study) to prepare a comprehensive and environmentally acceptable scheme for the planning and implementation of the HKIA. Regarding the parallel runway system, five different modes of operation were studied:

- (a) *Segregated mode of operation.* One of the runways would be used for arrivals, and the other for departures (i.e. the current mode of operation of the HKIA);
- (b) Dependent mixed modes of operation. Under dependent mixed operation mode, both arrivals and departures would occur on each of the two runways. Depending on the extent to which aircraft on both runways had to be coordinated with one another, there could be three different types of dependent mixed operation modes, viz. Dependent Approaches and Departures mode, Independent Approaches and Departures mode, and Dependent Approaches and Independent Departures mode; and
- (c) *Independent mixed mode of operation.* Independent mixed operations would allow each runway to function separately and without coordination with operations on the other runway, as if the runways were two different airports.

3.9 *Implementation issues.* Regarding the implementation of various operation modes, the 1990 New Airport Master Plan Study found that:

Note 12: The Provisional Airport Authority was a statutory body set up in 1990 to prepare for the development of the HKIA. With the enactment of the Airport Authority Ordinance in 1995, the Provisional Airport Authority was reconstituted as the Airport Authority to carry forward the planning, funding, development and management of the HKIA.

- (a) *Constraints.* While there was no constraint in using the segregated mode and dependent mixed mode of operation, the following constraints were envisaged in implementing independent mixed mode of operation (see para. 3.8(c)):
 - (i) for independent departures, due to two peaks in the Tai Yam Teng and Fa Peng Teng areas of northeast Lantau Island (see Figure 5), the ICAO requirement (see Figure 6) could not be met when the runway operated in the northeast direction. Consideration should be given to terrain removal to facilitate independent departures in future (i.e. excavation of the two peaks by 11 metres and 60 metres respectively also see para. 3.12(c)); and
 - (ii) for independent approaches, the ICAO regulation (see Figure 7) required that in the event of an aircraft heading off course from the north runway during approach (i.e. a missed approach), the arriving aircraft on the south runway would have to turn to the south. However, the terrain of the Lantau Island might block the aircraft in making such a south turn; and
- (b) *Proposed use of a new PRM radar.* Independent mixed mode operation could be possible in the future when the ICAO standards and aircraft flight control navigation/surveillance technology had been well developed to a state that would facilitate such mode of operation. The Consultant proposed the use of a PRM radar at the HKIA to:
 - (i) monitor independent approaches and departures to and from the two runways;
 - (ii) monitor separation of aircraft from high terrain and from other aircraft; and
 - (iii) provide redundant coverage for the approach surveillance radar already planned for the HKIA.

Figure 5

High terrain in south and northeast of the HKIA



Source: Adapted from CAD records

Figure 6



The ICAO requirement on flight paths under independent departures

Source: Adapted from ICAO manual

Remarks: The ICAO regulation requires that for departures under independent mode of operation, the flight paths of two departing aircraft must be at least 15 degrees apart immediately after take-off. Under the situation described in paragraph 3.9(a)(i), the flight path of aircraft taking off from the south runway might be blocked by the two peaks in Tai Yam Teng and Fa Peng Teng areas.





The ICAO requirement on flight paths under independent approaches

Source: Adapted from ICAO manual

Remarks: The ICAO regulation requires that for approaches under independent mode of operation, the missed approach flight paths of two aircraft must be at least 30 degrees apart. In the situation described in paragraph 3.9(a)(ii), the aircraft approaching the south runway should be directed to the south in order to meet the requirement. However, due to the terrain of Lantau Island, the aircraft could not make such a turn.

1994 Airspace Design Study

3.10 In 1994, the CAD commissioned a consultancy study (i.e. the 1994 Airspace Design Study) on the detailed flight procedures and airspace allocations for the HKIA. Regarding the operation of the two runways at the HKIA, the Study found that:

(a) new technology and the ICAO procedures to permit simultaneous independent operations expected in earlier airport master plan studies had not happened; and

(b) there was no acceptable solution for total independent mode of operation due to natural obstructions, south and northeast of the HKIA (see Figures 5 to 7 in para. 3.9).

2008 Airspace and Runway Capacity Study

3.11 In order to enhance the airspace and runway capacity, a consultancy study in this regard was commissioned by the Airport Authority in 2008 and validated by the CAD. The Study re-confirmed that constraints on independent mixed mode of operation at the HKIA as reported in previous studies were still valid. The 2008 Study also found that, based on the ICAO's standards and analysis of other factors, such as the surrounding terrain, the operating environment, the infrastructure and the airspace of the HKIA, the practical maximum capacity of the two runways of the HKIA under segregated mode of operation was 68 movements per hour, which could be attained through a series of enhancement measures. It was concluded that there would not be further capacity gain by changing the runway operation to the more complicated dependent mixed modes of operation.

Audit enquiry with the CAD

3.12 Between July and October 2014, in response to Audit enquiries concerning the procurement decision of the PRM radar and the actions taken to address the constraints in adopting the independent mixed mode of operation, the CAD said that:

(a) although the 1994 Airspace Design Study was not able to identify a viable solution to the constraints, the use of new aviation technologies, including the PRM radar to mitigate the risks in adopting independent approach (see para. 3.9(a)(ii)), had not been ruled out by the CAD. The PRM radar had a very high update rate compared with conventional radar and could enhance the ATC surveillance capability. It was considered at the time of the procurement that its application could facilitate the adoption of independent mixed mode of operation at the HKIA;

- (b) subsequent to the 1994 Airspace Design Study, the CAD noted that PRM radars could be used to enhance dual runway operations and meet the need for traffic growth. The CAD also noted that, based on the forecast traffic demand in 1996, the aircraft movements at the HKIA were expected to increase beyond the limit of 50 movements per hour under the segregated mode of operation by about 2001. A decision was therefore made in 1995 to make the purchase and funding approval was obtained in 1996. Visits to PRM installations in two overseas airports in 1997 reinforced the CAD's belief that the PRM radar was a practical means to enhance airport capacity under a constrained environment; and
- (c) the CAD's subsequent assessment indicated that the extent of obstructing terrain on northern Lantau which would need to be removed was much more extensive than that estimated in the 1990 Study, rendering the independent mixed mode of operation at the HKIA not practicable through terrain removal.

Areas for improvement

3.13 Before seeking funding for the PRM radar in 1996, the CAD had been made aware of the constraints in adopting independent mixed mode of operation to maximise the utilisation of the capacity of the HKIA's dual runways by two consultancy studies in 1990 and 1994. In particular, the 1994 Study pointed out that there was no acceptable solution for total independent mixed mode of operation due to terrain obstructions, south and northeast of the HKIA. However, the CAD proceeded with the procurement of the PRM radar in the belief that there might be advancement in technology to permit simultaneous independent operations and the PRM radar could then support independent mixed mode of operation. In the event, the expected changes in technology did not happen. As a result, the PRM radar was only put into use for purposes other than supporting the independent mixed mode of operation of the HKIA's runways. Such other uses turned out to be supplemental and were discontinued after some 20 months to 4 years (see para. 3.6) thus raising the question on whether the public fund spent on the PRM radar was good value for The CAD needs to draw lessons from this case to improve its future money. management of ATC equipment projects.

Need for cost-benefit analysis

3.14 Audit noted that the CAD's decision to procure the PRM radar was based on various assumptions, including advancement in technology which were outside the CAD's control (see para. 3.12). Despite these uncertainties, there was no traceable record to show that the CAD had evaluated the project viability using a cost-benefit analysis before making the procurement decision. The CAD also could not produce records of the considerations leading to the procurement decision (Note 13). The CAD needs to strengthen its records management, in particular for major procurement decisions for better public accountability.

Need for adequate information in funding application

3.15 In the funding application of 1996, Members of the LegCo PWSC/Finance Committee were informed that the PRM radar was required for independent mixed mode of operation to enable full utilisation of the capacity of the HKIA's dual runways. However, LegCo Members were not informed of the associated constraints in adopting the independent mixed mode of operation and the implementation of which was contingent on advancement in technology. In Audit's view, it is important that both the pros and cons of a proposed project, including the potential risks inherent in the project, are provided in the funding application to enable LegCo Members to make an informed decision on whether to support the project.

Audit recommendations

3.16 Audit has *recommended* that the Director-General of Civil Aviation should draw lessons from the PRM project with a view to improving the management of major equipment projects in future, including:

(a) strengthening project appraisal to ensure that all uncertainties/risks impacting on project viability are fully evaluated in a cost-benefit analysis before making procurement decisions;

Note 13: According to the CAD, due to the long time lapse and scattered handling offices of the PRM project, it was not certain whether the records were not available or could not be located.

- (b) strengthening the records management of major procurement decisions for public accountability; and
- (c) providing adequate information in the funding application for a capital project to enable the LegCo PWSC/Finance Committee to make an informed decision.

Response from the Administration

3.17 The Director-General of Civil Aviation agrees with the audit recommendations. He has said that as concluded in the 2008 Study, the practical maximum capacity of the two runways at the HKIA under segregated mode of operation was 68 movements per hour (see para. 3.11) which could be achieved through a series of enhancements.

PART 4: ADMINISTRATION OF ATC SERVICE RELATED CHARGES

4.1 This PART examines the CAD's administration of ATC service related charges and suggests areas for improvement.

Charging arrangements for ATC services provided

4.2 Hong Kong is a contracting party to the Convention on International Civil Aviation (also known as Chicago Convention) and is responsible for providing ATC services to all aircraft operating in and out of the HKIA and within the Hong Kong Flight Information Region. The Chicago Convention provides that all contracting parties may impose reasonable charges on the aircraft for the use of such navigation services.

4.3 Under the Government's "user pays" principle, the full cost of providing ATC services is recovered through the following charges:

ATC service charges. For ATC services provided to aircraft operating in (a) and out of the HKIA, the CAD collects from the Airport Authority ATC service charges (based on which the Airport Authority determines the airport charges that it collects from the airline operators). In accordance with an agreement between the Government and the Airport Authority, on or before 1 September each year, the CAD is to provide the Airport Authority with an estimate of the ATC service charges for the coming financial year together with the CAD's projected cost estimates. The Airport Authority shall pay the Government the estimated ATC service charges by 12 equal monthly instalments on the 21st day of each month. Within three months after the expiry of each financial year, the CAD shall provide the Airport Authority with a statement of the final accounts showing the actual ATC service charges payable and adjustment (either by way of a refund of excess paid or a payment of any shortfall) shall be made within 60 days from the date of the delivery of the statement of the final accounts; and

(b) *En-route navigation charges.* For aircraft passing through the Hong Kong Flight Information Region, without landing at the HKIA, the CAD collects en-route navigation charges directly from the airlines concerned. The terms of en-route navigation charges are published in Gazette Notice as well as the CAD's Aeronautical Information Publication which are available on the Internet and open to access by all airlines. The current charge rate at \$4.8 per nautical mile flown was published in the Gazette Notice of August 2000. Based on the flight data captured by its computer system, the CAD issues demand notes three times a month to cover flights from the 1st to 10th days, 11th to 20th days and 21st to the last day of the month. Demand notes for en-route navigation charges are to be settled within two weeks of the issue date.

4.4 Figure 8 shows the amount of ATC service related charges collected by the CAD from 2009-10 to 2013-14.



ATC service related charges collected (2009-10 to 2013-14)

Figure 8

Source: Audit analysis of CAD records

Review of en-route navigation charge level

4.5 It is the Government's policy that fees charged by the Government should be set at levels adequate to recover the full cost of providing the goods and services. The Financial and Accounting Regulations (Note 14) stipulate that Controlling Officers are responsible for ensuring that the fees and charges relating to services for which they are responsible are regularly reviewed and updated. According to Financial Circular No. 6/2006, Controlling Officers should ensure that the fee levels are conducive to achieving the target (such as full-cost recovery), taking into account fairness and friendliness to users.

4.6 Since the setting of the en-route navigation charge at \$4.8 per nautical mile flown in 2000, the CAD completed four reviews of the charge level. In all the reviews, the CAD projected the charge level for the coming years based on the estimated costs of providing the service and the estimated nautical miles flown by the airlines. Based on comparisons of the projected charge levels with the existing charge level, the CAD recommended maintaining the en-route navigation charge at the current level. The FSTB agreed to the CAD's recommendations for the reviews conducted in 2001, 2008, and 2009, and rejected the CAD's proposal for the 2013 review to maintain the fee at the current level, which did not meet the full-cost recovery principle. In December 2013, the CAD submitted a revised proposal to adjust the en-route navigation charge level for 2014-15. The CAD's revised proposal was accepted by the FSTB in March 2014.

4.7 Audit noted that after implementing the en-route navigation charge level as recommended in each fees and charges review (i.e. maintaining at \$4.8 per nautical mile), the CAD had not reviewed the implementation results. Audit analysed the cost recovery situation by comparing the actual costs of providing the en-route navigation services and the charges collected from 2001-02 (the year after implementing the current en-route navigation charge rate) to 2013-14 (see Table 5).

Note 14: The Financial and Accounting Regulations are made by the Financial Secretary under the provisions of the Public Finance Ordinance (Cap. 2) for the better carrying out of the provisions and purposes of the Ordinance, and for the safety, economy and advantage of public moneys and Government property.

Table 5

Comparison of en-route navigation charges collected and actual costs of providing the services (2001-02 to 2013-14)

Year	En-route navigation charges collected (a) (\$ million)	Actual cost attributed to en-route navigation services (b) (\$ million)	Difference (c) = (a) – (b) (\$ million)
2001-02	161.7	128.8	32.9
2002-03	129.5	130.6	(1.1)
2003-04	120.9	126.3	(5.4)
2004-05	153.7	122.0	31.7
2005-06	171.3	131.0	40.3
2006-07	184.4	126.2	58.2
2007-08	201.0	125.1	75.9
2008-09	192.0	177.3	14.7
2009-10	179.7	178.8	0.9
2010-11	200.3	180.4	19.9
2011-12	218.1	187.1	31.0
2012-13	238.3	212.9	25.4
2013-14	265.1	226.3	38.8
Total	2,416.0	2,052.8	363.2

Source: Audit analysis of CAD records

4.8 The discrepancies between actual costs of providing the en-route navigation services and the charges collected as shown in Table 5 indicate a need for the CAD to conduct a review after implementing the en-route navigation charge level recommended in each fees and charges review to ensure that the charge level is conducive to achieving full-cost recovery. Audit noted that as at August 2014, the CAD had not implemented its proposed en-route navigation charge rate for 2014-15 because of the need to obtain legal advice on certain issues. The CAD needs to take this opportunity to re-examine the proposed charge rate with due regard to the latest cost projection and the full-cost recovery principle.

4.9 In response to Audit enquires, the CAD said that:

- the figures in Table 5 in paragraph 4.7 should be interpreted in the light (a) of the economic environment and costing methodology. Revenue dropped significantly in 2002-03 and 2003-04 because of a substantial reduction in the airspace under the control of the CAD with effect from 1 November 2001 and the adverse impact of severe acute respiratory syndrome. As a result, the Government suffered deficits on en-route navigation services in these two years. From 2004-05 to 2007-08, robust economic recovery and growth of the aviation industry resulted in the revenue exceeding the costs. In 2008-09, the CAD revised the costing basis for the en-route navigation services to more accurately reflect the increasing resources devoted to this area. This, coupled with the global economic recession which caused a reduction in revenue, resulted in the surplus declining to \$0.9 million in 2009-10. Since 2010-11, the revenue had risen in line with the strong traffic growth in the Asia-Pacific Region. This caused the surplus to increase to \$38.8 million in 2013-14. However, it is expected that the total cost for en-route navigation services will increase when the new ATC system comes into operation; and
- (b) the CAD did not review the implementation results after each fees and charges review in the past because this was not a Government-wide requirement. Nonetheless, the CAD agrees to conduct such reviews in future.

Collection of en-route navigation charges

4.10 According to CAD records, demand notes for ATC service charges are usually settled on time but those for en-route navigation charges are not always so. Figure 9 shows that the amount of overdue en-route navigation charges at year end had increased by 230% from \$4.7 million in 2009-10 to \$15.7 million in 2013-14. Though the amount involved remained relatively small as compared to the total revenue of \$1,101.5 million over the same period, its significant increase percentage-wise is a cause for concern. An analysis of the \$15.7 million overdue en-route navigation charges as at 31 March 2014 is shown in Table 6.



Figure 9

Financial year

Source: Audit analysis of CAD records

Remarks: As at 30 September 2014, the overdue amount of en-route navigation charges was \$21.6 million.
Table 6

Analysis of the overdue en-route navigation charges (31 March 2014)

Amount overdue by each airline	Number of defaulting airlines	Total amount overdue (\$ million)
Less than \$50,000	155	1.0
\$50,000 to less than \$250,000	23	3.0
\$250,000 to less than \$500,000	4	1.5
\$500,000 and above (Note)	5	10.2
Total	187	15.7

Source: Audit analysis of CAD records

Note: The amount involved in the largest default case (hereinafter referred to as Case A) was \$6.4 million which had increased to \$7 million by 30 September 2014.

Measures to tackle default cases

4.11 The CAD has laid down procedures for following up on overdue demand notes for en-route navigation charges. The timetable for the follow-up actions is shown in Table 7.

Table 7

CAD action	Amount owed by local airline operator		Amount owed by overseas airline operator	
	< \$50,000	≧ \$50,000	< \$50,000	≧ \$50,000
Issue of reminder	2 weeks		3 weeks	
Issue of warning letter (Note)	5 weeks		7 weeks	
Preparation of first legal letter to be signed by DoJ's counsel (Note)	8 weeks	_	11 weeks	_
Preparation of second legal letter to be signed by DoJ's counsel (Note)	14 weeks	_	17 weeks	_
Referral to DoJ (Note)	18 weeks	8 weeks	21 weeks	11 weeks

Timetable for follow-up actions on overdue en-route navigation charges

Source: CAD records

Note: In practice, these steps are performed by batch on a monthly basis.

Remarks: The number of weeks is counted from the date of issue of demand note.

Security deposit/banker's guarantee

4.12 According to the Gazette Notice on en-route navigation charges of August 2000 (see para. 4.3(b)), the Director-General of Civil Aviation may require an airline operator to lodge with the CAD:

(a) a security deposit equivalent to the anticipated charges that the operator shall incur for one month of operation by that operator. The CAD has the right to deduct from the deposit the amounts that are not settled within the time limit specified in the demand notes; and (b) alternatively, a banker's guarantee of the same amount.

4.13 Audit noted that the CAD had not demanded security deposit or banker's guarantee from any airline operator. According to the CAD, there could be potential operational difficulties in implementing these measures. However, given the increasing trend of overdue en-route navigation charges (see Figure 9 in para. 4.10), there is a need to implement measures to provide coverage against revenue loss in default cases. In Audit's view, the CAD should explore the feasibility of demanding a security deposit or banker's guarantee on a case-by-case basis having regard to the operator's payment records.

Legal action against default cases

4.14 According to the Standing Accounting Instructions issued by the Treasury, where a Controlling Officer is satisfied that sums due to the Government arising from arrears of revenue are not recoverable, he should apply write-off procedures. In the past 10 years from 2004-05 to 2013-14, the CAD wrote off 101 cases of outstanding en-route navigation charges totalling \$1.2 million. Of the 101 written-off cases, 96 (95%) involved less than \$50,000 each for which the DoJ had advised that it was not cost-effective or viable to take legal action as the debtors were untraceable, insolvent or otherwise out of the jurisdiction.

4.15 Of the remaining five written-off cases involving more than \$50,000 each, one case was written off in 2005 after consulting the DoJ. In 2006, the CAD consulted the DoJ about the possible sanction against the largest (in terms of amount) of the other four cases. In this case, the defaulting airline failed to pay en-route navigation charges totalling \$391,066 from November 2004 to October 2005 when it ceased overflying Hong Kong airspace. However, after consulting the DoJ, and in the light of the fact that all recovery actions were futile, the CAD wrote off the outstanding amount of \$391,066 in September 2006. Thereafter, the CAD wrote off three other cases of outstanding en-route navigation charges involving \$75,951 to \$232,248 each for similar reasons.

4.16 As at 30 September 2014, there were four cases of overdue en-route navigation charges (including Case A — see Note to Table 6 in para. 4.10) which involved over \$500,000 each. The CAD should consider taking effective measures

to protect revenue, including reminding airline operators of their contractual obligation to pay en-route navigation charges and instigating legal actions against default cases as appropriate.

Audit recommendations

4.17 Audit has *recommended* that the Director-General of Civil Aviation should:

- (a) conduct a review after implementing the en-route navigation charge level recommended in each fees and charges review to ensure that the charge level is conducive to achieving full-cost recovery;
- (b) re-examine the proposed en-route navigation charge rate for 2014-15 with due regard to the full-cost recovery principle; and
- (c) take effective measures to prevent the loss of revenue in default en-route navigation charge cases, including:
 - (i) demanding a security deposit or banker's guarantee from specific airline operators using the CAD's navigation services on a case-by-case basis having regard to their payment records;
 - (ii) reminding the airline operators of their contractual obligation to pay en-route navigation charges when they first submit flight plans to the CAD for using the Hong Kong airspace and in all demand notes sent to them; and
 - (iii) taking legal actions against defaulting airline operators as appropriate.

Response from the Administration

4.18 The Director-General of Civil Aviation agrees with the audit recommendations.

PART 5: ADMINISTRATION OF THE MANDATORY OCCURRENCE REPORTING SCHEME

5.1 This PART examines the CAD's administration of the mandatory occurrence reporting (MOR) scheme and suggests areas for improvement.

Requirements and procedures of the MOR scheme

5.2 According to the Safety Management Manual of ICAO, a fundamental activity of safety management is the accurate and timely reporting of relevant information related to hazards, incidents or accidents. ICAO has recommended, among other things, that aviation authorities should:

- (a) establish a mandatory incident reporting system to facilitate collection of information on actual or potential safety deficiencies; and
- (b) establish and maintain an accident and incident database to facilitate the effective analysis of information on actual or potential safety deficiencies obtained, including that from its incident reporting systems, and to determine any preventive actions required.

5.3 The requirements of the MOR scheme are laid down in the Air Navigation (Hong Kong) Orders 1995 (Cap. 448C), as follows:

(a) any aviation service provider or operating personnel specified in the legislation (e.g. a pilot, operator and manufacturer of an aircraft registered in Hong Kong, an air traffic controller and an aerodrome licensee or manager) shall make a report of any reportable occurrence within four days of such occurrence coming to his knowledge;

- (b) a reportable occurrence is defined as any incident or defect of an aircraft or any ground facility which endangers, or which if not corrected would endanger the aircraft, the occupants or any other person (Note 15); and
- (c) an aircraft operator shall retain the data from a flight data recorder which is relevant to a reportable occurrence for a period of 14 days from the date of the occurrence being reported to the CAD or such a longer period as the CAD directs.

5.4 According to the CAD's MOR guidelines issued in 1999, the objectives of the MOR scheme are to:

- (a) ensure that the CAD is advised of hazardous or potentially hazardous incidents and defects;
- (b) enable knowledge of these occurrences to be disseminated so that other persons and organisations may learn from them; and
- (c) enable an assessment to be made by those concerned of the safety implications of each occurrence, both in itself and in relation to previous similar occurrences, so that they may take or initiate any necessary action.

Processing of occurrence reports

5.5 According to the CAD's MOR guidelines, the Flight Standards and Airworthiness Division (FSAD) is the central point for receipt, dissemination, storage and analysis of MOR data. It is responsible for:

Note 15: To assist those who are involved in the MOR operation, the CAD has issued guidance on the types of occurrence (relating to aircraft operations, aircraft technical issues, and ground services and facilities) which must be reported. Examples are fire, uncontained engine failures, critically low fuel states and close proximity between aircraft.

- (a) carrying out evaluation to identify MOR cases that require the CAD's involvement in follow-up and to direct these cases to responsible CAD divisions for action (Note 16);
- (b) recording those cases where follow-up action is needed as "Open" in the MOR database. All reports not requiring the CAD's follow-up action are recorded as "Closed" by the responsible division. For example, some reported occurrences may have been adequately dealt with by the reporting organisations. There is no justification for further investigation by the CAD although details of the occurrence and action taken do provide valuable information for dissemination and storage purpose. Such cases are categorised as "closed on receipt";
- (c) coordinating and monitoring the progress until satisfactory closure of "Open" occurrences;
- (d) disseminating occurrence information to those who need to know (through notices and bulletins);
- (e) continuously monitoring all incoming data for significant hazards or potential hazards using previously stored data when appropriate, and alerting corresponding CAD specialist divisions and others as necessary; and
- (f) regular monitoring of stored data to identify hazards or potential hazards.

Note 16: The CAD divisions responsible for carrying out follow-up action on MOR cases are:

- (a) the ASMD for ATC related cases;
- (b) the Airport Standards Division (APSD) for airport operation related cases; and
- (c) the FSAD for cases relating to flight operation and aircraft engineering.

- 5.6 The CAD's MOR guidelines also specify that:
 - (a) if alternative reporting procedures have been established by the responsible divisions of the CAD other than the FSAD, such occurrence reports will be received and handled directly by the responsible divisions (Note 17); and
 - (b) in line with the international practices, it is the CAD's policy not to institute legal proceedings in respect of unpremeditated or inadvertent breaches of the law which come to light only because they have been reported under the MOR scheme, except in cases involving dereliction of duty amounting to gross negligence or recklessness. Nevertheless, to ensure aviation safety, the CAD may suspend or revoke a licence if an occurrence report suggests that a licence holder does not satisfy the licence requirements.

5.7 The FSAD uses a MOR database (Note 18) to capture information of MOR cases from receipt of the reports to closure of the cases. According to the CAD's laid-down guidelines, the FSAD is responsible for categorising the reports received, creating records in the database and forwarding relevant cases to responsible divisions (i.e. the ASMD, FSAD and APSD). The relevant division is responsible for assigning a risk level to each MOR case, taking follow-up action accordingly and updating the MOR database until the case is closed.

Note 17: According to laid-down procedures of the ASMD and APSD, such MOR cases received and handled by them directly should centrally reach the FSAD for updating the MOR database.

Note 18: According to the CAD, the database is a primary means of providing MOR statistical data for addressing outside enquiries. It also provides a platform for the FSAD to manage MOR cases relating to flight operations and engineering events. The APSD and ASMD use their own control systems to manage MOR cases regarding the airport and air traffic events respectively.

Areas for improvement

Management of MOR database

5.8 In June 2014, Audit obtained from the CAD an image of the MOR database (hereinafter referred to as the June version) for analysing MOR cases from 2009-10 to 2013-14. Audit analysis of the database image revealed that as at 16 June 2014, there were 3,336 MOR cases (of which 2,189 were closed and 1,147 were outstanding cases) in the past five years. Ageing analysis of the 1,147 outstanding cases showed that 811 (71%) had remained outstanding for over one year. In response to Audit enquiry, in August 2014 the CAD provided Audit with an updated version of the database image as at 12 August 2014 (hereinafter referred to as the August version), which showed that there were 3,374 MOR cases (of which 2,740 were closed and 634 were outstanding cases).

5.9 According to the CAD, the discrepancies between the June and August versions of the MOR database were attributable to:

- (a) *Updating the case status*. The status of 509 cases with completed action but still shown as open cases in the June version database was updated in the August version;
- (b) *Reclassification of reported cases.* 44 non-MOR cases were reclassified as MOR cases while 11 MOR cases were reclassified as non-MOR cases;
- (c) *Duplication cases.* Four duplicated MOR cases were deleted; and
- (d) Late input cases. There were nine late input cases. Eight of them occurring in 2012 and 2013 were uploaded to the MOR database in July/August 2014. The remaining case which occurred in January 2014 was reported to the CAD in July 2014 (Note 19).

A reconciliation of two versions of the MOR database is shown in Table 8.

Note 19: In response to Audit's enquiry in September 2014, the CAD informed Audit that the late reporting case was found to be a non-MOR case after completing an investigation in September 2014.

Table 8

	Number of outstanding MOR cases (a)	Number of closed MOR cases (b)	Total number of MOR cases (a) + (b)
June version database	1,147	2,189	3,336
Add or (Less):			
Outstanding case reclassified as closed	(509)	509	_
Case reclassified as MOR	_	44	44
Case reclassified as non-MOR	(9)	(2)	(11)
Case duplicated	(4)	_	(4)
Late input cases	9	_	9
August version database	634	2,740	3,374

Reconciliation of the June and August versions of the MOR database

Source: Audit analysis of CAD records

5.10 The MOR database is an important management tool for monitoring the progress of follow-up actions on reported hazardous or potentially hazardous occurrences and for trend analysis of significant aviation safety issues. However, the discrepancies found in the June version of the MOR database indicate weaknesses in the management of the MOR database because:

- (a) the change of status of 509 cases was not timely reflected in the MOR database;
- (b) the classification of 59 (44 + 11 + 4) cases in the MOR database was found to be inaccurate;

- (c) some of the discrepancies were not reconciled in a timely manner as ageing analysis of the 568 (509 plus 59) cases showed that 298 (52%) of them occurred before 2013-14; and
- (d) of the nine late input cases, eight cases (which occurred in 2012 and 2013) were uploaded to the database after a lapse of 17 to 29 months.

5.11 *Audit analysis of the August version MOR database.* The analysis has revealed room for improvement in the following areas:

- (a) timeliness of reporting (see paras. 5.12 to 5.17); and
- (b) management of MOR cases (see paras. 5.18 to 5.21).

Timeliness of reporting

5.12 Timeliness of reporting reportable occurrences under the MOR scheme contributes to aviation safety by enabling early identification of hazards and prompt dissemination of safety information. However, of the 3,374 MOR reports received by the CAD from 2009-10 to 2013-14, 1,037 (31%) could not meet the statutory four-day-reporting rule (see para. 5.3(a)). As shown in Figure 10, the percentage of late reporting increased from 24% in 2009-10 to 35% in 2013-14.





MOR reports received (2009-10 to 2013-14)

Source: Audit analysis of CAD records

5.13 As shown in the ageing analysis in Figure 11, 28% of the 1,037 late reports were received after 14 days (i.e. beyond the statutory retention period of data from a flight data recorder — see para. 5.3(c)).





Source: Audit analysis of CAD records

5.14 In response to Audit enquiry on the actions taken to improve the timeliness of reporting MOR cases, the CAD informed Audit in August and September 2014 that:

the CAD had issued a notice to all airlines in July 2014 to remind them of (a) the four-day-reporting rule;

- (b) the CAD's MOR guidelines used the words "major" or "significant" to describe some reportable occurrences which would be subject to interpretation and very much dependent upon the situation. The reporting organisation might have to obtain further information in order to determine if the event was reportable or not;
- (c) the overall objective of the CAD in operating the MOR scheme was to use the reported information to improve the level of flight safety and not to attribute blame. It was the international best practice to promote a non-punitive reporting culture, so as to encourage reporting of occurrences. As such, punitive action might not be the first consideration; and
- (d) there might be cases that the reporting organisations/personnel only became aware of the occurrences after the statutory four-day-reporting period. Such cases should not be regarded as non-compliant cases. The CAD would consider revising the MOR reporting form to facilitate reporting organisations/personnel to indicate the dates when the occurrences come to their knowledge (if different from the dates of occurrences).

5.15 Audit understands that the CAD's practice is to provide a non-punitive environment in order to encourage reporting. However, a balance has to be struck to ensure that the effectiveness of the MOR scheme is not compromised. In Audit's view, there is a need to take targeted action in warranted cases such as those listed in paragraphs 5.16 and 5.17.

5.16 *Frequent non-compliant cases.* Audit analysis of the 1,037 late MOR reports showed that 84% were accounted for by three operators. In the past five years, the CAD had not reminded them to improve the situation until July 2014 (see para. 5.14(a)). There is a need to conduct similar analysis regularly to identify such cases for the CAD's senior management's attention and necessary follow-up action.

5.17 Long delay cases. Audit examined all the 15 MOR cases which had taken more than 180 days to report (see Figure 11 in para. 5.13) and found that in six cases (Note 20) the reasons for long delay were that the relevant operators only submitted the MOR reports to the CAD after completion of their own follow-up actions. The CAD needs to remind these operators that their own follow-up actions do not absolve them of their statutory responsibility to comply with the four-day-reporting rule. Long delay in reporting is not conducive to the timely dissemination of information on potential hazards for other aviation organisations/personnel to learn. The CAD needs to regularly review long delay cases to ascertain the underlying reasons with a view to taking appropriate actions to improve the situation.

Management of MOR cases

5.18 Assignment of risk level. According to the CAD's laid-down procedures, all MOR cases should be assigned a risk level upon receipt of the reports. With reference to the ICAO guidelines and building on past experiences, the CAD has developed a model for assessing the risk level of MOR cases taking into account the severity and likelihood of the occurrences. The FSAD and APSD use a scale of 1 to 7 to denote the risk levels, i.e. levels 6 to 7 are categorised as high risk, levels 4 to 5 as medium risk and 1 to 3 as low/no risk. The ASMD has followed the ICAO's classification of risk based on "aircraft proximity" (Note 21) and developed its risk categorisation, i.e. Categories A to D to denote cases of "risk of collision", "safety not assured (i.e. collision could result if no action taken by either the pilot or the ATC)", "no risk of collision" and "risk undetermined (due to insufficient information or conflicting/inconclusive evidence)", respectively.

- Note 20: Of the other nine cases examined by Audit, three were in fact compliant cases but, due to input error, the dates of updating the database were mistakenly recorded as the dates of reporting the reportable occurrences. Four other cases were omission cases identified by the CAD during a licensing inspection. The CAD subsequently issued a warning letter to the operator concerned. Regarding the remaining two cases, the CAD informed Audit that they had been reclassified as non-MOR cases in September 2014 after investigations.
- **Note 21:** *ICAO defines "aircraft proximity" as a situation in which, in the opinion of a pilot or air traffic services personnel, the distance between aircraft as well as their relative positions and speed have been such that the safety of the aircraft involved may have been compromised.*

Administration of the mandatory occurrence reporting scheme

5.19 Depending on the risk level of an MOR case, the case officer may either carry out investigation or monitor the progress of investigation and corrective actions taken by the reporting organisations (e.g. for the low risk cases). After completion of all follow-up actions, the case officer may amend the risk level previously assigned if necessary. Audit analysis of the 3,374 MOR cases by risk levels recorded in the respective database revealed that 1,025 (30%) of them were without risk level assigned/captured (see Figure 12). Of the 1,025 cases, 967 were within the purview of the FSAD and APSD. The CAD needs to remind the responsible case officers to follow the laid-down procedures in assigning risk levels for MOR cases. The remaining 58 MOR cases were handled by the ASMD. The ASMD used non-numeric risk categorisation to classify the risk levels of ATC related cases (see para. 5.18) which could not be captured by the MOR database. The CAD may wish to consider enhancing the MOR database to capture such information to facilitate management review.

Figure 12



Analysis of 3,374 MOR cases by risk level (2009-10 to 2013-14)

Source: Audit analysis of CAD records

5.20 Airport vehicles not giving way to aircraft. Audit examination of the 412 medium risk cases revealed that the most frequent incidents were related to "airport vehicles not giving way to aircraft" (33 cases from January to December 2012). Among the 1,025 cases without risk level assigned/captured, there were 75 similar incidents. According to the CAD, the APSD had followed up all these cases using its monitoring regime on airport operation (see para. 1.10), and had conducted a review on these cases in January 2013. The review found that these cases often occurred in apron area involving slow-moving taxiing aircraft and vehicles, i.e. not meeting the reporting criteria of an obstruction in runways or aircraft manoeuvring areas as mentioned in the CAD's guidelines on reportable occurrences. As such, the CAD had ceased to categorise these cases as reportable occurrences since 2013. Audit noted from APSD records that during January 2013 and March 2014, there were 66 cases of "airport vehicles not giving way to aircraft". In other words, there were a total of 174(33 + 75 + 66) such cases from 2009-10 to 2013-14. In order to minimise the occurrence of such cases and to mitigate the associated risks, Audit considers that in addition to the current monitoring regime on airport operations, the CAD also needs to continue monitoring these cases (which may result in a hazardous or potentially hazardous situation) through the MOR system and instigate regulatory action if the situation persists.

5.21 Long outstanding cases. According to the CAD's laid-down guidelines, MOR cases should normally be closed within six months and any MOR case remaining outstanding for more than six months should be monitored on a monthly basis. Of the 3,374 MOR cases, 634 were outstanding as at 12 August 2014. Ageing analysis of these 634 cases showed that 201 had remained outstanding for over four years (see Figure 13). According to the dates of last action recorded in the MOR database, 117 of these 201 cases had no follow-up action recorded since 2009. For example, in one case concerning display error of aircraft engine speed, the case officer sought comments from a colleague in June 2009. However, the case record showed that no response was received and no further action had been recorded since June 2009. The CAD needs to closely monitor the long outstanding cases to ensure that timely follow-up actions have been taken in accordance with the laid-down guidelines.



Ageing analysis of 634 outstanding MOR cases (12 August 2014)

Figure 13

Source: Audit analysis of CAD records

Audit recommendations

5.22 Audit has *recommended* that the Director-General of Civil Aviation should:

- (a) strengthen the management of the MOR database to ensure that it can support the monitoring of follow-up actions on reported MOR cases;
- (b) closely monitor the timeliness of reporting MOR cases and take targeted action in warranted cases such as cases of frequent and long delay in reporting;

- (c) consider revising the MOR reporting form to facilitate reporting organisations/personnel to indicate the dates when the reportable occurrences come to their knowledge (if different from the dates of the occurrences);
- (d) remind case officers to strictly follow the laid-down procedures in assigning the risk levels for MOR cases and consider enhancing the MOR database to capture the risk information of the ATC related cases to facilitate management review;
- (e) continue to monitor cases of obstruction of aircraft by airport vehicles through the MOR system and instigate regulatory action if the situation persists; and
- (f) closely monitor the long outstanding MOR cases to ensure that timely follow-up actions have been taken and properly recorded.

Response from the Administration

5.23 The Director-General of Civil Aviation agrees with the audit recommendations. He has said that in response to the audit findings on airport vehicles not giving way to aircraft, the CAD has taken actions (e.g. monthly airfield safety briefings, regular airport safety meetings and the production of a dedicated safety video) to enhance the airport community's awareness of such cases.

PART 6: WAY FORWARD

6.1 This PART summarises the major audit observations identified in earlier PARTs and examines the way forward.

Major audit observations

6.2 The ATC system, comprising advanced electronic systems, is an essential tool enabling air traffic controllers to provide safe, reliable, effective and efficient ATC services. In PART 2, Audit found that the existing ATC system was operating above its planned capacity, with frequency of surveillance data display problems increasing since 2011, but the new ATC system targeted for commissioning in December 2012 had experienced delay in implementation. Up to August 2014, there were considerable outstanding deficiencies/observations remaining to be followed up during the Site Acceptance Tests. The latest estimate was that the system would only be ready for operation in 2015.

6.3 In 1996, the CAD obtained funding to procure a PRM radar with a view to maximising the utilisation of the capacity of the HKIA by adopting independent mixed mode of operation for its parallel runways. The PRM radar costing \$101.4 million was commissioned in 2000. In PART 3, Audit found that the CAD had been made aware of the constraints in adopting the independent mixed mode of operation by two consultancy studies in 1990 and 1994 (i.e. the ICAO's requirements on independent mixed mode of operation could not be met due to terrain obstructions south and northeast of the HKIA). However, the CAD proceeded with the PRM project in the belief that there might be advancement in technology to permit simultaneous independent operations and the PRM radar could then support independent mixed mode of operation. In the event, the expected changes in technology did not happen. As a result, the PRM radar was only put into use for purposes other than supporting the independent mixed mode of operation of the HKIA's runways. Such other uses also turned out to be supplemental and were discontinued after some 20 months to 4 years. The PRM radar has been put into standby mode since 2005.

6.4 Under the Government's "user pays" principle, the full cost of providing ATC services is to be recovered through the ATC service charges for aircraft using the HKIA and en-route navigation charges for aircraft using the Hong Kong airspace

only. In PART 4, Audit has found that there is a need for the CAD to conduct a review after implementing the en-route navigation charge level recommended in each fees and charges review to ensure that the charge level is conducive to achieving full-cost recovery. Moreover, in view of the increasing amount of overdue en-route navigation charges, the CAD also needs to consider implementing measures (such as security deposit) to provide coverage against revenue loss in default cases.

6.5 Safety has always been a top priority in the civil aviation industry. To improve the level of flight safety, the CAD has monitored hazardous or potentially hazardous incidents through the MOR scheme. In PART 5, Audit has found that there is a need to strengthen the management of the MOR database to ensure that it can provide accurate and up-to-date information to support MOR case management and trend analysis of significant aviation safety issues. Audit has also found that there is room for improving the timeliness of reporting MOR cases, and closer monitoring of the progress of long outstanding MOR cases.

Post-completion review

6.6 From time to time, the CAD has to undertake major procurement projects to upgrade/replace its ATC equipment in order to provide safe, reliable, effective and efficient ATC services. The problems identified in the projects for procuring the new ATC system and the PRM radar indicate the need for conducting post-completion reviews to draw lessons for the benefit of future similar projects.

Audit recommendation

6.7 Audit has *recommended* that the Director-General of Civil Aviation should conduct post-completion reviews of major procurement projects undertaken by the CAD (including the new ATC system project), taking into account the audit observations and recommendations in this Audit Report.

Response from the Administration

6.8 The Director-General of Civil Aviation agrees with the audit recommendation.

Civil Aviation Department: Organisation chart (August 2014)



Source: CAD records

Appendix B

Acronyms and abbreviations

AESD	Air Traffic Engineering Services Division
APSD	Airport Standards Division
ASMD	Air Services and Safety Management Division
ATC	Air traffic control
ATMD	Air Traffic Management Division
ATMS	Air Traffic Management System
Audit	Audit Commission
CAD	Civil Aviation Department
DoJ	Department of Justice
FSAD	Flight Standards and Airworthiness Division
FSTB	Financial Services and the Treasury Bureau
GANP	Global Air Navigation Plan
GLD	Government Logistics Department
HKIA	Hong Kong International Airport
ICAO	International Civil Aviation Organization
LegCo	Legislative Council
MOR	Mandatory occurrence reporting
PBN	Regional Performance-based Navigation Implementation Plan
PRM	Precision runway monitor
PWSC	Public Works Subcommittee

CHAPTER 5

Food and Environmental Hygiene Department

Pest control services

Audit Commission Hong Kong 30 October 2014 This audit review was carried out under a set of guidelines tabled in the Provisional Legislative Council by the Chairman of the Public Accounts Committee on 11 February 1998. The guidelines were agreed between the Public Accounts Committee and the Director of Audit and accepted by the Government of the Hong Kong Special Administrative Region.

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PEST CONTROL SERVICES

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PEST CONTROL SERVICES

Executive Summary

1. The Food and Environmental Hygiene Department (FEHD) provides pest control services in public places, targeted at the control of rodents, mosquitoes and other arthropod pests which pose a threat to human health. In 2013-14, the FEHD had some 2,400 pest control and related staff, and its expenditure on pest control services totalled \$437 million. Like other places in the world, Hong Kong people are concerned about the control of rodents, mosquitoes and other pests. Every year, thousands of complaints about pest infestation are lodged with the FEHD. From time to time, there have been public concerns about pest infestation and the risk of outbreak of vector-borne diseases such as the mosquito-borne dengue fever and Japanese encephalitis (JE). The Audit Commission (Audit) has recently conducted a review to examine the FEHD's efforts on the provision of pest control services.

Pest surveillance programmes

2. The FEHD has a number of regular programmes for pest surveillance, covering rodents and mosquitoes. The surveillance information generated from the programmes includes two key indicators, the rodent infestation rate (RIR) and the ovitrap index (OI). The RIR reflects the general situation of rodent infestation in individual districts whereas the OI indicates the extensiveness of the distribution of Aedine mosquitoes (vectors of dengue fever) in the surveyed area (paras. 1.4, 2.2 and 2.3).

3. *Coverage of areas for rodent surveillance.* For compiling the RIR, the FEHD places monitoring baits at selected areas to detect the presence of rodents. The RIR of a district is the percentage of baits bitten at the selected areas of the district. As at June 2014, there were 41 selected areas distributed over different districts. Audit noted that the FEHD had been using the same 41 areas for rodent surveillance in the past 10 years. No new areas had been selected for surveillance since 2004. The insufficient geographical coverage of the rodent surveillance programme might undermine the representativeness of the RIR for a district. Audit considers that there is room for widening the network of areas for the rodent surveillance programme (paras. 2.5 to 2.11).

4. *Factors affecting the rodent surveillance.* The rodent surveillance could be affected by environmental or human factors (e.g. food remains around a monitoring bait could reduce the attractiveness of the bait). Audit reviewed the records of a rodent surveillance exercise conducted in 2014, and found that of the 2,240 monitoring baits placed, only 1,272 (57%) were free from environmental or human distractions. Notwithstanding that 43% of monitoring baits might be affected by various factors (e.g. application of rodenticides or scattering of food remains nearby), in most cases, no adjustments were made to exclude them in the compilation of RIR (paras. 2.16 to 2.18).

5. *Coverage of areas for dengue vector surveillance*. Ovitraps are small plastic containers designed for attracting Aedine mosquitoes (dengue vectors) to lay eggs. For vector surveillance, the FEHD places ovitraps at selected areas. The OI is the percentage of ovitraps found to have positive larval breeding results. Audit noted that the selected areas were not subject to regular review. Many popular places (e.g. Causeway Bay and Stanley) had not been selected as areas for dengue vector surveillance (paras. 2.28 to 2.31).

6. *Problematic ovitraps.* Suspected tampering of ovitraps happened from time to time. Since 2013, there had been an increase in the number of problematic ovitraps (e.g. fallen on ground or dried up). In a site visit to Tai Po in May 2014, Audit noted that five of the 55 ovitraps placed in the area were problematic. However, the FEHD frontline staff did not report the problematic ovitraps to the supervisor. The results of the five problematic ovitraps were not excluded from the OI calculation (paras. 2.36 to 2.39).

7. *Coverage of areas for JE vector surveillance*. In September 2013, the FEHD set up the JE vector surveillance programme to collect samples of mosquitoes in the summer months (from April to October) to detect the presence of Culex mosquitoes (JE vectors). As at June 2014, the JE vector surveillance programme covered only six areas in Yuen Long, which were considered by the FEHD as high-risk areas. Audit noted that places outside Yuen Long might also be affected by the risk factors of JE. For example, a local JE case occurred in Tuen Mun in August 2014 (paras. 2.45 to 2.52).

8. *Effectiveness of infestation indicators.* The RIR and the OI are key infestation indicators (see para. 2). Audit however found that the RIR and the OI did not always fully reflect the actual situation of pest infestation and cases were noted when the two indicators might not be in line with the level of infestation as perceived by the general public (paras. 2.63 and 2.64).

Pest control operations

9. *Planning of pest control work.* Through its 19 District Environmental Hygiene Offices (District Offices), the FEHD carries out pest control operations in public places over the territory. District Offices are responsible for formulating inspection programmes for their own pest control teams. Although the FEHD requires such programmes to be worked out on a weekly basis, Audit found in four District Offices visited that their current set of inspection programmes had generally been used for several years. Audit further noted certain inadequacies in their planning of pest control work, such as uneven workloads among different pest control teams, and construction sites (which were potential mosquito breeding sites) not always covered by inspection programmes (paras. 3.2 to 3.16).

10. *Supervision and performance of pest control work.* Audit observed the pest control work of the four District Offices visited and noted various improper work practices in the performance of the pest control work. These included: (a) failing to remove potential mosquito breeding sources; (b) improper handling of rodenticides; (c) improper handling of trapped rodents; and (d) failing to set rodent traps properly. Audit also noted cases in which supervisors did not adequately supervise their pest control teams (paras. 3.30 and 3.31).

11. *Monitoring the performance of contractors.* As at June 2014, 1,644 contractor staff were involved in the day-to-day pest control work over the territory. It is the intention of the FEHD to manage the pest control contracts by results. However, performance standards have not been clearly set, against which results of the pest control contracts can be measured (paras. 3.37 to 3.42).

Promotion of pest control and environmental hygiene

12. **Provision of pest surveillance information to stakeholders.** It is the responsibilities of relevant government bureaux/departments to keep their own venues hygienic and prevent pest infestation. To enable them to better respond to the infestation situations at places under their purview, the FEHD proactively provides details of the RIR and the OI to 20 government bureaux/departments (user departments). However, many venues of the user departments were not covered by the FEHD's bait points for rodent surveillance. Moreover, many venues did not have an ovitrap set up by the FEHD for dengue vector surveillance. The RIR and the OI could only provide limited pest surveillance information relating to venues of user departments (paras. 4.4 to 4.7).

Way forward

13. The FEHD has all along been focusing its pest control services on pests which pose a threat to human health (such as rodents and mosquitoes). Its routine inspection programmes generally do not cover cockroaches, flies, stinging insects and ticks, which can also pose significant health threats to humans. Over the years, the pattern of vector-borne diseases has been changing. More recently, the risks of outbreak of dengue fever and JE have caused increasing public concerns. The FEHD needs to keep its strategy on pest control under constant review (paras. 5.2 to 5.8).

Audit recommendations

14. Audit recommendations are made in the respective sections of this Audit Report. Only the key ones are highlighted in this Executive Summary. Audit has *recommended* that the Director of Food and Environmental Hygiene should:

Pest surveillance programmes

(a) consider widening the network of surveyed areas selected for the rodent surveillance programme (para. 2.26(a));

- (b) prevent recurrence of incidents in which the rodent surveillance was affected by various environmental or human factors, and make necessary adjustments to the compilation of the RIR (para. 2.26(d) and (e));
- (c) keep the geographical coverage of surveyed areas for dengue vector surveillance under regular review (para. 2.42(a));
- (d) step up actions to tackle the increasing number of problematic ovitraps identified and remind all FEHD staff concerned of the need to properly deal with problematic ovitraps (para. 2.42(c));
- (e) review the coverage of geographical areas for JE vector surveillance (para. 2.53);
- (f) review the effectiveness of the RIR and the OI in providing surveillance information for planning and evaluation of pest control work (para. 2.68(a));

Pest control operations

- (g) provide adequate guidelines to help District Offices regularly update their inspection programmes (para. 3.27(a));
- (h) ensure more efficient and cost-effective deployment of staff resources for pest control work (para. 3.27(b));
- (i) review the adequacy of the supervisory practices of pest control teams, with a view to improving the performance of pest control staff (para. 3.33(a));
- (j) provide guidelines to help District Offices set performance standards against which the results of contractors' pest control work can be measured (para. 3.45(b));

Promotion of pest control and environmental hygiene

(k) in consultation with the relevant user departments, review the adequacy of the pest surveillance information currently provided to them for assessing the pest infestation situations of venues under their purview (para. 4.11(a));

Way forward

- (1) critically review the FEHD's pest control strategy, taking on board Audit's observations and recommendations (para. 5.9(a)); and
- (m) continue to keep abreast of the latest trends of vector-borne diseases locally and in places outside Hong Kong (para. 5.9(b)).

Response from the Administration

15. The Director of Food and Environmental Hygiene agrees with the audit recommendations.

PART 1: INTRODUCTION

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

Background

1.2 Pests such as rodents (rats and mice), mosquitoes, cockroaches, fleas and mites are a nuisance to humans, and can cause physical damages to properties and contaminate foodstuffs. In particular, some pests (e.g. rodents and certain mosquito species) are disease vectors that pose a threat to public health.

1.3 Rodents are nocturnal and social animals with an average life span of about one year. They are good at climbing, jumping and swimming. In Hong Kong, the commonly found rodent species are sewer rats (also known as Norway rats), house rats (also known as roof rats) and mice. Rodents can help transmit diseases like plague, urban typhus, scrub typhus and spotted fever (Note 1).

1.4 Mosquitoes are flying insects which breed in places such as permanent stagnant water and containers. Adult mosquitoes have gone through a life cycle of four stages (eggs, larvae, pupae and adults) and can live up to two to three weeks. Female mosquitoes of most species have to feed on animal blood for the development of eggs (Note 2). In Hong Kong, the commonly found mosquito species include Aedine mosquitoes (see Photograph 1), Culex mosquitoes (see Photograph 2) and Anopheline mosquitoes (see Photograph 3). These species can be vectors of dengue fever, Japanese encephalitis (JE) and malaria.

Note 1: *Plague and urban typhus are flea-borne diseases. Scrub typhus is a mite-borne disease. Spotted fever is a tick-borne disease. Rodents may carry the disease-transmitting fleas, ticks and mites on their bodies.*

Note 2: *Male adult mosquitoes usually feed on plant juice.*
Photographs 1 to 3

Mosquito species commonly found in Hong Kong



Source: FEHD records

1.5 The Food and Environmental Hygiene Department (FEHD) is the Government's advisor on pest control matters. Under the Public Health and Municipal Services Ordinance (Cap. 132), the Director of Food and Environmental Hygiene is the designated authority in the control of vermin (e.g. rodents — Note 3) infestation and mosquito breeding.

Pest control services

1.6 The FEHD provides pest control services in public places on a sustained basis, targeted at the control of rodents, mosquitoes and other arthropod (Note 4) pests which pose a threat to human health. The prevention of pest-borne diseases is one of the major work of the FEHD.

Note 4: An arthropod is an invertebrate animal having an external skeleton, a segmented body and jointed appendages. Examples of arthropods are insects and spiders.

Note 3: According to the Public Health and Municipal Services Ordinance, vermin include rodents, as well as cockroaches, mites, ticks, bugs, fleas, lice and itch mites (and the eggs, larvae, nymphs or pupae thereof).

1.7 The FEHD adopts an integrated approach to controlling pests, putting emphasis on the effective use of pesticides and continuous improvements in environmental hygiene. Under this approach, two key services are delivered through different sections of the FEHD, as follows:

- (a) *Pest control advisory services*. Under the Administration and Development Branch, the Pest Control Advisory Section (PCAS) provides government departments (including other FEHD sections) and the public with professional advice on prevention and control of pests affecting public health. The PCAS carries out surveillance and monitoring of pest problems, and compiles indicators for assessing pest infestation (e.g. the rodent infestation rate see para. 2.3); and
- (b) *Pest control operational services.* Pest control staff of the Environmental Hygiene Branch carry out pest control work to prevent and control the breeding of disease vectors (e.g. rodents, mosquitoes and other arthropod pests with public health significance). Both preventive work (e.g. removal of potential mosquito breeding places, and cutting grass that provides habitats for mosquitoes see Photograph 4) and control work (e.g. applying insecticides see Photograph 5) are conducted. The pest control staff are deployed to the Branch's 19 District Environmental Hygiene Offices (District Offices) for providing services over the territory. An organisation chart of the pest control services of the FEHD is at Appendix A.

Photographs 4 and 5

Provision of pest control operational services (Examples)

Photograph 4



Cutting grass to remove mosquito habitats



Photograph 5

Applying insecticides

Source: Photographs taken by the Audit Commission on 30 June 2014 1.8 As at June 2014, the FEHD had a team of 2,419 pest control and related staff (including 73 staff of the PCAS) for the delivery of pest control services (Note 5). In 2013-14, the FEHD's expenditure on pest control services totalled \$437 million, a large majority (88%) of which was used on rodent and mosquito control (see Figure 1).

Figure 1

The FEHD's expenditure on pest control services (2013-14)



Source: FEHD records

Note 5: Of the 2,419 staff, 1,644 were staff of contractors who conducted pest control work for the FEHD under service contracts.

Public concerns about pest infestation

1.9 Rodent infestation is a common problem faced by many countries in the world. Hong Kong people are also concerned about the control of rodents and other pests. Every year, the FEHD received thousands of complaints about pest infestation, mainly relating to rodents and mosquitoes. In 2013, the FEHD received 6,813 complaints about rodents and 6,421 complaints about mosquitoes (see Table 1).

Table 1

Complaints about pest infestation (2013)

	Pest I			
Region	Rodent Mosquito (No. of (No. of		Others (e.g. cockroach and bedbug) (No. of	Total no. of complaints
	complaints)	complaints)	complaints)	
Hong Kong and Islands	1,908	1,737	1,049	4,694
Kowloon	2,373	1,459	642	4,474
New Territories	2,532	3,225	3,434	9,191
Total	6,813	6,421	5,125	18,359

Source: FEHD records

1.10 Members of District Councils have also expressed concerns about rodent and mosquito problems. For example, at a meeting of a District Council held in October 2013, it was considered that rodent infestation was a problem in the entire District, particularly in individual black spots. At a meeting of another District Council held in November 2013, Members urged that the FEHD should follow up serious problems of mosquito infestation in the District. 1.11 From time to time, discussions were held about pest infestation at the Panel on Food Safety and Environmental Hygiene of the Legislative Council (LegCo). Members of LegCo also expressed concern about pest infestation, such as rodent problems in markets, wharfs, old districts as well as in areas where there was a high concentration of restaurants. Besides, it was noted that individual areas had problems of mosquito infestation. The Administration was urged to step up the related prevention and control measures.

Recent concerns about vector-borne diseases

1.12 According to the World Health Organisation (WHO), vector-borne diseases are infectious and affect people worldwide, with more than half of the world's population at risk from such diseases. Every year, there are more than one billion cases, leading to over one million deaths worldwide. "Vector-borne diseases" is the theme of the 2014 World Health Day of the WHO.

1.13 In Hong Kong, common vector-borne diseases are the mosquito-borne dengue fever, JE and malaria, the mite-borne scrub typhus, and the tick-borne spotted fever. Although Hong Kong did not have epidemics of vector-borne diseases in recent years, there were sporadic cases reported for some diseases such as dengue fever (see Table 2), which is an endemic disease in most Southeast Asian countries (Note 6) and is not uncommon in the Guangdong Province in the Mainland.

Note 6: For example, in 2014 (up to September), Singapore had recorded some 15,000 dengue fever cases, Malaysia some 70,000 cases and Thailand some 24,000 cases.

Table 2

	No. of reported cases					
Disease	2009	2010	2011	2012	2013	2013 vs 2009 (+ increase/ - decrease)
Mosquito-related a	liseases					
Dengue fever	43	83	30	53	103	+60 (+140%)
JE	0	0	1	3	6	+6 (Note)
Malaria	23	34	41	26	20	-3 (-13%)
Rodent-related diseases						
Plague	0	0	0	0	0	0 (Note)
Scrub typhus	20	17	7	23	28	+8 (+40%)
Urban typhus	5	2	2	3	1	-4 (-80%)
Spotted fever	13	22	20	10	22	+9 (+69%)

Reported cases of selected vector-borne diseases (2009 to 2013)

Source: Department of Health's published information

Note: The percentage increase in reported cases from 2009 to 2013 cannot be calculated because there was no reported case in 2009.

1.14 More recently, a number of vector-borne disease cases reported in the past few months have caused public concerns about pest infestation. For example, in 2014:

- (a) *Dengue fever.* 94 (1 local and 93 imported) cases of dengue fever had been reported up to 30 October;
- (b) *JE*. Five (3 local and 2 imported) JE cases had been reported up to 30 October; and
- (c) *Scrub typhus*. 16 local cases of scrub typhus had been reported up to end of September. This had given rise to concerns about this mite-borne disease.

Audit review

1.15 The Audit Commission (Audit) has recently conducted a review to examine the FEHD's efforts on the provision of pest control services, focusing on the following areas:

- (a) pest surveillance programmes (PART 2);
- (b) pest control operations (PART 3);
- (c) promotion of pest control and environmental hygiene (PART 4); and
- (d) way forward (PART 5).

Audit has found that there is room for improvement in the above areas and has made a number of recommendations to address the issues.

Acknowledgement

1.16 Audit would like to acknowledge with gratitude the assistance and full cooperation of the staff of the FEHD during the course of the audit review.

PART 2: PEST SURVEILLANCE PROGRAMMES

2.1 This PART examines the FEHD's surveillance programmes for monitoring pest problems. Audit has found room for improvement in the following areas:

- (a) rodent and rat-flea surveillance (paras. 2.4 to 2.27);
- (b) dengue vector surveillance (paras. 2.28 to 2.43);
- (c) JE vector surveillance (paras. 2.44 to 2.54);
- (d) malaria vector surveillance (paras. 2.55 to 2.62); and
- (e) effectiveness of infestation indicators (paras. 2.63 to 2.69).

Surveillance information about pests

2.2 The PCAS of the FEHD carries out pest surveillance programmes to assess pest infestation over the territory. As at June 2014, the FEHD had five regular programmes for pest surveillance, covering rodents and mosquitoes (see Table 3). Details of the programmes are at Appendix B. The programmes provide surveillance information for the FEHD to plan and evaluate its pest control work.

Table 3

Pest surveillance programmes of the FEHD (June 2014)

Programme	Vector/pest being monitored	
Rodent-related		
Rodent surveillance programme	Rodents (rats and mice)	
Rat-flea survey	Rat fleas	
Mosquito-related		
Dengue vector surveillance programme	Aedine mosquitoes	
JE vector surveillance programme	Culex mosquitoes	
Malaria vector surveillance programme	Anopheline mosquitoes	

Source: FEHD records

2.3 The surveillance information generated from the programmes includes two key indicators, the rodent infestation rate (RIR — see paras. 2.4 to 2.22) and the ovitrap index (OI — see paras. 2.28 to 2.41). The RIR and the OI provide territory-wide surveillance information about the pests. The FEHD has informed the LegCo Panel on Food Safety and Environmental Hygiene that:

- (a) the RIR reflects the general situation of rodent infestation in individual districts. The FEHD has been making use of the RIR and the trend movement of the RIR as the basis for devising anti-rodent measures and assessing the overall efficacy of rodent prevention and disinfestation work; and
- (b) the OI indicates the extensiveness of the distribution of Aedine mosquitoes in the surveyed area. The OI helps evaluate the effectiveness of mosquito prevention and control work carried out by various parties, and provide surveillance information to the public and for making timely adjustments to the FEHD's mosquito control strategies and measures.

Rodent and rat-flea surveillance

2.4 The RIR is compiled twice a year. It is a key indicator of rodent infestation under the rodent surveillance programme (see para. 2.3(a)). In addition, the FEHD also conducts a rodent-related survey every year, namely the rat-flea survey (see paras. 2.23 to 2.25).

2.5 For compiling the RIR, the FEHD places non-poisonous baits (monitoring baits — see Photograph 6) at selected areas to detect the presence of rodents. Every time the RIR is compiled, around 55 baits are placed at each selected area for 3 days. As at June 2014, there were a total of 41 selected areas distributed over 19 districts of the territory. On average, each district had about two selected areas. The RIR of a district is the percentage of baits gnawed (bitten) at the selected areas of the district during the 3-day survey period. In 2013, the RIRs of individual districts ranged from 0% to 8.3% (see Appendix C).

Photograph 6

A monitoring bait set at a rear lane



Source: Photograph taken by Audit on 19 May 2014

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2.6 For analysis of surveillance results, the FEHD categorises the selected areas into "residential areas", "industrial areas" and "rear lanes" (see Appendix D).

Coverage of areas for rodent surveillance

2.7 As can be seen from Appendix D, the rodent surveillance programme did not cover all major types of areas in each district. For example:

- (a) *Rear lanes.* The rear lanes of four (21%) districts (i.e. Southern, Shatin, Tuen Mun, and Kwai Tsing) had not been covered for surveillance;
- (b) *Residential areas.* The residential areas of seven (37%) districts (i.e. Central/Western, Wan Chai, Kowloon City, Kwun Tong, Mong Kok, Yau Tsim, and Tsuen Wan) had not been covered for surveillance; and
- (c) Industrial areas. Industrial areas were only covered for surveillance in five (26%) districts. Of the remaining 14 (74%) districts, Audit noted that there were industrial areas in at least five districts, namely Shatin, Tai Po, Tsuen Wan, Yuen Long, and Kwai Tsing. However, the industrial areas of these districts had not been covered for surveillance.

2.8 Upon enquiry, the FEHD informed Audit in September 2014 that the sites selected for setting monitoring baits for rodent surveillance were areas that required particular attention in public places as nominated by District Offices. Any place of a reasonable size for carrying out surveillance would be considered for inclusion in the surveillance programme should the place has:

- (a) a rodent problem persistently or has high potential in getting a rodent problem; and
- (b) high human activities.

2.9 In this regard, Audit noted that the FEHD had been using the same 41 areas (see Appendix D) for rodent surveillance for 10 years. FEHD records indicated that no new areas had been selected for surveillance since 2004.

Meanwhile, Members of District Councils and LegCo had expressed concerns about rodent problems in markets, wharfs, old districts as well as in areas where there was a high concentration of restaurants (see paras. 1.10 and 1.11). For example, at a meeting of the Food, Environment, Hygiene and Works Committee of the Central and Western District Council on 17 October 2013, Members commented that:

- (a) the number of dead and live rodents in the Shek Tong Tsui Market was growing year by year. In an earlier visit conducted by the Committee Chairman to the Market and a nearby vacant private estate, many rodents were found at midnight;
- (b) the problem of rodent infestation was not unique to the Shek Tong Tsui Market, but was found across the Central and Western District; and
- (c) the responsible department should take appropriate measures to address the problem.

2.10 Audit further noted that the Shek Tong Tsui Market and the nearby vacant private estate were located along Queen's Road West. However, as at September 2014, Queen's Road West and its nearby public places had not been covered by the rodent surveillance programme (Note 7).

2.11 As LegCo has been informed, the RIR should reflect the general situation of rodent infestation in individual districts, and it is the basis for devising anti-rodent measures and assessing their overall efficacy (see para. 2.3(a)). The insufficient geographical coverage of the rodent surveillance programme may undermine the representativeness of the RIR for a district (see para. 2.7). This is not conducive to reflecting the general situation of infestation in the district, nor is this conducive to helping the FEHD plan and evaluate its rodent control work (see para. 2.9(a) to (c)). Audit considers that there is room for widening the network of areas for the rodent surveillance programme in order to ensure that the

Note 7: *FEHD records indicated that the rodent surveillance programme for Central and Western District covered only Queen's Road Central, Hollywood Road and Third Street. Queen's Road West and other areas had not been included in the programme.* surveillance information generated by the programme (i.e. the RIR) could better reflect the infestation situation.

Effectiveness of the monitoring baits

2.12 For compiling the RIR, the FEHD places non-poisonous baits (monitoring baits) at selected areas to detect the presence of rodents. The FEHD has all along been using raw sweet potatoes as monitoring baits. There have been criticisms (e.g. from the public) that raw sweet potatoes might not be attractive to rodents.

2.13 In 2007, the FEHD's PCAS (see para. 1.7(a)) had adopted a commercial monitoring bait (bait block) for rodent surveillance. The bait block was a tailor-made product for rodent survey. The PCAS conducted testing on the bait block before adopting it as a monitoring bait for the rodent surveillance programme. Testing results showed that the bait block was particularly attractive to rodents at rear lanes. FEHD staff placed both the bait block and sweet potato at each area selected for rodent surveillance, and observed the percentage of bait blocks and/or sweet potatoes bitten at the area. This method had been used until October 2009. Table 4 shows that during the period when bait blocks were used together with sweet potatoes, the RIR stayed at a level ranging from 3.6% (Phase 2 of 2009) to 8.5% (Phase 1 of 2009).

Table 4

Year (Phase — Note 1)	RIR	Monitoring bait	
2006 (Phase 1)	2.5%		
2006 (Phase 2)	3.3%	Sweet potato	
2007 (Phase 1)	4.4%		
2007 (Phase 2)	5.3%		
2008 (Phase 1)	6.0%	and	
2008 (Phase 2)	6.6%	- Dait Diock	
2009 (Phase 1)	8.5%		
2009 (Phase 2)	3.6%	Sweet potato and bait block (Note 2)	
2010 (Phase 1)	1.3%		
2010 (Phase 2)	1.7%	Sweet potato	

RIRs (2006 to 2010)

Source: FEHD records

Note 1: The RIR was calculated twice a year (i.e. Phase 1 and Phase 2).

Note 2: During the survey period from July to December 2009, the bait block was used up to 18 October 2009.

2.14 Audit noted that the PCAS had considered that the bait blocks could increase the sensitivity of rodent surveillance, and help the FEHD get a more accurate picture of rodent infestation. However, in November 2009, the FEHD decided that the use of bait blocks should be discontinued (with effect from 19 October 2009). According to FEHD records, the reason was to maintain

consistency in rodent surveillance. The RIR for Phase 2 of 2009 (July to December 2009) was therefore compiled using different combination of monitoring baits, namely, sweet potatoes and bait blocks (up to 18 October 2009), and only sweet potatoes (19 October 2009 and thereafter). In the event, the RIR showed a noticeable drop, from 8.5% (Phase 1 of 2009) to 3.6% (Phase 2 of 2009 — see Table 4). The RIR dropped further to 1.3% (Phase 1 of 2010) when only sweet potatoes were used for the whole survey period. In its 2012 annual review, the PCAS stated that it would keep in view the latest availability of other suitable monitoring baits.

- 2.15 Upon enquiry, the FEHD informed Audit in September 2014 that:
 - (a) in November 2009, the FEHD decided that the use of bait blocks should be discontinued due to their shortcomings, including their poor durability under moist condition when they were set in rear lanes and open spaces where the bait blocks were readily affected by dripping from pipes, washing activities and rain, etc. The bait became soft and even dissolved making the detection of rodents' gnawing marks difficult;
 - (b) as recommended by the manufacturer, bait blocks should be used together with bait boxes (i.e. a box for holding baits, with openings for access by rodents) for better results or protection from bad weather;
 - (c) taking into consideration the shortcomings of bait blocks and the difficulties in setting bait boxes in the local situation as well as the total cost of setting the bait (bait blocks plus bait boxes), bait blocks were not selected to replace sweet potatoes as the bait for surveillance. Besides, sweet potatoes were available all the year round; and
 - (d) the use of both bait blocks and sweet potatoes would have rendered the RIR during the period not directly comparable with other periods. The FEHD should have made proper adjustment in announcing the relevant RIR.

Factors affecting rodent surveillance

2.16 Apart from the use of unattractive baits, the results of rodent surveillance could also be affected by other environmental or human factors. For example, food remains around a monitoring bait could reduce the attractiveness of the bait, and the application of rodenticides nearby could affect rodent activities around the monitoring bait.

2.17 To improve the effectiveness of rodent surveillance, the PCAS gives District Offices advance notifications of surveillance activities in their districts. District Offices are expected to clear food attractions around the monitoring baits, and temporarily suspend nearby rodent control operations during the 3-day survey period (see para. 2.5). However, this had not been effectively done. Audit reviewed the records of rodent surveillance for Phase 1 of 2014, and found that:

- (a) of the 2,240 monitoring baits placed, only 1,272 (57%) were free from environmental or human distractions; and
- (b) the remaining 968 (43%) monitoring baits were subject to different kinds of interference which could affect their results. Incidents affecting some of the 968 baits included application of rodenticides nearby, scattering of food remains nearby and baits turned bad.

2.18 It was not satisfactory that some 43% of monitoring baits had been affected by various environmental and human factors which might undermine the bait attractiveness and the effectiveness of rodent surveillance. Notwithstanding that a large number of monitoring baits might be affected by various factors, Audit noted that, in most cases, no adjustments were made to exclude them in the compilation of RIR.

2.19 Upon enquiry, the FEHD informed Audit in September 2014 that most incidents would not have any effect on the RIR, as follows:

(a) Application of rodenticides nearby. The rodenticides used locally are chronic poisons which do not give immediate killing effect on rodents. Gnawing activities of rodents will not be affected by the presence of rodenticides;

- (b) *Scattering of food remains nearby.* Gnawing activities of rodents will not be affected by the presence of food remains. Fresh baits will be set every day during the survey period to ensure their attractiveness. Human activities in rear lanes are unavoidable. Surveillance data obtained under the same conditions are comparable; and
- (c) **Baits turned bad.** Fresh baits will be set every day during the survey period. Gnawing marks of rodents on baits turned bad (e.g. damaged by slugs) could easily be distinguished from marks left by non-targeted animals.

2.20 Audit notes that the above views are at variance with advice given by the PCAS. In an internal review report of 2012, the PCAS explained the following limitations of rodent infestation surveys:

- (a) Food remains nearby. Rodents had their own preference of food and might choose to take food that was readily available instead of the baits. Under these circumstances, the RIR obtained might under-estimate the actual rodent problem;
- (b) *Baits turned bad.* Whether a rodent would choose to gnaw on a bait might also depend on the condition and freshness of the bait which in turn was affected by weather factors (e.g. rainfall and humidity). Rain might damage the baits, while moisture level might affect the bait palatability; and
- (c) Baits damaged by slugs. Baits were sometimes eaten/damaged by non-target animals (e.g. slugs). Although the baits were replenished on the ensuing day if they were lost on the first day of the survey period, the duration in which the baits were present at a specific point was shortened. Therefore, the RIR obtained from the survey might under-estimate the rodent situation.

2.21 As regards the application of rodenticides near a monitoring bait (see para. 2.19(a)), Audit notes that the FEHD's rodenticide baits consist of sweetened cereals (Note 8) which are also attractive food for rodents. Applying the rodenticides near a monitoring bait could be similar to scattering food remains around (see para. 2.20(a)). There were cases that rodenticides were applied a few days before the survey period.

2.22 Notwithstanding the FEHD's explanations in paragraph 2.19, taking into consideration the views in paragraphs 2.20 and 2.21, there remains a risk that the possible impact of incidents may affect the rodent surveillance exercise. To ensure that the RIR could fairly reflect the actual situation of rodent infestation, there is a need for the FEHD to look into and better control those factors and make appropriate adjustments to the compilation of the RIR (e.g. excluding those affected baits from the RIR calculation).

Rat-flea survey

2.23 Rat fleas are carriers of diseases such as plague. The FEHD conducts rat-flea surveys to assess the potential plague risk for humans. Every year, the FEHD focuses on certain types of areas (e.g. markets and rear lanes) in conducting the rat-flea survey. Live rats are sampled from the areas for the collection of rat fleas for analysis (Note 9).

2.24 Audit reviewed the rat-flea surveys conducted during the period 2010 to 2014 (up to June 2014). Audit found that each survey covered only some of the 19 districts (see Table 5).

- **Note 8:** *The FEHD's rodenticide baits are normally made of uncooked cereals, sugar, oil and anticoagulant rodenticides.*
- **Note 9:** *The FEHD counts the number of rat fleas. The rat-flea index is calculated based on the following formula:*

 $Rat-flea index = \frac{Number of rat fleas collected from the rats examined}{Number of rats examined}$

According to the WHO, a rat-flea index greater than 1 represents an increased potential plague risk for humans.

Table 5

	Thoma	No. of c		
Year	(i.e. type of areas surveyed)	Survey conducted	Survey not conducted	Total no. of districts
2010	Typhoon shelters	9 (Note 1)	10 (Note 2)	19
2011	Squatter areas	6	13	19
	Fixed pitch hawker stalls	6	13	19
2012	Markets	10	9	19
	Wholesale food markets	2	17 (Note 3)	19
2013	Rear lanes	12	7	19
2014 (up to June)	Rural/semi-rural villages	12	7	19

Rat-flea surveys (2010 to June 2014)

Source: Audit analysis of FEHD records

- Note 1: Of the 13 typhoon shelters located in the 9 districts, 12 were covered by the rat-flea survey.
- Note 2: One typhoon shelter was located in the 10 districts.

Note 3: One wholesale food market was located in the 17 districts.

2.25 Audit noted that more districts could have been selected for survey. For example, in 2013, the theme of survey was "rear lanes". However, the rear lanes in 7 districts were not selected for survey. Moreover, in 2012, one of the themes of survey was "markets", which was a community facility available in every district. However, the markets in 9 districts were not selected for survey.

Audit recommendations

2.26 Audit has *recommended* that the Director of Food and Environmental Hygiene should:

- (a) consider widening the network of surveyed areas selected for the rodent surveillance programme (e.g. selecting areas other than residential areas, industrial areas and rear lanes on a rotational basis);
- (b) critically review the effectiveness of using raw sweet potatoes as a monitoring bait for rodent monitoring;
- (c) keep in view the availability of more effective baits for monitoring rodents;
- (d) critically look into the incidents in which the rodent surveillance was affected by various environmental or human factors (e.g. application of rodenticides nearby), and take effective measures to prevent recurrence of such incidents in future;
- (e) ensure that necessary adjustments are made to the compilation of the RIR (e.g. excluding those affected baits from the RIR calculation) in order to improve the precision of the infestation indicator; and
- (f) consider enhancing the annual rat-flea surveys to cover all districts in the territory (e.g. on a rotational basis) in order to make a more comprehensive assessment of the plague risk.

Response from the Administration

2.27 The Director of Food and Environmental Hygiene agrees with the audit recommendations. She has said that:

(a) the network of survey seeks to cover areas with the environmental conditions which favour rodent activities. The FEHD will review the network on a yearly basis and adjust the network if appropriate;

- (b) the FEHD will continue to keep in view rodent infestation assessment methods recommended by the WHO and adopted by major cities around the world, and adopt the method and the kind of baits which are most suitable for use in our local situation;
- (c) the rodent infestation survey, like all other surveillance methods, has its limitations. The FEHD has taken measures to increase the sensitivity of the rodent surveillance including replacing the bait every day to maintain its freshness and informing parties concerned of the surveillance schedule in advance and reminding them to suspend all rodent control measures during the rodent infestation survey period. While it is not always possible to eliminate all environmental and human factors on the ground, the PCAS will endeavour to further refine the survey by providing detailed guidelines on data adjustment in enumeration of the RIR to the relevant staff and seek stakeholders' assistance in minimising environmental and human factors; and
- (d) the FEHD will consider selecting appropriate sites from more districts for carrying out the rat-flea survey as far as practicable having regard to resource availability.

Dengue vector surveillance

2.28 Ovitraps are small plastic containers designed for attracting dengue vectors, Aedine mosquitoes, to lay eggs (see Photograph 7). Every month, the FEHD places ovitraps at selected areas (see Appendix B) for a week to detect the larval breeding rate of Aedine mosquitoes (Note 10). The OI is the percentage of ovitraps found to have positive larval breeding results (Note 11). The OI for an area indicates the extensiveness of the distribution of Aedine mosquitoes in the area. In 2013, the OIs of individual areas ranged from 0% to 36.2% (see Appendix E).

Note 10: *The species to be monitored is Aedes albopictus.*

Note 11: Normally, around 50 ovitraps are placed at each selected area.

Photograph 7

An ovitrap



Source: Photograph taken by Audit on 16 May 2014

Coverage of geographical areas

2.29 As at June 2014, the areas selected for surveillance included 44 areas throughout the territory and 30 areas in the port areas (see Appendix E).

2.30 The areas for vector surveillance were not subject to regular review. The last review was made in 2011, when the number of areas (outside the port areas) was increased by 6, from 38 to 44 areas. Table 6 shows the FEHD's justifications for adding the 6 areas in 2011.

Table 6

Six areas added for dengue vector surveillance (2011)

	Area added	Justification	
1	Deep Water Bay and Repulse Bay	A local case of dengue fever found in the area	
2	Shau Kei Wan and Sai Wan Ho		
3	Hung Hom	Being residential areas with schools and high concentration of people	
4	Sheung Kwai Chung		
5	Sai Kung Town	Being residential areas with frequent	
6	So Kwun Wat	visitors and medium population density	

Source: FEHD records

2.31 Audit noted that, apart from these 6 areas, many places over the territory could also meet the criteria for inclusion in the surveillance programme. For example, on Hong Kong Island, Stanley is a mix of residential areas and tourist attractions, and Causeway Bay is crowded with residents, visitors and students from schools in the area. However, such places had not been selected as areas for dengue vector surveillance (see Figure 2).



Areas for dengue vector surveillance outside the port areas Hong Kong Island (June 2014)



Source: FEHD records

2.32 The insufficient coverage of geographical areas for dengue vector surveillance (see Figure 2 for the coverage of Hong Kong Island for example) is a cause for concern. In this connection, Audit noted that at a recent meeting of the LegCo Panel on Food Safety and Environmental Hygiene in May 2014, concerns were raised about the fact that housing estates at Kai Tak New Development Area were not selected for dengue vector surveillance, and the FEHD was urged to set up more ovitraps.

Strategic review of ovitrap distribution

2.33 For each of the selected areas, the FEHD sets up a number of ovitraps for dengue vector surveillance. As at June 2014, a total of 2,371 ovitraps were set up in the 44 areas (outside the port areas).

2.34 Audit noted that the FEHD had in the past conducted annual strategic reviews of ovitrap locations within the selected areas, taking account of relevant factors such as past experience and new developments in the districts (Note 12). The FEHD also had an internal working group to consider the review results (Note 13). In December 2007, the working group endorsed an updated strategic locations of ovitraps which had since been adopted for implementation. However, no further reviews had been conducted since then. As at June 2014, more than six year had elapsed. The strategic locations of ovitraps within the selected areas might warrant another review.

Suspected tampering of ovitraps

2.35 In 2006, the FEHD noted an incident of suspected tampering of ovitraps, involving some 200 ovitraps in a number of areas (Note 14). Later in the same year, the FEHD informed the LegCo Panel on Food Safety and Environmental Hygiene that it had taken improvement measures in this regard, including considering ways and means of improving the security and the design of ovitraps. According to the FEHD, the improvement measures have been implemented. For example, the FEHD has improved the design of ovitraps by adding a cap to cover the ovitrap, so as to avoid inadvertent spilling of pesticides into the ovitraps during mosquito control operations. The FEHD has also sealed the ovitraps with stickers. In June 2011, the FEHD informed the LegCo Panel on Food Safety and Environmental Hygiene that if the seals were found to be broken or tampered with, data of the ovitrap concerned would not be used for compiling the OI. The FEHD would refer suspected cases of tampering of ovitraps to the police.

- **Note 12:** Other relevant factors included emerging public health needs, public requests for setting up new ovitraps, views of District Councils and suggestions from District Offices.
- **Note 13:** The working group was headed by the Assistant Director (Administration) and comprised FEHD staff from the Environmental Hygiene Branch and the PCAS.
- Note 14: In September 2006, a staff member of one of the pest control contractors complained that ovitraps were suspected to have been tampered with. The FEHD examined all ovitraps over the territory, and found that some 200 ovitraps seemed to have been tampered with. The affected ovitraps were located in Kwai Chung, Lai King, Tsing Yi, Sham Shui Po (East) and Kwun Tong (Central).

2.36 However, in spite of the FEHD's efforts, suspected tampering of ovitraps still happened from time to time. Table 7 shows the number of problematic ovitraps (e.g. fallen on ground or dried up — Note 15) reported in recent years. Some of these problematic cases might involve suspected tampering of ovitraps, for example:

- (a) in August 2011, 31 (56%) ovitraps in Sham Shui Po East were sprayed with pesticides; and
- (b) in November 2013, 21 (38%) ovitraps in Wan Chai North were sprayed with oily substances.

Table 7

Problematic ovitraps reported (2010 to June 2014)

Year	No. of cases reported (No. of ovitraps involved)
2010	5 (12)
2011	10 (50)
2012	9 (16)
2013	21 (102)
2014 (up to June)	15 (76)
Total	60 (256)

Source: Audit analysis of FEHD records

Note 15: *Ovitraps are filled with dechlorinated water to provide a breeding environment for Aedine mosquitoes.*

2.37 As can be seen from Table 7, the large increase in the number of problematic ovitraps since 2013 is a cause for concern. The large number of problematic ovitraps might have an impact on the OI.

- 2.38 Upon enquiry, the FEHD informed Audit in September 2014 that:
 - (a) of the 60 reported cases of problematic ovitraps, obvious signs to confirm tampering had not been found in most cases;
 - (b) in only 15 cases, the number of problematic ovitraps exceeded 10% of the total number of ovitraps in the surveyed area; and
 - (c) if the percentage of problematic ovitraps was 10% or higher, and if there was sufficient time to carry out the survey again in the relevant areas, the survey would be re-conducted.

Problematic ovitraps not properly dealt with

2.39 The FEHD has instructed frontline staff to report cases of tampering of ovitraps to supervisory staff. In a site visit to observe the handling of ovitraps by FEHD staff, Audit found that problematic ovitraps (which might have been tampered with) were not properly handled by frontline staff (see Case 1 at Appendix F). In Case 1, the problematic ovitraps (see Photographs 8 and 9 for examples) might not have functioned properly. They might also have been tampered with. However, these problematic ovitraps were not reported to the supervisor, contrary to the FEHD's instructions.

Photographs 8 and 9

Examples of problematic ovitraps noted by Audit

Photograph 8

Ovitrap placed horizontally and was found to be dry

Photograph 9



Ovitrap laid on the ground and was found to be dry

Source: Photographs taken by Audit on 16 May 2014

- 2.40 Upon enquiry, the FEHD informed Audit in September 2014 that:
 - (a) frontline staff responsible for retrieving ovitraps had the knowledge and experience in assessing on the spot the suspected tampering cases that should be reported to their supervisors;
 - (b) the supervisors would assess the suspected tampering cases to confirm the case; and
 - the most important thing was for the frontline staff to assess if the (c) function of an ovitrap in attracting the mosquito had been affected.



2.41 Audit considers that while, in general, responsible frontline staff have the relevant knowledge and experience to assess the situation, the risk of human errors still exists. For example, as shown in Case 1 at Appendix F, some of the problematic ovitraps had lost all the water inside. They would no longer serve their intended function in an effective manner (see Photographs 8 and 9). It would not be appropriate to regard these ovitraps as totally normal and treat them as such without notifying the supervisor for further advice. Moreover, as a matter of fact, LegCo has been informed that ovitraps with seals peeled off (broken) would not be used for compiling the OI (see para. 2.35). The frontline staff should have better handled the problematic ovitraps.

Audit recommendations

2.42 Audit has *recommended* that the Director of Food and Environmental Hygiene should:

- (a) keep the geographical coverage of surveyed areas for dengue vector surveillance under regular review, taking account of factors such as public demand for a wider coverage, and risks of outbreak of dengue fever at individual places over the territory;
- (b) similarly, keep the strategic distribution of ovitraps within the surveyed areas under regular review, so as to locate them in suitable positions representative of the areas being monitored; and
- (c) step up actions to tackle the increasing number of problematic ovitraps identified. In particular, the FEHD should:
 - (i) investigate into all suspected cases to ascertain if tampering is involved;
 - (ii) assess the adequacy of the FEHD's measures in preventing and detecting problematic ovitrap cases (including tampering of ovitraps);
 - (iii) take effective measures to prevent and detect problematic ovitrap cases (including tampering of ovitraps) in the future; and

(iv) remind all staff concerned of the need to properly deal with problematic ovitraps (e.g. reporting cases of problematic ovitraps to supervisory staff, and excluding affected ovitraps from the compilation of the OI).

Response from the Administration

2.43 The Director of Food and Environmental Hygiene generally agrees with the audit recommendations. She has said that:

- (a) dengue vector surveillance covers areas with high human concentrations such as clusters of residential areas, schools and hospitals as recommended by the WHO. The FEHD will continue to annually review the coverage of the surveyed areas taking into consideration the recommendations of the WHO, development of the city, the transmission of the disease in the past year, the comparability of the surveillance results and the resource implications;
- (b) the FEHD will continue to review on a yearly basis the strategic distribution of ovitraps within the surveyed areas taking into consideration relevant factors such as the biology of the vector, the representativeness of the location and the possibility of disturbance of the ovitraps by the public; and
- (c) frontline staff responsible for retrieving ovitraps have the knowledge and experience in assessing in the field if the ovitraps have been tampered with and if the function of an ovitrap in attracting mosquitoes has been affected. This notwithstanding, the PCAS will seek to provide more detailed guidelines on handling problematic ovitraps and data adjustment in enumeration of the OI to staff. The PCAS will remind its staff to investigate all problematic cases to ascertain if tampering is involved and remind parties concerned not to interfere with the ovitraps.

Japanese encephalitis vector surveillance

2.44 JE is a mosquito-borne viral disease in humans and animals. Mosquitoes become infected when feeding on infected animals (mainly domestic pigs and wild

birds), and then transmit the disease to humans. The disease vector is Culex mosquitoes. In recent years, there have been sporadic JE cases reported in Hong Kong, mainly the Tin Shui Wai areas of Yuen Long. In 2014 (up to August 2014), three local JE cases were reported in Hong Kong.

2.45 In September 2013, the FEHD set up the JE vector surveillance programme. Under the programme, samples of mosquitoes are collected in each of the summer months (i.e. April to October) through the use of a trapping device to detect the presence of Culex mosquitoes (Note 16). Findings of JE virus in the samples of Culex mosquitoes found are publicised (Note 17).

2.46 As at June 2014, the FEHD had set up trapping devices at six areas in Yuen Long for JE vector surveillance.

Limited coverage of geographical areas for surveillance

2.47 Audit noted that, apart from the existing JE vector surveillance programme, the FEHD had carried out a territory-wide survey of JE vectors during the period October 2004 to October 2005 (the 2004-2005 Survey).

2.48 Compared with the territory-wide surveillance information of the 2004-2005 Survey, the surveillance information about Yuen Long provided under the existing JE vector surveillance programme is very limited.

2.49 Upon enquiry, the FEHD informed Audit in September 2014 that the 2004-2005 Survey was a one-off territory-wide JE survey. It was for getting baseline information on distribution of JE vectors and JE virus-carrying vectors, piggeries and areas with migratory birds in Hong Kong. The JE vector surveillance programme started in 2013 covering Yuen Long only, because the risk of local transmission of JE in Yuen Long was much higher than other areas:

Note 16: *The species to be monitored is Culex tritaeniorhynchus.*

Note 17: In June 2014, the FEHD detected the virus from Culex mosquitoes collected in Tin Shui Wai. The result was announced.

- (a) of the 10 local human JE cases reported during 2004 to 2013, 7 were from Yuen Long;
- (b) of the 3 local JE cases reported during 2014 (up to August 2014), 2 were also from Yuen Long; and
- (c) in the 2004-2005 Survey, all the JE vectors that carried JE virus were collected from Yuen Long.

2.50 According to the FEHD, the six areas selected for surveillance at Yuen Long under the existing programme are the high-risk areas. The FEHD has considered such risk factors as proximity of piggeries, aggregation of migratory birds, and previous records of JE vectors.

2.51 In this regard, Audit noted that places outside Yuen Long might also be affected by such risk factors. For example:

- (a) *Piggeries.* According to the FEHD's latest records, in 2014, there were 46 pig farms/slaughterhouses over the territory. Of these pig farms/slaughterhouses, 12 (26%) were located in districts other than Yuen Long, e.g. Sai Kung and North District;
- (b) Migratory birds. According to information published in 2005 by the Centre for Health Protection of the Department of Health, 40% of wild birds in Hong Kong and 70% of wild birds in Kowloon Park had JE antibodies. A vector mosquito could pick up the JE virus from a wild bird and then transmit it to a human (Note 18); and
- (c) *Previous records of JE vectors.* As noted in the 2004-2005 Survey, JE vectors were present in many places over the territory outside Yuen Long.

Note 18: According to the published information, wild birds pose much less danger to humans in the transmission of JE because the total viral mass in birds is far less than that in pigs.

2.52 As a matter of fact, in August 2014, there was one reported local JE case occurred in Tuen Mun (i.e. outside Yuen Long). Audit considers that the geographical coverage of the JE vector surveillance programme needs to be extended.

Audit recommendation

2.53 Audit has *recommended* that the Director of Food and Environmental Hygiene should review the coverage of geographical areas for JE vector surveillance, taking account of the fact that places not currently selected for surveillance could be subject to risk factors (e.g. proximity of piggeries and aggregation of migratory bird) in relation to the disease.

Response from the Administration

2.54 The Director of Food and Environmental Hygiene agrees with the audit recommendation. She has said that:

- (a) the FEHD will keep in view the risk of local transmission of the disease taking into consideration the recommendation and advice given by the WHO and the Department of Health, and the resource implications; and
- (b) the JE vector surveillance would be extended to other areas if necessary.

Malaria vector surveillance

2.55 Some species of Anopheline mosquitoes are vectors of malaria (Note 19). Under the malaria vector surveillance programme, the FEHD regularly collects samples of mosquitoes and their larvae from potential breeding places along streams

Note 19: The two species confirmed to be malaria vectors in the territory are Anopheles minimus and Anopheles jeyporiensis.

(Note 20). Analysis is conducted to identify the presence of malaria vectors and their larvae in the samples.

2.56 According to the FEHD's latest records available, in 2014, there were about 5,400 streams in Hong Kong. The FEHD has not laid down a timetable for completing the survey of all these streams. Audit noted that the FEHD had surveyed only 1,625 (30%) streams in the past three years (2011 to 2013). At this pace, a complete survey of all the 5,400 streams would take as long as 10 years.

2.57 One reason for the slow progress of the survey of streams could be the long time taken on larval surveys which involve manual collection of samples of mosquito larvae from stream water. Such surveys are done in addition to the collection of mosquito samples along the streams using mosquito trapping devices.

2.58 Audit reviewed the larval surveys conducted recently during the period January to June 2014. Audit found that the FEHD spent considerable time (155 man-days) in conducting the surveys for 386 streams. Moreover, only a small number of streams (9% of the streams) had larvae of Anopheline mosquitoes, all of which were not malaria vectors (see para. 2.55).

2.59 Audit noted that the last local case of malaria was reported some 14 years ago in 2000, and that the FEHD's surveys had not found malaria vectors and their larvae since 2006. This, together with the results of the recent larval surveys, shows that the risk of locally transmitted malaria in Hong Kong is not high. Audit also noted that, apart from the malaria vector surveillance programme, District Offices of the FEHD had been conducting regular mosquito control work on selected streams (see para. 3.2). The FEHD may need to examine the need for conducting the labour-intensive larval survey for every stream under the malaria vector surveillance programme.

Note 20: According to the FEHD, malaria vectors usually breed in habitats along streams. Mosquito samples are collected with the aid of a trapping device. Larva samples are collected manually from the stream water.

- 2.60 Upon enquiry, the FEHD informed Audit in September 2014 that:
 - (a) the larval survey was needed for getting information for carrying out effective and efficient targeted vector control and prevention. Given the territory's densely populated condition, local transmission of malaria could be very extensive within a short period of time;
 - (b) the malaria vector prevention programme being implemented by District Offices was reviewed from time to time taking into consideration the development of the territory; and
 - (c) not all of the streams needed to be attended to with the same priority in the context of malaria prevention. Work plan with timetable for implementing the malaria vector surveillance programme according to the risk factors of transmission of the disease would be prepared.

Audit recommendations

2.61 Audit has *recommended* that the Director of Food and Environmental Hygiene should:

- (a) continue to critically review the FEHD's strategy for malaria vector surveillance, in parallel with that for malaria prevention, taking into account the latest assessment of the risks of malaria in Hong Kong and the resource implications especially for conducting the labour-intensive larval surveys; and
- (b) based on the results of the review in (a) above, prepare a work plan with timetable for implementing the malaria vector surveillance programme.

Response from the Administration

2.62 The Director of Food and Environmental Hygiene agrees with the audit recommendations. She has said that:
- (a) at present, malaria is still a major threat to many parts of the world. Though the last local case of malaria was reported in 2000, sites favourable for the breeding of the two confirmed local malaria vectors can still be found in various parts of the territory. The territory is still under the threat of having local transmission of the disease, and given the high density of our population, it would be very difficult to contain its spread. It is therefore necessary to maintain vigilance, and the FEHD will continue to keep in view the strategy and methodologies for malaria vector surveillance and prevention recommended by the WHO as well as the advice given by the Department of Health. The most effective and efficient vector prevention and control methodology would be adopted; and
- (b) the FEHD will prepare a work plan with timetable for implementing the malaria vector surveillance programme taking into account the risk factors of transmission of the disease and resource availability.

Effectiveness of infestation indicators

2.63 The RIR and the OI are key infestation indicators. LegCo has been informed that the RIR reflects the general situation of rodent infestation in individual districts, and that the OI indicates the extensiveness of the distribution of Aedine mosquitoes in the surveyed area (see para. 2.3).

Indicators may not fully reflect the actual situation of pest infestation

2.64 The FEHD classifies the RIR into 3 levels and the OI into 4 levels with a view to initiating actions accordingly (see Appendix G). However, Audit noted that the RIR and the OI did not always fully reflect the actual situation of pest infestation. Cases 2 and 3 are examples showing that the RIR and the OI might not be in line with the level of infestation as perceived by the general public.

Case 2

Rodent infestation in Sai Kung (2012 and 2013)

1. For 2012 and 2013, the FEHD recorded a 0% RIR for Sai Kung.

2. Such surveillance information did not seem to be consistent with other FEHD statistics for its rodent control work in Sai Kung, as follows:

Year	No. of public complaints about rodents in Sai Kung	No. of rodents trapped/poisoned by the FEHD in Sai Kung
2012	378	677
2013	419	584

Audit comments

3. The number of public complaints about rodents and the number of rodents trapped/poisoned in Sai Kung were considerable. The degree of rodent infestation in Sai Kung might not be negligible as the RIR suggested.

Source: FEHD records

Case 3

Mosquito infestation in Yuen Long (January to March 2013)

1. In January and February 2013, the FEHD recorded a 0% OI for Yuen Long Town.

2. On 11 March 2013, at a meeting of the Environmental Improvement Committee of the Yuen Long District Council, Members commented that:

- (a) mosquito infestation had remained serious in Yuen Long District. There was recently an increase in the number of public complaints about mosquito infestation in the District; and
- (b) there was doubt as to why a 0% OI was recorded.

3. At the meeting, the Members urged the FEHD to ensure that an accurate OI could be obtained.

4. On 25 April 2013, the FEHD announced the OI for March 2013. The figure for Yuen Long Town remained at 0%.

Audit comments

5. The OI for an area indicates the extensiveness of the distribution of Aedine mosquitoes in the area (see para. 2.63). According to the FEHD's published information, Aedine mosquitoes are commonly found in Hong Kong. The fact that Yuen Long Town had a 0% OI (i.e. no or negligible number of Aedine mosquitoes) was seemingly at odds with the increasing number of public complaints about mosquito infestation in the District (see para. 2(a) above).

Source: FEHD records and minutes of Yuen Long District Council meetings

- 2.65 Upon enquiry, the FEHD informed Audit in September 2014 that:
 - (a) regarding Case 2:
 - the RIR for Sai Kung had been taken from the central area of Tseung Kwan O and mainly from the town of Sai Kung where the population was relatively high;
 - (ii) the complaints about rodents in Sai Kung District were mainly received from village type houses which scattered widely in the District;
 - (iii) the village type houses had not been chosen for coverage by the rodent surveillance programme. Such houses were too widely distributed for effective monitoring through the RIR; and
 - (iv) the FEHD had monitored closely the complaint figures from those areas and conducted regular pest control operations there;
 - (b) a 0% RIR of a district only indicated that no rodent activities in the surveillance areas had been detected during the survey period (the three days when the monitoring bait was set see para. 2.5). It did not suggest that there was no rodent activity in the whole district during the whole month;
 - (c) a 0% OI of a surveyed area indicated that dengue vectors were not detected in that area during the week (see para. 2.28) when the ovitraps were set. It did not indicate that dengue vector was not present in the area in the whole month nor did it indicate that dengue vector was not present outside the surveyed area; and
 - (d) the RIR and the OI provided only additional information for formulation of pest control strategies and evaluation of the effectiveness of pest control work.

2.66 Notwithstanding the FEHD's explanations (see para. 2.65), Audit considers that there are limitations in the use of the OI and the RIR as key indicators of pest infestation.

2.67 Audit considers that infestation indicators provide important surveillance information for planning and evaluation of pest control work. It is important that the indicators can adequately reflect the level of pest infestation. At present, the indicators are presented as a percentage of the monitoring points with positive results. In general, a 0% infestation rate may give an impression to the public that the number of pests concerned is negligible. However, this might not be in line with public perception of the pest problem, for example, as reflected by number of public complaints and number of rodents trapped/poisoned in the areas concerned. There is a need to review the effectiveness of the infestation indicators in providing surveillance information for pest control.

Audit recommendations

2.68 Audit has *recommended* that the Director of Food and Environmental Hygiene should:

- (a) review the effectiveness of infestation indicators (i.e. the RIR and the OI) in providing surveillance information for planning and evaluation of pest control work, taking account of other relevant information, e.g. public complaints on pest infestation;
- (b) having regard to the results of the review in (a) above and other relevant factors (e.g. findings in this audit review), review the methodology for the compilation of infestation indicators to improve their representativeness of the level of pest infestation; and
- (c) consider providing supplementary information to stakeholders
 (e.g. LegCo and the public) on the limitations of the infestation indicators in representing the general level of pest infestation (see para. 2.65(b) to (d)), so as to avoid misinterpretation by users of the indicators.

Response from the Administration

2.69 The Director of Food and Environmental Hygiene generally agrees with the audit recommendations. She has said that:

- (a) the objectives of the two indices are to provide additional information on the extensiveness of infestation of rodents and Aedine mosquitoes for formulation of relevant pest control strategies and evaluation of the effectiveness of pest control work. There are no internationally adopted standards and guidelines on the RIR and the OI. Each surveillance method has its strengths and weaknesses;
- (b) the FEHD classifies the RIR and the OI into different levels and initiates actions accordingly (see para. 2.64);
- (c) the FEHD will continue to keep in view the methods on disease vector surveillance recommended by the WHO and used by other cities. Methods which are suitable for use locally would be adopted for improving the effectiveness of the surveillance methods being used. More detailed guidelines for compilation of the infestation indicators would be prepared for the relevant staff. They would be reminded of the limitations of the infestation indicators, and to take into account public complaints/requests for services on controlling the pest, results of inspection and information obtained from the monitoring/surveillance system in addition to the infestation indicators (RIR and OI) for planning and evaluating the pest control work; and
- (d) the FEHD will provide stakeholders including the public with more information on the interpretation and limitations of the infestation indicators when the indicators are released.

PART 3: PEST CONTROL OPERATIONS

3.1 This PART examines the pest control operations of the FEHD's District Offices, and suggests measures for improvement in the following areas:

- (a) planning of pest control work (paras. 3.2 to 3.28);
- (b) supervision and performance of pest control work (paras. 3.29 to 3.34); and
- (c) monitoring the performance of contractors (paras. 3.35 to 3.46).

Planning of pest control work

3.2 Through its 19 District Offices, the FEHD carries out pest control operations in public places over the territory (see para. 1.7(b)). A key component of the operations is the conduct of routine pest control work at places such as pavements, flower beds, rear lanes, hill slopes and open areas (Note 21). Routine pest control work is also done at streams, watercourses and other water bodies to prevent and control disease vectors such as malaria vectors (Note 22).

3.3 Pest control staff of District Offices are organised into teams to conduct routine pest control work. The pest control teams are classified into in-house teams

- **Note 21:** According to the FEHD, particular attention is paid to areas in close proximity to places such as food premises, residential premises, schools, construction sites, illegal cultivation sites, hospitals, waterfront public and private cargo working areas, cross boundary check points and ferry terminals, typhoon shelters, markets/municipal services buildings, hawker bazaars, pig farms and other problematic spots.
- **Note 22:** Besides routine pest control work, the FEHD also investigates into complaints, takes enforcement actions against mosquito breeding in private premises and construction sites, promotes public awareness in pest control through anti-mosquito campaigns and anti-rodent campaigns, conveys technical advice to the public on proper pest control, and follows up vector-borne disease cases, etc.

(comprising FEHD staff) and contractor teams (comprising contractor staff — Note 23). Each team serves specific geographical areas. As at June 2014, the 19 District Offices had a total of 95 in-house teams and 274 contractor teams. On average, each District Office had 5 in-house teams and 14 contractor teams. Each team had about 6 members.

Audit visits

3.4 From May to July 2014, Audit visited four District Offices (Note 24), namely Eastern District Office (District Office A), Sham Shui Po District Office (District Office B), Sai Kung District Office (District Office C) and Yuen Long District Office (District Office D). Audit reviewed their planning and conduct of routine pest control work.

3.5 To obtain first-hand information about the pest control practices of the four District Offices, Audit also conducted inspection visits to sites where pest control work was done, as follows:

 (a) Accompanied visits. Audit staff visited different pest control teams when they were on duty, covering the work of both in-house and contractor pest control teams of the four District Offices. A total of 10 visits were conducted (Visit-1 to Visit-10 – Note 25); and

- **Note 23:** Contractor staff provide services under pest control contracts. As at June 2014, there were a total of 20 pest control contracts, involving seven contractors (see para. 3.35).
- **Note 24:** The District Offices were selected from the four regions, namely, Hong Kong and Islands, Kowloon, New Territories (East), and New Territories (West).
- Note 25: On 12 and 14 May 2014, Audit staff conducted the first two accompanied visits to pest control teams of District Office A. This round of visits helped Audit familiarise with the operations of pest control teams. Thereafter, for each of the four District Offices, Audit selected an in-house pest control team and a contractor pest control team for visit during the period 26 May to 30 June 2014. Audit visited each team for one day covering their working hours.

(b) *Independent visits.* On some occasions, Audit staff conducted inspection visits on their own to observe the results of the District Offices' pest control work (Note 26).

Areas for improvement in planning of pest control work

3.6 Pest control teams patrol their responsible areas according to a planned schedule (inspection programme). The inspection programme specifies the locations (e.g. specific rear lanes and streets) to be patrolled each day. During the patrol, the pest control team carries out pest control operations, such as clearing stagnant water, applying pesticides, and replacing rodenticides. District Offices are responsible for formulating inspection programmes for their own pest control teams (Note 27).

3.7 Audit examined a sample of weekly inspection programmes for the four District Offices, and found that the District Offices had largely been using the same set of programmes for at least three years (Note 28). Upon enquiry, the District Offices informed Audit (from May to July 2014) that the current set of inspection programmes had generally been used for a long time. The basis for formulating the programmes in the first place could not be traced.

3.8 According to FEHD guidelines, the inspection programmes should be worked out on a weekly basis. However, the guidelines gave no clear instructions on how the inspection programmes should be formulated taking account of relevant information (e.g. infestation indicators, complaints and blackspots).

Note 26: Some inspections were conducted outside the normal working hours of pest control teams.

- **Note 27:** In practice, each pest control team prepares its inspection programme for approval by the District Office.
- Note 28: For the four District Offices, Audit selected the inspection programmes of the pest control teams (8 in-house teams and 30 contractor teams) for one week in each of the years 2012 to 2014. Audit compared the inspection programs for each team and found that, in general, no changes had been made to the programmes over the three-year period.

3.9 Audit visits had revealed a number of inadequacies in the planning of pest control work (see paras. 3.10 to 3.21). There is a need for the FEHD to provide adequate guidelines so as to help District Offices formulate more effective inspection programmes.

Uneven workloads of pest control teams on site

3.10 Audit noted two contrasting cases during Visit-3 on 26 May 2014 and Visit-8 on 5 June 2014. In one case, the pest control team (an in-house team) completed its inspection programme by conducting 1.3 hours of on-site pest control work. In the other case, the pest control team (a contractor team) conducted some 7 hours of on-site work for completing the scheduled pest control work. Table 8 shows the different workloads of the two inspection programmes.

Table 8

Time spent on two inspection programmes
(District Offices A and B)

	Visit-3	Visit-8
Pest control team	In-house (District Office A)	Contractor (District Office B)
Date of the inspection programme/visit	26 May 2014	5 June 2014
Work areas for patrolling and pest control	Specific areas/streets around Causeway Bay	Specific areas/streets around two housing estates in Sham Shui Po
Time spent		
Patrolling and conducting pest control work at the work areas	1.3 hours (15%)	7 hours (87%)
Ancillary work (e.g. preparatory work and travelling between work areas)	3.9 hours (43%)	1 hour (13%)
Office work	3.8 hours (42%)	0 hour (0%)
Total (Note)	9 hours (100%)	8 hours (100%)

Source: Audit visits on 26 May 2014 and 5 June 2014

Note: The normal working hours of the in-house staff were 9 hours a day (from 8:00 a.m. to 6:00 p.m., including a one-hour lunch break). The working hours of the contractor staff were 8 hours a day (from 8:00 a.m. to 5:00 p.m., including a one-hour lunch break).

3.11 Audit noted that the in-house team spent considerable time (42%) of the working hours — see Table 8) at the FEHD office, and on walking between work areas (some 40 minutes). Upon enquiry, the FEHD informed Audit in September 2014 that:

- (a) carrying pesticides, which are toxic and hazardous, on public transport is prohibited. Government vehicles or hired vehicles should be the means of transportation in such circumstances. While each pest control team of contractors is provided with a vehicle for driving to the work sites direct, the vehicles for in-house pest control teams are for share use among the teams; and
- (b) as regards the office work, in-house pest control teams are led by supervisors who are usually a staff member of the FEHD Foreman rank. Unlike contractor staff whose duties are mainly on pest control field work, these in-house supervisors are also required to perform other duties (e.g. administrative work, law enforcement duties, investigation of complaints, and preparing reports on pest control survey conducted).

3.12 In this regard, Audit noted that during Visit-3 on 26 May 2014, the FEHD had hired a motor vehicle to carry the in-house pest control team to work. However, for most of the time, the vehicle was parked at the roadside and was not used for conveying the pest control team between work areas.

3.13 As for the office work, Audit noted that the four members (other than the supervisor) of the in-house pest control team were workmen who were primarily field workers. Requiring all four workmen to spend substantial (42%) time at the FEHD office to support their supervisor's other duties, which included administrative and reporting work (see para. 3.11(b)), might not constitute efficient deployment of staff resources. In this regard, the contractor team whose team members (also workers) spent the vast majority of their time on on-site pest control work. Moreover, Audit found no documentary records of the specific office work done by the four in-house workmen on that day. The FEHD needs to explore ways of making better use of its staff resources in conducting pest control work.

Construction sites not covered by inspection programmes

3.14 Construction sites are potential mosquito breeding grounds and may provide harbourage for rodents. The FEHD internal guidelines require that inspection programmes should cover all construction sites in the work areas.

3.15 During Visit-9 on 23 June 2014, the pest control team of District Office D conducted patrol according to the inspection programme. Audit noted that the team bypassed some construction sites en route. Audit recorded the details of three sites for follow-up purposes (see para. 3.16). Photograph 10 shows one of these sites.

Photograph 10

A construction site bypassed by the pest control team (23 June 2014)



Source: Audit visit conducted on 23 June 2014

3.16 Audit noted that the inspection programme made no mention of any construction sites. Upon enquiry, District Office D informed Audit in June 2014 that, as in other District Offices, District Office D had maintained a control list of construction sites within its responsible areas. Audit was also informed that inspections could be conducted according to the list where necessary. However, Audit reviewed the list and could not find details of the three construction sites recorded earlier (see para. 3.15).

3.17 Upon enquiry, the FEHD informed Audit in September 2014 that it had reminded District Offices to keep an updated list of construction sites or fenced-off vacant sites in their districts. Pest control staff were reminded to:

- (a) proactively take note of any new construction sites or fenced-off vacant sites during their work, and report to their supervisors for updating the list of construction sites or fenced-off vacant sites. The supervisor should verify the land status of these sites with the departments concerned where necessary; and
- (b) incorporate the construction sites or fenced-off vacant sites in the inspection programmes.

Inadequate coordination with street cleansing activities

3.18 Apart from pest control services, District Offices are also responsible for the provision of services such as street cleansing. Manual sweeping and street washing are conducted from time to time.

3.19 During the visits to the four District Offices, Audit noted cases in which street washing was conducted shortly after the completion of routine pest control work. Table 9 shows examples of such cases in the weekly pest control work and street washing schedules for June 2014.

Table 9

		Time for co	Time lapse	
District Office	Location	Routine pest control work	Street washing	control work and street washing
				(Day)
А	Cloud View Road	Tuesday	Wednesday	1
А	Wing Hing Street	Wednesday	Thursday	1
А	Ngan Mok Street	Wednesday	Friday	2
С	Housing estate X	Wednesday	Thursday	1
С	Housing estate Y	Wednesday	Thursday	1

Routine pest control work and street washing for selected locations (June 2014)

Source: Audit analysis of FEHD records

3.20 Routine pest control work is conducted according to inspection programmes. Such work requires pest control teams to replace rodenticides and apply pesticides in public places (see para. 3.6). Audit considers that, to avoid the freshly applied rodenticides and pesticides from getting wet (rendering them ineffective) or being washed away during street washing, District Offices should better dovetail their inspection programmes with street washing schedules. For example, it is more desirable to conduct routine pest control work for a location right after street washing, but not the other way round. The existing arrangements (see Table 9 for examples) are less than satisfactory.

3.21 Upon enquiry, the FEHD informed Audit in September 2014 that it had reminded pest control staff of District Offices to enhance the coordination between the pest control work and other street cleansing activities (e.g. street washing) of the FEHD.

Control and disinfestation work on nuisance pests

3.22 In the four District Offices visited by Audit, the inspection programmes did not specify the type of routine pest control work to be done at each work area (e.g. control of rodents, mosquitoes or other pests). Upon enquiry, the District Offices informed Audit in June and July 2014 that the inspection programmes were primarily for controlling disease vectors, mainly rodents and mosquitoes. For nuisance pests (e.g. cockroaches) which caused irritation rather than serious illness, preventive and control measures were not conducted regularly. The District Offices generally acted on complaints to conduct disinfestation exercises for nuisance pests.

3.23 Audit noted that the four District Offices received many complaints about nuisance pests (1,617 complaints in 2013), and that many disinfestation exercises were conducted on nuisance pests. In particular, District Office D conducted 9,547 disinfestation exercises for nuisance pests in 2013 (see Table 10).

Table 10

Disinfestation exercises for nuisance pests conducted by selected District Offices (2013)

District Office	Number of disinfestation exercises	
А	112	
В	52	
С	500	
D	9,547 (Note)	
Total	10,211	

Source: FEHD records

Note: Of these exercises, 8,823 were targeted at flies.

3.24 Upon enquiry, the FEHD informed Audit in September 2014 that, of the 8,823 disinfestations operations conducted by District Office D on flies (see Note to Table 10), 8,810 operations were carried out under a regular programme at refuse collection points, bin sites and aqua privies.

3.25 In this connection, Audit notes that, in response to public concerns about bedbug infestation in public places, the FEHD has recently introduced routine pest control work for bedbugs (Note 29). Under the enhanced practices, the FEHD will carry out regular pest control programmes against bedbugs in refuse collection points and public places (e.g. applying insecticides to discarded furniture pending removal at refuse collection points).

3.26 Audit welcomes the FEHD's initiatives in preventing and controlling bedbugs (see para. 3.25) and flies (see para. 3.24) in a planned manner. Any unplanned disinfestation exercises for nuisance pests could disrupt District Offices' routine pest control work. The sporadic conduct of any unplanned disinfestation exercises might also not be able to fully meet public expectations. Audit considers that, to better meet public expectations and to further reduce any disruption on routine pest control work, the FEHD may need to continue exploring the desirability of incorporating into its inspection programmes further preventive and control measures for other nuisance pests.

Audit recommendations

3.27 Audit has *recommended* that the Director of Food and Environmental Hygiene should take measures to improve the FEHD's planning of pest control work. In particular, the FEHD should:

(a) provide adequate guidelines to help District Offices regularly update their inspection programmes, taking into account relevant information (e.g. infestation indicators, complaints and blackspots);

Note 29: In October 2013, a LegCo Member expressed concern about the increasing bedbug problems in public places. The FEHD has subsequently required District Offices to enhance their bedbug disinfestation measures.

- (b) ensure more efficient and cost-effective deployment of staff resources for pest control work by:
 - (i) evening out the workloads among different inspection teams;
 - (ii) reducing the time spent by pest control field workers at the office;
 - (iii) making better use of motor vehicles for conveying pest control staff between work areas in conducting routine pest control work; and
 - (iv) specifying clearly in the inspection programmes details of the pest control work to be conducted;
- (c) take measures to incorporate the checking of potentially problematic sites (e.g. construction sites) into the inspection programmes;
- (d) ensure that the coordination between the pest control work and other street cleansing activities (e.g. street washing) of the FEHD are enhanced, with a view to reducing the risk of hampering the effectiveness of rodenticides and pesticides applied in public places; and
- (e) consider devising preventive and control measures for more nuisance pests where appropriate, and incorporating them into routine pest control work under the inspection programmes.

Response from the Administration

3.28 The Director of Food and Environmental Hygiene agrees with the audit recommendations. She has said that:

(a) the FEHD will review and provide appropriate guidelines setting out the relevant benchmarks to help District Offices regularly update their inspection programmes and specify clearly, in the inspection programmes, details of the pest control work to be conducted;

- (b) the FEHD will remind District Offices to ensure more efficient and cost-effective deployment of staff resources for pest control work by evening out the workloads of different pest control teams, reducing the time spent by in-house pest control workers at the office and making better use of motor vehicles for conveying pest control staff between work areas in conducting routine pest control work. In general, the supervisors of pest control teams are responsible for the supervision of fieldwork and other administrative duties after they return to office;
- (c) the District Offices completed a special round of checking in September 2014. All the construction sites and fenced-off sites have been incorporated in the regular inspection programmes;
- (d) the FEHD has reminded pest control staff of District Offices to enhance the coordination between the pest control work and other street cleansing activities (e.g. street washing) of the FEHD;
- (e) the FEHD's resource is focused on the control of pests with public health significance (e.g. mosquitoes and rodents). Nuisance pests such as cockroaches, ants and bedbugs are closely related to environmental hygiene conditions of individual premises. Complaints of nuisance pests mainly arose from the privately occupied portions of the premises. Under the Public Health and Municipal Services Ordinance, it is the responsibility of the owners or occupiers to maintain their premises free from vermin infestation; and
- (f) in response to complaints about nuisance pests, District Offices will provide technical advice to the owners or occupiers concerned and conduct relevant pest control work in public areas. The FEHD will continue to monitor the ground situation and where circumstances so warrant, incorporate preventive and control measures for other nuisance pests in public places under the regular inspection programmes.

Supervision and performance of pest control work

3.29 A typical pest control team has 5 or 6 members (1 supervisor with 4 or 5 workers). For in-house pest control teams, the supervisor is usually a staff member of the Foreman rank. For contractor pest control teams, the supervisor is

an employee of the contractor. According to FEHD guidelines, in-house supervisors are not required to supervise contractor staff. The in-house supervisors and contractor supervisors are responsible for leading their own teams (see paras. 3.35 to 3.46 for the FEHD's practices in monitoring contractor performance).

Improper work practices of pest control teams

3.30 Audit conducted accompanied visits and independent visits to observe pest control work of the four District Offices (see para. 3.5). The visits revealed areas where improvements could be made in the performance of the pest control work. Improper work practices of the pest control teams (see Table 11 for details) included:

- (a) using improper gear at work by individual staff (see item 1 of Table 11);
- (b) failing to remove potential mosquito breeding sources (see Photograph 11 and item 6 of Table 11);
- (c) improper handling of rodenticides (see Photograph 12 and items 3 to 5 of Table 11);
- (d) failing to conduct pest control work by individual staff (see item 2 of Table 11);
- (e) improper handling of trapped rodents (see item 7 of Table 11); and
- (f) failing to set rodent traps properly (see item 8 of Table 11).

Table 11

Performance of individual pest control workers (May to August 2014)

Item	Date of audit visit	In-house/ contractor staff	Observed	Detail
1	14.5.2014 (Visit-2)	In-house	Using improper gear at work	 (a) a worker collected a dead rodent with cotton gloves instead of plastic/rubber gloves as required by the FEHD. (b) a worker did not put on gloves and goggles when spraying pesticides, contrary to the FEHD's recommended practice.
2	26.5.2014 (Visit-4)	Contractor	Failing to conduct pest control work by individual staff	 (c) a pest control worker was also responsible for driving the motor vehicle which carried the pest control team. The worker did not conduct pest control work as required by the service contract, but stayed with the car at the roadside. The worker explained that the car was not parked at a proper parking space.
3	26.5.2014 (Visit-4)	Contractor	Placing rodenticides inappropriately	(d) a rodenticide bait was hung on a fence, high above the ground. The position might not be accessible to rodents.
4	30.5.2014 (Visit-5)	In-house	Placing rodenticides inappropriately	(e) rodenticide pellets were unpacked and placed on the ground in a rear lane. The place was accessible to other people (including children) and domestic animals (e.g. dogs and cats) (see Photograph 12).

	Date of	In-house/	Observed	
Item	audit visit	contractor staff	performance	Detail
5	3.6.2014 (Visit-7)	Contractor	Failing to replace rodenticides	(f) when the pest control team finished their work, the contents of a bait box (a box for holding baits, with openings for access by rodents) had not been checked. At Audit's request, the team opened the bait box and found that the bait had turned bad. It was not until then the team replaced the bait.
6	23.6.2014 (Visit-9)	In-house	Failing to remove potential mosquito breeding sources	(g) workers picked up receptacles (e.g. discarded bottles and paper cups) along the road and emptied the water inside. Although the receptacles could again gather water (e.g. rainwater) for mosquito breeding, the workers put back the receptacles on the ground (see Photograph 11). The workers should have taken away the receptacles for disposal.

Table 11 (Cont'd)

	Date of	In-house/	Observed	
Item	audit visit	contractor staff	performance	Detail
7	12.5.2014	Contractor and	Alleged	(h) From time to time, live
	(Visit-1)	In-house	drowning of	rodents were trapped (in cage
			trapped	traps) by pest control teams.
	14.5.2014		rodents	Upon enquiry, workers
	(V181t-2)			colleagues did not kill the
	26.5.2014			trapped rodents by breaking
	(Visit-4)			their necks as specified in the FEHD guidelines. Rather, it
	3.6.2014			was a common knowledge that
	(Visit-7)			workers drowned the rodents
				for convenience (e.g. using a
	30.6.2014			large polystyrene container).
	(Visit-10)			This was an inhumane
				treatment not allowed by the
				FEHD.
8	11.6.2014	Contractor	Failing to set	(i) On each day, Audit visited
	(Independent		rodent traps	two rear lanes shortly after
	visit)		property	set by pest control workers
	4 8 2014			Audit found that:
	(Independent			Audit found that.
	visit)			(i) none of the cage traps
	/			were set according to the
				FEHD guidelines. The
				each cage trap should be
				nlaced at right angle to the
				vertical surface of the wall
				in the rear lane, and that
				the opening of the cage
				trap should be facing the
				vertical surface of the
				wall. In the event, the
				cage traps were scattered
				along the rear lane, in a
				disorganised manner; and

Table 11 (Cont'd)

Item	Date of audit visit	In-house/ contractor staff	Observed performance	Detail
				 (ii) according to records of the responsible office (District Office B), in 3 of the rear lanes, a total of 40 cage traps should be set (15, 15 and 10 cage traps respectively). However, Audit found that only 24 cage traps had been set (10, 6 and 8 cage traps respectively).

Table 11 (Cont'd)

Source: Audit visits during May to August 2014

Photograph 11

Receptacles which could gather water for mosquito breeding were not removed from the site (June 2014)





A receptacle (paper cup)

Source: Audit visit conducted on 23 June 2014

Photograph 12

Rodenticide pellets unprotected from moisture and access of domestic animals and children (May 2014)





Rodenticide pellets

Source: Audit visit conducted on 30 May 2014

3.31 Audit considers that the above-mentioned areas for improvement were generally related to the inadequate performance and supervision of pest control workers. In this connection, Audit noted in 2 (20%) of the 10 accompanied visits that the supervisors did not adequately supervise the pest control teams. There is a need for the FEHD to take measures to strengthen the supervision of its pest control workers. To improve the accountability of the supervisors of pest control teams, there is a need for them to record their work for management review.

3.32 In this connection, Audit noted that supervisors of in-house pest control teams were also responsible for other duties (e.g. administrative work, law enforcement duties, and investigation of complaints — see para. 3.11(b)). According to FEHD guidelines, in-house supervisors were required to record their work activities daily in an official log. Upon enquiry, District Offices B and D informed Audit in May and July 2014 that they had only used the log for recording law enforcement activities.

Audit recommendations

3.33 Audit has *recommended* that the Director of Food and Environmental Hygiene should:

- (a) review the adequacy of the supervisory practices of pest control teams, with a view to improving the performance of pest control staff, particularly in areas such as clearing of potential mosquito breeding places, application of rodenticides and handling trapped rodents in a proper manner;
- (b) having regard to the results of the review in (a) above, take effective measures to ensure that pest control workers are adequately supervised; and
- (c) remind supervisors of in-house pest control teams to properly record their work activities in a daily log for management review.

Response from the Administration

3.34 The Director of Food and Environmental Hygiene agrees with the audit recommendations. She has said that the FEHD:

- (a) has reminded District Offices to strengthen the supervision of the work performance of the in-house pest control workers and the pest control teams of the contractors;
- (b) will review the contract clauses of the outsourced pest control services and, where appropriate, consider imposing heavier sanction on contractors for substandard performance; and
- (c) has also reminded supervisors of in-house pest control teams in District Offices to properly record their work activities for management review.

Monitoring the performance of contractors

3.35 It is an established practice of the FEHD to contract out pest control services to private service providers. As at June 2014, of the 2,419 staff who delivered the FEHD's pest control services, 1,644 (68%) were staff of contractors. The pest control services were delivered under 20 contracts, each covering a specific geographical area (e.g. Kwai Tsing, Tai Po and Tsuen Wan). The 20 pest control contracts (in operation as at June 2014) were awarded to seven contractors at a total price of some \$530 million (Note 30).

3.36 Through outsourcing, the FEHD intends to improve existing services and attain better cost-effectiveness. As stated in the FEHD's operational manual for management of pest control contracts, the main objectives in outsourcing include:

- (a) improving existing services and meeting increasing demands and new service requirements;
- (b) attaining better cost-effectiveness and efficiency;
- (c) increasing the flexibility in coping with fluctuating demands; and
- (d) gaining access to new skills and technology in the market place.

3.37 Under the pest control contracts, staff of service providers carry out pest control work for the FEHD. As at June 2014, 1,644 contractor staff were involved in the day-to-day pest control work over the territory (see para. 3.35). Through its District Offices, the FEHD monitors and assesses the performance of the contractors.

Note 30: The 20 pest control contracts were procured through open tendering exercises. For tendering purposes, the 20 contracts were grouped into 5 clusters. There were 4 contracts per cluster (e.g. Yau Tsim, Shum Shui Po, Mong Kok and Kowloon City formed a cluster). Service providers were allowed to tender for any number of contracts, whether within a cluster or in more than one cluster. In order to avoid over-reliance on one or more dominant contractors, the FEHD would award to each contractor not more than one contract in each cluster.

3.38 The FEHD has laid down service requirements which are binding on the contractors, namely, job-based requirements (e.g. number of staff, working hours, and tasks to be conducted) and performance-based requirements such as:

- (a) on completion of the pest disinfestation work, the location concerned should be free from signs of activity of the pest (e.g. egg cases and live pests); and
- (b) the effectiveness of disinfestation work should be assessed by objective indicators such as the RIR, the rat-flea index and the OI (see para. 2.3).

3.39 For contractors who fail to meet the service requirements, the FEHD would take various actions depending on the gravity of the matter. For example, the FEHD could require contractors to rectify the situation and issue to them a notice of default in performance (default notice — Note 31). In case of serious breach of service requirements, the Government could terminate the pest control contract.

Lack of performance standards

3.40 The RIR and the OI are important outcome indicators for pest control work. Under the pest control service contracts, it is one of the service requirements that the effectiveness of mosquito/rodent/pest disinfestation work shall be assessed by objective indicators (e.g. rat-flea index, OI and pest infestation rate), and that the FEHD shall have the discretion to decide whether the effectiveness of mosquito/rodent/pest control work has been achieved. However, the FEHD has not specified the standard level of OI and RIR which contractors have to attain.

3.41 Upon enquiry, the FEHD informed Audit in September 2014 that it was not always practicable to use the OI as a performance indicator for contractors, because:

Note 31: *Issuance of a default notice will cause the contractor's contract payments to be reduced. The default notice will be taken into account should the contractor bid for pest control contracts in the future.*

- (a) the contractors were responsible for providing mosquito/rodent and other pest control services in public places under the purview of the FEHD; and
- (b) some ovitaps or monitoring baits were set in areas outside public places (Note 32).

3.42 In this connection, Audit notes that it is the intention of the FEHD to manage its pest control contracts by results (Note 33). Audit considers it important that performance standards are clearly set, against which results of the pest control contracts can be measured.

Field inspections to assess contractor performance

3.43 Staff of District Offices conduct field inspections to assess contractor staff's day-to-day performance. The FEHD requires that the inspections should be conducted on a random (surprise) basis.

3.44 During the visits to the four District Offices (see para. 3.4), Audit reviewed their inspection records (Note 34). Audit found that the District Offices usually did not conduct field inspections before 9:30 a.m., or after 4:05 p.m. A team of contractor staff informed Audit that they were well aware of the District Office's pattern of conducting daily field inspections. In this connection, Audit's site inspections in May and June 2014 (see paras. 3.30 to 3.32) revealed some cases in which contractor staff might not have followed the service requirements.

- **Note 32:** Such areas fall within the management responsibility of other parties (e.g. other government departments (see para. 4.5) or private owners).
- **Note 33:** As stated in its operational manual for management of pest control contracts, the *FEHD* has adopted the guiding principle of "management by results" in the management of pest control service contracts.
- **Note 34:** Audit reviewed the latest available records of inspections conducted during the fourth week of June, namely, from 23 to 28 June 2014.

Audit recommendations

3.45 Audit has *recommended* that the Director of Food and Environmental Hygiene should:

- (a) review the adequacy of performance standards for pest control services provided by contractors;
- (b) provide guidelines to help District Offices set performance standards against which the results of contractors' pest control work can be measured, taking account of relevant parameters (e.g. OI and RIR) which are applicable to the contractors' work; and
- (c) remind staff to strictly follow the FEHD's requirements on the conduct of field inspections. In particular, inspections should be conducted on a random basis, in order to ensure that pest control work conducted by contractors at different times of the day will have a fair chance of being assessed.

Response from the Administration

3.46 The Director of Food and Environmental Hygiene agrees with the audit recommendations. She has said that the FEHD:

- (a) will review the performance standards for pest control services provided by contractors and, where appropriate, provide further guidelines on performance standards, including inspection findings, to help District Offices assess the contractor's pest control work; and
- (b) has reminded District Offices to strictly follow the requirements in conducting field inspections and to conduct the inspections on a random basis, covering the whole period of the working hours, to ensure that pest control work conducted by contractors at different times of the day will have a fair chance of being assessed.

PART 4: PROMOTION OF PEST CONTROL AND ENVIRONMENTAL HYGIENE

4.1 This PART examines the FEHD's efforts in promoting pest control and environmental hygiene.

Community involvement in pest control

4.2 In pest control, prevention is more effective than disinfestation. According to the WHO's advice, there is always a need for community involvement in implementing environmental management measures for pest control. Under the FEHD's integrated approach to controlling pests (see para. 1.7), emphasis is put on continuous improvement in environmental hygiene as well as on other pest control measures.

Publicity and public education on pest control

4.3 The FEHD makes use of a wide range of channels for publicity and public education to promote pest control and environmental hygiene. Such channels include the FEHD's website, posters, leaflets and TV/radio announcements in the public interest. The FEHD also organises publicity events, such as roving exhibitions at shopping malls of housing estates, health talks, and theme exhibitions.

Engaging venue managers and other stakeholders in pest control

4.4 The FEHD only conducts pest control and preventive work in public places which do not have a venue manager (e.g. clearing stagnant water at roadsides and destroying rat holes on hill slopes). It is the responsibilities of other stakeholders (e.g. other government departments and private owners) to keep their own venues hygienic and prevent pest infestation. To help engage the venue managers in pest control, the FEHD provides pest surveillance information to them to heighten their awareness of pests as disease vectors (see paras. 4.5 to 4.10). To sustain the stakeholders' pest control efforts, the FEHD regularly organises pest control campaigns.

Provision of pest surveillance information to stakeholders

4.5 The FEHD publicises regularly the RIR and the OI for public information. To enable government departments to better respond to the infestation situations at places under their purview, the FEHD proactively provides details of the two indicators (i.e. the RIR and the OI by areas) to 20 government bureaux/departments (user departments — Note 35). Such user departments include the Agriculture, Fisheries and Conservation Department (AFCD), the Education Bureau (EDB), the Housing Department, and the Leisure and Cultural Services Department (LCSD).

Inadequate surveillance information for user departments

4.6 As mentioned in paragraphs 2.7 to 2.11 and 2.29 to 2.32, the RIR and the OI have an insufficient geographical coverage. Details are as follows:

- (a) *RIR.* As at June 2014, of a total of 2,240 bait points set up over the territory for rodent surveillance, 184 (8%) were set up at venues of user departments. Monitoring baits were placed at the bait points to detect the presence of rodents for compiling the RIR. Many venues of the user departments were not covered by bait points. For example:
 - (i) *AFCD and EDB*. No bait points were set up at venues of the AFCD and the EDB; and
 - (ii) *LCSD*. Only 25 bait points were set up for the Department, covering 11 (0.7%) of the 1,552 parks and gardens; and

Note 35: These 20 user departments are members of the Interdepartmental Working Group on Pest Prevention and Control, which is an advisory body that helps the Department of Health execute its health functions in relation to prevention and control of infectious diseases.

- (b) OI. As at June 2014, of a total of 2,371 ovitraps set up over the territory, 1,039 (44%) were set up at venues of user departments. The ovitraps detected the larval breeding rate of dengue fever vectors for compiling the OI. However, many venues of the user departments did not have an ovitrap. For example:
 - (i) AFCD. Only 1 ovitrap was set up for the AFCD, which was located at the Hong Kong Wetland Park. No other ovitraps were set up at visitor facilities (e.g. camp sites and barbecue sites) of the AFCD's 46 country parks/special areas;
 - (ii) *EDB.* Of the 1,083 primary and secondary schools over the territory (Note 36), only 178 (16%) had ovitraps (188 in total) set up by the FEHD; and
 - (iii) *LCSD*. Of the 1,552 parks and gardens under the purview of the LCSD, 163 (11%) had ovitraps (223 in total) set up by the FEHD. In particular, no ovitraps were set up at such major parks as the Victoria Park and the Hong Kong Park.

4.7 Audit considers that the RIR and the OI could only provide limited pest surveillance information relating to venues of user departments.

Lack of interest in the Rapid Alert System

4.8 In 2011, the FEHD introduced a Rapid Alert System for the OI. Under the system, when the OI for an area reaches 20%, the FEHD will immediately and specifically alert the system's subscribers (e.g. management offices of residential premises in the area — Note 37) to the high OI. This helps engage stakeholders in the community in taking timely measures for mosquito prevention and control. Apart from alerting subscribers who are usually management offices of residential premises, the FEHD will also invite them to post up pre-designed alert notices in

Note 36: The figure comprised 569 primary schools and 514 secondary schools (including international schools) for the 2013-14 school year.

Note 37: Other users include venue managers of schools and construction sites.

communal areas of the premises. This is to draw people's attention to the need for prompt preventive and control measures for mosquito infestation. Subscription for the system is free.

4.9 As at June 2014, the FEHD had sent out 6,394 invitations to relevant parties (e.g. management offices of residential premises — see para. 4.8) in the 44 areas covered by the OI (see para. 2.29) to subscribe for the Rapid Alert System. Only 812 (13%) of them subscribed for the system. The response rate was not high. Audit noted that there were no subscribers in one area.

4.10 The lukewarm interest in the Rapid Alert System was not encouraging. Audit noted that, even for some areas with high OIs, the number of subscribers was low. For example, the OI of Sai Kung Town had reached a high of 32% in May 2013 (see item 26 of Appendix E), but there were only 4 subscribers. The FEHD needs to review the effectiveness of the Rapid Alert System. It also needs to explore other more effective means of providing timely alerts to stakeholders (e.g. making use of the social media for disseminating the alert information).

Audit recommendations

4.11 Audit has *recommended* that the Director of Food and Environmental Hygiene should:

- (a) in consultation with the relevant user departments, review the adequacy of the pest surveillance information currently provided to them for assessing the pest infestation situations of venues under their purview;
- (b) take measures to improve the surveillance information provided to other departments for pest prevention and control purposes;
- (c) critically review the effectiveness of the Rapid Alert System for engaging stakeholders in pest control; and

(d) explore more effective means of providing timely alerts to stakeholders and the general public (e.g. making use of the social media in disseminating the alert information) about the need to step up efforts in pest control (e.g. at times of severe mosquito infestation).

Response from the Administration

4.12 The Director of Food and Environmental Hygiene generally agrees with the audit recommendations. She has said that the FEHD:

- (a) will consult the stakeholders with a view to refining the pest infestation information currently provided to them, although the FEHD has not received any comments from the relevant departments that such information is inadequate; and
- (b) will seek comments and suggestions from subscribers of the Rapid Alert System and seek to improve the effectiveness of the system, taking into consideration resource availability. Invitations will be made to all target groups again to enhance their understanding of the significance and usefulness of the information with a view to increasing the number of subscribers.

4.13 The Director of Agriculture, Fisheries and Conservation has said that the AFCD shall be pleased to work with the FEHD to review the adequacy of the pest surveillance information currently provided to the AFCD for assessing the pest infestation situations of venues under its purview.

4.14 The Director of Leisure and Cultural Services has said that the LCSD will continue to work closely with the FEHD to enhance the measures for prevention and control of rodents and mosquitoes in the venues under the management of the LCSD.

PART 5: WAY FORWARD

5.1 This PART explores the way forward for the FEHD's provision of pest control services.

Strategy on pest control

5.2 The FEHD is the Government's advisor on pest control matters. The Director of Food and Environmental Hygiene is the designated authority in the control of vermin infestation and mosquito breeding. In discharging its duties, the FEHD has all along been focusing its pest control services on pests which pose a threat to human health, in particular, rodents and mosquitoes which are major disease vectors (see paras. 1.2 to 1.4).

Wide variety of pests affecting human health

5.3 Apart from rodents and mosquitoes, many other pests could pose a threat to human health. For example, according to overseas experiences:

- (a) Cockroaches. Cockroaches can transport micro-organisms on their body surfaces to humans. Cockroaches have been implicated in the spread of different kinds of bacteria, parasitic worms and human pathogens. Certain proteins found in cockroach faeces, saliva and body parts could also cause allergic reactions or trigger asthma symptoms, especially in children;
- (b) *Flies.* Similar to cockroaches, flies have been known to carry disease-causing germs which are potentially dangerous to humans;
- (c) *Stinging insects.* Insects such as wasps and hornets can give painful stings. Some stinging insects can also sting repeatedly and the venom can cause allergic reactions in humans; and
(d) *Ticks.* Dogs and rats may carry ticks on their bodies. Ticks can be vectors of spotted fever which is mainly transmitted through their bites. Infection can also occur when crushed tissues or faeces of the infected ticks get into breaks in human skin or mucous membranes.

5.4 While the above pests can pose significant health threats to humans, the FEHD's routine inspection programmes generally do not cover cockroaches, flies, stinging insects and ticks (see para. 3.22). These pests, as in the cases of many other nuisance pests, are mainly dealt with through the FEHD's handling of related complaints.

Changing pattern of vector-borne diseases

5.5 In 2013-14, the FEHD's pest control services had an expenditure of \$437 million, of which 53% was spent on mosquito control, 35% on rodent control, and 12% on the control of other nuisance pests (see Figure 1 in para. 1.8). However, this pattern of resource allocation may no longer be optimal having regard to the changing pattern of vector-borne diseases over the years. For example, many years ago, plague and malaria were the major vector-borne diseases that posed a threat to humans. Today, this is no longer the case. More recently, the risks of outbreak of dengue fever and JE have caused increasing public concerns.

5.6 As can be seen from Table 2 in paragraph 1.13, there had not been any plague cases in recent years. For malaria, they were all imported cases and the number had been decreasing in the past three years. On the other hand, reported cases of dengue fever, JE, scrub typhus and spotted fever had been increasing significantly. In view of the changing pattern of vector-borne diseases, there is a need for the FEHD to keep its strategy on pest control under constant review. In this regard, the FEHD needs to keep working in close liaison with the Department of Health to keep abreast of the latest trends of vector-borne diseases locally and in places outside Hong Kong (Note 38).

Note 38: Keeping a close watch of the development of vector-borne diseases in places outside Hong Kong is important. For example, according to information published by the Department of Health, dengue fever is an endemic disease in various popular tourist destinations for Hong Kong people, including the Philippines, Thailand, Indonesia, Malaysia and Singapore.

Challenges facing the FEHD in the provision of pest control services

5.7 Given the limited resources available for pest control work on the one hand, and the large geographical area that needs to be covered as well as the large variety of pests that require different types of surveillance and control work on the other, the FEHD is facing great challenges in its provision of pest control services. It is therefore most important for the FEHD to continue to enhance its pest control strategy which should comprise, among others, the following key elements:

- (a) *Pest surveillance programmes.* Effective pest surveillance programmes should be in place covering, as far as possible, all areas over the territory. These programmes provide essential surveillance information for the FEHD to effectively plan and prioritise its limited resources for pest control work;
- (b) *Pest control operations.* Pest control work should be conducted according to an effective programme that is regularly adjusted to address the risks of pest infestation identified through pest surveillance; and
- (c) *Promotion of pest control and environmental hygiene.* Any pest control strategy will not be effective without community involvement. It is important to engage all stakeholders and the general public in pest control.

5.8 Audit considers that the FEHD needs to critically review its pest control strategy, taking into account the observations and recommendations in this Audit Report as well as the latest trends of vector-borne diseases locally and in places outside Hong Kong.

Audit recommendations

5.9 Audit has *recommended* that the Director of Food and Environmental Hygiene should:

(a) critically review the FEHD's pest control strategy, taking on board Audit's observations and recommendations in PARTs 2 to 4; and (b) continue to work in close liaison with the Department of Health in keeping abreast of the latest trends of vector-borne diseases locally and in places outside Hong Kong.

Response from the Administration

5.10 The Director of Food and Environmental Hygiene generally agrees with the audit recommendations. She has said that:

- (a) the FEHD will continue to keep in view the pest control strategy, pest surveillance programmes, pest control operations and promotion of pest control and environmental hygiene, and to update them for the prevention of vector-borne diseases taking into consideration the advice given by the WHO and the Department of Health, results of surveillance, feedback from stakeholders as well as resource availability;
- (b) the FEHD's first priority will continue to be placed on the prevention and control of vector-borne diseases such as plague, dengue fever and malaria listed by the WHO. Pests that pose public health threat, namely mosquitoes and rodents, would continue to be given a higher priority in allocation of resources in pest control and prevention; and
- (c) the FEHD will continue to work closely with the Department of Health and other relevant departments on the prevention and control of vector-borne diseases. The advice given by the WHO would be taken into account.

Appendix A (para. 1.7(b) refers)

Pest control services of the Food and Environmental Hygiene Department Organisation chart (30 June 2014)



- Note 1: The Assistant Directors also oversee other FEHD services besides pest control.
- *Note 2:* Some non-directorate staff (e.g. Heads of District Offices) of the Environmental Hygiene Branch oversee various FEHD services including pest control. These staff are not shown in the organisation chart.

Pest surveillance programmes of the Food and Environmental Hygiene Department (June 2014)

Item	Programme (pest monitored)	Detail	Surveillance information generated
Roden	t-related		
1	Rodent surveillance programme (rodents)	 The FEHD placed non-poisonous baits in selected areas in different districts. Around 55 baits were placed in each of the areas selected. 	 Rodent infestation rates for different districts were compiled (i.e. the ratio of baits bitten at that district). The rodent infestation rate for a district generally reflects the situation of rodent infestation.
2	Rat-flea survey (rat fleas)	 The FEHD sampled live rats from different areas over the territory. Fleas were collected from the rats for analysis. The FEHD also dissected the rats to look for signs of plague infection. 	 A key index was the rat-flea index, which was "number of rat fleas collected" divided by "number of rats examined". A rat-flea index of greater than 1 represents an increased potential plague risk for humans.

Appendix B (Cont'd)

(Cont'd) (paras. 2.2 and 2.28 refer)

Item	Programme (pest monitored)	Detail	Surveillance information generated
Mosqu	uito-related		
3	Dengue vector surveillance programme (Aedine mosquitoes)	 The FEHD placed small plastic containers with dechlorinated water, known as ovitraps, at selected areas for detecting the larval breeding rate of Aedine mosquitoes. A number of ovitraps were placed in each area selected. 	 Ovitrap indices were compiled (i.e. the percentage of ovitraps that were found to have positive larval breeding results). The ovitrap index for an area indicated the extensiveness of the distribution of Aedine mosquitoes in the area.
4	JE vector surveillance programme (Culex mosquitoes)	 The FEHD set mosquito trapping devices at selected areas to collect samples to detect the presence of Culex mosquitoes. The Culex mosquitoes found were tested for the presence of JE virus. 	• The FEHD would announce the fact that JE virus was found in the mosquito samples.
5	Malaria vector surveillance programme (Anopheline mosquitoes)	 The FEHD conducted surveys of Anopheline mosquitoes and their larvae along streams over the territory. Mosquitoes were collected with trapping devices. Larvae were collected manually from the stream water. 	 Malaria vectors had not been found since 2006. Such information was for internal reference.

Rodent infestation rates (2013)

	District	RIR		
Hong	Hong Kong and Islands			
1	Central/Western	3.6%		
2	Eastern	5.9%		
3	Southern	1.1%		
4	Wan Chai	2.7%		
5	Islands	0.5%		
Kowl	oon	·		
6	Kowloon City	4.2%		
7	Kwun Tong	2.0%		
8	Mong Kok	2.1%		
9	Sham Shui Po	6.6%		
10	Wong Tai Sin	5.8%		
11	Yau Tsim	0.9%		
New Territories (East)				
12	North	1.6%		
13	Sai Kung	0.0%		
14	Shatin	1.3%		
15	Tai Po	2.7%		
New	Territories (West)			
16	Tsuen Wan	4.6%		
17	Tuen Mun	0.4%		
18	Yuen Long	8.3%		
19	Kwai Tsing	2.6%		
	Overall	3.1%		

Appendix D (paras. 2.6, 2.7 and 2.9 refer)

Analysis of areas selected for rodent surveillance (June 2014)

		Total no. of		
District	Residential area	Industrial area	Rear lane	areas
	(No.)	(No.)	(No.)	
Central/Western			3	3
Eastern	1	1	1	3
Southern	1	1		2
Wan Chai			1	1
Islands	1		1	2
Kowloon City			2	2
Kwun Tong		1	1	2
Mong Kok			2	2
Sham Shui Po	1		2	3
Wong Tai Sin	1		1	2
Yau Tsim			2	2
North	1	1	1	3
Sai Kung	1		1	2
Shatin	2			2
Tai Po	1		1	2
Tsuen Wan			2	2
Tuen Mun	1	1		2
Yuen Long	1		1	2
Kwai Tsing	2			2
Total	14	5	22	41

Appendix E (paras. 2.28, 2.29

and 4.10 refer)

Ovitrap indices (2013)

		Highest OI			
	Area	recorded	Month recorded		
		(Note 1)			
Hong	Hong Kong and Islands				
1	Chai Wan West	10.7%	June		
2	Shau Kei Wan and Sai Wan Ho	25.4%	June		
3	North Point	22.2%	June		
4	Wan Chai North	14.0%	August		
5	Happy Valley	15.8%	June		
6	Central, Sheung Wan and Sai Ying Pun	16.4%	May and June		
7	Sai Wan	20.8%	June		
8	Aberdeen and Ap Lei Chau	18.2%	May		
9	Pokfulam	24.5%	June		
10	Deep Water Bay and Repulse Bay	21.8%	June		
11	Cheung Chau	5.7%	August		
12	Tung Chung	19.4%	May		
Kowle	Don				
13	Tsim Sha Tsui	14.0%	August		
14	Mong Kok	12.7%	August and October		
15	Lai Chi Kok	10.9%	June		
16	Sham Shui Po East	16.7%	May		
17	Cheung Sha Wan	16.7%	June		
18	Kowloon City North	16.4%	May		
19	Hung Hom	7.4%	September		
20	Ho Man Tin	18.9%	July		
21	Wong Tai Sin Central	17.7%	June		
22	Diamond Hill	9.1%	June		
23	Kwun Tong Central	28.6%	June		
24	Lam Tin	23.6%	May		
New 2	Territories (East)				
25	Tseung Kwan O	36.2%	May		
26	Sai Kung Town	32.0%	May		
27	Ma On Shan	20.7%	June		
28	Yuen Chau Kok	14.3%	July		
29	Tai Wai	21.4%	June		
30	Tai Po	16.4%	September		
31	Fanling	19.6%	September		
32	Sheung Shui	12.7%	September		

Appendix E (Cont'd) (paras. 2.28, 2.29 and 4.10 refer)

	Area	Highest OI recorded (Note 1)	Month recorded	
New 7	Cerritories (West)			
33	Tin Shui Wai	16.4%	June	
34	Yuen Kong	21.7%	June	
35	Yuen Long Town	5.7%	June	
36	Tuen Mun (South)	15.1%	June	
37	Tuen Mun (North)	25.4%	May	
38	So Kwun Wat	23.6%	May	
39	Tsuen Wan Town	8.3%	June	
40	Ma Wan	4.0%	April, July and August	
41	Sheung Kwai Chung	20.4%	May	
42	Kwai Chung	18.9%	June	
43	Lai King	23.6%	June	
44	Tsing Yi	9.1%	September	
Port areas				
45	Hong Kong International Airport	0.7%	June	
10	(1 area)	11.00	T	
40	Cross Boundary Check Points on Land	11.8%	June	
to 52	(/ areas)	9.007	Inno	
33	Areas	8.9%	June	
57	(4 areas) Cross Doundary Formy Dians (2 pross)	15 9 07	Contombor	
57 to 50	Closs Boundary Ferry Fiers (5 areas)	13.8%	September	
60	Container Terminals (0 areas)	0.0%	(Note 2)	
to 68	Container Terminais (9 areas)	0.070	(11010 2)	
69	Public Cargoes Working Areas	11.2%	Iune	
to 74	(6 areas)	11.270	Juic	

Source: FEHD records

Note 1: All the 74 areas had a lowest recorded OI of 0% in 2013.

Note 2: A 0% OI was recorded throughout 2013.

Appendix F (paras. 2.39 and 2.41 refer)

Case 1

Handling of problematic ovitraps at the Tai Po surveyed area

1. On 16 May 2014, Audit conducted a site visit to observe how FEHD staff handle the ovitraps in the Tai Po surveyed area. There were 55 ovitraps placed in the area. Audit noted that 5 of the 55 ovitraps were problematic, as follows:

(a) 4 ovitraps had been relocated (see Photographs 8 and 9 for examples); and

(b) 1 ovitrap had lost its sealing sticker which had been peeled off.

2. The frontline staff collected all the 55 ovitraps and brought them back to office for examination of larval breeding results. The fact that the 5 ovitraps were problematic was not reported to the supervisor.

3. The 5 problematic ovitraps did not show any positive breeding results. For the other 50 ovitraps which were not problematic, positive breeding results were found in 2 ovitraps.

4. On 23 June 2014, the FEHD announced the OI for May 2014. The figure for Tai Po was stated at 3.6% (Note 1). The results of the 5 problematic ovitraps had not been excluded from the OI calculation.

Audit comments

5. The problematic ovitraps might not have functioned properly. They might also have been tampered with. It was unsatisfactory that these problematic ovitraps were not reported to the supervisor for further decision. Had the supervisor decided to exclude the 5 problematic ovitraps from the OI calculation, the OI for Tai Po would have read 4%, instead of 3.6% (Note 2).

Source: Site visit on 16 May 2014

Note 1: $3.6\% = (2 \text{ ovitraps with positive breeding results } \div 55 \text{ ovitraps}) \times 100\%$

Note 2: $4\% = (2 \text{ ovitraps with positive breeding results } \div 50 \text{ ovitraps}) \times 100\%$

	Infestation		
Indicator	Level	Range of the indicator for a surveyed area	Action
RIR	1	Below 10%	Routine rodent disinfestation programmes are conducted to prevent infestation from worsening.
	2	10% to less than 20%	Block Control would be carried out (Note).
	3	20% or above	A comprehensive rodent disinfestation operation would be launched in the surveyed area. To enhance the result of the operation, the cleansing service of the FEHD would complement the poison treatment by eliminating food sources and harbourages for rodents. A task force meeting would be convened to coordinate anti-rodent work among relevant government departments to strengthen rodent disinfestation, environmental improvement and cleansing services comprehensively, and to promote rodent control in the community.
OI	1	Below 5%	A one-off control operation to be mounted at areas within a 100-metre radius from the vector-positive ovitraps.
	2	5% to less than 20%	Weekly inspection to be conducted around the vector-positive ovitraps to identify breeding/potential breeding places and eliminate such places as far as possible.
	3	20% to less than 40%	Actions to be taken to initiate an inter-departmental task force and redeploy resources and mobilise staff of the district to eliminate the breeding/potential breeding places.
	4	40% or above	In addition to the actions under level 3, adult mosquito control by fogging would be conducted in parallel with larval control whenever necessary.

Actions to be taken on infestation of rodents and mosquitoes

Source: FEHD records

Note: Block Control involves treatment of a rodent population in its entirety according to the physical barrier for rodent activities in one operation.

Appendix H

Acronyms and abbreviations

AFCD	Agriculture, Fisheries and Conservation Department
Audit	Audit Commission
District Office	District Environmental Hygiene Office
EDB	Education Bureau
FEHD	Food and Environmental Hygiene Department
JE	Japanese encephalitis
LCSD	Leisure and Cultural Services Department
LegCo	Legislative Council
OI	Ovitrap index
PCAS	Pest Control Advisory Section
RIR	Rodent infestation rate
WHO	World Health Organisation

CHAPTER 6

Development Bureau Leisure and Cultural Services Department Lands Department Environmental Protection Department

Government's efforts in enhancing tree safety

Audit Commission Hong Kong 30 October 2014 This audit review was carried out under a set of guidelines tabled in the Provisional Legislative Council by the Chairman of the Public Accounts Committee on 11 February 1998. The guidelines were agreed between the Public Accounts Committee and the Director of Audit and accepted by the Government of the Hong Kong Special Administrative Region.

Report No. 63 of the Director of Audit contains 10 Chapters which are available on our website at http://www.aud.gov.hk

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GOVERNMENT'S EFFORTS IN ENHANCING TREE SAFETY

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GOVERNMENT'S EFFORTS IN ENHANCING TREE SAFETY

Executive Summary

Background. There are tens of millions of trees in Hong Kong. It is the 1. Government's policy to actively promote greening in order to improve the city's The Government has all along adopted an "integrated living environment. approach" in assigning to relevant departments responsibilities for maintaining vegetation (including trees) on government land. Under this approach, tree maintenance is part and parcel of the duty of the department which uses and manages that particular piece of land or facility. Currently, there are a number of major tree management departments, including the Highways Department (HyD) which manages trees on roadside man-made slopes/retaining walls and expressways, and the Leisure and Cultural Services Department (LCSD) which manages trees in LCSD venues and landscaped areas along public roads other than expressways. The Administration estimated that, as at December 2013, the major tree management departments were maintaining about 1.6 million trees with an annual contract expenditure of \$473 million, and 470 staff were involved in day-to-day tree management on a full-time or part-time basis.

2. *Public concern over tree safety.* In the past few years, there have been a number of tree collapse cases causing deaths or injuries to members of the public. In March 2009, the Chief Secretary for Administration led an inter-departmental Task Force to review tree management issues, particularly public safety aspects. In June 2009, the Task Force published its Report. Pursuant to the recommendations of the Task Force Report, the Development Bureau (DEVB) established the Tree Management Office (TMO) in March 2010. To ensure more effective implementation across departments of the integrated approach to tree management, the TMO acts as a central authority to give policy steer, a focal point of coordination of departmental efforts, and a provider of arboricultural expertise. In May 2014, the Audit Commission (Audit) commenced a review of the Government's efforts in enhancing tree safety.

Coordinating the work of tree management departments

3. **Delineation of management responsibilities for roadside trees.** Trees at roadside areas pose a particular safety risk to pedestrians and road users. Broadly speaking, apart from expressways (under the purview of the HyD) and country parks (under the purview of the Agricultural, Fisheries and Conservation Department), the LCSD is responsible for roadside trees on landscaped areas, whereas the Lands Department (LandsD) is responsible for roadside trees on unallocated government land not maintained by any other departments. According to a Technical Circular issued in March 2004 by the DEVB, the LandsD carries out maintenance of trees on an ad hoc basis, i.e. mainly when a requirement is identified or a complaint/referral is received (paras. 2.4, 2.15, 2.17 and 2.22).

4. **Disagreements over maintenance responsibilities.** All along, there have been disagreements among departments over the delineation of maintenance responsibilities for roadside trees, particularly regarding whether a tree is within a "landscaped area". In the LCSD's view, a landscaped area should be an area with landscape design elements such as roadside planters or tree pits. In the TMO's view, a landscaped area should be an area with intentional plantings irrespective of whether the plantings are located in planters or tree pits. The disagreements among departments had affected the handling of tree complaints and other tree management work. In 2013, it was agreed that when agreement could not be reached among departments, the TMO would review the case and adjudicate as to which department was responsible for tree management (paras. 2.18 to 2.21).

5. **Roadside tree survey.** In 2011, the DEVB considered that there was a need to enhance tree risk management for roadside trees under the ad hoc maintenance by the LandsD, and to have a general understanding of the quantity and quality of these trees in order to facilitate policy considerations on the maintenance approach. In July 2012, the TMO embarked on a territory-wide roadside tree survey covering public roads/carriageways. As at June 2014, the TMO had substantially completed the fieldwork of the survey. Some 70,000 roadside trees not included in the inventories of any tree management departments were found. As at September 2014, the TMO was working on the delineation of maintenance responsibilities of the survey d trees, and the review of the policy considerations on the maintenance approach for roadside trees had not been completed (paras. 2.23 to 2.27).

6. **Special tree inspection exercise.** The scope of the TMO's roadside tree survey (see para. 5 above) did not cover village access roads/footpaths in rural areas. In October 2012, a fatal tree collapse case occurred on a village access road in Tai Po. After this case, the LandsD planned to conduct a special tree inspection exercise to identify potentially hazardous trees along village access roads and footpaths on unallocated government land with relatively high pedestrian and/or vehicular flow, and to carry out appropriate remedial works of the trees for public safety. The LandsD started the exercise in December 2013 and expected to complete the exercise in six years (paras. 2.27, 2.38 to 2.40).

7. *Need to review the ad hoc maintenance approach.* According to the LandsD, it was first involved in tree maintenance in May 2002 on the understanding that trees not claimed by any other departments on unallocated government land, which were unlikely to be along roadside, would be taken up by the LandsD. It had since then been accepted within the Government that trees put under the LandsD would only be subject to ad hoc rather than regular maintenance. Since the issue of the Technical Circular in March 2004 (see para. 3 above), trees on non-landscaped areas along non-expressway roads and pavements had been put under the LandsD's purview. The 2012 Tai Po tree collapse case (see para. 6 above) highlighted inadequacies in the ad hoc maintenance of roadside trees for ensuring public safety. There is a need for a critical review of the LandsD's ad hoc maintenance approach (paras. 2.43 and 2.44).

Tree risk assessment

8. Implementation of the tree risk assessment (TRA). The Task Force, making reference to international best practices, recommended new TRA arrangements based on a dual approach comprising two stages (i.e. the area-basis assessment and the tree-basis assessment). In carrying out the area-basis assessment, a tree management department should classify the sites under its purview into three risk zones (i.e. Category I, II and III zones). The purpose is to let the department focus on high-risk sites (i.e. Category I zones). In carrying out the tree-basis assessment of a site, a group inspection (a Form 1 inspection) should be conducted on all trees of the site to identify problematic trees. For the problematic trees identified, if the remedial measures taken on the spot cannot eliminate the risks, detailed inspections (Form 2 inspections) should be conducted on them to identify in detail the risks and the appropriate remedial measures (paras. 3.2 to 3.8).

9. *Conduct of Form 1 inspections.* According to the TMO's guidelines on the dual-approach TRA, to safeguard the quality of a Form 1 inspection, the number of trees to be covered should not be excessive. Audit examined the Form 1 inspections conducted by the HyD and the LCSD in the 2014 TRA, and noted that there were a considerable number of Form 1 inspections which covered a large number (e.g. more than 100) of trees. Audit also noted cases in which problematic trees had not been identified during their Form 1 inspections, but later became the subjects of complaints and found to be hazardous (paras. 3.18 to 3.20).

10. *Conduct of Form 2 inspections.* By conducting a Form 2 inspection on a tree, the tree management department can ascertain the detailed conditions of the tree and better identify appropriate remedial measures, including long-term measures (such as pest control and site improvement). Audit noted that, in the 2014 TRA, the number of Form 2 inspections conducted varied widely among the major tree management departments. In particular, the LCSD did not conduct any Form 2 inspections on trees (other than old and valuable trees (OVTs) and stonewall trees) in its 2014 TRA (paras. 3.25 and 3.28).

11. *Tackling brown root rot (BRR) disease*. BRR disease on trees is caused by an aggressive fungal pathogen. Trees infected with BRR disease may experience a rapid deterioration of health and structural conditions. There is currently no effective cure to the disease. The TMO has adopted a dual-pronged management strategy for preventing the spread of the disease, comprising precautionary and preventive measures. For infected trees which are not OVTs, they should be removed entirely. For infected OVTs, if they are structurally stable and the infection is at the early stage, they should be quarantined. Audit noted that, as at August 2014, there were 16 non-OVTs with BRR infection pending removal. For some of them, the removal had been outstanding for a long period (paras. 3.52, 3.55 and 3.57).

Management information systems and databases

12. *Tree Management Information System (TMIS).* The TMO engaged a contractor to set up the TMIS. The system commenced live run in December 2012. The TMO encountered a number of system development issues. There were gaps between the expected and the actual functions provided. There were also system bugs and instability issues. In particular, most of the tree management departments had not yet transferred their tree data to the system. There were also data inconsistencies between the system and the departmental systems maintained by

some departments. The TMO was planning to enhance the TMIS (paras. 4.2, 4.3, 4.7 and 4.9).

13. *Tree Register.* In July 2010, the TMO set up and published (on its website) a "Tree Register". The Tree Register includes problematic trees with mitigation measures to be completed and important trees (i.e. OVTs and stonewall trees). The objectives of the Tree Register are to promote community surveillance and to enhance the transparency of the Government's tree risk management work. Audit noted that there was a tendency for tree management departments not to add problematic trees to the Tree Register. There were also trees with mitigation measures already completed for quite some time (3 to 8 months) but not deleted from the Tree Register (paras. 4.14, 4.15, 4.17 and 4.22).

Training and community involvement

14. **Training on tree management.** The TMO used considerable staff resources (both professional and administrative staff) in delivering training courses on tree management. In 2013, the 21 training courses delivered by the TMO took up 35 working days, representing about 14% of the working days in the year. The delivery of training by the TMO will draw on its scarce staff resources, leaving fewer resources available for other important duties. The TMO needs to review its long-term arrangement for delivering tree management training (paras. 5.9, 5.10 and 5.12).

15. *Community involvement in greening.* The DEVB oversees community involvement activities on greening. In view of growing public concerns about tree safety, the DEVB needs to further promote community surveillance from a tree safety perspective, particularly relating to roadside trees (paras. 5.18 and 5.23).

Way forward

16. **Progress made since 2008 in improving tree management.** The TMO was set up in March 2010 with the main task of minimising the threat of problematic trees to public safety. Notwithstanding the Government's efforts since the setting up of the TMO, tree collapse incidents have still occurred from time to time, including a few fatal cases. It appears that more needs to be done in further enhancing tree safety (paras. 6.2 and 6.3).

17. *Addressing safety risks of trees on private land.* The work of the TMO primarily focuses on trees maintained by government departments. For trees on private land, their maintenance responsibilities rest with the private land owners concerned. In August 2014, a tragic tree collapse incident occurred at Mid-levels which involved a tree on private land. This incident has aroused public concerns about safety risks posed by trees on private land. Audit considers that the DEVB needs to critically review whether there is a need for tree legislation to regulate, among other things, the proper maintenance of trees on private land. Meanwhile, effective measures need to be devised to bring forth improvements more readily (paras. 6.6 and 6.10).

Audit recommendations

18. Audit recommendations are made in the respective sections of this Audit Report. Only the key ones are highlighted in this Executive Summary. Audit has *recommended* that the Secretary for Development should:

Coordinating the work of tree management departments

- (a) expedite action to review the policy considerations concerning the maintenance approach for roadside trees, and sort out the delineation of maintenance responsibilities of the surveyed trees (para. 2.33(a));
- (b) in conjunction with the Director of Lands, consider implementing regular maintenance for trees on unallocated government land, particularly roadside trees, which currently are under ad hoc maintenance (para. 2.46);

Tree risk assessment

- (c) provide more guidelines on the appropriate number of trees to be covered by a Form 1 inspection (para. 3.39(b));
- (d) provide more guidelines to help tree management departments decide whether and when it is necessary to conduct a Form 2 inspection (para. 3.39(d));
- (e) for non-OVTs which have been infected with BRR disease, urge the responsible departments to remove the trees in a timely manner (para. 3.60(a));

Management information systems and databases

- (f) take measures to promptly complete the TMIS enhancement project (para. 4.12(a));
- (g) ensure that tree management departments are committed to using the TMIS and avoid data inconsistencies between the TMIS and departmental systems (para. 4.12(c));
- (h) take measures to ensure that the Tree Register provides a complete and up-to-date list of problematic trees with mitigation measures to be completed (para. 4.26(a));

Training and community involvement

- (i) review the long-term arrangement for the TMO to deliver tree management training in a more sustainable manner (para. 5.13);
- (j) make more efforts in promoting community surveillance from a tree safety perspective, particularly relating to roadside trees (para. 5.24);

Way forward

- (k) critically review whether there is a need for legislation for mandatory tree inspection and maintenance of trees on private land by private land owners (para. 6.11(c)); and
- (1) before any new legislation is introduced, take effective measures that can more readily help improve tree safety on private land (para. 6.11(d)).

19. Audit has also *recommended* that the Director of Lands should expedite action to complete the special tree inspection for roadside trees on village access roads and footpaths in rural areas (para. 2.47).

Response from the Administration

20. The Administration agrees with the audit recommendations.

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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 *Government's greening policy.* Hong Kong's greenery is much treasured by the community. Around 67% of the territory's total land area is covered by woodland, shrubland and grassland. Green landscape contributes to the quality of the living environment in various ways, including improvement in air quality, lower temperature, visual appeal, etc. It is the Government's policy to actively promote greening in order to improve the city's living environment. The Government strives to uplift the quality of the living environment through active planting, proper maintenance and preservation of trees together with other vegetation (Note 1).

1.3 The Government has estimated that there are tens of millions of trees in Hong Kong. While most of the trees are in the countryside, hundreds of thousands are also found in the built-up areas of all districts. Such green coverage is achieved over the years through careful spatial planning as well as conscious greening efforts. The Government has spent an average of about \$200 million on greening works annually, planting about 10 million new trees, shrubs and seasonal flowers each year.

1.4 *Integrated approach to tree management.* Given the large number of trees all over the territory, the Government has all along adopted an "integrated approach" for assigning responsibilities for preserving and maintaining all vegetation on government land to relevant departments. Under this approach, tree maintenance is part and parcel of the duty of the department which uses and manages that particular piece of land or facility. Currently, there are nine major tree management departments, namely:

Note 1: According to government guidelines, a plant is considered as a tree if its trunk diameter measures 95 millimetres or more at a height of 1.3 metres above the ground.

— 1 —

- (a) Highways Department (HyD) which manages trees on roadside man-made slopes/retaining walls and expressways (see Photograph 1);
- (b) Leisure and Cultural Services Department (LCSD) which manages trees in LCSD venues and landscaped areas along public roads (other than expressways) (see Photograph 2);
- (c) Architectural Services Department (ArchSD) which manages trees on man-made slopes maintained by the Department;
- (d) Housing Department (HD) which manages trees in public housing estates;
- (e) Water Supplies Department (WSD) which manages trees within waterworks facilities;
- (f) Agriculture, Fisheries and Conservation Department (AFCD) which manages trees in country parks;
- (g) Civil Engineering and Development Department (CEDD) which manages trees in works areas during construction;
- (h) Drainage Services Department (DSD) which manages trees within drainage facilities; and
- Lands Department (LandsD) which manages trees on unallocated government land not managed by any other departments. According to existing guidelines, the LandsD maintains such trees on an ad hoc basis (see also para. 2.36).

In response to a question raised by the Legislative Council (LegCo) in examining the 2014-15 Estimates of Expenditure, the Administration informed LegCo, among others, that the eight major tree management departments (excluding the LandsD) were maintaining about 1.6 million trees as at December 2013 (see Appendix A).

Photograph 1



Trees managed by the HyD along an expressway

Photograph 2

Trees managed by the LCSD in a park



Source: LCSD records

Source: HyD records

Public concern over tree safety

1.5 Trees, like other living organisms, have a natural cycle. They grow, age, become weak and die. Their growth is subject to both internal constraints as well as external or environmental factors. In general, as a tree grows older and larger, its growth rate and ability to recover will decline and one day due to internal (e.g. tree diseases) or external (e.g. typhoon, thunderstorm, heavy rain, etc.) reasons, it will die and may collapse. This poses a threat to public safety.

1.6 In the past few years, there have been a number of tree collapse cases causing deaths or injuries to members of the public. In August 2008, a fatal tree collapse case occurred in Stanley where a tall old tree managed by the LCSD fell on a teenage girl, causing great concerns about the public safety aspects of tree management. The Coroner's Court inquiry revealed weaknesses in the LCSD's tree inspection system, including a lack of professional knowledge from management to frontline staff. Details of more recent tree collapse cases are given in paragraph 1.10.

Task Force Review in 2009

1.7 In March 2009, the Chief Secretary for Administration led an inter-departmental Task Force to review tree management issues, particularly the public safety concerns expressed by the Coroner's Court relating to the Stanley tree collapse case. In June 2009, the Task Force published its Report entitled "People, Trees, Harmony". The key conclusions and recommendations of the Report include:

(a) *Holistic approach to tree management.* Although the review emanated from public concern over tree safety, the Task Force recognised that tree safety could not be tackled in isolation through management and maintenance without putting this work in the overall context of the greening and landscape policy. The Government should therefore tackle tree management in a comprehensive and sustainable manner, addressing issues such as appropriate planning, proper identification of planting locations, suitable design and careful selection of species;

- (b) *Institutional framework.* The Task Force had reviewed the integrated approach to tree management (see para. 1.4) and considered it to be generally efficient and cost effective. However, there was room for improvement. In order to coordinate better the work of different departments, the Development Bureau (DEVB) should take up the overall policy responsibility for greening, landscape and tree management (see also paras. 1.8 and 1.9);
- (c) *Tree risk assessment (TRA).* There was a need to enhance the TRA arrangements to better protect public safety. The Government should adopt new TRA arrangements based on a dual approach (comprising an "area basis" assessment and a "tree basis" assessment see also paras. 3.2 to 3.8 for details);
- (d) *Expertise and training.* Tree management (particularly TRA) was a professional task. The Government should enhance training to ensure that it has adequate quality staff at different levels;
- (e) *Community involvement and public education*. Apart from the Government, the community could play a significant role in helping to preserve trees. The Government should strengthen community involvement and public education; and
- (f) *Tree legislation.* The Task Force had reviewed the need for a new tree ordinance and considered that there was no need to introduce any legislative change at the moment. Government efforts should instead be channelled to the administrative means proposed to improve coordination, enhance TRA, upgrade expertise and involve the community (see also paras. 6.7 and 6.8).

Setting up of the Tree Management Office

1.8 Pursuant to the recommendations of the Task Force Report, the DEVB has taken up the overall policy responsibility for greening, landscape and tree management. In March 2010, the DEVB established the Greening, Landscape and Tree Management Section (GLTMS). The GLTMS, headed by a Principal Assistant Secretary, is underpinned by the Greening and Landscape Office (GLO) and the Tree Management Office (TMO), which work in close cooperation to promote a

holistic greening approach. The estimated expenditure for the GLTMS in 2014-15 amounted to \$46.2 million. An organisation chart of the GLTMS is at Appendix B.

1.9 To ensure more effective implementation across departments of the integrated approach to tree management, the TMO acts as a central authority to give policy steer, a focal point of coordination of departmental efforts, and a provider of arboricultural expertise. The key areas of work of the TMO include, among other things:

- (a) enhancing tree risk management;
- (b) raising the professional standard of tree management by, for example, enhancing training for tree management personnel in departments, developing practice guidelines and conducting researches, and setting up an inventory of trees;
- (c) enhancing community involvement and public education; and
- (d) enhancing the tree complaint mechanism and the emergency response system.

The TMO has an establishment of 15 professional and 2 technical staff. Five administrative staff are also shared between the TMO and the GLO.

Recent tree collapse cases

1.10 Since the 2008 Stanley incident (see para. 1.6) and the setting up of the TMO in March 2010 (see para. 1.8), there have been a number of serious tree collapse cases, as follows:

- (a) in June 2010, a tree located along a cycling track in Sha Tin collapsed on a cyclist, causing his death;
- (b) in July 2012, a tall old tree located at Park Lane Shoppers' Boulevard in Tsim Sha Tsui collapsed, causing injuries to five persons;

- (c) in October 2012, a tree located along a rural access road in Tai Po collapsed on a lorry, causing the death of its passenger; and
- (d) in August 2014, a tree located on a private slope at Mid-levels collapsed on a pedestrian, causing her death (see also paras. 6.6 to 6.10).

Audit review

1.11 In May 2014, the Audit Commission (Audit) commenced a review of the Government's efforts in enhancing tree safety. The audit fieldwork was completed in August 2014. The review focused on the improvement measures taken since the setting up of the TMO, covering the following areas:

- (a) coordinating the work of tree management departments (PART 2);
- (b) tree risk assessment (PART 3);
- (c) management information systems and databases (PART 4);
- (d) training and community involvement (PART 5); and
- (e) way forward (PART 6).

Audit has found that there is room for improvement in the above areas and has made recommendations to address the issues.

More recent development

1.12 On 23 September 2014, the Ombudsman announced that her office would conduct a direct investigation into the tree management regime and practices of the TMO and other relevant departments. The Ombudsman's investigation would focus on examining the Government's tree management regime and the relevant legal framework, and the TMO's practices in overseeing and coordinating departments in their management of trees.

Acknowledgement

1.13 Audit would like to acknowledge with gratitude the full cooperation of the staff of the DEVB, the LCSD, the HyD, and the LandsD during the course of the audit review.

PART 2: COORDINATING THE WORK OF TREE MANAGEMENT DEPARTMENTS

2.1 This PART examines the TMO's efforts in coordinating the work of tree management departments. Audit has found room for improvement in the following areas:

- (a) coordinating the work of non-core departments in tree management (paras. 2.2 to 2.14);
- (b) delineation of management responsibilities for roadside trees (paras. 2.15 to 2.34); and
- (c) maintenance of roadside trees on unallocated government land (paras. 2.35 to 2.48).

Coordinating the work of non-core departments in tree management

Integrated approach to tree management

2.2 Over the years, the Government has adopted an "integrated approach" in assigning responsibilities for preserving and maintaining all vegetation (including trees and other plants) on government land among relevant departments. The arrangement is set out in a number of Technical Circulars promulgated by the Works Branch of the DEVB and its predecessor, the then Environment, Transport and Works Bureau (ETWB). As a general guide, under this approach, the demarcation of maintenance responsibilities is based on where trees are located and which departments are responsible to maintain the facilities thereon (e.g. country parks, leisure parks, expressways, public housing, etc.). Tree maintenance is then part and parcel of the daily management duty of the facilities.

2.3 While recognising that the existing integrated approach to tree management to be generally efficient and cost-effective, the Task Force identified a number of inadequacies and recommended the setting up of a new tree office
(i.e. the TMO) as the central authority and focal point for coordination to ensure more effective implementation of the integrated approach (see para. 1.7(b)).

2.4 Technical Circular (Works) No. 2/2004 "Maintenance of Vegetation and Hard Landscape Features" (the Technical Circular) issued in March 2004 by the ETWB sets out the demarcation of maintenance responsibilities among government departments for vegetation on government land. It provides the basis for the integrated approach to tree management.

2.5 The TMO is the central coordinating authority for implementing the integrated approach. When the TMO was set up in March 2010, it focused its efforts on the nine major tree management departments (i.e. core departments) which maintained a large number of trees (see Appendix A). Besides the core departments, there were other tree management departments (i.e. non-core departments) that were also responsible for maintaining trees on their allocated land. In its early years, the TMO had close liaison with the core departments and collected from them information about the trees they maintained. However, little information was collected from non-core departments, such as the number of trees they maintained and their arrangements for tree maintenance.

Survey of trees maintained by non-core departments

2.6 In July 2012, the TMO decided to conduct a survey to collect tree-related statistics from all government departments. From their response, 20 non-core departments were identified, with an inventory of some 180,000 trees. The TMO repeated the survey in 2013 and 2014. More non-core departments were added to the list. Appendix C shows the results of the TMO's surveys conducted in 2012, 2013 and 2014.

2.7 Appendix C shows that, as at 31 March 2014, a total of 27 non-core departments were maintaining some 182,000 trees. Among them, the Environmental Protection Department (EPD) was maintaining the largest number of trees. It had a stock of some 160,000 trees, even more than many of the core departments. Nearly all (158,000 or 99%) of the EPD's trees were located at restored landfills not accessible to the public. Some of these restored landfills were located in urban areas having an interface with roads and pavements. The trees along the boundary of these restored landfills may pose a safety risk to the public if

they collapse. In fact, in 2013, there was a tree collapse case at a restored landfill in Kwai Chung (see Case 1).

Case 1

Tree collapse incident at a restored landfill managed by the EPD (15 June 2013)

1. The Gin Drinkers Bay Landfill in Kwai Chung was closed in 1979. The LCSD intended to develop it as a park (the Kwai Chung Park) for public use. Because of some development issues, the Park has never been opened (Note) and continues to be managed by the EPD. The Park is on a small hill (with an area of some 29 hectares) surrounded by roads and pedestrian walkways with bus stops. Inside the Park are some 39,000 trees, with many on the slopes of its edges along the roadside (see Figure 1).

Figure 1

Location of tree collapse incident in Kwai Chung Park



Case 1 (Cont'd)

2. On 15 June 2013, during heavy rain, three adjoining tall trees on a slope of the Park fell on the adjacent Kwai Hei Street, hitting a passing car. The car was damaged and the driver was injured and taken to hospital for treatment.

3. The TMO followed up with the EPD for the causes of the tree collapse. The EPD considered that the tree collapse was probably due to sudden strong wind during the continuous rainy days. On request, the EPD submitted to the TMO tree inspection records of the Park completed by its landfill restoration contractor (a waste management company). The TMO considered that the tree inspection conducted on the Park was not up to the acceptable standard. In response, the EPD informed the TMO that the contractor had strengthened the tree inspection of the site and had arranged to prune and remove dead branches or leaning trees when required. At the same time, the EPD was reviewing the tree risk assessment arrangement and asked for information about relevant training courses organised by the TMO.

Audit comments

4. The EPD maintains a large number of trees, mostly at restored landfills. While most of the trees are located in areas not accessible to the public, the 2013 incident revealed the public safety risk of tree collapse at restored landfills, particularly for those trees along the boundary of these sites having an interface with roads and pavements. As a non-core department, the EPD might not be fully aware of its maintenance responsibilities and the requirements for conducting tree risk assessment. There is a need for the TMO to step up efforts to regularly remind non-core departments of their maintenance responsibilities for trees under their purview, and provide necessary advice and assistance to them.

Source: Audit analysis of DEVB records

Note: Issues related to the development of the Kwai Chung Park were reported in paragraphs 2.27 to 2.34 of Chapter 4 of the Director of Audit's Report No. 60 of March 2013.

2.8 Besides the large number of trees maintained by the EPD, Audit also noted from the survey results that the number of non-core departments increased from 20 in 2012 to 27 in 2014, indicating that some departments might have not responded to the 2012 survey, or they were not sure whether they were responsible for tree maintenance.

2.9 The current strategy of the TMO in coordinating the work of tree management departments focuses on the core departments. Many administrative measures for tree management apply mainly to the core departments, including:

- (a) having representatives in the committees (Note 2) under the GLTMS;
- (b) submission of TRA progress reports and completed TRA forms for the TMO's checking;
- (c) monitoring of tree complaint cases on a monthly basis;
- (d) incorporation of tree information in the TMO's centralised tree database (see para. 4.3); and
- (e) receiving invitation to training courses on TRA organised by the TMO.

2.10 Owing to the large number of trees (some 180,000) maintained by 27 non-core departments, Audit considers that the TMO needs to refine its strategy for coordinating the work of tree management departments and applying more administrative measures to non-core departments. The TMO's surveys of non-core departments only required them to provide information about the number of trees they maintained, number of trees felled during the year, maintenance expenditure,

Note 2: The committees are the Steering Committee on Greening, Landscape and Tree Management, the Works and Maintenance Committee on Greening, the Community Involvement Committee on Greening, and the Training Committee on Greening, Landscape and Tree Management.

and whether the maintenance work was outsourced. The TMO may consider collecting more information from non-core departments about their tree maintenance arrangements (e.g. compliance with relevant circulars and guidelines, and the use of qualified contractors, etc.) to facilitate the coordination of the work of tree management departments.

Audit recommendations

- 2.11 Audit has *recommended* that the Secretary for Development should:
 - (a) collect more information about the tree maintenance practices of non-core departments, take measures to ensure that they adequately discharge their responsibilities for tree management, and provide necessary advice and assistance to them;
 - (b) step up efforts to regularly remind non-core departments of their maintenance responsibilities for trees under their purview; and
 - (c) consider refining the TMO's strategy for coordinating the work of tree management departments, and applying more administrative measures to non-core departments (particularly those maintaining a large number of trees, e.g. the EPD).

2.12 Audit has also *recommended* that the Director of Environmental Protection should strengthen the EPD's tree maintenance practices to ensure that all trees under its purview are properly maintained in accordance with the laid-down guidelines.

Response from the Administration

2.13 The Secretary for Development agrees with the audit recommendations in paragraph 2.11.

2.14 The Director of Environmental Protection agrees with the audit recommendation in paragraph 2.12. She has said that the EPD is committed to strengthening its tree maintenance practices to ensure that all trees under its purview are properly maintained in accordance with the laid-down procedures. Proper training will also be provided to staff on tree management so that they could adequately discharge their duties.

Delineation of management responsibilities for roadside trees

2.15 Trees at roadside areas pose a particular safety risk to pedestrians and road users, especially in areas with high pedestrian and/or vehicular flow. In the past, most of the serious cases causing deaths or major injuries to members of the public involved roadside trees (see paras. 1.6 and 1.10).

2.16 When a roadside tree is located on allocated government land, the maintenance responsibility falls on the allocatee department. Nevertheless, many of the roadside trees are found along roads and pavements which are unallocated government land (Note 3). According to the Technical Circular, the maintenance responsibilities of roadside trees on unallocated government land are divided among several departments, as follows:

- (a) the LCSD is responsible for vegetation (including trees and other plants) on landscaped areas along non-expressway public roads outside country parks;
- (b) the AFCD is responsible for vegetation along non-expressway public roads within country parks;

Note 3: Unallocated government land means government land which has not been allocated by the LandsD to another government bureau or department via a handover record. It signifies the land status rather than management responsibility. Various departments are involved in the management of public roads and pavements which are regarded as unallocated government land, e.g. the LandsD for unlawful occupation by structures, the Food and Environmental Hygiene Department for cleanliness, and the HyD for structural maintenance.

- (c) the HyD is responsible for vegetation within the boundary of expressways, and on man-made slopes it maintains. In emergencies where fallen trees, overgrown bushes or grass pose imminent danger to pedestrians or road users, the HyD is responsible for removal of the vegetation; and
- (d) the LandsD is responsible for the ad hoc maintenance of vegetation on unallocated government land not maintained by any other departments.

2.17 Broadly speaking, apart from expressways (under the purview of the HyD) and country parks (under the purview of the AFCD), the LCSD is responsible for roadside trees on landscaped areas, whereas the LandsD is responsible for the ad hoc maintenance of roadside trees on unallocated government land not maintained by any other departments when a complaint or referral is received calling for such maintenance.

Disagreements over maintenance responsibilities for roadside trees

2.18 All along, there have been disagreements among departments over the delineation of maintenance responsibilities for roadside trees, particularly regarding whether a particular tree is within a "landscaped area", the definition of a landscaped area, and the existence or otherwise of handover records. Such disagreements were often triggered by a tree complaint when the department responsible for maintaining the tree concerned had to be identified. The departments involved would sort out among themselves on a case-by-case basis to identify the responsible party for taking up the tree complaint.

2.19 According to the Technical Circular, a landscaped area refers to an area where planting or hard landscape features have been undertaken to improve the environment. In the LCSD's view, a landscaped area should be an area with landscape design elements such as roadside planters or tree pits. On the other hand, in the TMO's view, a landscaped area should be an area with intentional plantings irrespective of whether the plantings are located in planters or tree pits. 2.20 The disagreements among departments had affected the handling of tree complaints and other tree management work. In a paper submitted to the Works and Maintenance Committee on Greening (WMCG — Note 4) in January 2013, it was stated that:

- (a) though the delineation of responsibilities for tree maintenance was clearly defined in the Technical Circular, there were frequent disputes among government departments;
- (b) this sometimes caused delay in handling tree complaint cases in a timely manner, waste of time and resources by departments in arguing their cases, dissatisfaction of complainants, and more importantly, potential hazards to the public. From the public's perspective, these disputed cases could give an impression that departments were irresponsible and the Government was incompetent in tree management; and
- (c) it was essential that tree-related complaint/enquiry cases should be effectively handled and resolved by the responsible departments so as to mitigate potential hazards posed by trees and enhance public safety.

2.21 From December 2012 to September 2013, three meetings were held among the DEVB, the LCSD and the LandsD to resolve the differences in the interpretation of the definition of a landscaped area for the determination of tree maintenance responsibility. As a result of the meetings, it was agreed that when an agreement could not be reached among departments, the TMO would review the case and adjudicate as to which department was responsible for tree management. Departments aggrieved with the TMO's ruling on tree maintenance responsibilities might appeal. Pending an appeal and consideration by the Appeal Board (Note 5), the department concerned would follow up the case as assigned until such time the appeal result overturns the TMO's ruling. Audit noted that, up to July 2014, the

- **Note 4:** The WMCG is chaired by the responsible Deputy Secretary (Works) of the DEVB. Its roles, among others, are to oversee the tree management system, and to resolve inter-departmental interface issues arising from greening, landscape and tree management work.
- **Note 5:** The Appeal Board is chaired by the responsible Deputy Secretary (Works) of the DEVB. Up to July 2014, no cases had been brought to the attention of the Appeal Board.

relevant departments had not yet fully settled their disagreements over the interpretation of the definition of a landscaped area, and there were still dispute cases over maintenance responsibilities for adjudication by the TMO (Note 6).

Roadside tree survey

2.22 Roadside trees are mainly maintained by the LCSD and the LandsD (see para. 2.17). According to its tree inventory, as at May 2014, the LCSD was maintaining about 140,000 trees on roadside landscaped areas. According to the Technical Circular, the LandsD is responsible for carrying out maintenance of roadside trees on an ad hoc basis (see also paras. 2.35 to 2.45 for details), i.e. mainly when a requirement is identified or a complaint/referral is received. In 2010 and 2011, the LandsD expressed concern over the vast area of unallocated government land and the large number of roadside trees involved. Meanwhile, there was also a lack of an inventory of such roadside trees concerning their health and structural conditions, especially for those trees along roadside which were not under regular inspection and maintenance.

2.23 In 2011, the DEVB considered that there was a need to enhance tree risk management, especially for roadside trees on unallocated government land under the ad hoc maintenance by the LandsD. The DEVB decided that it was necessary to have a general understanding of the quantity and quality of these trees in order to facilitate policy considerations on the maintenance approach for roadside trees. In July 2012, the TMO embarked on a territory-wide roadside tree survey covering all the 18 districts in Hong Kong. According to a paper submitted to the Steering Committee on Greening, Landscape and Tree Management in December 2013, the objectives of the roadside tree survey were to:

- (a) build up a database of roadside trees for tree management use;
- (b) identify and delineate maintenance responsibilities of the surveyed trees; and
- **Note 6:** Since the implementation of the adjudication system in August 2013 and up to June 2014, the TMO had dealt with 39 dispute cases (involving 735 trees), including 4 adjudication cases (involving 21 trees).

(c) identify trees with health and/or structural problems and refer them to relevant government departments for mitigation actions.

The survey did not cover roadside trees already included in the tree inventories of the LCSD, the HyD and other tree management departments.

As at June 2014, the TMO had substantially completed the fieldwork of the roadside tree survey. A total of some 70,000 roadside trees not included in the inventories of any tree management departments were found. During the survey, the TMO also identified 1,339 problematic trees and made referrals to relevant departments for follow-up actions. As at September 2014, the TMO was working on the delineation of maintenance responsibilities of the surveyed trees according to the land status and other relevant factors.

2.25 According to the TMO, as at September 2014, it had completed the initial assessment on the delineation of maintenance responsibilities of the surveyed trees for 5 of the 18 districts, and would come up with the initial assessment for another 6 districts in October 2014. Audit considers that the TMO needs to expedite the delineation of the surveyed trees and agree with the departments concerned on such delineation, so that they can prepare for taking up the maintenance responsibilities, such as including the trees in their tree inventories and making preparation for tree maintenance work.

2.26 The TMO was liaising with relevant departments to seek their agreement on the delineation of maintenance responsibilities. An Appeal Board was also in place for resolving disagreements among departments (see para. 2.21). As the assignment of maintenance responsibilities was still in progress, the collected information was not yet used for tree management work. Moreover, as at September 2014, a review of the policy considerations (see para. 2.23) concerning the ad hoc maintenance approach applicable to the LandsD under the Technical Circular for roadside trees had not been completed (see also paras. 2.42 to 2.45).

Coverage of the roadside tree survey

2.27 Roadside trees on unallocated government land could be found along both public roads/carriageways and village access roads/footpaths. However, Audit noted that the scope of the TMO's roadside tree survey covered only public

roads/carriageways. Roadside trees along village access roads/footpaths in rural areas were not covered in the survey. Nevertheless, shortly after the commencement of the field work of the TMO's roadside tree survey in July 2012, a fatal tree collapse case occurred on a village access road in October 2012 (see para. 1.10(c)). The incident prompted the LandsD to conduct a special tree inspection to cover roadside trees along village access roads/footpaths (see also para. 2.39). The key objective of the TMO's survey was to build up a database of roadside trees (see para. 2.23(a)). As the scope of this roadside tree survey only covered public roads/carriageways but not village access roads/footpaths, a comprehensive database of roadside trees would not be available.

2.28 Audit also noted that:

- (a) the survey covered roadside areas measuring 5 metres from the road kerb. However, in many locations, the roadside areas might extend beyond 5 metres from the kerb. On the other hand, the special tree inspection started by the LandsD in December 2013 covered roadside areas measuring 10 metres from the road kerb (see para. 2.39(b)). Audit considers that roadside trees (particularly tall trees) located more than 5 metres from the road kerb may pose a threat to pedestrians and road users and need to be included in the survey; and
- (b) for roadside trees on sites not readily accessible (e.g. tall slopes or sites with constraints for access), the survey was conducted in tree groups with inspection performed at a distance (i.e. without close inspection of the individual trees). About 50% of the 70,000 trees surveyed were inspected in tree groups.

2.29 Upon enquiry about the limited scope and coverage of the roadside tree survey, the TMO explained to Audit that:

(a) the primary objective of the roadside tree survey was to have a general understanding of the quantity and quality of these trees in order to facilitate policy considerations on the maintenance approach for roadside trees (see para. 2.23);

- (b) the TMO considered that the roadside tree survey which was risk-based had achieved its objective as it had formed the basis for the DEVB to develop policy directives; and
- (c) the number of trees beyond 5 metres would be significantly smaller than those within 5 metres given that there were buildings and development in most situations.

Different managers for trees in the same locality

2.30 The delineation of tree maintenance responsibilities under the integrated approach based on the Technical Circular has resulted in a number of departments taking up the maintenance responsibilities for trees in the same locality. Such cases usually involve roadside trees where the LandsD, the LCSD and other departments are responsible for different trees in the same locality. For example, at a roadside area with both a landscaped area and naturally grown trees, the LCSD is responsible for the trees in the landscaped area, while the LandsD is responsible for the remaining trees on an ad hoc basis. Where a roadside man-made slope is involved, the slope maintenance department (e.g. the HyD) is responsible for the trees on the slope. Other departments may also be involved if the roadside area involves allocated government land nearby. Under such circumstances, tree maintenance involving multiple departments may not be cost-effective. There are also increased risks that the trees involved are not taken care of since they may not be easily differentiated from each other in the absence of clear tree labels.

2.31 This issue was discussed at a meeting of the WMCG held in January 2013. The TMO proposed that, for trees in the same locality, the department with the responsibility for the larger portion of trees was encouraged to take up the responsibility for the entire area, with reference to the "lion's share principle" adopted for slope maintenance. Nevertheless, this approach was not mandatory. Departments were only encouraged to take into account the lion's share principle in negotiating the delineation of tree maintenance responsibilities for the sake of cost-effectiveness and public interest. It was concluded that the arrangement would only proceed on a case-by-case basis through negotiation and agreement among departments.

2.32 Audit supports the idea of adopting the lion's share principle in delineating tree management responsibilities to departments involved. However, Audit noted from the TMO's records that, up to July 2014, there had not been any successful cases of applying such principle. It appears that more needs to be done to encourage the adoption of the lion's share principle by the departments that are managing trees.

Audit recommendations

- 2.33 Audit has *recommended* that the Secretary for Development should:
 - (a) having regard to the findings of the roadside tree survey, expedite action to review the policy considerations concerning the maintenance approach for roadside trees (see para. 2.26), and sort out the delineation of maintenance responsibilities of the surveyed trees of the TMO's roadside tree survey so that the departments concerned can promptly take up the maintenance responsibilities; and
 - (b) step up efforts to further promote the adoption of the lion's share principle by departments for taking up tree management responsibilities, taking due account of cost-effectiveness and public interest.

Response from the Administration

2.34 The Secretary for Development agrees with the audit recommendations. He has said that the delineation of maintenance responsibilities of roadside trees is on-going. The TMO will delineate the maintenance responsibilities based on the cost-effectiveness, efficiency, expertise, ease of operation, appropriateness and other relevant factors.

Maintenance of roadside trees on unallocated government land

2.35 Roadside trees could be of natural or planted origin. According to the Technical Circular, regular maintenance operations are required for vegetation on

landscaped areas to ensure the healthy establishment and growth of plants, which in general include watering, fertilising, weeding, pruning, mulching, pest control, replacement, etc. as appropriate. The required maintenance operations vary depending on the species, stage of maturity and planting objectives. For natural vegetation on unallocated government land not maintained by any other departments, the LandsD will carry out ad hoc maintenance (e.g. tree felling, trimming and grass cutting) when it receives complaints or referrals, or when its staff come across trees that may have problems during their day-to-day land control duties.

Ad hoc maintenance by the LandsD as set out in the Technical Circular was one of the inadequacies of the integrated approach identified by the Task Force in 2009 (see para. 1.7(b)). It was noted that the LandsD had no in-house expertise on trees and had to seek professional advice from other departments such as the LCSD and the AFCD, which might lead to a delay on prompt resolution of tree problems. Moreover, unallocated government land totalled about 33,000 hectares (33% of all land in Hong Kong) and there was no detailed record or statistics on the number of trees thereon. While recognising that the LandsD had a grave problem in coping with the work concerned, the Task Force did not propose any changes to such ad hoc maintenance approach. The Task Force suggested the setting up of a new tree unit in the LandsD to enable it to effectively discharge its duties without having to seek expert advice from other departments. The Tree Unit was set up in 2010 with an establishment of 12 staff.

2.37 In 2010 and 2011, the LandsD expressed concern to the DEVB over the adoption of the ad hoc maintenance approach on a large number of roadside trees on unallocated government land under its purview (see para. 2.22). In 2011, the DEVB decided to conduct a roadside tree survey to assess the quantity and quality of these trees in order to facilitate policy considerations (see para. 2.23).

Tree safety in rural areas

2.38 In October 2012 (after the TMO had started its roadside tree survey in July 2012), a fatal tree collapse case caused by a roadside tree occurred in Tai Po (see para. 1.10(c)). Details are given in Case 2.

Case 2

Tree collapse incident at Lam Tsuen Sun Tsuen, Tai Po (11 October 2012)

1. On 11 October 2012, around 10:30 a.m., a heavy branch fell from a Chinese banyan tree at the verge of a slip road linking Lam Tsuen Sun Tsuen to Lam Kam Road in Tai Po. The branch hit a passing lorry and crushed the driver's cabin. The driver was injured and the passenger (a delivery worker) was killed.

2. The collapsed tree was a roadside tree on unallocated land on a village access road. In response to media enquiries, the LandsD confirmed that the collapsed tree was under its ad hoc maintenance. In the absence of any complaint before the incident, LandsD staff had not previously inspected the tree.

3. The TMO investigated the tree collapse case and compiled a report. According to the report, the fallen branch was a heavy lateral limb with sign of decay on its attachment to the main trunk. The weak point at the attachment was considered as the main reason for the branch failure. It was suspected that the lorry might have hit the decayed branch before the collapse. The police made an investigation on this case and submitted the Death Report to the Coroner's Office in April 2013 recommending that no "Death Inquest" was required. On 3 May 2013, the Coroner's Office informed the Police that the Coroner had decided that a Death Inquest was not required.

Audit comments

4. Village access roads in rural areas are usually lined with trees, more often than roads in urban areas. Proper maintenance of roadside trees along rural roads is important for public safety. In accordance with the Technical Circular, roadside trees along rural roads (other than those along footpaths in village environs and access roads maintained by the Home Affairs Department) are under the ad hoc maintenance by the LandsD upon complaint or referral. This tree collapse case highlighted inadequacies in the ad hoc maintenance of roadside trees for ensuring public safety.

Source: DEVB records

Special tree inspection exercise

2.39 After the Tai Po tree collapse case, the LandsD considered that there was growing public concern over tree safety in rural areas. In November 2012, the LandsD planned to conduct a special tree inspection exercise to identify hazardous and potentially hazardous trees along village access roads and footpaths on unallocated government land with relatively high pedestrian and/or vehicular flow in rural areas in the New Territories, and to carry out appropriate remedial works of the trees for public safety. The objectives and scope of the special tree inspection were to:

- (a) complete tree survey along 685 selected village access roads and footpaths, with a total length of about 250 kilometres covering an area of some 5 million square metres;
- (b) survey all trees within 10 metres from both sides of each selected road or footpath (a total of about 150,000 trees); and
- (c) remove trees identified dead, collapsed, with imminent danger or obvious defects posing immediate hazard to the public.

2.40 The LandsD started the special tree inspection in December 2013. The original plan was to complete all the work in three years' time. In March 2014, after completing the preliminary stage of the inspection, the LandsD revised the time schedule to six years in the light of experience and operational circumstances. As at July 2014, the special tree inspection exercise was still in progress.

2.41 Audit noted that the village access roads and footpaths covered by the LandsD's special tree inspection were not included in the scope of the TMO's roadside tree survey (see para. 2.27). Audit also noted the following issues that might hamper the effectiveness of the special tree inspection exercise:

(a) the inspection was intended to be a one-off exercise. There was no plan to provide any form of regular maintenance for roadside trees along rural roads after completion of the inspection; and (b) the inspection would not generate tree information for compiling a tree database for enhancing management of roadside trees in rural areas.

Need to review the ad hoc maintenance approach

2.42 Trees require proper maintenance to prevent failure incidents which may result in loss of life, injuries, damage to property and obstruction to traffic. Roadside trees pose a particular risk to pedestrians and road users. Currently, the modus operandi as set out in the Technical Circular does not require a regular programme for tree maintenance in respect of those trees on unallocated government land under the purview of the LandsD. The LandsD adopts the ad hoc maintenance approach in accordance with the Technical Circular and looks to its staff to identify trees that may have problems and take follow-up actions when discharging day-to-day functions of land control, and acts on receipt of complaints or referrals. The lack of an inventory of trees on unallocated government land has further hampered the LandsD's efficiency and effectiveness in handling tree complaints and referrals.

2.43 Upon enquiry, in September 2014, the LandsD informed Audit that the LandsD was first involved in tree maintenance in May 2002 and at that time, the LandsD was not required to maintain trees along streets and roads. Instead, the LandsD took up trees not claimed by any other departments on unallocated government land. Given the large but unknown number of such "unclaimed" trees and the resultant strain on the LandsD, and on the understanding that such trees were unlikely to be along roadside, it had since then been accepted within the Government that trees put under the LandsD would only be subject to ad hoc rather than regular maintenance. Since the issue of the Technical Circular in March 2004, trees falling on non-landscaped areas along non-expressway roads and pavements had been put under the LandsD's purview. The LandsD continued to carry out ad hoc maintenance of such trees as spelt out in the Technical Circular.

2.44 The 2012 fatal tree collapse case in Tai Po highlighted inadequacies in the ad hoc maintenance of roadside trees for ensuring public safety. Audit noted that the TMO's roadside tree survey started in July 2012 was intended to provide input for policy considerations concerning the ad hoc maintenance approach (see para. 2.23). There is a need for a critical review of the ad hoc maintenance

approach, taking into account the previous tree collapse cases, as well as the results of the TMO's roadside tree survey and the LandsD's special tree inspection exercise. In Audit's view, it is imperative to implement some form of regular maintenance for roadside trees under the LandsD's purview.

2.45 Besides trees on non-landscaped roadside areas, the LandsD is also responsible for maintaining trees on other unallocated government land, including vacant government land all over the territory pending development, allocation or sale. Under the current arrangement, these trees are also under ad hoc maintenance.

Audit recommendations

2.46 Audit has *recommended* that the Secretary for Development and the Director of Lands should consider implementing regular maintenance for trees on unallocated government land, particularly roadside trees, which currently are under ad hoc maintenance.

2.47 Audit has also *recommended* that the Director of Lands should expedite action to complete the special tree inspection for roadside trees on village access roads and footpaths in rural areas.

Response from the Administration

2.48 The Secretary for Development and the Director of Lands agree with the audit recommendations.

PART 3: TREE RISK ASSESSMENT

3.1 This PART examines the TMO's implementation of new TRA arrangements and other tree risk management issues relating to old and valuable trees (OVTs) and brown root rot (BRR) disease. Audit has found room for improvement in the following areas:

- (a) implementation of the TRA (paras. 3.2 to 3.42);
- (b) maintenance of OVTs (paras. 3.43 to 3.51); and
- (c) tackling BRR disease (paras. 3.52 to 3.61).

Implementation of the tree risk assessment

3.2 The Task Force, making reference to international best practices, recommended new TRA arrangements based on a dual approach (see para. 1.7(c)). Pursuant to this recommendation, the TMO has issued and updated guidelines on the dual-approach TRA (the TRA Guidelines). The TRA Guidelines provide guidance to tree management departments to implement the dual-approach TRA to achieve the objective of identifying problematic trees in a professional and systematic manner for taking timely remedial measures to protect public safety.

Area-basis assessment

3.3 The dual-approach TRA comprises two stages, namely the area-basis assessment and the tree-basis assessment. In carrying out the area-basis assessment of sites under its purview, a tree management department should classify the sites into three types of risk zones (i.e. Category I, II and III zones — see Table 1) based on the intensity of traffic/pedestrian flow.

Table 1

Categories of tree risk management zones

Category I zone	Target areas are intensively used with high traffic flow and high pedestrian flow, such as public parks, playgrounds, crowded streets, busy carriageways, schools, etc.
Category II zone	Target areas are infrequently used with low traffic flow and low pedestrian flow, such as road verges of limited access, countryside roads, village footpaths, etc.
Category III zone	Target areas are rarely used with very rare public access, such as inaccessible areas, remote countryside slopes, dense woodlands, maintenance access not open for public, etc.

Source: DEVB records

3.4 The objective of the area-basis assessment is to let tree management departments focus on high-risk sites (i.e. Category I zones) so that they can accord priority to these sites for more effective risk management. According to the TRA Guidelines, for Category I zones, the tree-basis assessment has to be carried out at least once a year.

Tree-basis assessment

3.5 The tree-basis assessment of a site comprises a group inspection of all trees of the site, and detailed inspections of particular problematic/important trees. The purpose of a group inspection is to identify problematic trees. According to the TRA Guidelines, the following types of problematic trees have to be identified in a group inspection:

- (a) trees on a complaint list with structural or health problems;
- (b) mature trees belonging to species with brittle wood structure and having unsatisfactory structural or health conditions with failure potential;

- (c) trees with major defects or health problems; and
- (d) trees growing in very stressful site conditions with failure potential.

3.6 In carrying out a group inspection of the trees of a site, visual assessment of the trees is conducted. A "Form 1" is used for recording the results of a group inspection, and a group inspection is referred to as a Form 1 inspection (Note 7).

3.7 For the problematic trees identified in a group inspection, if the remedial measures taken on the spot cannot eliminate the risks, detailed inspections have to be carried out. The purpose of a detailed inspection of a tree is to identify in detail the risks and the appropriate remedial measures. For OVTs and stonewall trees (i.e. important trees), detailed inspections have to be carried out as a rule under the TRA Guidelines.

3.8 In carrying out a detailed inspection of a tree, visual assessment and/or aerial assessment (by climbing up the tree — see Photograph 3) are conducted to assess in detail the general conditions of the tree, the conditions of its parts (i.e. crown, branches, trunk and roots) and the conditions of the site. Appropriate equipment (e.g. tomograph and resistograph — Note 8) may be used to assess the extent of structural problems (see Photograph 4 and Figure 2). A hazard rating from 3 to 12 is assessed based on the failure potential, the size of the tree (or parts of it) and the frequency of targets (i.e. people, properties and human activities)

Note 7: According to the TRA Guidelines, the inspection officers for Form 1 inspections have to meet the requirements of both training/qualification and working experience (i.e. having attended TRA training courses organised/recognised by the TMO or with valid qualification/certification on arboriculture, and with at least 2 years of working experience in tree management).

Note 8: A tomograph is a device used for producing sectional images of a tree to depict internal decay or cavities. A resistograph is a device used for inspecting a tree to ascertain wood density and to detect internal decay or cavities.

using the area under the tree. A "Form 2" is used for recording the results of a detailed inspection, and a detailed inspection is referred to as a Form 2 inspection (Note 9).

Photograph 3

Aerial assessment on a tree



Source: LCSD records

Photograph 4

Detailed tree assessment using tomograph



Source: LCSD records

Note 9: According to the TRA Guidelines, the inspection officers for Form 2 inspections have to meet all the requirements of training, qualification and working experience (i.e. having attended TRA training courses organised/recognised by the TMO, and preferably with valid qualification/certification on arboriculture, and with at least 2 years of working experience in tree management).

Figure 2



Internal image of the tree produced by tomograph

Source: LCSD records

Remarks: Different colours indicate different wood densities.

Results of annual TRA exercises

3.9 After carrying out the tree-basis assessment, depending on the problems identified, the remedial measures to be taken on problematic trees may include pruning to remove dead and defective branches, controlling pests and diseases, and installing tree support systems. If there are no practical remedial measures, the last resort is to remove hazardous trees to protect public safety.

3.10 Of the nine major tree management departments (see para. 2.5), the LandsD did not implement the TRA (Note 10). For the remaining eight departments (i.e. HyD, LCSD, ArchSD, HD, WSD, AFCD, CEDD and DSD), they implemented the TRA subject to the TMO's monitoring. Table 2 shows, in respect of these eight departments, the number of inspections completed under the annual TRA exercises since 2011.

Note 10: The LandsD conducted inspections regularly for OVTs and stonewall trees under its management, and on a need basis for some trees (e.g. those under monitoring or complaint).

Table 2

Year	No. of Form 1 inspections completed for tree groups	No. of Form 2 inspections completed for individual trees (Note)	No. of trees with remedial measures taken/to be taken	No. of trees removed
2011	20,062	7,475	Information not available	2,776
2012	22,566	5,772	19,407	3,493
2013	25,320	6,937	21,956	4,851
2014	24,815	6,603	22,021	4,030

Inspections completed under the annual TRA exercises (2011 to 2014)

Source: DEVB records

Audit examination of the TRA implementation

3.11 Audit examined the TRA implementation by the two major tree management departments, namely the HyD and the LCSD. As at December 2013, the HyD and the LCSD maintained 0.63 million and 0.51 million trees respectively (see Appendix A). The total number of trees (1.14 million) under the purview of these two departments accounted for 72% of the 1.58 million trees under the maintenance of the eight major tree management departments.

3.12 The HyD is responsible for the maintenance of trees located on slopes under its purview and areas within the boundary of expressways. The HyD has outsourced its slope and road maintenance work, including vegetation maintenance, by eight term contracts. The Vegetation Maintenance Team under the Landscape Unit of the HyD (comprising 26 staff) is responsible for overseeing vegetation maintenance by the contractors. Audit selected one contract (i.e. the contract

Note: The Form 2 inspections included those completed for problematic trees identified during Form 1 inspections and those completed for OVTs and stonewall trees.

covering expressways in New Territories East and Hong Kong Island) for reviewing the TRA implementation by the HyD.

3.13 The LCSD is responsible for the maintenance of trees located at its venues (e.g. parks and gardens) and along non-expressway roads. For trees located at LCSD venues, their maintenance is outsourced to horticultural contractors. For trees located along non-expressway roads, their maintenance is by in-house regional tree teams. There are six regional tree teams (Note 11) comprising 33 tree units with 210 staff. Audit selected two regional tree teams (i.e. the Hong Kong West Region and the New Territories East Region Tree Teams) for reviewing the TRA implementation by the LCSD.

3.14 In reviewing the TRA implementation by the TMO and tree management departments, Audit found room for improvement in the following areas:

- (a) timing of the annual TRA exercise (paras. 3.15 and 3.17);
- (b) conduct of Form 1 inspections (paras. 3.18 to 3.23);
- (c) conduct of Form 2 inspections (paras. 3.24 to 3.28);
- (d) TMO's monitoring of the TRA implementation (paras. 3.29 to 3.34); and
- (e) departments' internal checking of tree inspections (paras. 3.35 to 3.38).

Timing of the annual TRA exercise

3.15 The climate of Hong Kong is sub-tropical. The high rainfall and frequent typhoons, coupled with high fungal and pest activities, make the health and structural conditions of trees change rapidly. According to the TRA Guidelines, for Category I zones, the tree-basis assessment has to be carried out at least once a

Note 11: The six regional tree teams cover the following regions: Hong Kong West, Hong Kong East, Kowloon, New Territories East, New Territories West, and New Territories North.

year. The TRA yearly exercise is scheduled to commence in the end of the preceding year and to complete by the end of May, before the onset of the wet season.

3.16 Audit considers that there is merit in completing the annual TRA exercise earlier, taking into account the following:

- (a) according to the Hong Kong Observatory, the wet season of Hong Kong starts in April. In recent years, it was not unusual to encounter heavy rains in April or March. For example, a Black Rainstorm Warning was issued on 30 March 2014. Moreover, according to Hong Kong Observatory records, 7 of the 18 Black Rainstorm Warnings ever issued were before the end of May. It is also pertinent to note that, the Geotechnical Engineering Office (which is responsible for slope safety) requires that regular maintenance of slopes should be carried out at least once a year and completed by the end of March before the onset of the wet season; and
- (b) upon the completion of the annual TRA exercise, some tree remedial measures may still be outstanding. For example, upon the completion of the 2013 and 2014 TRA exercises by the end of May, there were respectively 18,795 and 20,975 trees with remedial measures completed, and respectively 2,766 and 794 trees with remedial measures outstanding. Meanwhile, departments were required to put in place temporary measures, e.g. cordoning off the site to safeguard the public. These remedial measures required sufficient time for completion before the onset of the wet season.

3.17 Upon enquiry, the TMO informed Audit in September 2014 that the observation of the growth and response of trees in Spring was essential for the determination of appropriate remedial measures (particularly for deciduous trees) and the control of decaying fungi (which became observable in Spring/early Summer). The current time schedule of the annual TRA exercise had taken into account the physiology of some tree species and the detection of pathogenic fungi on trees. Notwithstanding this, Audit considers that, taking into account the fact that the wet season in Hong Kong starts in early April, there is merit to consider completing the annual TRA exercise earlier than the end of May.

Conduct of Form 1 inspections

3.18 *Number of trees covered by an inspection.* According to the TRA Guidelines, to safeguard the quality of a Form 1 inspection, the number of trees to be covered should not be excessive. Nevertheless, according to the TMO, there is no international standard on the maximum number of trees to be covered by a tree group inspection (i.e. a Form 1 inspection). Hence, there is no such maximum number set in the TRA Guidelines.

3.19 In sample checking the Form 1 inspections conducted by the HyD and the LCSD in the 2014 TRA (see paras. 3.11 to 3.13), Audit analysed the number of trees covered by these inspections, each of which was conducted by an inspector within a day. For the HyD, of the 433 Form 1s examined, 36 (8%) covered more than 100 trees. The number of trees covered by an inspection averaged 36, ranging from 1 to 570. For the LCSD, of the 805 Form 1s examined, 162 (20%) covered more than 100 trees. The number averaged 51, ranging from 1 to 572. Audit considers that, if the number of trees covered by a Form 1 inspection is excessive, individual trees may not be adequately inspected. Trees with less apparent problems or deteriorating health or structural conditions may be overlooked. In this connection, the TMO informed Audit in October 2014 that, generally for slopes, it was not practical to demarcate a densely vegetated slope arbitrarily into smaller groups during inspections.

3.20 Audit selected trees reported in complaints for examining the quality of the latest Form 1 inspections conducted on them before the complaints. The examination covered complaints received by the two LCSD tree teams selected for examination during the 18 months from January 2013 to June 2014. Audit noted the following:

- (a) there were 33 complaints relating to 34 trees. Among the 34 trees, the LCSD found that 27 (79%) trees had health or structural problems. Eventually, 14 of the 27 trees had to be removed; and
- (b) for the 27 problematic trees identified, they had previously been assessed to be in fair conditions by their Form 1 inspections. Regarding the Form 1 inspections for the 27 trees, the number of trees covered by an inspection averaged 84 and ranged from 3 to 203. The effectiveness of these inspections in identifying problematic trees was questionable. Case 3 shows such an example.

Case 3

Problematic trees were not identified by a Form 1 inspection

1. On 20 February 2014, a tree collapse incident occurred in Tai Po, leading to the damage of a lorry nearby. The tree was under the purview of the LCSD. The tree was removed on the same day.

2. According to LCSD records, the collapsed tree had been covered by a Form 1 inspection conducted on 3 July 2013, and had been assessed to be in fair conditions without the need for mitigation measures or monitoring. The inspection had covered a large number (i.e. 195) of trees.

3. In the tree failure report submitted to the TMO on 24 February 2014, the LCSD stated that it was the severe root rot underneath which led to the tree failure, and significant defects above the ground level were not observed. Nevertheless, the TMO expressed concern that there were about 200 trees reported to be in "fair" health and structural conditions at the time of inspection but the tree concerned showed severe root rot and collapsed in about 6 months. The LCSD was advised to perform a thorough inspection on the neighbouring trees of similar species in order to prevent the recurrence of similar incidents.

4. After performing a thorough inspection on the neighbouring trees on 24 February 2014, the LCSD identified six hazardous trees in the vicinity of the collapsed one. In all cases, severe internal decay or large cavities were found which were developed gradually from mechanical or natural wounds. The six hazardous trees were later removed by the LCSD in mid-March 2014.

Audit comments

5. The quality of the Form 1 inspection conducted in July 2013 was questionable since problematic trees could not be identified. One reason might be that the inspection covered a large number of trees and affected adversely the effectiveness of the inspection. There is a need to improve the effectiveness of Form 1 inspections under the TRA by the LCSD. There is also a need to explore the use of better methodology and technology to help enhance the effectiveness of Form 1 inspections.

Source: LCSD records

3.21 Audit considers that the TMO needs to take measures to help tree management departments improve the effectiveness of Form 1 inspections. The TMO also needs to provide more guidelines on the appropriate number of trees to be covered by a Form 1 inspection (e.g. by specifying the maximum number of trees to be covered).

3.22 **Recording of inspection results.** According to the TRA Guidelines, the purpose of a Form 1 inspection is to identify problematic trees for taking remedial measures. If the remedial measures taken on the spot (e.g. removal of broken branches) can eliminate the risk of a problematic tree, a Form 2 inspection is not required. Audit considers that, in order to facilitate the monitoring of the quality of a Form 1 inspection, there is a need to properly record:

- (a) the problematic trees identified by the Form 1 inspection but without undergoing Form 2 inspections; and
- (b) the remedial measures taken on these trees.

3.23 Audit examination of the Form 1s prepared by the HyD and the LCSD revealed that the information mentioned in paragraph 3.22(a) and (b) was not recorded on the Form 1s, though it might be recorded in other maintenance records. Audit noted that the TMO had updated the "Guidelines on Photo Taking of Tree Conditions in the Process of Tree Risk Assessment" in March 2014 so that adequate photo records of the tree conditions could be provided in the TRA forms.

Conduct of Form 2 inspections

3.24 According to the TRA Guidelines, the most important functions of the tree-basis assessment are to identify hazardous trees, to inspect them thoroughly by using Form 2, and to identify appropriate remedial measures. A Form 2 inspection nevertheless takes a longer time to complete (as compared with the inspection of a tree during a Form 1 inspection). According to the LCSD, at least 30 minutes are required to complete a Form 2 inspection if only visual assessment is conducted. If aerial assessment and assessment using tomograph/resistograph are conducted, a half-day is required for one tree. The TMO also advised Audit in October 2014 that the actual time required for a Form 2 inspection varied depending on the complexity of the case.

3.25 Table 3 shows, in respect of the eight major tree management departments (excluding the LandsD), the number of Form 2 inspections conducted on problematic trees (other than OVTs and stonewall trees) identified by Form 1 inspections in the 2014 TRA. It can be seen that the number of such Form 2 inspections varied widely among the tree management departments, ranging from 0 to 3,528. In particular, the LCSD and the AFCD conducted no Form 2 inspections on problematic trees identified by Form 1 inspections (though they conducted Form 2 inspections on OVTs and stonewall trees as required by the TRA Guidelines — see para. 3.7)

Table 3

Department	Estimated number of trees covered by Form 1 inspections	Number of Form 2 inspections conducted on problematic trees
HyD	630,000	219
LCSD	324,595	0
ArchSD	112,200	2,070
HD	100,000	3,528
WSD	7,100	11
AFCD	36,000	0
CEDD	34,000	99
DSD	14,144	6
Total	1,258,039	5,933

Form 2 inspections conducted on problematic trees identified by Form 1 inspections in the 2014 TRA

Source: DEVB records

3.26 As shown in Table 3, no Form 2 inspection was conducted by the LCSD on any problematic trees identified in the 2014 TRA. However, for the Form 1 inspections conducted by the two LCSD tree teams selected for examination (see para. 3.19), Audit noted that 21 problematic trees were identified and assessed to be requiring continuous monitoring because defects such as severe dieback, sparse crown and abnormal bark crack were found. However, no Form 2 inspection was conducted on these trees. This is at variance with the TRA Guidelines which stipulate that Form 2 inspections have to be conducted for trees requiring continuous monitoring.

3.27 According to the LCSD, when the tree teams had identified trees that required remedial actions during Form 1 inspections, they would carry out remedial measures as far as practicable. In the context of Form 1 inspections in the 2014 TRA, the LCSD had immediately carried out remedial measures on 2,894 trees and removed 208 trees identified with serious safety issues. With the completion of remedial actions, the LCSD sought to eliminate risks found during Form 1 inspections, rendering Form 2 inspections in these cases unnecessary.

3.28 By conducting a Form 2 inspection, a tree management department can ascertain the detailed conditions of the tree concerned and better identify appropriate remedial measures, including long-term measures (such as pest control and site improvement). Audit considers that the TMO needs to provide more guidelines to help tree management departments decide whether and when it is necessary to conduct a Form 2 inspection, and ensure that tree management departments follow such guidelines.

TMO's monitoring of the TRA implementation

3.29 *Checking of tree inspections.* To monitor the TRA implementation by major tree management departments, the TMO carries out checking of tree inspections conducted by them. This checking comprises desktop review of the forms selected and field inspections of the trees concerned. As at July 2014 (the time of the audit review), the checking of the 2014 TRA had not yet been completed. Regarding the checking of the 2013 TRA, 523 (about 2%) Form 1 inspections and 293 (about 4%) Form 2 inspections were checked. The findings included:

- (a) incomplete information (e.g. anticipated completion dates of remedial measures missing);
- (b) tree species incorrectly identified;
- (c) problematic trees not identified by Form 1 inspections; and
- (d) tree defects not identified by Form 2 inspections.

3.30 Upon checking Form 1 and Form 2 inspections, the TMO will provide comments to the departments concerned and refer cases to them for taking follow-up actions. For the checking of the 2013 TRA, the number of cases referred was 111 for Form 1 inspections and 40 for Form 2 inspections. The percentage of referral (based on the total number of inspections checked) was 21% for Form 1 inspections and 14% for Form 2 inspections.

3.31 *Non-core tree management departments.* As mentioned in paragraph 2.7, there were a total of 27 non-core tree management departments as at 31 March 2014. Some of them in fact have many trees under their purview, notably the EPD. The TRA implementation by these departments is currently not subject to the TMO's monitoring. Audit considers that the TMO needs to monitor the effectiveness of the TRA implementation by non-core tree management departments.

3.32 *Tree patrols.* In 2011, the TMO set up the Central Tree Support Team. The Team currently comprises 13 staff (11 professional and 2 technical staff). Its duties, among others, include the following:

- (a) conducting tree patrols to identify problematic trees, through risk-based site inspections, and refer them to the departments or parties concerned for taking necessary follow-up actions. In conducting tree patrols in 2013-14, the Team identified 618 problematic trees;
- (b) checking tree inspections conducted by tree management departments during annual TRA exercises (see para. 3.29). In checking the 2013 TRA, the Team identified 151 problematic trees;

- (c) taking part in the roadside tree survey (see para. 2.23) which was substantially completed in June 2014 (see para. 2.24). In taking part in the roadside survey in 2013-14, the Team identified 936 problematic trees; and
- (d) inspecting OVTs, trees infected with BRR disease, and trees involved in failure cases.

3.33 According to the TMO, the Team's fieldwork is often multi-purpose, relating to a number of duties. For example, when conducting fieldwork in connection with checking tree inspections conducted by tree management departments, the Team also watches out for problematic trees in the vicinity. There is a planned programme each year for checking tree inspections conducted by tree management departments.

3.34 Audit considers that tree patrols (see para. 3.32(a)) are effective in identifying problematic trees, particularly those not subject to regular inspections (e.g. trees under ad hoc maintenance by the LandsD). With the substantial completion of the roadside tree survey in June 2014 (see para. 3.32(c)), the Central Tree Support Team can focus more on conducting tree patrols which are effective in identifying problematic trees.

Departments' internal checking of tree inspections

3.35 As stipulated in the TRA Guidelines, tree management departments have to carry out internal checking of tree inspections conducted by them. In this connection, the TMO has promulgated guidelines requiring a tree management department to check at least 10% of tree inspections conducted. The checking should comprise desktop checks of the forms randomly selected and field inspections of the trees concerned.

3.36 For the HyD, it has developed internal checking guidelines (based on the TMO's guidelines) that Form 1 inspections should be checked by Assistant Inspectors of Works, and Form 2 inspections should be checked by Landscape Architects of the Vegetation Maintenance Team. Audit examined the HyD's internal checking of tree inspections, and did not identify significant non-compliances.

3.37 For the LCSD, it has developed its own "Horticultural Guidelines" which, among other things, deal with internal checking of tree inspections in accordance with the TMO's guidelines. As stated in the Horticultural Guidelines, Form 1 inspections are subject to a two-tier checking. The first-tier checking is conducted by Managers/Leisure Managers of respective tree teams/districts/venues, and the second-tier checking is conducted by Chief Leisure Managers of respective regions. Besides, Form 2 inspections are subject to checking by the LCSD Headquarters.

3.38 In examining the LCSD's internal checking of tree inspections, Audit noted the following non-compliances:

- (a) in the first-tier checking of Form 1 inspections, for one of the two tree teams selected for examination, only desktop checks of the forms selected but no field inspections of the trees concerned were conducted; and
- (b) in the second-tier checking, the forms checked by the Chief Leisure Managers concerned were submitted by the two tree teams, instead of randomly selected from the computer system in accordance with the Horticultural Guidelines. This rendered the checking less effective.

Audit recommendations

3.39 Audit has *recommended* that the Secretary for Development should:

Timing of the annual TRA exercise

(a) review the time schedule for the annual TRA exercise and consider revising it so that the exercise can be completed earlier, preferably before the onset of the wet season;

Conduct of Form 1 inspections

(b) provide more guidelines on the appropriate number of trees to be covered by a Form 1 inspection (e.g. by specifying the maximum number of trees to be covered); (c) for the problematic trees identified by a Form 1 inspection but without undergoing Form 2 inspections, remind tree management departments to properly record these trees and the remedial measures taken on them;

Conduct of Form 2 inspections

(d) provide more guidelines to help tree management departments decide whether and when it is necessary to conduct a Form 2 inspection;

TMO's monitoring of the TRA implementation

- (e) consider including non-core tree management departments in the TMO's monitoring of the TRA implementation; and
- (f) consider focusing more of the TMO's efforts on conducting risk-based site inspections for identifying problematic trees.

3.40 Audit has also *recommended* that the Director of Leisure and Cultural Services should:

- (a) take measures to improve the effectiveness of Form 1 inspections (see Case 3 in para. 3.20); and
- (b) rectify the non-compliances with the internal checking requirements relating to tree inspections (see para. 3.38).

Response from the Administration

3.41 The Secretary for Development agrees with the audit recommendations. He has said that the TMO has been inviting non-core departments for audit checking of TRA inspections forms since August 2014. The EPD, the Home Affairs Department and the Food and Environmental Hygiene Department have agreed to submit TRA inspection forms for the TMO's audit. These 3 departments accounted for around 90% of trees maintained by non-core departments. The other 10% will be covered step by step.

3.42 The Director of Leisure and Cultural Services agrees with the audit recommendations. She has said that the LCSD will make every endeavour to address the issues requiring follow-up actions to enhance the standards and overall cost-effectiveness of efforts on tree management. She has also said that:

- (a) in the 2014 TRA, the LCSD has conducted Form 1 inspections on 320,000 trees in Category I zones. Among the 5,800 Form 1s, 70% of them covered less than 200 trees. That said, the LCSD will adhere to new guidelines to be issued by the TMO including the maximum number of trees to be covered by a Form 1 inspection; and
- (b) the LCSD will remind its staff to adhere strictly to:
 - (i) the TRA Guidelines to conduct Form 2 inspections on trees requiring continuous monitoring; and
 - (ii) the internal checking requirements in the LCSD's Horticultural Guidelines.

Maintenance of old and valuable trees

3.43 In February 2003, in response to the concerns of some LegCo Members on the protection of OVTs, the then ETWB asked the LCSD and the AFCD to draw up a register of OVTs (the OVT Register). In September 2004, the ETWB issued Technical Circular (Works) No. 29/2004 on the registration and preservation of OVTs (the OVT Guidelines). According to the OVT Guidelines, trees eligible for inclusion in the OVT Register have to be located on government land within built-up areas or tourist attraction spots in village areas and must satisfy one or more of the following criteria:

- (a) trees of particularly old age (e.g. aged 100 years or above);
- (b) trees of large size (e.g. with a trunk diameter of at least 1 metre);
- (c) trees of precious or rare species;
- (d) trees of cultural, historical or memorable significance; or
- (e) trees of outstanding form.

Photograph 5 shows an OVT at the former Central Government Offices.

Photograph 5

An OVT at the former Central Government Offices



Source: LCSD records

3.44 According to the OVT Guidelines, tree management departments have to draw up procedures to identify trees to be nominated for inclusion in the OVT Register. The LCSD or the AFCD will assess nominated trees (Note 12). The LCSD is also responsible for maintaining the Register.

Note 12: The LCSD is responsible for those nominated trees located on allocated government land and unallocated government land along public roads, while the *AFCD* is responsible for those located on unallocated government land not along public roads.

3.45 The Government's policy is to provide priority protection to OVTs. According to the OVT Guidelines:

- (a) departments have to conduct regular inspections on OVTs under their maintenance;
- (b) the LCSD and the AFCD have to conduct regular audit inspections on all OVTs, at least once every year; and
- (c) the removal of an OVT is prohibited. If it is unavoidable, the LandsD's approval is required. The LandsD has to seek the DEVB's endorsement before giving the approval.

3.46 When the OVT Register was set up in September 2004, there were 527 OVTs. Since then, 71 OVTs had been removed due to natural causes or typhoon damage, and 36 new OVTs had been added. As at June 2014, there were 492 OVTs. They were under the maintenance of 16 departments. The majority of OVTs (349 or 71%) were under the LCSD's maintenance.

3.47 **Public safety risks posed by OVTs.** Some OVTs are at the senescence stage. They are weak in terms of growth and recovery and are susceptible to environmental factors such as strong winds and heavy rains as well as pests and diseases. Some recent tree collapse cases, including the fatal incident in Stanley (2008) and the incident at Park Lane Shoppers' Boulevard (2012), involved OVTs. The proper maintenance of OVTs is therefore important not only for their preservation but also for effective tree risk management.

Form 2 inspections of OVTs

3.48 The OVT Guidelines have specified inspection requirements for OVTs (see para. 3.45). Besides, according to the TRA Guidelines, the maintenance department of an OVT will conduct at least one Form 2 inspection on the OVT a year. However, according to the LCSD's Horticultural Guidelines, the LCSD will conduct at least two Form 2 inspections on an OVT under its maintenance a year. There is a difference in the number of Form 2 inspections required to be conducted on an OVT.

3.49 In view of the public safety risks posed by OVTs (see para. 3.47), there is merit in conducting Form 2 inspections of OVTs on a more frequent basis.

Audit recommendation

3.50 Audit has *recommended* that the Secretary for Development should consider standardising the frequency of conducting Form 2 inspections of OVTs to at least twice a year in the TRA Guidelines.

Response from the Administration

3.51 The Secretary for Development agrees with the audit recommendation.

Tackling brown root rot disease

Threat to tree safety posed by the spread of BRR disease

3.52 BRR disease on trees is caused by an aggressive fungal pathogen (Phellinus noxius). The symptoms of early stage of BRR infection are not easily observed because the infected area is mostly below ground. Trees infected with BRR disease may experience a rapid deterioration of health and structural conditions. There is currently no effective cure to the disease. In the 2012 tree collapse case at Park Lane Shoppers' Boulevard (see para. 1.10(b)), the OVT concerned was infected with BRR disease. More recently, in the August 2014 tree collapse case at Mid-levels (see para. 1.10(d)), the collapsed tree was also suspected to have been infected with BRR disease.

3.53 BRR disease mainly spreads through root-to-root contact, infected wood debris in soil, and the dissemination of basidiospores from fruiting bodies. In Hong Kong, a number of tree species such as *Bombax ceiba*, *Delonix regia*, and *Ficus microcarpa* have been confirmed to have contracted the disease. Due to the highly pathogenic and infectious nature of Phellinus noxius, it is most important to prevent the local spreading of BRR disease in Hong Kong, particularly from a tree risk management point of view.

3.54 In this regard, the TMO has promulgated guidelines on BRR disease (the BRR Guidelines), and has implemented a vigilant surveillance programme. The programme comprises three components, namely: (a) a management strategy for preventing the local spread of BRR disease; (b) a system for reporting suspected cases; and (c) procedures for proper removal of infected trees.

Management strategy for preventing the spread of BRR disease

3.55 The TMO has adopted a dual-pronged management strategy for preventing the spread of BRR disease, comprising precautionary and preventive measures. Precautionary measures include proper tree planting and maintenance practices. Preventive measures include reducing the sources of BRR inoculum and controlling the spread of BRR disease by removing the diseased parts. Preventive measures to be taken on infected trees include the following:

- (a) for infected non-OVTs in Category I risk zones, they should be removed entirely, including stumps, wood debris and associated fine roots in soil medium; and
- (b) for infected OVTs, they should be quarantined to avoid local spreading. The structural stability of an infected OVT should be ascertained by conducting a thorough assessment for follow-up actions as follows:
 - (i) for a structurally stable OVT at the early stage of BRR infection, treatment efforts can still be made by creating a physical barrier (by digging a trench) and using chemicals to retard local spreading. The tree should be closely monitored on at least a quarterly basis and should be placed in the Tree Register (see para. 4.15); and
 - (ii) for a structurally unstable OVT, it should be removed for protecting public safety and preventing the spread of BRR disease.

Dealing with BRR cases

3.56 Starting from 2012, the TMO has integrated the surveillance for BRR cases with the annual TRA exercise. In conducting tree inspections, special attention has to be paid to identifying suspected BRR cases. For suspected BRR cases identified, tree management departments have to report them to the TMO for further verification and recommendation on follow-up actions. Table 4 shows the numbers of cases reported and cases with BRR infection confirmed by the TMO since March 2010 up to 15 August 2014.

Table 4

BRR infection	OVTs	Non-OVTs	Total
	(No.)	(No.)	(No.)
Confirmed to be infected (Note)	30 (23)	88 (69)	118 (92)
Confirmed to be not infected	6	12	18
Under investigation	1	4	5
Total	37	104	141

BRR cases reported to the TMO (15 August 2014)

Source: Audit analysis of DEVB records

Note: The figures in brackets represented the number of trees which had already been felled or collapsed.

3.57 Table 4 shows that, of the 88 non-OVTs with BRR infection confirmed, 69 had already been removed and 2 were under trial treatment. For the 17 (88 - 69 - 2) remaining non-OVTs, Audit noted that:

- (a) 16 of them were maintained by government departments. According to the BRR Guidelines, they had to be removed. Some of the cases had been outstanding for a long period (up to 4 months) since confirmation of BRR infection. According to the TMO, in some cases, the departments concerned had experienced difficulties in engaging contractors to remove the infected trees. Also, in some cases, since infection signs were not obvious, the TMO had advised the departments concerned to retain the trees for further observation. Audit considers that, if decisions to remove infected trees have been made, the TMO needs to urge the departments concerned to take actions in a timely manner. Infected trees pending removal should also be included in the Tree Register (see para. 4.14) to enhance transparency and community surveillance; and
- (b) one of them was on private land. The TMO had advised the land owner (via the LandsD) of the BRR infection and the need to take necessary follow-up actions. The TMO had been tracking the case and, as at August 2014, the land owner was arranging to remove the infected tree.

Providing more information on BRR disease

3.58 In dealing with BRR disease, the TMO has commissioned research studies (by local universities) and provided training to government and contractor staff. It has also provided training and produced an education video on the identification, management and control of BRR disease to the general public to promote community surveillance on BRR disease.

3.59 Audit considers that, to promote public awareness and community surveillance, there is a need to provide more information on BRR disease. As shown in Table 4, of the 30 OVTs infected with BRR disease, 7 (30 - 23) had not been removed. Regarding these 7 infected OVTs, the information that they had decay or fungal diseases was disclosed in the Tree Register. The information that they had been infected with BRR disease was however not disclosed in either the Tree Register or the OVT Register.

Audit recommendations

- 3.60 Audit has *recommended* that the Secretary for Development should:
 - (a) for non-OVTs infected with BRR disease, urge the responsible departments to remove the trees in a timely manner, in order to remove the threat to public safety and prevent the spread of the disease; and
 - (b) provide more information on BRR infection in the Tree Register and the OVT Register for infected OVTs, and in the Tree Register for infected non-OVTs, in order to promote public awareness and community surveillance.

Response from the Administration

3.61 The Secretary for Development agrees with the audit recommendations.

PART 4: MANAGEMENT INFORMATION SYSTEMS AND DATABASES

4.1 This PART examines the setting up and the use of tree management systems and databases by the TMO and tree management departments. Audit has found room for improvement in the following areas:

- (a) Tree Management Information System (TMIS) (paras. 4.2 to 4.13);
- (b) Tree Register (paras. 4.14 to 4.27); and
- (c) Tree Failure Database (paras. 4.28 to 4.34).

Tree Management Information System

4.2 The Task Force recommended the adoption of the dual-approach TRA (see para. 1.7(c)). In this connection, the Task Force also recommended setting up a database of problematic and important trees for recording systematically and comprehensively their conditions for appropriate follow-up actions. To take forward this recommendation, the TMO, with the assistance of the Efficiency Unit (EU) as the Project Manager, engaged a contractor to set up the TMIS. The contract was let in November 2011, with a system set-up cost of \$8 million. The objectives of the TMIS are:

- (a) to provide a central database of trees maintained by tree management departments (not limited to problematic and important trees);
- (b) to support the dual-approach TRA, and to facilitate automatic scheduling and management of inspection tasks and follow-up actions;
- (c) to facilitate central monitoring, coordination, data analysis and reporting; and
- (d) to facilitate sharing of information among the TMO and tree management departments.

4.3 In December 2012, the TMIS was formally rolled out. The TMIS comprises the following components:

- (a) a central database of trees maintained by tree management departments.
 In addition to basic tree data (e.g. species, size, location and responsible department), the database also contains data on activities taken on trees;
- (b) an "activities scheduling and workflow management" component for supporting the daily operation of tree management departments; and
- (c) a "business intelligence and analytics" component for work progress reporting, data analysing, and predictive modelling on tree failure probability.

Problems with the current TMIS

4.4 In using the TMIS, tree management departments expressed concerns about the gaps between the expected and the actual functions provided. Examples of such gaps included:

- (a) arising from the design of the TMIS, area zones (with spatial data) had to be created in the system first before trees located therein could be input to the system. However, the creation of area zones was laborious. This affected tree management departments' efficiency and willingness in using the TMIS;
- (b) there was a need for a more sophisticated search function (e.g. according to lamp post or slope number);
- (c) there was a need for transferring tree inventories between departments but this function was not provided; and
- (d) many departments outsourced their tree maintenance work and there was a need for contractor staff to have direct access to the system but this access was not provided.

4.5 Furthermore, there were also problems with the setting up of the TMIS. During the three months' nursing period (from December 2012 to March 2013) following the commencement of the live run, the system was unstable and there were many system malfunction incidents. In the event, the nursing period was extended for another three months (from March to June 2013). However, system malfunction incidents still happened and the number of unresolved system bugs started to accumulate. In the circumstances, the TMO and the EU did not have confidence in the contractor in properly maintaining the TMIS. As at September 2014, the TMO was planning to engage another contractor to carry out a project to enhance the TMIS.

4.6 In preparing for the enhancement project, a Business Process Reengineering Study was conducted (by the EU) in June 2014, and a funding application was made to the Office of the Government Chief Information Officer. In September 2014, the funding approval (for \$6.05 million) was granted. The live run of the enhancement project was targeted at November 2015. The scope of the TMIS enhancement project would cover the following areas:

- (a) conversion of data on area zones and trees located therein for a number of tree management departments (e.g. the LCSD, the HyD and the ArchSD) to update the TMIS database. Data conversion was required since the TMIS database was neither complete nor up-to-date;
- (b) expansion of existing functions (e.g. the search function); and
- (c) development of new functions (e.g. the function for transferring tree inventories between departments).

System development issues encountered

4.7 The TMO and the EU encountered system development issues in implementing the TMIS. There were gaps between the expected and the actual functions provided (see para. 4.4), and also system bugs and instability issues (see para. 4.5). The tree management departments also encountered difficulties in transferring tree data to the TMIS. As at May 2014, most of the tree management departments had not yet fully transferred their tree data to the TMIS (see Appendix D).

4.8 Appendix D shows that only three of the eight major tree management departments (i.e. the AFCD, the CEDD and the HD) had fully transferred their tree data to the TMIS. For the other five departments, of the 1.42 million trees maintained by them, only 0.4 million (28%) had their tree data transferred. Some of them had only transferred a small percentage of their tree data. In particular, the HyD had transferred only 0.4% of its tree data to the TMIS. Audit noted that there were problems with data format and creation of area zones. Nevertheless, as the TMIS is intended to be a central database of tree inventory for tree management, monitoring and analysis, it is most important that all tree data of tree management departments should be transferred to the TMIS before it can provide the intended functions.

4.9 Audit also noted that there were data inconsistencies between the TMIS and the departmental systems maintained by some departments (e.g. the LCSD and the HyD). After two rounds of data conversion in March and June 2012, there were still data inconsistencies between the TMIS and the departmental systems. It was because the departments continued to update tree data in their departmental systems after data conversion but without promptly updating the TMIS. A third round of data conversion was planned for in the enhancement project. Data inconsistencies will undermine the effectiveness of the TMIS. Audit considers that effective measures need to be taken to ensure data synchronisation if tree management departments continue to run their departmental systems and the TMIS in parallel (Note 13).

4.10 Besides, Audit also noted that the TMIS could help identify the responsible departments for handling tree complaints, and it was provided with a complaint handling function. However, this function was not put to use. In October 2012, the TMO and the major tree management departments decided that this function would not be used for the time being. The major reason was to avoid duplication in complaint data handling by the TMIS and the complaint handling systems of the departments. Nevertheless, the absence of tree complaint data in the TMIS will undermine its effectiveness in the identification and tracking of problematic trees.

Note 13: According to the EU, it and the TMO had sought to prevent the further proliferation of departmental systems by requiring that all tree-related system functions should be built on a common platform of the TMIS.

4.11 Audit considers that the TMO needs to promptly complete the TMIS enhancement project in order to deliver the expected functions and reap the benefits of the TMIS. The TMO also needs to review the system development issues encountered previously and draw lessons therefrom for reference by the enhancement project.

Audit recommendations

- 4.12 Audit has *recommended* that the Secretary for Development should:
 - (a) take measures to promptly complete the TMIS enhancement project in order to deliver the expected functions and reap the benefits of the TMIS;
 - (b) review the system development issues encountered previously and draw lessons therefrom for reference by the enhancement project;
 - (c) ensure that tree management departments are committed to using the TMIS for keeping complete and up-to-date tree data, and avoid data inconsistencies between the TMIS and departmental systems; and
 - (d) review and modify, when appropriate, the complaint handling function of the TMIS with a view to putting it to effective use.

Response from the Administration

4.13 The Secretary for Development agrees with the audit recommendations.

Tree Register

4.14 After the June 2010 fatal tree collapse case in Sha Tin (see para. 1.10(a)), the TMO set up and published (on its website) a "Tree Register" of problematic and important trees in July 2010 (see Figure 3). The objectives of the Tree Register are:

- (a) to promote community surveillance. In view of the large number of trees in the community and the fact that the health and structural conditions of trees change in step with their normal lifecycles as well as changes in their external environment, community surveillance can assist in monitoring the conditions of trees in the community; and
- (b) to enhance the transparency of the Government's tree risk management work.

Figure 3

Tree Register on the TMO's website (www.trees.gov.hk)

f2= Location	樹木品電 Species	載木状況 Condition	改善指流 Mitigation Measures	其件t Others	視察部門 Inspection Department 上次檢查日期 Last Inspection Date 教士型記号號碼 Three Register No. [徳木登記冊號碼 Department Reference no.]	相曰片 Photo	地調 Location Map
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4.15 According to the TMO's guidelines on the updating of the Tree Register (the Tree Register Guidelines), the Tree Register includes the following three categories of trees:

- (a) problematic trees identified in the TRA which have mitigation measures to be completed;
- (b) problematic trees reported in complaint/referral cases which require continuous monitoring, and problematic trees publicised in the media; and
- (c) important trees which require regular monitoring, including all OVTs and stonewall trees.

4.16 The Tree Register provides relevant information on trees included therein (e.g. location, species, health and structural conditions, mitigation measures, responsible department and date of last inspection). Besides, responsible departments attach standard labels to trees included in the Tree Register. Once the mitigation measures of problematic trees have been completed and the conditions have been assessed to be satisfactory, the trees can be deleted from the Register. Table 5 shows the changes in the number of trees in the Register.

Table 5

Tree category	As at July 2010	Trees added	Trees deleted	As at July 2014	Net change	Percentage of net change
	(a)	(b)	(c)	(d) = (a)+(b)-(c)	(e)=(b)-(c)	(f) = $[(e)/(a)] \times 100\%$
OVTs	504	20	32	492	-12	-2%
Stonewall trees (other than OVTs)	398	45	93	350	-48	-12%
Problematic trees	252	129	273	108	-144	-57 %
Overall	1,154	194	398	950	-204	-18%

Number of trees in the Tree Register (July 2010 to July 2014)

Source: Audit analysis of DEVB records

Additions of trees to the Tree Register

4.17 As shown in Table 5, the number of trees in the Tree Register had dropped by 18% from 1,154 to 950 over four years since it was set up in July 2010. In particular, the number of problematic trees (i.e. other than OVTs and stonewall trees) had decreased by 57% from 252 to 108. Audit noted that there was a tendency for tree management departments not to add trees to the Tree Register (see paras. 4.18 and 4.19).

4.18 **Problematic trees identified in the TRA.** According to the Tree Register Guidelines, problematic trees identified in the TRA which have mitigation measures to be completed should be added to the Tree Register. Audit noted that as at the completion of the 2013 TRA (i.e. 31 May 2013), there were 2,719 problematic trees (other than OVTs and stonewall trees) which had undergone Form 2 inspections and had mitigation measures to be completed. However, of these 2,719 trees, only two (0.1%) were added to the Tree Register. According to the TMO, one reason could be that mitigation measures of many of these trees were completed in a short time and they were then not required to be added to the Tree Register.

4.19 *Problematic trees reported in complaint/referral cases.* According to the Tree Register Guidelines, problematic trees reported in complaint/referral cases which require continuous monitoring should be added to the Tree Register. However, there were cases in which this guideline was not followed. Case 4 shows an example.

Case 4

A problematic tree requiring continuous monitoring was not added to the Tree Register

1. On 10, 12 and 17 June 2014, the Integrated Call Centre (1823 Hotline) received a total of four complaints (from different complainants) on a tree located at Li Po Lung Path in Kennedy Town. According to the complainants, the tree was in poor conditions and might collapse. The complaints were referred to the responsible department (i.e. the LCSD). According to LCSD records, a Form 1 inspection of the tree was conducted on 20 January 2014. The tree was assessed to be in fair conditions and no Form 2 inspection was conducted.

2. Upon receipt of the complaints, the LCSD inspected the tree and found that it was affected by soil contamination. The LCSD took mitigation measures (i.e. soil improvement and pruning of withered twigs and leaves) on 18 June 2014. In its replies to the complainants, the LCSD stated that it would closely monitor the tree and the last resort would be to remove it if it could not recover.

3. In response to Audit enquiries, in July 2014, the LCSD said that it inspected the tree biweekly and observed that it was recovering gradually. The LCSD also said that a Form 2 inspection had not been conducted and the tree had not been added to the Tree Register.

Audit comments

4. Audit considers that when the problematic tree was assessed in June 2014 to be requiring continuous monitoring (see para. 2 above):

- (a) a Form 2 inspection should have been conducted according to the TRA Guidelines (see paras. 3.7 and 3.8). A Form 2 inspection would help identify the appropriate mitigation measures; and
- (b) the tree should have been added to the Tree Register according to the Tree Register Guidelines (see para. 4.15). If it had been the case, a label would have been attached to the tree (see para. 4.16), and the public would have been aware that mitigation measures were to be completed. It could obviate the need to lodge repeated complaints by members of the public.

Source: LCSD records

4.20 Audit considers that the TMO needs to take measures to ensure that problematic trees identified in the TRA or reported in complaint/referral cases are duly added to the Tree Register (e.g. by regularly reminding tree management departments to follow the Tree Register Guidelines).

Deletions of trees from the Tree Register

4.21 According to the Tree Register Guidelines, when mitigation measures have been completed and conditions have been assessed to be satisfactory, responsible departments have to propose to the TMO to delete the trees concerned from the Tree Register. The TMO will consider the proposals and make the deletions.

4.22 As at 31 July 2014, there were 108 problematic trees in the Tree Register. In examining the Tree Register, Audit noted that for 6 (6%) trees, mitigation measures had been completed and conditions had been assessed to be satisfactory for quite some time already (ranging from 3 to 8 months). These trees should have been deleted from the Tree Register. Audit considers that the TMO needs to take measures to ensure that trees no longer problematic are deleted from the Tree Register in a timely manner.

User-friendliness of the Tree Register and tree labels

4.23 The Tree Register, as it appears on the TMO's website, comprises 18 files of tree records (one file for each of the 18 Districts). Tree records are displayed in alphabetical order by responsible department. The Tree Register is not equipped with a search function (while the OVT Register maintained by the LCSD is so equipped). Hence, searches for trees based on certain criteria (e.g. location, species, and responsible department) cannot be carried out. Audit considers that the TMO needs to enhance the user-friendliness of the Tree Register by equipping it with a search function.

4.24 The standard label attached to a problematic tree included in the Tree Register currently only displays limited information (i.e. Tree Register serial number, species, responsible department and enquiry telephone number). Audit considers that the standard label needs to display more prominently additional information (e.g. the fact that mitigation measures of the tree are to be completed). The TMO needs to review the content of the standard label to promote community surveillance, and consider putting up a warning sign where necessary.

Review of the Tree Register

4.25 The Tree Register has been operating for four years since July 2010. There is a need for the TMO to conduct a review of the Tree Register to assess whether its objectives have been achieved and to identify areas for improvement.

Audit recommendations

- 4.26 Audit has *recommended* that the Secretary for Development should:
 - (a) take measures to ensure that the Tree Register provides a complete and up-to-date list of problematic trees with mitigation measures to be completed, e.g. by making required additions and deletions to the Register in a timely manner; and
 - (b) conduct a review of the Tree Register to assess whether its objectives have been achieved and to identify areas for improvement, including:
 - (i) enhancing the user friendliness of the Tree Register; and
 - (ii) reviewing the content of the standard label attached to a problematic tree included in the Tree Register to see if it is desirable to display additional information more prominently, and consider putting up a warning sign where necessary.

Response from the Administration

4.27 The Secretary for Development agrees with the audit recommendations.

Tree Failure Database

4.28 The TMO, making reference to international practices, set up a centralised Tree Failure Database in July 2010 for internal data collection and analysis. The objective is to collect information of tree failures from tree management departments with a view to analysing systemic issues to help prevent recurrence of similar failures. The information collected will facilitate the Government to better design and plan greening policies and to make tree management strategies more sustainable.

4.29 According to the TMO's guidelines on reporting tree failures (Note 14), tree management departments:

- (a) should use a Tree Failure Report Form to report a tree which:
 - (i) collapsed due to natural causes; or
 - (ii) was removed due to poor health or structural problems; and
- (b) might use a summary form to report a large number of trees which collapsed due to inclement weather (e.g. typhoon and rainstorm).

Building up of the Tree Failure Database

4.30 As at June 2014, the Tree Failure Database recorded 2,034 failure cases, comprising 1,560 (77%) detailed cases reported via the Tree Failure Report Form, and 474 (23%) simplified cases reported via the summary form. Table 6 shows the building up of the Tree Failure Database since it was set up in July 2010.

Note 14: The guidelines were mentioned in the TMO's progress report submitted to the LegCo Panel on Development in May 2011, and tree failure analysis report submitted to the Expert Panel on Tree Management (see also para. 4.32).

Table 6

Building up of the Tree Failure Database (July 2010 to June 2014)

Year	Number of cases added
2010 (July to December)	28
2011	65
2012	1,007
2013	847
2014 (up to June)	87
Total	2,034

Source: DEVB records

4.31 Audit noted the following:

- (a) as shown in Table 6, the number of cases added to the Tree Failure Database in a year varied widely. According to the TMO, the weather conditions of a year (e.g. whether there were severe typhoons) had a strong bearing on this number;
- (b) tree management departments generally only reported tree failure cases in which the trees collapsed (partly or wholly) and were then removed. They generally did not report cases in which the trees were removed due to poor health or structural problems. Upon enquiry, the TMO informed Audit that the relevant guidelines had been revised in September 2014 to exclude reporting of trees removed due to poor health or structural problems. This revision was in line with international practices; and

(c) some departments expressed concerns about the efforts and difficulties in using the Tree Failure Report Form (see para. 4.29(a)) to report tree failures. They also requested a Chinese version of the Report Form for the use by their frontline staff.

Making better use of the Tree Failure Database

4.32 In early 2012, the TMO carried out an analysis on the 77 tree failure cases captured by the Tree Failure Database as at 30 November 2011. The analysis report was discussed by the Expert Panel on Tree Management (EPTM — Note 15) at its meeting held in February 2012. The TMO stated in the report that it would build up the Tree Failure Database so that it was large enough to be statistically significant. The TMO would analyse the data to identify systemic issues in relation to tree failures and share the lessons learnt with tree management departments. Audit considers that the TMO needs to continue to monitor the building up of the Tree Failure Database with a view to making better use of it.

Audit recommendations

- 4.33 Audit has *recommended* that the Secretary for Development should:
 - (a) review the need for modifying the Tree Failure Report Form (e.g. by providing a Chinese version) to facilitate tree management departments to report tree failures; and
 - (b) continue to monitor the building up of the Tree Failure Database with a view to making better use of it.

Response from the Administration

- 4.34 The Secretary for Development agrees with the audit recommendations.
- **Note 15:** The EPTM is chaired by the Head of the GLTMS and comprises local experts and experts from outside Hong Kong. The role of the EPTM is to advise the Government on policy and operational issues concerning tree management as well as the preservation of individual trees (including OVTs).

PART 5: TRAINING AND COMMUNITY INVOLVEMENT

5.1 This PART examines the Government's efforts in improving training and community involvement relating to tree management, and suggests measures for improvement.

Training on tree management

Planning of tree management training

5.2 The Task Force Review recognised that tree management (particularly TRA) was a professional task, and training would be essential to ensure that the Government had adequate quality staff at managerial, supervisory and frontline levels to carry out tree management work. The Task Force recommended that a Training Committee should be set up to plan staff training in a comprehensive, strategic and continuing manner.

5.3 In May 2010, the DEVB set up the Training Committee on Greening, Landscape and Tree Management (the Training Committee). The Training Committee oversees the formation and the implementation of a training plan for government staff to facilitate them to discharge greening, landscape and tree management duties professionally. It is chaired by the responsible Deputy Secretary for Development (Works) and comprises 13 members from the GLTMS and tree management departments.

5.4 In 2012, the GLTMS compiled a competence matrix for tree management work, listing out the skill sets required for the three levels of staff (i.e. frontline, supervisory and managerial staff) after consulting tree management departments and taking into account overseas experiences. The competence matrix was endorsed by the Training Committee at its second meeting held in May 2012.

5.5 In 2013, the GLTMS carried out a survey on government staff to ascertain the skill sets already acquired. The survey results were reported to the Training Committee at its third meeting held in March 2014, as follows:

- (a) two departments (i.e. the LCSD and the AFCD) carried out tree work mainly by in-house staff, while other departments outsourced tree work. The skill set required for frontline staff was applicable to the LCSD and the AFCD only. The two departments provided in-house training to their frontline staff;
- (b) in general, most of the staff in tree management departments had already acquired the skill sets required for them through training provided or arranged by the Government. There were no significant training gaps but only minor ones; and
- (c) prior to the setting up of the TMO, there were few training courses on tree management. With the setting up of the TMO and new initiatives on tree management, tree management courses had increased substantially in the market.

5.6 At its third meeting, the Training Committee endorsed the tree management training plan for the period 2014 to 2016 prepared by the GLTMS. The training plan consisted of the following major elements:

- (a) the TMO would enhance training programmes in respect of training gaps identified in the 2013 survey (see para. 5.5(b)), e.g. pruning work, site supervision, occupational safety and health, and management of pests and diseases;
- (b) the TMO had coordinated with tertiary education institutions for providing diploma programmes targeted at supervisory and managerial staff. It would continue with such coordination and promote the development of degree programmes; and
- (c) contractors had the responsibility to ensure that their staff were qualified to perform tree management work competently and safely. When relevant training courses were available in the market, contractors should subscribe to them. Nevertheless, given that contractors had to be well versed with the Government's new initiatives, the TMO would make the relevant training available to contractor staff at the initial stage when it was not readily available in the market.

Provision of tree management training by the TMO

5.7 In general, the training provided by the TMO could be categorised as follows:

- (a) training on TRA. This was the core training course provided by the TMO and included the 2-day "Comprehensive Tree Risk Assessment and Management Training Course";
- (b) training on occupational safety and health in arboriculture;
- (c) training on essential areas of tree management (e.g. tree species identification, and management of pests and diseases); and
- (d) advanced training delivered by external parties. The TMO sponsored government staff to attend this category of training (e.g. diploma courses delivered by tertiary education institutions).

5.8 The training provided by the TMO could also be categorised according to the mode of delivery as follows:

- (a) training delivered by TMO staff. In 2013, there were 21 such courses
 (e.g. courses on TRA) with 4,383 participants. These courses accounted for the bulk of the training provided by the TMO. According to the TMO, these courses were delivered by TMO staff because they were not currently available in the market; and
- (b) training delivered by external parties. In 2013, there were 11 such courses (e.g. courses on occupational safety and health in arboriculture) with 696 participants.

5.9 Audit noted that the TMO used considerable staff resources (both professional and administrative staff resources) in delivering training courses. In 2013, the 21 training courses delivered by the TMO took up 35 working days, representing 14% of the about 250 working days in that year. Most of the TMO's professional staff were directly involved in the delivery. Besides, considerable

amount of administrative work was also incurred in the delivery (including the recruitment and selection of attendees, class administration, collecting feedback, etc.).

5.10 The TMO is an office with a small establishment (comprising 15 professional and 2 technical staff and 5 administrative staff who are shared with the GLO). The delivery of tree management training by the TMO will draw on the TMO's scarce staff resources, leaving fewer resources available for other important duties, including the formulation of tree management policies and guidelines, and the monitoring of the work of tree management departments (e.g. TRA implementation).

5.11 Audit understands that due to turnover of tree management staff (both government and contractor staff), tree management training needs to be provided regularly. On the other hand, this audit review has highlighted various areas where improvements need to be made regarding tree management in general and enhancing tree safety in particular. The TMO needs to focus its limited staff resources on the core duties and accord priority to matters requiring urgent attention.

5.12 Audit considers that there is a need for the TMO to review the long-term arrangement for it to deliver tree management training. For example, the TMO may consider confining training to areas where it has unique expertise (e.g. the treatment of BRR disease). It may also consider using other alternative modes of delivering training, such as:

- (a) seeking the assistance of the Civil Service Training and Development Institute in delivering training courses, particularly in doing the associated administrative work;
- (b) webcasting the training sessions and uploading the training videos onto its website; and
- (c) engaging training service providers. In engaging service providers for delivering training courses, the TMO can specify the exact requirements regarding course contents, qualifications of trainers, target attendees, etc. to ensure that the planned training objectives are achieved.

Audit recommendation

5.13 Audit has *recommended* that the Secretary for Development should review the long-term arrangement for the TMO to deliver tree management training in a more sustainable manner, including the use of other alternative modes of delivering training.

Response from the Administration

5.14 The Secretary for Development agrees with the audit recommendation.

Community involvement in greening and tree preservation

Government's community involvement activities

5.15 The Task Force considered that the community could play a significant role in helping to preserve trees. The Task Force recommended, among other things, that:

- (a) the Government should strengthen public education on greening and tree preservation. Particularly, the Government should foster an attitude of care for trees across the territory by the community, and appeal to private owners to take proper care of trees within their private lots; and
- (b) the LCSD should expand its Green Volunteer Scheme by inviting prominent figures in the community to participate in the Scheme as Green Ambassadors, and recruiting more Green Volunteers to enhance the surveillance of trees in their respective districts.

5.16 In March 2011, the Government reorganised the Community Involvement Committee on Greening (CICG — then under the purview of the Home Affairs Bureau) and put it under the purview of the DEVB. The CICG advises the Government on matters relating to community involvement activities on greening. It is chaired by the Permanent Secretary for Development (Works) and comprises 8 official and 11 non-official members. 5.17 Community involvement activities on greening are organised by the DEVB and other bureaux and departments. In 2013, 61 such activities, with a total of about 1.4 million participants, were organised. Broadly speaking, these activities aim to achieve the following objectives:

- (a) promoting public appreciation of greening and trees;
- (b) enlisting public support in promoting greening and tree management; and
- (c) enhancing knowledge of greening and tree management.

5.18 The DEVB oversees community involvement activities on greening. The GLTMS leads particular initiatives where its professional expertise is required or cross-departmental efforts are involved. The GLTMS also monitors the effectiveness of the Government's community involvement activities on greening. For example, it will conduct a series of surveys to track public views on the Government's greening work (with the first one completed by September 2013), and will compile performance indicators (such as the number of Greening Partners (see para. 5.22) and the number of event participants).

LCSD's Green Volunteer and Green Ambassador Schemes

5.19 In 2003, the LCSD set up the Green Volunteer Scheme to promote community involvement in greening. Under the Scheme, Green Volunteers (GVs) are recruited from the general public on a district basis, and are given basic training on the caring of plants and trees. GVs are invited to serve in carrying out greening activities. As at May 2014, there were 5,100 GVs, of which 950 (19%) were active members.

5.20 In April 2010, the LCSD set up the Green Ambassador Scheme, as recommended by the Task Force. Under the Scheme, local prominent figures are invited to join as Green Ambassadors (GAs) to help promote community involvement in greening and recruit GVs. As at August 2014, there were 355 GAs, most of them were District Council Members.

5.21 Audit reviewed the volunteer services arranged by the LCSD for GVs and noted that they were mainly related to the Hong Kong Flower Show, the North District Flower Bird Insect and Fish Show, community planting days and inspection of OVTs. Broadly speaking, GVs carried out general horticultural activities rather than activities targeted at tree care. In view of growing public concerns about tree safety (particularly relating to roadside trees), the LCSD needs to leverage on these schemes (e.g. by mobilising the large number of GVs for active participation) to better promote tree care in general and community surveillance of roadside trees in particular. Audit noted that the GLTMS would implement an "Adopt a Tree Movement" to promote community surveillance of trees (see also para. 5.22(c)). Audit considers that the LCSD may help better implement the Movement by encouraging the large number of GVs to actively participate in it.

DEVB's "Be Our Greening Partner" Campaign

5.22 In May 2013, the GLTMS launched the "Be Our Greening Partner" (BOGP) Campaign (see Photograph 6), as a core programme of its community involvement activities. Under the BOGP Campaign, people from all walks of life will be proactively engaged to foster appreciation and care of Hong Kong's greenery. Regarding the implementation of the Campaign, Audit noted the following:

- (a) the key event in 2013 was the launch of the Greening Partner Charter. The Charter is a list of "good acts" on greening matters that subscribers to it should strive to observe. These good acts include the surveillance and reporting to the Government of problematic trees. As at September 2014, about 560 organisations and 5,800 individuals had subscribed to the Charter and become Greening Partners;
- (b) the key event in 2014 was the "Our Favourite Old and Valuable Trees Contest". The objective of the contest was to foster community appreciation and care of OVTs; and
- (c) the forthcoming key event would be the "Adopt a Tree Movement". The objective of the movement was to promote community surveillance of trees.

Photograph 6

Opening ceremony of the BOGP Campaign cum Tree Seminar (May 2013)



Source: DEVB records

5.23 As can be seen from paragraph 5.22(a) and (b), the BOGP Campaign initially focused on fostering a culture of appreciation and care of Hong Kong's greenery. Audit considers that, in view of growing public concerns about tree safety, the BOGP Campaign needs to further promote community surveillance from a tree safety perspective (particularly relating to roadside trees) in future. In this regard, Audit welcomes the GLTMS's latest initiative to implement the "Adopt a Tree Movement" (see para. 5.22(c)) which may help promote community involvement in enhancing tree safety.

Audit recommendations

5.24 Audit has *recommended* that the Secretary for Development should, in view of growing public concerns about tree safety, make more efforts in promoting community surveillance from a tree safety perspective (particularly relating to roadside trees).

5.25 Audit has also *recommended* that the Director of Leisure and Cultural Services should:

- (a) leverage on the LCSD's Green Volunteer and Green Ambassador Schemes (e.g. by mobilising the large number of GVs for active participation in community involvement activities) to better promote tree care in general and community surveillance of roadside trees in particular; and
- (b) step up efforts to encourage the large number of GVs to actively participate in the Government's community involvement activities, including the forthcoming "Adopt a Tree Movement" under the BOGP Campaign implemented by the GLTMS.

Response from the Administration

5.26 The Secretary for Development agrees with the audit recommendation in paragraph 5.24.

5.27 The Director of Leisure and Cultural Services agrees with the audit recommendations in paragraph 5.25. She has said that the LCSD will:

- (a) explore measures to leverage on its Green Volunteer and Green Ambassador Schemes to better promote tree care and encourage wider participation in tree care and surveillance; and
- (b) continue to foster collaboration with the GLTMS to disseminate information on community involvement activities to GAs and GVs, including but not limited to the forthcoming "Adopt a Tree Movement".

PART 6: WAY FORWARD

6.1 This PART explores the way forward for the Government's efforts in enhancing tree safety.

Progress made since 2008 in improving tree management

6.2 The 2008 tragic tree collapse incident in Stanley has led to drastic changes in the way the Government deals with tree management. In March 2010, the TMO was set up with the main task of minimising the threat of problematic trees to public safety. More than four years after its setting up, the TMO has made progress in improving tree management. In October 2012, the LegCo Panel on Development was informed of the work progress in the implementation of the tree management policy in various areas, including:

- (a) enhancing TRA;
- (b) raising the professional standard of tree management by:
 - (i) building a professional team in the TMO;
 - (ii) enhancing training for tree management personnel in departments;
 - (iii) seeking experts' view;
 - (iv) developing practice guidelines and conducting researches; and
 - (v) setting up an inventory of trees;
- (c) enhancing public education and community involvement;
- (d) enhancing the care of OVTs; and
- (e) enhancing the tree complaint mechanism and the emergency response system.

6.3 Audit welcomes the Government's efforts in enhancing tree safety and the improvements made so far. However, notwithstanding the Government's efforts since the setting up of the TMO, tree collapse incidents have still occurred from time to time, including a few fatal cases (see para. 1.10). It appears that more needs to be done in further enhancing tree safety. Audit considers that the DEVB needs to continue to keep the LegCo Panel on Development informed, on a regular basis, of the progress in the implementation of tree management policy, particularly regarding the Government's efforts in enhancing tree safety.

Areas for improvement

6.4 This audit review has identified a number of areas for improvement relating to the Government's tree management work, including:

- (a) Coordinating the work of tree management departments (see PART 2). In particular, there are grey areas relating to the delineation of maintenance responsibilities of roadside trees among different tree management departments (see paras. 2.18 to 2.26). The ad hoc maintenance approach adopted by the LandsD under the Technical Circular for trees on unallocated government land, especially those on roadside, poses a threat to public safety (see paras. 2.42 to 2.45). Besides, a strategy for better coordinating the work of non-core tree management departments is needed (see paras. 2.6 to 2.10);
- (b) Tree risk assessment (see PART 3). In particular, more detailed guidelines are needed to guide tree management departments to conduct TRA inspections effectively to identify problematic trees (see paras. 3.18 to 3.28). Besides, there is a need to standardise the frequency of conducting Form 2 inspections of OVTs. More information on BRR infection needs to be provided for public information;
- (c) Management information systems and databases (see PART 4). In particular, the centralised TMIS encountered system development issues and an enhancement project is underway (see paras. 4.2 to 4.11). Besides, there is a need to review the Tree Register for promoting community surveillance (see paras. 4.14 to 4.25). There is also a need to monitor the building up of the Tree Failure Database (see paras. 4.28 to 4.32); and

(d) *Training and community involvement (see PART 5).* The TMO needs to review the long-term arrangement for it to deliver tree management training (see paras. 5.7 to 5.12). Besides, the TMO needs to make more efforts in promoting community surveillance from a tree safety perspective (see para. 5.23).

6.5 Audit considers that the DEVB needs to take on board the observations and recommendations in this Audit Report in further strengthening the Government's efforts in enhancing tree safety.

Addressing safety risks of trees on private land

6.6 The work of the TMO primarily focuses on trees maintained by government departments. For trees on private land, their maintenance responsibilities rest with the private land owners concerned. The recent tragic tree collapse incident at Mid-levels involved a tree on private land (see para. 1.10(d)). This incident has aroused public concerns about safety risks posed by trees on private land and the need for legislation for mandatory tree inspection and maintenance by private land owners to address such risks.

6.7 In its Report of June 2009, the Task Force had examined the existing legislation with provisions applicable to tree management and deliberated on whether it was necessary to introduce a new tree ordinance or amend any existing ordinance. The Task Force noted that:

- (a) under common law, the duty of care owed by private land owners would require them to inspect trees on their land to ensure that such trees would not pose a potential danger to people or properties. Failure to discharge such a duty will result in possible liability for negligence and nuisance;
- (b) since the 1970's, the Government had included tree preservation clauses in land leases as a lease condition. According to these clauses, the lessee was required to apply to the LandsD for consent before felling of and interfering with any trees on his lot;

- (c) since the 1980's, the Government had included landscape clauses in land leases to encourage landscaping of private lots and proper management of plants located thereon; and
- (d) for cases of redevelopment requiring planning approval or lease modification, there would be opportunities to impose conditions for tree preservation purposes.

6.8 The Task Force concluded that there was no need to introduce any legislative change at the moment and efforts should instead be channelled to the administrative means proposed to improve coordination, enhance tree risk management, upgrade expertise and involve the community. It would be better to see how the administrative measures work in reality before considering the need for legislative amendments. As stated in the Task Force Report, the Government would keep the matter under review having regard to the operational experience of the new improvement measures.

- 6.9 Regarding the maintenance of trees on private land, Audit has noted that:
 - (a) there is no requirement for private land owners to conduct regular maintenance and inspections on trees on their land, while trees on government land are subject to annual TRA (see para. 3.4) by the respective tree management departments;
 - (b) when problematic trees are identified by the Government (e.g. during the TMO's tree patrols) and the situation does not reflect any breaches of the land leases concerned, the Government can only advise the tree owners (normally via the LandsD) to take necessary actions. Currently, there is no legislative backing for taking enforcement actions; and
 - (c) only a small percentage of land leases have incorporated the tree preservation clause (see para. 6.7(b)).

6.10 In view of the recent incident (see para. 1.10(d)) and public concerns about the safety risks of trees on private land, Audit considers that the DEVB needs to critically review whether there is a need for tree legislation to regulate, among other things, the proper maintenance of trees on private land. However, introducing new legislation is a long-drawn process, requiring substantial time and resource inputs. Meanwhile, there is a need to devise effective measures that can bring forth improvements more readily, including for example:

- (a) placing more emphasis on private trees in community involvement activities on greening (e.g. promoting surveillance of private trees by their owners);
- (b) publicising information and materials that can assist private land owners in maintaining their trees; and
- (c) exploring the feasibility of employing other existing regulatory measures (e.g. the Code of Practice on Building Management and Maintenance issued under the Building Management Ordinance (Cap. 344)) to impose some form of standards and guidelines for compliance by private land owners regarding tree maintenance.

Audit recommendations

- 6.11 Audit has *recommended* that the Secretary for Development should:
 - (a) continue to keep the LegCo Panel on Development informed of the progress in the implementation of tree management policy, particularly regarding the Government's efforts in enhancing tree safety;
 - (b) take on board the observations and recommendations in this Audit Report in further strengthening the Government's efforts in enhancing tree safety;
 - (c) critically review whether there is a need for legislation for mandatory tree inspection and maintenance of trees on private land by private land owners; and

(d) before any new legislation is introduced, take effective measures that can more readily help improve tree safety on private land.

Response from the Administration

6.12 The Secretary for Development agrees with the audit recommendations.
Appendix A (paras. 1.4, 2.5 and 3.11 refer)

Trees maintained by major tree management departments (December 2013)

Department	Estimated number of trees maintained	Number of staff involved (Note 1)	Estimated contract expenditure in 2013 (Note 2) (\$ million)
HyD	630,000	57	74
LCSD	513,600	222	215
ArchSD	200,000	5	67
HD	100,000	35	24
WSD	49,400	14	5
AFCD	36,000 (Note 3)	87	0
CEDD	27,300	22	10
DSD	24,100	16	5
LandsD	(Note 4)	12	73
Total	1,580,400	470	473

Source: DEVB records

- *Remarks:* These figures were reported to LegCo in connection with the examination of the 2014-15 *Estimates of Expenditure.*
- *Note 1:* These figures included staff involved in day-to-day tree management on a full-time or part-time basis. For the LCSD, the number of staff included full-time staff only.
- *Note 2:* Only the lump-sum figure was reported to LegCo. The contract expenditure for each department was estimated on a pro rata basis by the duration of contract period. Also, some contracts were not solely for tree maintenance. For example, the LCSD hired horticulture contractors for tree maintenance as well as maintenance of other vegetation.
- *Note 3:* There are a large number of trees in country parks which are under the purview of the AFCD. The figure here only included the number of trees in areas with intensive use in country parks (e.g. picnic areas).
- *Note 4:* There are a large number of trees on unallocated government land (including those in the countryside) which are under the purview of the LandsD, but it does not keep an inventory of such trees.

Greening, Landscape and Tree Management Section Organisation chart (extract) (August 2014)



Source: DEVB records

Note: The three teams also provide support on tree management matters to the respective tree management departments under their purview, and contribute staff resources to form the Central Tree Support Team (see also para. 3.32).

Appendix C (paras. 2.6 and 2.7 refer)

		A	s at 31 Marc	h
	Department	2012	2013	2014
1	Environmental Protection Department	160,012	160,900	160,147
2	Correctional Services Department	6,083	6,159	6,113
3	Hong Kong Police Force	3,237	3,442	3,513
4	Government Property Agency	4,458	4,430	3,495
5	Fire Services Department	1,860	2,101	2,087
6	Home Affairs Department	1,825	1,675	1,741
7	Education Bureau	8	1,319	1,416
8	Hong Kong Observatory	674	658	658
9	Department of Health	644	634	623
10	Food and Environmental Hygiene Department	1,760	350	503
	Sub-total	180,561	181,668	180,296
	No. of trees maintained by other departments	1,177	1,379	1,955
	Total number of trees	181,738	183,047	182,251
	Total number of non-core departments	20	24	27

Number of trees maintained by non-core departments (2012 to 2014)

Source: Audit analysis of DEVB records

Appendix D (paras. 4.7 and 4.8 refer)

Tree records in the TMIS (May 2014)

Department	Estimated number of trees maintained (Note 1)	Number of tree records transferred to the TMIS	Percentage of tree records transferred to the TMIS
AFCD	41,827 (Note 2)	41,827	100%
CEDD	31,416	31,416	100%
HD	93,847	93,847	100%
Sub-total	167,090	167,090	100%
LCSD	513,600	377,255	73%
DSD	24,100	4,541	19%
WSD	49,400	7,497	15%
ArchSD	200,000	8,378	4%
HyD	630,000	2,441	0.4%
Sub-total	1,417,100	400,112	28%
Total	1,584,190	567,202	36%

Source: DEVB records

- Note 1: For the AFCD, the CEDD and the HD, the actual numbers of trees maintained as at May 2014 were available upon full transfer of tree records to the TMIS. For other departments, the figures were based on the estimated numbers of trees maintained as at December 2013.
- *Note 2:* There are a large number of trees in country parks which are under the purview of the *AFCD*. The figure here only included the number of trees in areas with intensive use in country parks (e.g. picnic areas).

Appendix E

Acronyms and abbreviations

AFCD	Agriculture, Fisheries and Conservation Department
ArchSD	Architectural Services Department
Audit	Audit Commission
BOGP	Be Our Greening Partner
BRR	Brown root rot
CEDD	Civil Engineering and Development Department
CICG	Community Involvement Committee on Greening
DEVB	Development Bureau
DSD	Drainage Services Department
EPD	Environmental Protection Department
EPTM	Expert Panel on Tree Management
ETWB	Environment, Transport and Works Bureau
EU	Efficiency Unit
GAs	Green Ambassadors
GLO	Greening and Landscape Office
GLTMS	Greening, Landscape and Tree Management Section
GVs	Green Volunteers
HD	Housing Department
HyD	Highways Department
LandsD	Lands Department
LCSD	Leisure and Cultural Services Department
LegCo	Legislative Council
OVTs	Old and valuable trees
TMIS	Tree Management Information System
ТМО	Tree Management Office
TRA	Tree risk assessment
WMCG	Works and Maintenance Committee on Greening
WSD	Water Supplies Department

CHAPTER 7

Development Bureau Lands Department Buildings Department

Provision of public open space in private developments

Audit Commission Hong Kong 30 October 2014 This audit review was carried out under a set of guidelines tabled in the Provisional Legislative Council by the Chairman of the Public Accounts Committee on 11 February 1998. The guidelines were agreed between the Public Accounts Committee and the Director of Audit and accepted by the Government of the Hong Kong Special Administrative Region.

Report No. 63 of the Director of Audit contains 10 Chapters which are available on our website at http://www.aud.gov.hk

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PROVISION OF PUBLIC OPEN SPACE IN PRIVATE DEVELOPMENTS

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PROVISION OF PUBLIC OPEN SPACE IN PRIVATE DEVELOPMENTS

Executive Summary

1. The policy of incorporating public open spaces (and other public facilities) into a private development has been in force since 1980, with the objectives of achieving integrated design, optimisation of land use and better site planning and utilisation; and synchronising the availability of the public facilities with the envisaged population intake of private development projects.

2. The Development Bureau (DEVB) is responsible for setting and reviewing policies on provision of public open spaces (POSs). The Lands Department (Lands D) and the Buildings Department (BD) are responsible for monitoring compliance with relevant land lease conditions and conditions under some Deeds of Dedication, including the provision and maintenance of public open spaces, by the pertinent developers or building owners. As of August 2014, according to related information uploaded onto the websites of the Lands D and the BD, there were respectively 60 and 2 public open spaces in private developments (POSPDs).

3. In recent years, the subject of POSPD has attracted significant public attention where some media reports have covered cases involving denial of public access, tight restrictions on use and other management problems relating to POSPDs. Since March 2008, the Lands D and the BD have uploaded onto their websites POSPD Lists for information of the public. Furthermore, the DEVB promulgated in January 2011 the POSPD Design and Management Guidelines for reference by property owners, management agencies and the general public. From January 2011 to August 2014, seven new POSPDs had been provided in non-industrial developments. The Audit Commission (Audit) has recently conducted a review of the provision of POSPDs with a view to identifying areas for improvement.

POSPD accessibility

4. *Some POSPDs had low patronage*. Audit Survey of 36 POSPDs found that 10 POSPDs recorded low levels of patronage, each of which on average only recorded less than 10 visitors during a two-hour period. In Audit's view, owing to the low patronage of some POSPDs, the objective of providing POSPDs for recreational uses to serve the needs of local residents and the general public who can enjoy and use the surroundings in a leisurely manner may not have been fully achieved (paras. 2.2 to 2.4 and 6.4).

5. *Sites not being easily accessible.* According to the 2011 POSPD Design Guidelines, a POSPD should be provided at a location having clear visibility, and at grade or on the ground level. However, Audit site inspections revealed that POSs 5, 6B and 7 were located on podiums high above the ground level and members of the public needed to walk up long staircases or take passenger lifts before reaching the sites. Audit also noted that two passenger lifts provided at POS 7 to facilitate public access to the public open space had ceased to be provided for public use since 2002. However, the Lands D could not compel the building owners to resume the passenger lift service for public use because such a requirement had not been included as a land grant condition. Audit Survey further found that POSs 5, 6B and 7 had low patronage, on average recording only 4, 1 and 7 visitors during a two-hour period (paras. 2.4(b) and 2.7 to 2.14).

6. Uninterrupted access not provided. The land leases of the pertinent POSPDs generally require owners of POSPDs to provide uninterrupted public access to the sites. However, Audit's seven site inspections at POS 1 from January to June 2014 found that a gate at the entrance to the POSPD was closed with a metal chain which was locked up by a padlock. Furthermore, Audit's five site inspections at POS 31 from January to August 2014 found that the gates at Entrance A to the related development and Entrance B to POS 31 were both closed and locked with a notice requesting visitors to make a phone call for assistance from the management office. The site access arrangement at POSs 1 and 31 may be at variance with the pertinent lease condition of permitting public access to and use of the open areas. Audit Survey also found no visitor at POS 1 and on average only one visitor at POS 31 during a two-hour period (paras. 2.4(b) and 2.15 to 2.23).

POSPD management and maintenance

7. **POSPDs not always properly maintained.** According to the DEVB, pertinent building owners are generally required under the related land leases to manage and maintain POSPDs to the satisfaction of the Lands D. However, Audit site inspections in July 2014 revealed that POS 4 was covered with long grass and fallen tree branches, and some furniture and fittings at POS 15C were not properly maintained (paras. 3.2 to 3.6).

8. *Short opening hours of POSPDs.* According to the 2011 POSPD Management Guidelines, the daily opening hours for public access to a POSPD should not be less than 13 hours. However, Audit examination revealed that the daily opening hours of six POSPDs under the purview of the Lands D were less than 13 hours, ranging from 6 to 12 hours. In Audit's view, the short opening hours would have reduced the public's enjoyment of the public facilities (paras. 3.10 and 3.18).

9. *Public use of POS 40 being obstructed.* POS 40 comprising POS 40A and POS 40B was under the purview of the BD. However, Audit site inspection in August 2014 revealed that construction materials were stored inside POS 40A and various equipment items inside POS 40B, both of which had obstructed public use of the public facilities (paras. 3.22 to 3.24).

Dissemination of POSPD information

10. **POSPDs provided before 1980 not included in POSPD Lists.** According to the DEVB, owing to the small number of POSPDs commissioned before 1980, the POSPD Lists compiled by the Lands D and the BD only include POSPDs which have been open for public use since 1980 (para. 4.3).

11. *Sites not included in POSPD Lists.* According to the DEVB, the promulgation of POSPD Lists would help enhance public awareness of the existence and locations of POSPDs, and facilitate public monitoring of POSPD owners in fulfilling their responsibilities of managing and maintaining the POSPDs. However, Audit examination revealed that 3 POSPDs which had been open for public use for 7 to 14 years were not included in the Lands D's POSPD List because certificates of

compliance had not been issued for the related developments, and 2 other POSPDs which had been open for public use for 6 and 7 years were also not included in the POSPD Lists compiled by the Lands D and the BD, owing to the absence of related conditions in the land leases or deeds of dedication (paras. 4.5 to 4.9).

12. **POSPD provision not legally enforceable.** Audit noted that POS 35 involved an unrestricted lease and the owner was not required to provide a POSPD under the lease. Furthermore, an undertaking of the developer of POS 35 made to the Government for providing a POSPD was not legally enforceable (para. 4.11).

13. *Many visitors to parks and gardens not aware of nearby POSPDs.* Audit Survey found that over half of the visitors to the majority of the public parks and gardens located close to POSPDs were not aware of the existence of the nearby POSPDs. This reflects that the pertinent POSPDs are not well known in the local districts (paras. 4.19 and 4.21).

Provision of POSPD facilities

14. *Majority of POSPD owners not aware of the POSPD Guidelines.* Audit examination revealed that, of the 30 POSPDs covered in Audit opinion survey, the owners' incorporations and management companies of the majority of the POSPDs were not aware of the existence of the POSPD Design and Management Guidelines, with only two owners' incorporations indicating that they were aware of the matter (para. 5.12).

15. *Some POSPDs not provided with essential facilities.* Audit site inspections at 30 POSPDs revealed that 12 POSPDs were not provided with sheltered seating, 3 POSPDs were not provided with rubbish bins, 4 POSPDs were not provided with barrier-free-access facilities and 2 POSPDs were not provided with any sign board or notice board at the entrances (paras. 5.17 and 5.19).

16. Lands D instruction in conducting annual inspections not fully complied with. Audit examination revealed that, in 2013, three of the six pertinent District Lands Offices of the Lands D did not fully comply with the Lands D's instructions in conducting annual POSPD inspections (paras. 5.27 to 5.31).

Way forward

17. *Planning conditions not being fulfilled*. Audit examination revealed that the planning conditions of some private developments approved by the Town Planning Board could not be fulfilled or are not legally enforceable, mainly attributable to the fact that the planning conditions had not been incorporated into the related land leases. Examples include POS 7 and POS 35 (see paras. 5 and 12 above). Audit considers it unsatisfactory that the planning conditions of the Town Planning Board relating to the provision of POSPDs in some developments cannot be fulfilled or are not legally enforceable. The provision of information to the Town Planning Board about the uncertainty of fulfilling such planning conditions would have helped it in making informed decisions on development plans (paras. 6.7 and 6.8).

Audit recommendations

18. Audit recommendations are provided in the respective sections of this Audit Report. This Executive Summary only highlights the key recommendations. Audit has *recommended* that the Administration should:

POSPD accessibility

- (a) in providing comments on development plans submitted to the Town Planning Board for approval in future, refrain as far as practicable from recommending the acceptance of development proposals having POSPDs located in areas not easily accessible by the public (para. 2.24(a));
- (b) in accepting or requiring the provision of POSPDs in developments in future, take measures as far as practicable to ensure that the related requirements are capable of being enforced or realised through imposition of suitable conditions in the leases, or submission of legally-enforceable undertakings by the developers (para. 2.24(b));
- (c) take actions to require pertinent building owners to keep gates at entrances to POSPDs open during the POSPD opening hours according to related lease conditions (para. 2.25);

POSPD management and maintenance

- (d) take actions to strengthen Lands D inspections of POSPDs and require the pertinent building owners to properly maintain the sites and repair broken furniture and fittings in a timely manner (para. 3.8);
- (e) take actions to require the pertinent building owners to extend the daily opening hours of POSPDs to not less than 13 hours (as specified in the 2011 POSPD Management Guidelines) when opportunities arise in future (para. 3.19(a));
- (f) arrange BD inspections to prevent POSPDs from being occupied for private use (para. 3.25);

Dissemination of POSPD information

- (g) take actions to include POSs 32, 33 and 34 and other POSPDs not having been issued with certificates of compliance in the Lands D's POSPD List (para. 4.15(a));
- (h) include, as far as practicable, all known POSPDs which are required to be provided under related land leases in the POSPD List for public information, irrespective of their year of commissioning (para. 4.15(c));

Provision of POSPD facilities

- (i) take proactive actions to encourage owners' incorporations and management companies concerned to adopt and implement the relevant provisions stated in the 2011 POSPD Guidelines (para. 5.13);
- (j) take actions to encourage the pertinent building owners to provide in POSPDs sheltered seating, rubbish bins, barrier-free-access facilities, sign boards, and essential information on notice boards as far as possible (para. 5.25(a));

- (k) consider erecting appropriate POSPD sign boards and notice boards on nearby government land if pertinent owners refuse to erect such boards at the site entrances (para. 5.25(c)); and
- (1) strengthen actions to ensure that all District Lands Offices comply with Lands D instructions in conducting POSPD inspections (para. 5.32(a)).

Response from the Administration

19. The Administration agrees with the audit recommendations.

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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 In 1980, the Government promulgated a policy of requiring developers to incorporate certain public facilities into private developments at their own costs on sites located within zoning of "Government, Institution or Community (G/IC)" and "Open Space" under the pertinent Outline Zoning Plan (Note 1). Public facilities include public open spaces, G/IC facilities (such as community halls, elderly centres, and schools), pedestrian passages and vehicular accesses (such as walkways, footbridges and rights of way), and public transport terminus. In 1990, the Government extended the policy to cover development sites with zoning of "Comprehensive Development Area". In considering a planning application for a private development on a site located within zonings of G/IC, Open Space or Comprehensive Development Area, the Town Planning Board (TPB) would normally expect that the developer would provide certain public facilities on the site.

1.3 According to the Development Bureau (DEVB), the objectives of incorporating public open spaces (and other public facilities) into a private development are to achieve integrated design, optimisation of land use and better site planning and utilisation, and to synchronise the availability of public facilities including public open spaces with the envisaged population intake of private development projects.

Note 1: Outline Zoning Plans are statutory plans prepared by the Town Planning Board under the Town Planning Ordinance (Cap. 131) to show the land use zonings and major road systems of individual planning scheme areas. They define the land use pattern within planning areas under broad headings such as commercial, residential, industrial, G/IC and Open Space.

Introduction

1.4 The provision of public facilities in private developments for public use may arise under the following circumstances:

Land sale

(a) Government bureaux/departments (B/Ds) may propose to include in the land sale conditions a requirement that the purchaser of the site (or the developer) shall provide and maintain certain public facilities in a development to meet public needs; and

Private development or redevelopment

- (b) where a development or redevelopment requires the planning permission of the TPB (Note 2):
 - (i) the responsible B/Ds may propose the inclusion of certain public facilities therein; or
 - (ii) the developer may propose providing such facilities in the development, as the TPB would take into account such a provision in considering the application.

Such requirements may subsequently be imposed as planning conditions by the TPB in approving planning applications. For a development within a "Comprehensive Development Area" zone, a planning application to the TPB will need to be made in the form of Master Layout Plans. The TPB may impose conditions in approving Master Layout Plans, such as requirements on providing and maintaining certain public facilities in the proposed development for public use. These conditions may be incorporated into the lease conditions if applicable, say when the development is the subject of a new or modified lease.

Note 2: This occurs, for example, when a site falls within or includes some land zoned "G/IC" or "Open Space", or the development is located within a "Comprehensive Development Area" zone.

Objectives of providing public open space

1.5 According to the Hong Kong Planning Standards and Guidelines (HKPSG – Note 3):

- (a) a minimum of 20 hectares of open space should be provided for every 100,000 persons; and
- (b) an open space can be provided for active recreational use (such as a football pitch), or for passive recreational use (such as a park, a garden and a sitting-out area where people can enjoy the surroundings in a leisurely manner).

1.6 In December 2008, the DEVB informed the Panel on Development of the Legislative Council (LegCo) that:

- (a) the policy of incorporating public facilities in private developments for public use had been in force since 1980. It enabled the needed facilities to be provided to the public in a timely and integrated manner through private developments, provided for better planning and optimised the use of limited land; and
- (b) public open space in private developments (POSPDs) are meant for public use and enjoyment. It would also help to meet the acute shortfall of local open space in certain highly built-up or green field areas.

Note 3: The HKPSG, first issued in 1982, is a government manual of criteria for determining the scale, location and site requirements of various land uses and facilities. It includes general guidelines on the provision of open spaces.

Monitoring of provision and maintenance of public open space

1.7 The DEVB is responsible for setting and reviewing policies on provision of public open spaces. For private developments where the respective land leases have included provisions for providing and maintaining public open spaces, the Lands Department (Lands D) is responsible for monitoring compliance with the relevant land lease conditions by the developers, or subsequent owners of the developments who are responsible under the land leases after completion and sale of the developments. Since 2008, the Lands D has instructed its District Lands Offices (DLOs) to conduct annual inspections of POSPDs for checking compliance with the relevant lease conditions. As of August 2014, as recorded in the related POSPD List (Note 4), there were 60 POSPDs (Note 5) under the purview of the Lands D. Among the 60 POSPDs, 42 (70%) were located on private land, 17 (28%) on government land (Note 6), and one (2%) partly located on government land and partly on private land.

1.8 The Buildings Ordinance (Cap. 123) has also provided for the Government (represented by the Buildings Department — BD) to enter with a private developer into a Deed of Dedication to dedicate a piece of private land for public use. Under the Deed, the developer undertakes to provide and maintain a POSPD in the development concerned for public use in exchange for bonus Gross Floor Area or exemption of the POSPD from Gross Floor Area calculation. The BD is responsible for monitoring compliance with the Deed of Dedication by the developer or building owners. As of August 2014, as recorded in the related POSPD List, there were 2 POSPDs under the purview of the BD, both were located on private land.

- Note 4: The Buildings Department's List covered public facilities under its purview, which included two public open spaces dedicated for recreational purposes. According to the DEVB, these two dedicated spaces were also POSPDs. The Lands D's POSPD List covered developments completed after 1980 and issued with certificates of compliance (see paras. 4.4 and 4.14).
- **Note 5:** *These 60 POSPDs were provided under 57 private developments, of which 3 developments each involved 2 POSPDs.*
- **Note 6:** Developers are sometimes required to construct and maintain a public open space located on government land adjacent to a private development. Such open spaces are also included in the Lands D's POSPD List.

POSPD owners' concerns

1.9 In 2008, the subject of POSPD attracted significant public attention where there were more than ten media reports on cases involving denial of public access, tight restrictions on use and other management problems relating to POSPDs. In addition, owners of some developments providing POSPDs also expressed concerns over the financial burden of meeting the costs of managing and maintaining POSPDs. In April and December 2008, the DEVB informed LegCo Panel on Development that:

- (a) the responsibility of managing and maintaining public facilities in private developments for public use was set out in the land leases between the Government and the lessees, and reflected in the Deeds of Mutual Covenant. Such obligations were binding on subsequent assignees (i.e. flat owners upon the development falling into multiple ownerships);
- (b) when flat owners purchased their properties, it was important that such obligations were clearly understood. Such requirements should have been made known to prospective flat purchasers by their solicitors during the property conveyance process; and
- (c) under exceptional circumstances, the Government might consider sympathetically waiving the lease requirement for opening a POSPD on private land for public use based on individual merits of each case and subject to the following considerations:
 - (i) it was legally in order for the Lands D to waive the lease requirement if appropriate;
 - (ii) a request for waiver must be submitted by all owners or through its owners' corporation, and subject to the terms and conditions imposed by the Lands D including the payment of a waiver fee if a waiver was granted;
 - (iii) there was sufficient existing public open space in suitable locations within the district according to the HKPSG. Other considerations including the location and distribution of public open spaces should be taken into account;

- (iv) the agreement of the TPB for amending the relevant plans was obtained if required; and
- (v) there was support from the relevant District Council and Area Committee, in particular their understanding that a piece of POSPD would no longer be open to the public.

Recent developments

- 1.10 In January 2010, the DEVB informed LegCo Panel on Development that:
 - (a) having studied the subject and engaged various stakeholders, the Government considered that the existing policy of incorporating public open spaces into private developments for public use should be upheld, with refinements on the arrangement to guide the future provision and management of POSPDs in light of the problems encountered in implementing the policy over the years;
 - (b) the TPB had agreed that unless there was a current or forecast shortfall of open space in the district having regard to the HKPSG or special circumstances justifying the provision of a public open space as part of a private development project, it should not require or accept the provision of a POSPD in order to prevent the recurrence of the implementation and management problems;
 - (c) for residential developments, the provision of a POSPD on private land should not be required, lest the recurrent responsibilities would be passed onto the small owners. However, it might be desirable to ask developers to build a public open space on adjoining government land as part of the private developments in some harbourfront and green field sites for integrated design and public enjoyment;
 - (d) for commercial or comprehensive developments where there were obvious planning gains and little or no objection for the private developer to construct a public open space on adjacent government land, the Government would retain the flexibility to seek or accept provision of a POSPD for public enjoyment; and

- (e) special circumstances justifying the provision of a POSPD might include:
 - (i) situations where the proposed POSPD was located in a highly built-up area with an acute shortfall of local open spaces;
 - (ii) a planned waterfront promenade adjacent to a private development; or
 - (iii) the POSPD is part and parcel of an Urban Renewal Authority's project for revitalising an area.

1.11 In June 2013, the DEVB further informed LegCo Panel on Development that the Government had taken the following actions with a view to addressing the public concerns over the provision of POSPDs:

- (a) since March 2008, the Lands D and the BD had uploaded onto their websites POSPD Lists for information of the public;
- (b) in 2009, the DEVB commissioned a consultancy study to compile a set of clear and practicable guidelines on the design and management of POSPDs; and
- (c) in January 2011, the DEVB promulgated the "Public Open Space in Private Development — Design and Management Guidelines" (2011 POSPD Guidelines) for reference by property owners, management agencies and the general public.

1.12 Since the promulgation of the 2011 POSPD Guidelines, 7 sites have been sold for commercial, hotel and composite commercial and residential developments involving the provision of POSPDs (which were reflected in the land sale conditions). Among these 7 POSPDs, 2 are located on government land, 4 on private land and 1 straddling government land and private land. Therefore, POSPDs have continued to be provided in some of the private development projects.

Audit review

1.13 The Audit Commission (Audit) has recently conducted a review of the provision of POSPDs, focusing on the following areas:

- (a) POSPD accessibility (PART 2);
- (b) POSPD management and maintenance (PART 3);
- (c) dissemination of POSPD information (PART 4);
- (d) provision of POSPD facilities (PART 5); and
- (e) way forward (PART 6).

Audit has found that there are areas where improvements can be made by the Administration on the provision and monitoring of POSPDs, and has made a number of recommendations to address the issues.

Acknowledgement

1.14 Audit would like to acknowledge with gratitude the full cooperation of the staff of the DEVB, the Lands D, the BD and the Planning Department (PlanD) during the course of the audit review.

PART 2: POSPD ACCESSIBILITY

2.1 This PART examines the accessibility of POSPDs, focusing on POSPD patronage (paras. 2.2 to 2.5) and POSPD accessibility (paras. 2.6 to 2.27).

POSPD patronage

2.2 According to the DEVB, a public open space is provided for public use and enjoyment. Furthermore, as defined in the HKPSG (see para. 1.5):

- (a) an open space (or a recreational open space) is intended primarily for the provision of an outdoor open-air space for active and passive recreational uses serving the needs of local residents and the general public;
- (b) a passive recreational open space, such as a park, a garden, and a sitting-out area, is provided such that people can enjoy the surroundings in a leisurely manner;
- (c) an open space must be planned as a land use in its own right. It should be planned in the right location and should not be the remainder when other land uses have been provided. It should also be accessible, suitable, functional and usable and not merely an area included to make up the required standards; and
- (d) in planning the location of an open space, the visibility of the open space from public roads and accessibility requirements of all segments of the population should be taken into account, including the disabled, to enhance as wide usage as possible. To enhance usage, entrances to an open space should be easily identifiable and accessible.

Audit Survey

2.3 In January 2014, Audit commissioned a local university (Audit Consultant) to assist conducting a patronage survey and an opinion survey (Audit Survey — Note 7) on 30 Public Open Spaces (POSs 1 to 30 — see Appendix A) of the 60 POSPDs under the purview of the Lands D (as recorded in the related POSPD List). Audit Survey involved:

- (a) counting the number of visitors to the POSPDs (patronage survey);
- (b) interviewing POSPD users, related owners incorporations or management companies, and users of nearby parks and gardens (opinion survey); and
- (c) conducting inspections of facilities provided at the POSPDs.

10 POSPDs having low patronage

2.4 Audit Survey found that, among the 30 POSPDs covered in the survey (see Appendix A):

(a) 22 POSPDs recorded reasonable levels of patronage, each of which on average recorded 10 or more visitors during a two-hour period. Among these POSPDs, 6 had high patronage, each of which on average had more than 100 visitors during a two-hour period. Of these 6 POSPDs, 3 (POSs 24, 28 and 29) are located in commercial developments (see Photograph 1 for POS 29); and

Note 7: After conducting a preliminary survey on 60 POSPDs (provided under 57 developments), Audit Consultant classified them into high, medium and low categories based on the number of visitors observed. Among the 18 District Council districts, 4 did not have any POSPD. For each of the remaining 14 District Council districts, at least a POSPD was selected for the survey. For a district having more than 1 POSPD, 1 or more POSPDs were selected, each from different categories.

Photograph 1

POS 29 (August 2014)



Source: Photograph taken by Audit at 11:26 a.m. on 18 August 2014

(b) 8 POSPDs (POSs 1 to 8) recorded low levels of patronage, each of which recorded less than 10 visitors during a two-hour period (see Table 1).

In addition to the 30 POSPDs, Audit also examined one POSPD (POS 31) which had opening hours shorter than 13 hours a day (a standard specified in the POSPD Management Guidelines) and 5 other POSPDs (POSs 32 to 36) which were not included in the Lands D's POSPD List. Audit found that the patronage of POSs 31 and 36 was also low (see Table 1).

Table 1

POSPD	Average no. of visitors in a 2-hour period
POS 1	0
POS 2	1
POS 3	1
POS 4	2
POS 5	4
POS 6 (Note)	5
POS 7	7
POS 8	9
POS 31	1
POS 36	1

POSPDs with low patronage (March to July 2014)

Source: Audit Survey

Note: POS 6 comprises two parts, namely POS 6A and POS 6B. Audit Survey found that, on average during a two-hour period, there were 4 and 1 visitors at POS 6A and POS 6B respectively. 2.5 Audit examination revealed that some POSPDs had low patronage because of one or more of the following reasons:

- (a) sites not being easily accessible (e.g. POSs 5, 6B and 7 see paras. 2.7 to 2.14);
- (b) uninterrupted public access to POSPDs not being fully provided (e.g. POSs 1 and 31 see paras. 2.15 to 2.23);
- (c) short opening hours (e.g. POSs 6B and 31 see paras. 3.10 to 3.18);
- (d) site not being included in POSPD Lists (e.g. POS 36 see paras. 4.9 to 4.13); and
- (e) POSPD sign boards not being erected at entrances (e.g. POSs 4 and 26 see paras. 5.19 and 5.20).

Accessibility

2.6 Among the 10 POSPDs shown in Table 1, with the exception of POS 5 (see para. 2.8), Audit noted that separate public access to POSPDs, which was different from the access provided to residents of the related developments, was provided.

Areas for improvement

Sites not being easily accessible

2.7 According to the POSPD Design Guidelines (see para. 1.11(c)), a POSPD should be provided at a location having clear visibility, and at grade or on the ground level. Audit site inspections revealed that POSs 5, 6B and 7 were located on podiums high above the ground level and members of the public needed to walk up long staircases or take passenger lifts before reaching the sites.

POS 5

2.8 POS 5 occupying an area of about 6,400 square metres (m^2) is located on private land at the podium level of a residential development and on the roof of an MTR station. Visitors to POS 5 need to take passenger lifts (leading to the residential development and POS 5) provided at two entrances to the development (see Photograph 2 for one of the entrances).

Entrance to passenger lift lobby for access to POS 5 (July 2014)

Photograph 2

- Source: Photograph taken by Audit at 3:07 p.m. on 4 July 2014
- Remarks: English translation of the notice:

"Unauthorised persons are not allowed to enter this private place"

POS 6

2.9 POS 6 comprises two sites, one is located on the ground level of a residential development (POS 6A with an area of 920 m²) and another on two podiums (Lower Podium and Upper Podium) where visitors need to walk up some 200 stair steps to reach the sites (POS 6B with a total area of 490 m² — see Photographs 3 to 5). Both POSs 6A and 6B are located on private land.

<image>

Source: Photograph taken by Audit at 4:10 p.m. on 27 June 2014

Some 200 stair steps leading to POS 6B (June 2014)

Photograph 3

Photograph 4

Lower podium of POS 6B (June 2014)



Source: Photograph taken by Audit at 4:13 p.m. on 27 June 2014

Photograph 5

Upper podium of POS 6B (June 2014)



Source: Photograph taken by Audit at 4:15 p.m. on 27 June 2014

POS 7

2.10 POS 7 occupying an area of about 1,400 m^2 is located on private land at Levels 5 and 6 of a residential development which is accessible from local roads (at the same level of the POS site). Visitors to POS 7 from the main road (which is at the ground level of the development) need to take one of the two passenger lifts provided by the related residential development, walk up some 160 stair steps (see Photograph 6), or walk up a steep local road adjacent to the development.

Photograph 6



Stair steps leading to POS 7 from the main road (June 2014)

Source: Photograph taken by Audit at 3:01 p.m. on 25 June 2014
2.11 Audit site inspection on 25 June 2014 found that the two passenger lifts were not in service (see Photograph 7 for one of the passenger lifts). Audit examination of Lands D's records further revealed that the two passenger lifts had ceased to be provided for public use since 2002 (see Case 1).

Photograph 7 Passenger lift on the main road for access to POS 7 (June 2014)



Source: Photograph taken by Audit at 3:03 p.m. on 25 June 2014

Case 1

Suspension of passenger lift service at POS 7 (1987 to 2013)

Date	Particulars		
December 1987	The TPB approved a development plan submitted by a developer for residential development on government land, subject to the provision of a POSPD.		
February 1991	The Lands D granted a land lease for the development.		
December 1991	Taking into account the TPB's comment at its meeting of August 1991 on the development proposal, the developer submitted a revised development plan, which included the installation of two passenger lifts to improve the pedestrian movement between the main road and the local road and facilitate public access to the public open space.		
January 1992	The TPB approved the revised development plan.		
October 1999	The BD issued an occupation permit.		
June 2000	The Lands D issued a certificate of compliance.		
July 2002	In response to a complaint that the two passenger lifts were not open for public use, The Ombudsman's investigation revealed that, as the provision of passenger lifts was not a lease condition, the building owners were not bound to provide the public lift service.		
August 2003	The related owners incorporation posted a notice outside the passenger lifts informing the public that the lift service would be suspended in view of the high maintenance cost.		
September 2003 and February 2004	A Committee of the pertinent District Council expressed disappointment over the suspension of the lift service, and asked the Lands D to request the building owners to resume the lift service.		
March 2004	The Committee wrote to the DEVB (Note) expressing its concerns over the suspension of the lift service.		

Case 1 (Cont'd)

Date	Particulars
April 2004	The DEVB informed the Committee that the Government had no authority to require the building owners to resume the lift service for public use because such a requirement was not a land grant condition.
2004 to 2013	The Lands D had received 11 public complaints concerning the suspension of the lift service.

Source: Lands D records

- Note: Before July 2007, the then Housing, Planning and Lands Bureau was responsible for the policy portfolio of housing, planning and land matters. In July 2007, the DEVB was formed to take over the planning and land policy portfolio. For simplicity, the related Government Bureaux before July 2007 are referred to as the DEVB in this Audit Report.
- 2.12 In October 2014, the Lands D and the DEVB informed Audit that:
 - (a) some of the POSPDs covered in this Audit Report had been completed long time before the promulgation of the 2011 POSPD Guidelines. While some of the POSPDs were considered acceptable at the time of construction, they might not meet current design and provision standards; and
 - (b) regarding POS 7, the provision of the two passenger lifts was approved by the TPB in January 1992, when the related land grant had been executed in February 1991. Therefore the requirement for providing the two passenger lifts could not be imposed as lease conditions.

Audit comments

2.13 Regarding POS 7, Audit noted that the Lands D could not compel the building owners to resume the passenger lift service for public use because such a requirement was not a land grant condition. According to the TPB, the objectives of providing the public passenger lift service were to improve the pedestrian movement between the main road and the local road, as well as to facilitate public access to the public open space. In Audit's view, if the requirement to provide public passenger lift service had been included in the land lease condition of the development concerned, the Lands D could have had the authority to require the building owners to resume the lift service which would help achieve the above-mentioned objectives.

2.14 Table 1 in paragraph 2.4(b) shows that POSs 5, 6 and 7 had low patronage. A possible reason for their low patronage is that they are not located on the ground level (see para. 2.7), and visitors need to walk up long staircases or take passenger lifts to reach the sites. In Audit's view, the related B/Ds need to draw lessons in these cases and refrain from recommending the acceptance of development proposals having POSPDs located on a podium located high above the ground level which is not easily accessible by the public. Moreover, in accepting or requiring the provision of POSPDs in private developments in future, related B/Ds also need to take measures to ensure that related requirements are capable of being enforced or realised through imposition of suitable conditions in the leases, or submission of legally enforceable undertakings by the developers.

Uninterrupted public access to POSPDs not being fully provided

2.15 In general, related land leases require owners of POSPDs to provide uninterrupted public access to the sites. Furthermore, the Lands D has written to the owners' corporations or management companies of the POSPDs included in the Lands D's POSPD List reminding them of their obligations under the leases, including displaying notices informing the public that the facilities are open to the public, setting out the opening hours and ensuring that public access would not be obstructed or unreasonably denied. However, Audit site inspections revealed that uninterrupted public access might not have been fully provided at POSs 1 and 31.

POS 1

2.16 POS 1 occupies an area of $16,200 \text{ m}^2$ and is located on private land of a private development. A footpath is exclusively provided for public access to POS 1. The relevant lease condition of the related development is as follows:

"The public open space together with the footpath shall remain open to public pedestrian traffic at all times."

2.17 From January to June 2014, Audit conducted 7 site inspections at POS 1. In all the inspections, Audit found that a gate at the entrance to the footpath and to POS 1 was closed with a metal chain which was locked up by a padlock. There was also a notice requesting visitors to seek assistance from the management office at the entrance to the development (which required a 5-minute walk from the POSPD entrance) or make a phone call (telephone number provided) for assistance (see Photograph 8).

Photograph 8



Entrance to POS 1 (January 2014)

Source: Photograph taken by Audit at 2:48 p.m. on 15 January 2014

2.18 Audit also noted that, from 2008 to 2011, the Lands D had received 11 complaints regarding the alleged locking up of a gate at the entrance to POS 1. The Lands D's inspections revealed that members of the public could get access to the site by seeking assistance from the management office. In March 2012, the Lands D received another complaint about the north-eastern portion of POS 1 being occupied by the adjoining house owners for private use. In May 2012, the Lands D issued a warning letter to the owner of the development of POS 1 demanding the removal of structures not shown on the approved Layout Plan. In June 2012, the Lands D's inspection found that the unauthorised structures including a pavilion deck and a platform had been removed.

- 2.19 In October 2014, the Lands D informed Audit that:
 - (a) during its annual spot check on 29 November 2013, the gate at the entrance of POS 1 was found open. However, noting that the gate was subsequently locked, the Lands D issued three letters to the owners on 28 February 2014, 1 April 2014 and 28 April 2014 demanding rectification;
 - (b) in May 2014, the management office of POS 1 informed the Lands D that security improvement measures were being implemented to prevent burglaries and the gate had been opened. The Lands D's two surprise checks on 16 and 30 May 2014 found that the gate was open on both occasions; and
 - (c) on 14 July 2014, the Lands D further reminded the owners to open the gate at POS 1. On 21 July 2014, the management company replied that they had done so.

In Audit's view, the Lands D needs to take actions to require pertinent building owners to keep gates at entrances to POSPDs open during the POSPD opening hours to facilitate public access.

POS 31

2.20 POS 31 occupies an area of about 7,000 m^2 and is located on private land. There is an entrance (Entrance A) to the related private development and another entrance (Entrance B) to POS 31. The relevant lease condition of the related development (a recreational centre) reads as follows:

> "The Grantee shall, without levy of any charges, to permit public access to and the use by the public of the open areas together with all outdoor facilities (the said open areas and outdoor facilities are hereinafter collectively referred to as "the Facilities") provided in accordance with the Regulations for Administration and Management for the use of the Facilities (hereinafter referred to as "the Regulations") to be drawn up by the Grantee and to be approved by the Director."

The carparks of the development are open for public use.

2.21 From January to August 2014, Audit conducted 5 site inspections at POS 31. In all the inspections, Audit found that the gates at Entrance A to the development and Entrance B to POS 31 (see Photograph 9) were both closed and locked. There was a notice (see Photograph 10) posting at both Entrances A and B requesting visitors to make a phone call (telephone number provided) for assistance from the management office.

Photograph 9

Entrance B to POS 31 (August 2014)



Source: Photograph taken by Audit at 10:15 a.m. on 20 August 2014

Photograph 10

Notice at Entrance B to POS 31 (July 2014)



Source: Photograph taken by Audit at 3:29 p.m. on 16 July 2014

Remarks: English translation of the notice:

"To whom it may concern: Please contact staff of this centre on (telephone number) for entering and visiting the centre. Apology for any inconvenience caused."

2.22 In October 2014, Audit made a recommendation to the Lands D that it should ascertain whether the requirement for members of the public to call up the management office of POS 31 on each occasion in gaining access to the site is a breach of the pertinent lease condition. In response, the Lands D informed Audit that:

(a) the requirement to call up the management office of POS 31 to open the gate at the entrance to the site as stated in a notice board did not itself amount to an evidence proving that public access was denied; and

(b) whether the requirement for members of the public to call up the related management office in gaining access to the site was a breach of the pertinent lease condition depended on whether the public would be unreasonably denied access after calling up the management office.

Audit comments

2.23 In Audit's view, in order to provide an uninterrupted public access to POSPDs, the Lands D needs to take actions to require pertinent building owners to keep gates at entrances to POSPDs open during the POSPD opening hours according to related lease conditions.

Audit recommendations

2.24 Audit has *recommended* that the Secretary for Development should remind pertinent B/Ds of the need to:

- (a) in providing comments on development plans submitted to the TPB for approval in future, refrain as far as practicable from recommending the acceptance of development proposals having POSPDs located in areas not easily accessible by the public; and
- (b) in accepting or requiring the provision of POSPDs in developments in future, take measures as far as practicable to ensure that related requirements are capable of being enforced or realised through imposition of suitable conditions in the leases, or submission of legally-enforceable undertakings by the developers.

2.25 Audit has *recommended* that, with a view to facilitating public access to POSPDs, the Director of Lands should take actions to require pertinent building owners to keep gates at entrances to POSPDs open during the POSPD opening hours according to related lease conditions.

Response from the Administration

2.26 The Secretary for Development agrees with the audit recommendations in paragraph 2.24. He has said that:

- (a) POSPDs located in areas not easily accessible may be to a certain extent detrimental to public enjoyment of the facilities. The DEVB will consider reminding relevant B/Ds to refrain from recommending the acceptance of development proposals with POSPDs situated on podiums high above ground level and not easily accessible by the public;
- (b) while the Government may still accept or require provision of POSPDs in certain special circumstances, the provision is subject to the POSPD requirements capable of being enforced or realised through suitable conditions imposed in the lease; and
- (c) there may be situations whereby the Government has to choose between accepting a POSPD at a less-than-ideal location, and bearing an acute shortage of open space in the area.

2.27 The Director of Lands agrees with the audit recommendation in paragraph 2.25.

PART 3: POSPD MANAGEMENT AND MAINTENANCE

3.1 This PART examines the management and maintenance of POSPDs, focusing on:

- (a) some POSPDs not being properly maintained (paras. 3.2 to 3.9);
- (b) short opening hours of some POSPDs (paras. 3.10 to 3.20); and
- (c) BD's monitoring of POSPDs (paras. 3.21 to 3.26).

Some POSPDs not being properly maintained

Land lease requirements

3.2 According to a paper submitted to LegCo Panel on Development in April 2008, pertinent building owners in general were required under the respective contractual documents (including land leases) to manage and maintain POSPDs to the satisfaction of the Government (generally the Lands D in case of a land lease). The POSPD Management Guidelines (see para. 1.11(c)) also state that the pertinent building owners should properly maintain and manage POSPDs to enable the public to enjoy the facilities.

Areas for improvement

Some POSPDs not being properly maintained

3.3 Audit site inspections revealed that the sites and some furniture and fittings provided at POSs 4 and 15 were not properly maintained.

POS 4

3.4 POS 4 occupies an area of about $3,600 \text{ m}^2$ and is located on government land. The relevant lease condition of the related development states that the grantee needs to manage, maintain and repair a POSPD provided at the site. Audit site inspection in July 2014 revealed that POS 4 was covered by long grass (see Photograph 11) and fallen tree branches.

Area of publicgen space

Photograph 11 POS 4 covered with long grass

(July 2014)

Source: Photograph taken by Audit at 11:47 a.m. on 4 July 2014

POS 15

3.5 The relevant lease condition of the related development of POS 15 reads as follows:

"The Grantee shall at his own expense at all times maintain the said public open space and the said equipment, plants, and trees in good condition".

3.6 POS 15 comprises three parts, namely POSs 15A, 15B and 15C, which are located on different sites and are on government land. They together occupy a total area of about 4,800 m². Audit site inspections in July 2014 revealed that some furniture and fittings at POS 15C were not properly maintained. For example, a damaged canopy was not repaired (see Photograph 12), a missing drainage cover was not replaced (see Photograph 13), a broken electricity-cable cover was not fixed (see Photograph 14) and potted plants at the entrance were not removed to facilitate public access (see Photograph 15). Audit Survey revealed that, during the 18 hours covered in the survey, no visitor was found at POS 15C. In this connection, on average during a two-hour period, there were 33 visitors to POS 15, making up of 1 visitor to POS 15A and 32 visitors to POS 15B.

Photographs 12 to 15

Furniture and fittings not properly maintained at POS 15C (July 2014)



Damaged canopy not repaired

Photograph 13



Missing drainage cover not replaced



Broken electricity-cable cover not fixed

Photograph 15



Potted plants at entrance not removed

Source: Photographs taken by Audit at around 11 a.m. on 30 July 2014

Audit comments

3.7 In Audit's view, because POSs 4 and 15C were not properly maintained, this adversely affected their attraction and public enjoyment of the facilities. In this connection, on average during a two-hour period, there were 2 visitors to POS 4, and no visitor to POS 15C during an 18-hour period. Furthermore, the damaged canopy, the missing drainage cover and the broken electricity-cable cover at POS 15C might pose safety risks to visitors. Therefore, the Lands D needs to take actions to strengthen inspections of POSPDs under its purview to ensure that the sites are properly maintained. This will help improve the attraction of the POSPDs and its patronage and reduce safety risks to visitors.

Audit recommendation

3.8 Audit has *recommended* that the Director of Lands should take actions to strengthen Lands D inspections of POSPDs and require the pertinent building owners to properly maintain the sites and repair broken furniture and fittings in a timely manner.

Response from the Administration

3.9 The Director of Lands agrees with the audit recommendation.

Short opening hours of some POSPDs

3.10 According to the Leisure and Cultural Services Department (LCSD), apart from some parks, gardens or facilities which are closed during night time due to security and operational reasons, most of the parks and gardens managed by the Department are open 24 hours a day. Nevertheless, according to the POSPD Management Guidelines (see para. 1.11(c)), the daily opening hours for public access to a POSPD should not be less than 13 hours. Audit examination of the opening hours of the 60 POSPDs included in the Lands D's POSPD List revealed that the daily opening hours of six POSPDs were less than 13 hours (see Table 2). The relevant lease conditions on the opening hours of the six POSPDs are shown in Table 3.

Table 2

POSPDs with less that	n 13 daily	opening hours		
(August 2014)				

POSPD	Opening days	Number of daily opening hours
POS 6B (see para. 2.9)	All year round	10.5
POS 17	All year round	12
POS 31	January to March and November to December	6 to 7
	April to October	6 to 8
POS 37B (Note)	All year round	7
POS 38	All year round	11
POS 39	Monday and special days with activities in daytime	0
	Special days with activities in night time	7
	Tuesday, Thursday and Friday	7.75
	Wednesday, Saturday and Sunday	9

Source: Lands D records and Audit analysis

Note: POS 37 comprises two parts, namely POSs 37A and 37B. POS 37A is open for 24 hours a day whereas POS 37B is open for 7 hours a day.

Remarks: Audit Survey did not cover POSs 37, 38 and 39.

Table 3

Lease conditions on opening hours

POSPD	Lease condition on opening hours	
POS 6B	"At all reasonable times"	
POS 17	Opening hours not specified in the lease	
POS 31	"To accord with the grantee's Regulations to be approved by the Director" (Note 1)	
POS 37B	Opening hours not specified in the lease. The grantee was required to provide and maintain the public open space all to the satisfaction of the related B/D (Note 2)	
POS 38	"Daylight hours"	
POS 39	"The extent and manner of use shall have regard to the grantee's requirements for the security of the remainder of the lot and the grantee's requirements for the operation of but shall otherwise be as agreed between the grantee and the Director of Urban Service"	

Source: Lands D records

- Note 1: The "Director" refers to the Director of Lands. According to the Lands D, it had consulted the PlanD before approving the opening hours of POS 31.
- Note 2: At the time of granting the lease in March 1982, the then Regional Secretary for the New Territories was responsible for land matters in the New Territories. Since April 1982, the Lands D has taken over the related responsibilities. According to the Lands D, it had consulted the relevant District Officer on the opening hours of POS 37B.

Areas for improvement

3.11 Of the six POSPDs, Audit selected POSs 6B and 31 for examination.

POS 6B

3.12 The relevant lease condition of the related development of POS 6 reads as follows:

"The public open space after development shall be maintained and managed by the Grantee and made available for public use at all reasonable times."

3.13 POS 6 comprises two parts, namely POSs 6A and 6B (see para. 2.9). POS 6A is open for public use at all times. However, POS 6B is open for public use from 6:00 a.m. to 4:30 p.m. (total 10.5 hours per day).

3.14 Regarding POS 6B, in October 2008, the Lands D sought clarifications from the management agent of the related development about the short opening hours of the site. In November 2008 and January 2009, the management agent informed the Lands D that the opening hours were based on security and management considerations and patronage of the site. The management agent also said that it would review the opening hours regularly to suit the local situation.

POS 31

3.15 The lease condition of the related development of POS 31 states that the opening hours of the site should be based on the Regulations for Administration and Management (see para. 2.20). As prescribed in the Regulations, the opening hours of POS 31 are as follows:

January to March and November to December: 10:00 a.m. to 4:00 p.m. (Monday to Friday) (total 6 hours) 10:00 a.m. to 5:00 p.m. (Saturday, Sunday and public holidays) (total 7 hours)

April to October: 10:00 a.m. to 4:00 p.m. (Monday to Friday) (total 6 hours) 10:00 a.m. to 6:00 p.m. (Saturday, Sunday and public holidays) (total 8 hours) 3.16 In October 1995, the grantee informed the Lands D that shorter opening hours were required for the site because:

- (a) they had difficulty to arrange staff to attend the site without paying overtime allowance; and
- (b) staff would need to attend ceremonies in the morning and evening such that the POSPD could not be open before 10:00 a.m. and after 4:00 p.m.

In July 1997, after consulting the PlanD (Note 8), the Lands D approved the opening hours as prescribed in the Regulations (see para. 3.15).

3.17 According to the Lands D, the six POSPDs with short opening hours were developed years ago, and the opening hours imposed in the land leases were made without any general guidelines. The standard of 13 hours a day was only laid down in the POSPD Management Guidelines promulgated in 2011.

Audit comments

3.18 In Audit's view, the short opening hours of POSs 6B, 17, 31, 37B, 38 and 39 might reduce the public's enjoyment of the public facilities. Therefore, the Lands D needs to take actions to require the pertinent building owners to extend the daily opening hours of the POSPDs to not less than 13 hours as far as possible. The Lands D also needs to draw lessons in the case of POS 31 to refrain from approving the setting of the daily opening hours of a POSPD to less than 13 hours. In the event that the Lands D considers that the owners of a POSPD has strong grounds to limit the daily opening hours to less than 13 hours, it needs to take into account the views of the related District Councils as appropriate before approving the shorter opening hours. In this connection, it is relevant to note that the Government may waive a requirement for opening a POSPD for public use if the support of the relevant District Council has been obtained (see para. 1.9(c)(v)).

Note 8: According to the planning condition, the grantee needs to provide and open the space for public use to the satisfaction of the PlanD.

Audit recommendations

- 3.19 Audit has *recommended* that the Director of Lands should:
 - (a) take actions to require the pertinent building owners to extend the daily opening hours of POSPDs to not less than 13 hours (as specified in the 2011 POSPD Management Guidelines) when opportunities arise in future;
 - (b) remind Lands D staff, in approving the daily opening hours of a POSPD in future, take into account the standard of not less than 13 hours specified in the 2011 POSPD Management Guidelines; and
 - (c) take into account the views of the relevant District Councils before approving any reduction in the daily opening hours of a POSPD to less than 13 hours in future.

Response from the Administration

3.20 The Director of Lands agrees with the audit recommendations. She has said that the Lands D would consider extending the opening hours of the six POSPDs when opportunities arise in future (for example when a grantee applies for lease modification or amending the opening hours of a POSPD).

BD's monitoring of POSPDs

3.21 As of August 2014, as recorded in the related POSPD List, there were two POSPDs under the purview of the BD, one of which was involved in two litigations which had not been finalised. Audit selected the remaining POSPD (POS 40) for review.

Areas for improvement

POS 40

3.22 POS 40 comprises two parts, namely POSs 40A and 40B, which are located on two sites on private land. They together occupy a total area of about 200 m^2 . As stated in the pertinent Deed of Dedication:

- (a) the dedicated areas (namely POSs 40A and 40B) shall be used for public recreational purposes only and vehicles are prohibited from entering or passing over the dedicated areas; and
- (b) the owner shall keep and maintain the dedicated areas free of all obstructions of any nature whatsoever.

3.23 Audit site inspection in August 2014 revealed that construction materials were stored inside POS 40A (see Photograph 16) and various items of equipment, including ladders, trolleys and folded-up chairs, were stored inside POS 40B (see Photograph 17). Both POSs 40A and 40B were installed with gates which were unlocked at the time of Audit inspection.

Photograph 16

Construction materials stored inside POS 40A (August 2014)



Source: Photograph taken by Audit at 4:53 p.m. on 14 August 2014

Photograph 17

Equipment stored inside POS 40B (August 2014)



Source: Photograph taken by Audit at 4:55 p.m. on 14 August 2014

Audit comments

3.24 According to the BD, it has been engaging consultants to conduct periodic inspections of POSPDs under its purview at a frequency of not less than four inspections per year. In Audit's view, the BD needs to inspect POSPDs under its purview to prevent POSPDs from being occupied for private use which would obstruct public use of the public facilities.

Audit recommendation

3.25 Audit has *recommended* that the Director of Buildings should arrange BD inspections of pertinent POSPDs to prevent POSPDs from being occupied for private use.

Response from the Administration

3.26 The Director of Buildings agrees with the audit recommendation. He has said that the BD will follow up the irregularities identified by Audit relating to POS 40 and will continue to arrange inspections to prevent POSPDs under its purview from being occupied for private use.

PART 4: DISSEMINATION OF POSPD INFORMATION

4.1 This PART examines the efforts made by the Lands D and the BD to disseminate information to facilitate public access to POSPDs, focusing on:

- (a) uploading of POSPD Lists onto Lands D and BD websites (paras. 4.2 to 4.18); and
- (b) public awareness of POSPDs (paras. 4.19 to 4.24).

Uploading of POSPD Lists onto Lands D and BD websites

4.2 Since March 2008, for the purpose of enhancing public awareness, the Lands D and the BD have taken actions to disseminate information about POSPDs to the public by compiling POSPD Lists and uploading them onto their websites. The POSPD Lists include information of each POSPD on the related location and area, the level at which the public open space is located, the opening hours, the site plan, and the contact telephone number of the Government office responsible for monitoring the public open space (e.g. the related DLO of the Lands D).

4.3 As of August 2014, the Lands D's POSPD List comprised 60 POSPDs which were provided under 57 private developments and that of the BD consisted of 2 POSPDs. According to the DEVB, owing to the small number of POSPDs commissioned before 1980, the POSPD Lists only include POSPDs which have been open for public use since 1980.

Areas for improvement

3 POSPDs not included in POSPD Lists (for developments not having been issued with certificates of compliance)

4.4 According to the Lands D, it would include a POSPD in its POSPD List after issuing a certificate of compliance (Note 9) for the development concerned. On the other hand, the BD would include a POSPD in its POSPD List after issuing a related occupation permit (Note 10).

4.5 Audit examination revealed that, as of August 2014, owing to the fact that certificates of compliance had not been issued for the related developments, 3 POSPDs which had been open for public use for 7 to 14 years were <u>not</u> included in the Lands D's POSPD List (see Table 4).

Table 4

POSPD	Approximate area (m²)	Land status	Date of issuing occupation permit	No. of years since POSPD opening for public use
POS 32	17,000	Private land	December 2006	7
POS 33	8,900	Private land	February 2001	13
POS 34	7,800	Private land	February 2000	14

POSs 32, 33 and 34 (August 2014)

Source: Lands D records

- **Note 9:** Upon completion of a building and at the request of the developer, the Lands D will conduct checking and issue a certificate of compliance after satisfying that all the relevant obligations under the land lease have been complied with.
- **Note 10:** Upon completion of a building and receipt of an application for an occupation permit, the BD will conduct examination and issue an occupation permit after satisfying that pertinent requirements under the Buildings Ordinance have been complied with.

4.6 The land leases of the developments of POSs 32, 33 and 34 required the land grantees each to provide a POSPD and the owners to make available the POSPDs for public use. In this connection, Audit site inspections revealed that the three POSPDs were open for public use and related sign boards had been erected at the entrances to the sites (see Photograph 18 for an example).

Photograph 18

CD 取 休憩用地 Dable Open Space 開放時間 É との時至晩上10時 Conart for a fire Manged by

Sign board at entrance to POS 32 (April 2014)

Source: Photograph taken by Audit at 7:38 a.m. on 30 April 2014

4.7 In Audit's view, although the Lands D has not issued certificates of compliance for developments comprising POSs 32, 33 and 34, since the three POSPDs have been open for public use for a long time (7 to 14 years), they should have been included in the POSPD List. In this connection, according to DEVB information provided to the LegCo Panel on Development from 2008 to 2013:

(a) access to information and transparency are keys to public accessibility, and that the public has the right to know the existence and location of a POSPD;

- (b) owing to the large number of POSPDs and their scattered locations, public monitoring is the most effective way to ensure POSPD owners fulfill the responsibilities of managing and maintaining the POSPDs, as well as permitting the public to access the POSPDs in accordance with the contract requirements; and
- (c) members of the public are encouraged to inform the relevant DLOs for follow-up actions if it is suspected that owners are not fulfilling their responsibilities.

4.8 In order that the above-mentioned objectives of compiling and publishing POSPD Lists are effectively achieved, the Lands D needs to include all POSPDs under its purview in its POSPD List once they have been opened for public use. The Lands D also needs to take actions to ascertain if there are other similar POSPDs which have not been included in its POSPD List.

2 POSPDs not included in POSPD Lists (for developments not having the related lease conditions)

4.9 Audit examination revealed that, as of August 2014, 2 other POSPDs which had been open for public use for 7 and 6 years were <u>not</u> included in the POSPD Lists compiled by the Lands D and the BD owing to the absence of related conditions in the land lease or deed of dedication (see Table 5).

Table 5

POSPD	Approximate area (m ²)	Land status	Date of issuing occupation permit	No. of years since POSPD opening for public use
POS 35	4,100	Private land	December 2006	7
POS 36	600	Private land	September 2008	6

POSs 35 and 36 (August 2014)

Source: Lands D and PlanD records

4.10 Audit site inspections revealed that related sign boards had already been erected at the entrance to POS 35 and inside POS 36 (see Photograph 19 for the sign board erected inside POS 36).

Photograph 19

Sign board inside POS 36 (May 2014)



Source: Photograph taken by Audit at 1:03 p.m. on 12 May 2014

4.11 According to the Lands D, POSs 35 and 36 had not been included in the POSPD List because the provision of a POSPD was not a requirement under the pertinent land leases (see Cases 2 and 3).

Case 2

POS 35 at Development A (1993 to 2014)

1. POS 35 is part of a commercial and residential development (Development A) located on a site previously zoned as "Other Specified Use" annotated "Bus Depot". In May 1993, the TPB agreed to the developer's proposal of amending the zoning of the site to "Comprehensive Development Area". In December 1993, the site was rezoned to "Comprehensive Development Area" on the draft Outline Zoning Plan. In May 1994, the Planning Brief (Note) issued to the developer stated that:

- (a) a minimum of 1 m² open space per person (population generated by the development) should be constructed at the developer's cost, which should be managed by the developer and open for public use; and
- (b) the open spaces should be provided with active and passive recreational facilities and be conveniently accessible by the public.

2. In May 2004, the TPB approved the developer's application to develop the site for comprehensive commercial/residential uses. One of the conditions of the TPB's approval was that the developer needed to design, provide and maintain a POSPD to the satisfaction of the PlanD or the TPB.

3. In December 2006, in response to the PlanD's comments relating to the developer's application for an occupation permit submitted to the BD, the developer submitted an undertaking to the PlanD, stating that it would comply with the planning approval condition to design, provide and maintain a POSPD. Subsequently in the same month, upon completion of the development and the POSPD by the developer, the BD issued an occupation permit for the development.

4. In September 2008, in response to a media report that POS 35 was not included in Lands D's POSPD List, the Lands D stated that the related land lease was an unrestricted one, and the owner was not required to provide a POSPD under the lease.

Case 2 (Cont'd)

- 5. In October 2014, the Lands D informed Audit that:
 - (a) at the time of considering the planning application, the Lands D had informed the TPB and the PlanD that the subject lease was a virtually unrestricted lease not requiring a lease modification for the development, thus any planning condition should be enforced through the planning regime; and
 - (b) in 2008, the Lands D's in-house legal advice opined that the undertaking of the developer made to the PlanD for providing a POSPD was not legally enforceable (see para. 3).

Audit comments

6. Audit Survey revealed that, on average in a two-hour period, there were 12 visitors to POS 35. The fact that POS 35 was not included in the POSPD Lists may have affected public awareness of the facility.

7. The related land lease was an unrestricted one under which the Government could not require the inclusion of the provision of a POSPD in the lease. In Audit's view, it is unsatisfactory that the TPB's condition of approving the development project involving the provision of a POSPD is not legally enforceable. The relevant B/Ds should seek legal advice before accepting an undertaking from a developer in future (see para. 5(b)).

Source: Lands D records and Audit analysis

Note: A Planning Brief is a statement of planning intention, guidelines and requirements for the development of a site to facilitate the preparation of a Master Layout Plan for submission to the TPB for approval.

Case 3

POS 36 at Development B (2005 to 2014)

1. POS 36 is part of a commercial and residential development (Development B), where the POSPD is located on an "Open Space" zone and the remaining development on a "Residential (Group A)" zone (Note) under the Outline Zoning Plan. Before August 2010, the land lease of the site was an unrestricted one with a "non-offensive trades" clause prohibiting some trades (such as sugar-baker, oilman, butcher, victualler and tavern-keeper) on the lot, and a "rate and range" clause requiring compatibility of the development with neighbouring buildings.

2. In April 2005, the developer submitted a proposal to redevelop the site for providing service apartments. According to the PlanD, since "service apartment" is within the definition of "flat" use which was permitted in "Residential (Group A)" zone, planning permission from the TPB for the redevelopment was not required.

3. In August 2008, in relation to the application for an occupation permit, the developer submitted an undertaking to the BD stating that it would make the open space available for public use. In September 2008, the BD issued an occupation permit for the development.

4. In November 2009, in response to a public enquiry, the DEVB said that:

- (a) according to the building plans approved by the BD for Development B, part of the development was designated as "Open Space";
- (b) the "Open Space" zone was intended primarily for the provision of an outdoor open-air public space for active and/or passive recreational uses serving the needs of local residents as well as the general public; and
- (c) members of the public should be allowed to use this open space within reasonable hours. The space was open to the public.

Case 3 (Cont'd)

5. In August 2010, the Lands D issued a licence for the removal of the restriction of five trades (see para. 1) from the land lease.

Audit comments

6. Audit Survey revealed that, on average in a two-hour period, there was only 1 visitor to POS 36. The low patronage might be attributable to the fact that POS 36 was not included in the POSPD Lists compiled by the Lands D or the BD.

7. Similar to Case 2, the undertaking of the developer (see para. 3) to open public open space for public use may not be legally enforceable.

Source: Lands D records and Audit analysis

- *Note:* Under "Residential (Group A)" zone, commercial use was permitted in the lower three floors of the residential building.
- 4.12 In January 2010, the DEVB informed LegCo Panel on Development that:
 - (a) there were cases where it was not possible to translate related conditions into lease conditions. These included, for instance, where a development was held under an unrestricted lease or no lease modification was required to effect the development. Under such circumstances, the approval conditions given by the TPB could not be enforced through the leases; and
 - (b) for similar cases in future, if a development was governed by an unrestricted lease or the provision of a POSPD could not be practically imposed in the related land lease, B/Ds should not recommend the TPB to accept or require the provision of a POSPD, as the planning gains might not be capable of being realised.

4.13 In Audit's view, the DEVB needs to remind B/Ds to seek legal advice on whether an undertaking proposed by a developer on the provision of a public facility is legally enforceable before accepting the undertaking. Furthermore, in the event that a planning condition cannot be incorporated into a land lease, the responsible B/Ds need to explore other measures to render the planning condition enforceable, such as requesting the developer concerned to submit an application for lease modification for incorporating the condition into the land lease, or submit a legally enforceable undertaking for the purpose.

POSPDs provided before 1980 not included in POSPD Lists

4.14 The POSPD Lists only include POSPDs opening for public use since 1980 (see para. 4.3). According to the Lands D, it has practical difficulties in identifying all POSPDs irrespective of the year of commissioning because of resource constraints. In Audit's view, the Lands D and the BD need to include, as far as practicable, all known POSPDs which are required to be provided under related land leases in the POSPD Lists for public information, irrespective of the year of commissioning (see para. 4.7(a) to (c)).

Audit recommendations

- 4.15 Audit has *recommended* that the Director of Lands should:
 - (a) take actions to include POSs 32, 33 and 34 and other POSPDs not having been issued with certificates of compliance in the Lands D's POSPD List;
 - (b) take actions as far as practicable to include the maintenance and provision of a POSPD for public use in the related land lease if an opportunity for making modifications of the lease arises in future; and
 - (c) include, as far as practicable, all known POSPDs which are required to be provided under related land leases in the POSPD List for public information, irrespective of their year of commissioning.

4.16 Audit has also *recommended* that the Secretary for Development should remind B/Ds of the need to:

- (a) seek legal advice on whether an undertaking proposed by a developer on the provision of a public facility is legally enforceable before accepting the undertaking in future; and
- (b) if a planning condition cannot be incorporated into a land lease, explore the feasibility of other measures to render the planning condition enforceable, such as requesting the developer concerned to submit an application for lease modification for incorporating the condition into the land lease, or submit a legally enforceable undertaking for the purpose.

Response from the Administration

4.17 The Director of Lands agrees with the audit recommendations in paragraph 4.15. She has said that the Lands D will:

- (a) include all known POSPDs in the POSPD List; and
- (b) try to negotiate with the lessees with a view to incorporating the provision of POSPDs in lease modification documents when an opportunity arises in future.

4.18 The Secretary for Development agrees with the audit recommendations in paragraph 4.16.

Public awareness of POSPDs

4.19 For each of the 30 POSPDs selected for Audit Survey, Audit also selected a nearby public park or garden which is within a ten-minute walk from the POSPD concerned to conduct interview with, where available, 30 visitors there. Of these 30 POSPDs, 28 were found to be located near 27 public parks and gardens (i.e. 2 POSPDs did not have nearby parks and gardens).

Areas for improvement

Many visitors to parks and gardens not aware of nearby POSPDs

4.20 Of the 27 public parks and gardens selected for conducting interview with visitors, Audit Survey found that over half of the visitors to 19 parks and gardens were not aware of the existence of the nearby POSPDs (see Table 6).

Table 6

POSPD	No. of visitors (out of 30 visitors) to a park or a garden not aware of nearby POSPD	POSPD	No. of visitors (out of 30 visitors) to a park or a garden not aware of nearby POSPD
POS 21	29 (97%)	POS 10	23 (77%)
POS 24	26 (87%)	POS 11	22 (73%)
POSs 29 and 30	26 (87%) (Note 1)	POS 28	21 (70%)
POS 3	26 (87%)	POS 8	2 (67%) (Note 2)
POS 5	25 (83%)	POS 17	20 (67%)
POS 6	25 (83%)	POS 25	19 (63%)
POS 22	25 (83%)	POS 13	18 (60%)
POS 27	25 (83%)	POS 15	17 (57%)
POS 7	24 (80%)	POS 26	16 (53%)
POS 16	24 (80%)		

Visitors to parks and gardens not aware of nearby POSPDs (March to August 2014)

Source: Audit Survey

Note 1: POSs 29 and 30 are provided within the same private development.

Note 2: Audit visited a public park near POS 8 on two selected days for a total of 12 hours to conduct interviews with visitors there. However, only 3 visitors were found in the park during the period, and 2 of the 3 visitors were not aware of nearby POS 8.
4.21 In Audit's view, the fact that many visitors to public parks and gardens are not aware of some nearby POSPDs suggests that the pertinent POSPDs are not well known in the local districts. In order to improve the situation, the Lands D needs to take actions to enhance publicity of POSPDs, which will help the effective achievement of the objectives of enhancing public awareness of the existence and availability of POSPD, and public monitoring of POSPD operations (see para. 4.7(a) to (c)). In this connection, the Lands D may consider posting POSPD Lists in appropriate district public venues (such as District Offices, DLOs, LCSD venues and venues of non-governmental organisations).

Audit recommendation

4.22 Audit has *recommended* that the Director of Lands should seek assistance from relevant government departments (such as the Home Affairs Department and the LCSD) to enhance publicity of POSPDs.

Response from the Administration

4.23 The Director of Lands agrees with the audit recommendation.

4.24 The Director of Leisure and Cultural Services has said that the LCSD has no objection to assisting the Lands D to post POSPD Lists at the LCSD's venues subject to the availability of sufficient space and appropriate place in the relevant venues.

PART 5: PROVISION OF POSPD FACILITIES

5.1 This PART examines the provision of facilities at POSPDs and the Government's monitoring of compliance with POSPD requirements by the pertinent building owners, focusing on:

- (a) implementation of 2011 POSPD Guidelines (paras. 5.2 to 5.14);
- (b) provision of POSPD facilities (paras. 5.15 to 5.26); and
- (c) monitoring of compliance with POSPD requirements (paras. 5.27 to 5.33).

Implementation of 2011 POSPD Guidelines

5.2 In January 2009, in the wake of public concerns over public accessibility and standards of provision in POSPDs, and the conflicting interests between public users and private owners (see para. 1.9), the DEVB commissioned a consultant to, in collaboration with a local university, draw up a set of guidelines for the design and management of POSPDs (see para. 1.11(c)). After consulting the stakeholders (including professional bodies and trade organisations), in January 2011, the DEVB promulgated the POSPD Design and Management Guidelines (2011 POSPD Guidelines) for reference by relevant owners, management agencies and the general public.

- 5.3 The 2011 POSPD Guidelines comprise:
 - (a) **Design Guidelines.** The Guidelines aim at enhancing public access and enjoyment at POSPDs. The Guidelines provide a framework of better design based on the principles of connectivity, appropriateness and quality. According to the DEVB, the Guidelines should apply to future POSPDs with flexibility allowed to cater for the merits of individual cases, while the existing POSPDs are strongly advised to follow the Guidelines on a reasonable basis; and

- (b) *Management Guidelines.* The Guidelines aim to strike a reasonable balance between POSPD owners' obligations and responsibilities and the public use and enjoyment of POSPDs. According to the DEVB, the Guidelines:
 - (i) serve as a set of good practices for users, management agencies and owners of POSPDs to follow, and are advisory in nature;
 - (ii) do not override any of the provisions in land leases or deeds of dedication; and
 - (iii) should apply to new and existing POSPDs insofar as permitted under the leases or the deeds of dedication.
- 5.4 According to the Design Guidelines, a POSPD should be provided with:
 - (a) *Lighting, seating and universal access facilities.* These facilities are intended to provide the users with a sense of place which is safe and comfortable; and
 - (b) *Sign boards.* Clear sign boards and notice boards to show a POSPD's location would help inform the public of the available space for public use and help them identify the space. Notice boards should contain information on the related boundary, rules and regulations, opening hours and contact information of pertinent management agencies.

5.5 Regarding the Management Guidelines, inter alia, they cover the permissible activities, opening hours, dissemination of information relevant to a POSPD, and responsibilities of the owners and management companies concerned.

Areas for improvement

2011 POSPD Guidelines not enforceable on existing POSPDs

- 5.6 In May 2011, the DEVB informed LegCo Panel on Development that:
 - (a) the Design Guidelines should apply to future POSPDs with flexibility to cater for site-specific circumstances of individual cases, while existing ones were strongly advised to follow the Guidelines on a reasonable basis; and
 - (b) the Management Guidelines served as a set of good practices and were advisory in nature, and they should apply to future and existing POSPDs insofar as permitted under the land leases.

5.7 Audit examination of the pertinent land leases revealed that owners of POSPDs were normally required to fulfill the following obligations:

- (a) permitting the public to lawfully use the POSPDs and avoiding any obstruction to the sites; and
- (b) managing and maintaining the POSPDs to the satisfaction of the Government.

5.8 Audit noted that the existing land leases generally did not include the provision of facilities stated in the POSPD Design Guidelines (see para. 5.4) as well as the permissible activities, dissemination of information relevant to the POSPDs, and responsibilities of the related owners and management companies as stated in the Management Guidelines (see para 5.5).

5.9 In October 2014, the DEVB informed Audit that, in considering proposals and relevant plans submitted by lot owners on the provision of POSPDs for approval, the relevant government departments (including the Lands D and the PlanD) could make reference to the 2011 POSPD Guidelines as appropriate. 5.10 Audit considers it unsatisfactory that the essential requirements as mentioned in paragraph 5.8 are not included in the existing land leases which involved the provision of POSPDs. As a result, the Government cannot compel the pertinent building owners to comply with the relevant 2011 POSPD Guidelines.

Majority of POSPD owners not aware of Guidelines

5.11 Furthermore, the Lands D needs to take actions to encourage the owners and management companies of existing POSPDs to adopt and implement the relevant provisions stated in the two POSPD Guidelines as far as possible. In this connection, in May 2011, the DEVB informed LegCo Panel on Development that the two POSPD Guidelines had been:

- (a) distributed to the owners' incorporations and management companies of POSPDs, the Real Estate Developers Association of Hong Kong (Note 11) and the 18 District Councils; and
- (b) uploaded onto DEVB website for access and download by members of the public.

5.12 However, Audit found that, of the 30 POSPDs covered in Audit Survey (see para. 2.3), the owners' incorporations and management companies of the majority of the POSPDs were not aware of the existence of the two POSPD Guidelines, with only two owners' incorporations said that they were aware of the matter. In Audit's view, the DEVB needs to take proactive actions to encourage the owners' incorporations and management companies concerned to adopt and implement the relevant provisions stated in the two POSPD Guidelines, such as holding meetings with them and periodically sending them the two POSPD Guidelines with highlight of the relevant provisions.

Note 11: The Association, formed by a group of property developers in Hong Kong, is one of the main Government consultative bodies on land matters.

Audit recommendation

5.13 Audit has *recommended* that the Secretary for Development should take proactive actions to encourage owners' incorporations and management companies concerned to adopt and implement the relevant provisions stated in the 2011 POSPD Guidelines.

Response from the Administration

5.14 The Secretary for Development agrees with the audit recommendation.

Provision of POSPD facilities

- 5.15 According to the Design Guidelines:
 - (a) primary seating (such as chairs and benches) and secondary seating (such as steps and planter ledges) should be provided at POSPDs;
 - (b) appropriate covers should be provided over the seating as shades and rain-shelters (sheltered seating); and
 - (c) moveable tables and chairs could provide flexibility, and linear benches or ledges and circular benches could achieve different design effects.

5.16 In October 1984, relevant provisions in the Buildings Ordinance were amended, under which all newly constructed or substantially altered private buildings were required to provide barrier-free-access facilities (Note 12). In August 1995, the Disability Discrimination Ordinance (Cap. 487) was enacted which sets out provisions to prohibit discrimination against persons with a disability by failing to provide them with means of access to any premises that the public is entitled to use.

Note 12: In 1997 and 2008, the Government extended the barrier-free-access requirement to additional categories of buildings and enhanced the design standards.

Areas for improvement

Some POSPDs not provided with essential facilities

5.17 Audit site inspections at the 30 POSPDs covered in Audit Survey revealed that 12 POSPDs were not provided with sheltered seating, 3 POSPDs were not provided with rubbish bins, and 4 POSPDs were not provided with barrier-free-access facilities (see Table 7).

Table 7

Facilities not provided	Number of POSPDs involved	POSPD involved
Sheltered seating	12	POSs 1, 3, 8, 10, 11,13, 14, 16, 17, 21, 24, 26
Rubbish bin	3	POSs 1, 3, 21
Barrier-free-access facilities	4	POSs 1, 5, 6, 15

Essential facilities not provided in POSPDs (March to June 2014)

Source: Audit Survey

5.18 In Audit's view, in order to provide quality leisure and recreational spaces and facilitate user access, the Lands D needs to take action to encourage pertinent owners' corporations and management companies to provide sheltered seatings, rubbish bins and barrier-free-access facilities in the pertinent POSPDs as far as possible. According to the "Design Manual: Barrier Free Access 2008" promulgated by the BD, the provision of barrier-free-access facilities (such as visual-free walking areas and ramps with handrails) will facilitate greater independence of persons with a disability and of the elderly, as well as people with other forms of physical infirmities or limitations such as pregnant women, and families with young children. The Lands D should also incorporate the provision of sheltered seating, rubbish bins and barrier-free-access facilities in each POSPD should also be shown on the POSPD List published on Lands D website.

2 POSPDs not provided with any sign board or notice board

5.19 According to the Design Guidelines, POSPDs hidden from public view may result in low patronage, while identifiable POSPDs with clear, visible and legible sign boards would invite people to use the spaces. Audit site inspections found that, of the 30 POSPDs covered in Audit Survey, 2 POSPDs (namely POSs 4 and 26) were not provided with any sign board or notice board at the entrances (Note 13).

5.20 In Audit's view, in order that POSPDs are easily identifiable by members of the public, the Lands D needs to encourage owners of the POSPDs concerned to erect related sign boards and notice boards, or to explore whether the owners could be mandated under related land leases to erect such sign boards at the site entrances. Otherwise, the Lands D needs to consider erecting appropriate sign boards and notice boards on nearby government land, such as on public walkways, to inform the public of the existence of such POSPDs.

Essential information not provided on notice boards of some POSPDs

5.21 According to the Design Guidelines and the Management Guidelines, information on related rules and regulations, opening hours, contact information of management offices and location maps of POSPDs should be provided on notice boards erected at prominent areas of POSPDs. Such information is provided in the POSPD List published on Lands D website.

5.22 Audit site inspections found that, of the 30 POSPDs covered in Audit Survey, with the exception of the two POSPDs which were not provided with any sign board and notice board (see para. 5.19), the notice boards erected at 18 of the remaining 28 POSPDs were not provided with one or more of the required information stated in the 2011 POSPD Guidelines (see Table 8).

Note 13: Audit survey found that, on average during a two-hour period, 2 and 129 visitors were found visiting POSs 4 and 26 respectively. Moreover, POS 26 is located in a residential cum commercial development.

Table 8

Essential information not included in notice boards of POSPDs (March to June 2014)

Information not included in notice board	Number of POSPDs involved	POSPD involved
Opening hours	7	POSs 1, 3 (Note 1), 13, 14, 21, 24, 27
Contact information of management office	4	POSs 7 (Note 2), 14, 21, 24
Location map	16	POSs 3, 5, 6, 7 (Note 2), 8, 11, 14, 15, 16, 17, 19, 21, 22, 24, 27, 28

Source: Audit Survey

- *Note 1:* In October 2014, the Lands D informed Audit that the opening hours had been subsequently provided on the notice board at POS 3.
- Note 2: In September 2014, Lands D informed Audit that the contact information of the management office and location map had been subsequently provided on the notice board at POS 7.

5.23 According to the Lands D, the need for and practicality of providing all the related information on notice boards depend on the scale, location and nature of individual POSPDs.

5.24 In Audit's view, the Lands D needs to encourage owners of the POSPDs concerned to provide the essential information on notice boards erected on site. Otherwise, the Lands D needs to consider erecting appropriate notice boards on nearby government land, such as on public walkways, to inform the public of the essential POSPD information.

Audit recommendations

- 5.25 Audit has *recommended* that the Director of Lands should:
 - (a) take actions to encourage the pertinent building owners to provide in POSPDs sheltered seating, rubbish bins, barrier-free-access facilities, sign boards and essential information on notice boards as far as possible;
 - (b) include in the POSPD List published on Lands D website information on whether sheltered seating and barrier-free-access facilities are provided at each POSPD; and
 - (c) consider erecting appropriate POSPD sign boards and notice boards on nearby government land if pertinent owners refuse to erect such boards at the site entrances.

Response from the Administration

5.26 The Director of Lands agrees with the audit recommendations.

Monitoring of compliance with POSPD requirements

5.27 POSPDs are subject to the relevant provisions in the land leases in respect of their management, maintenance and opening to the public. The Lands D will check and satisfy itself that all relevant obligations contained in the land lease of a development, including that of the provision of a POSPD where applicable, have been complied with before issuing a certificate of compliance for the development. In March 2008, the Lands D Headquarters issued instructions (2008 Instructions) to the 12 DLOs (Note 14) requiring them to:

Note 14: The 12 DLOs are the DLO/Hong Kong East, the DLO/Hong Kong West and South, the DLO/Kowloon East, the DLO/Kowloon West, the DLO/Islands, the DLO/Tsuen Wan and Kwai Tsing, the DLO/Shatin, the DLO/Sai Kung, the DLO/Tai Po, the DLO/North, the DLO/Tuen Mun and the DLO/Yuen Long.

- (a) maintain a register of public facilities (including POSPDs) provided in private developments under the purview of the DLO concerned;
- (b) conduct annual inspections of the public facilities in (a) to ensure that the pertinent land lease conditions are complied with; and
- (c) record the results of inspections in a standard inspection form provided by the Lands D Headquarters.

Areas for improvement

DLOs not fully complying with Lands D instruction in conducting annual inspections

5.28 In 2010, the Lands D's Management Services Team (Note 15) carried out an investigation into the conduct of POSPD inspections by 6 of the 12 DLOs which were responsible for monitoring 47 of the 55 POSPDs (Note 16) as recorded in the Lands D's POSPD List at that time. The Management Services Team found that the 6 DLOs had not fully complied with Lands D instructions on conducting the annual POSPD inspections in 2009 (see Table 9).

- **Note 15:** The Management Services Team was established in May 2007 for the purpose of promoting the operational efficiency and effectiveness of the work of the Lands Administration Office.
- **Note 16:** The number of POSPDs (as recorded in the Lands D's POSPD List) increased to 60 as of August 2014.

Table 9

DLO	No. of POSPDs involved	No. of POSPDs inspected in 2009	No. of POSPD inspections recorded in standard form
Hong Kong West and South	12	2	0
Hong Kong East	10	2	0
Kowloon West	9	5	0
Tsuen Wan and Kwai Tsing	8	5	0
Tuen Mun	4	4	0
Islands	4	1	0
Total	47	19	0

POSPD annual inspections conducted by 6 DLOs (2009)

Source: Lands D records

5.29 In the light that some DLOs did not fully comply with the Lands D instructions in conducting POSPD inspections, since December 2011, the Lands D Headquarters has sent half-yearly reminders to the DLOs reiterating the need to comply with the 2008 Instructions (see para. 5.27).

5.30 Audit examination in 2014 revealed that some DLOs still did not fully comply with the 2008 Instructions in conducting annual POSPD inspections (see Table 10).

Table 10

POSPD annual inspections conducted by 6 DLOs (2011 to 2013)

		No. of POSPDs insp (Note 2)		pected in	
DLO	involved	2011	2012	2013	
Hong Kong West and South	13 (Note 1)	5 (5)	4 (4)	8 (8)	
Hong Kong East	10	10 (10)	10 (10)	10 (10)	
Kowloon West	9	2 (0)	2 (0)	5 (3)	
Tsuen Wan and Kwai Tsing	8	8 (5)	8 (8)	8 (8)	
Tuen Mun	4	3 (1)	4 (4)	4 (3)	
Islands	5 (Note 1)	4 (4)	5 (5)	5 (5)	
Total	49	32 (25)	33 (31)	40 (37)	

Source: Lands D records

- *Note 1:* Between 2009 and 2011, a new POSPD had been added to each of DLO/Hong Kong West and South and DLO/Islands.
- *Note 2:* Numbers in brackets represent the number of inspections having been recorded in the standard form.

5.31 Audit examination revealed that, in 2013, three DLOs (namely DLO/Hong Kong West and South, DLO/Kowloon West and DLO/Tuen Mun) still did not fully comply with the 2008 Instructions in conducting POSPD inspections. In Audit's view, the Lands D needs to strengthen actions on the issue. In this connection, the Lands D should require DLOs to submit annual returns to the Headquarters to report the progress of the POSPD inspections conducted, together with major observations and the follow-up actions taken.

Audit recommendations

- 5.32 Audit has *recommended* that the Director of Lands should:
 - (a) strengthen actions to ensure that all DLOs comply with Lands D instructions in conducting POSPD inspections; and
 - (b) require DLOs to submit annual returns to the Lands D Headquarters to report the progress of POSPD inspections conducted, together with major observations and the follow-up actions taken.

Response from the Administration

5.33 The Director of Lands agrees with the audit recommendations.

PART 6: WAY FORWARD

6.1 This PART outlines the major audit observations and examines the way forward.

Achievement of objectives of providing POSPDs

- 6.2 The objectives of providing POSPDs are:
 - (a) achieving integrated designs, better site planning and utilisation, optimising land use, and synchronising the availability of public open spaces with the envisaged population intake of private development projects; and
 - (b) providing outdoor open-air spaces for active and passive recreational uses serving the needs of local residents and the general public who can enjoy the surroundings in a leisurely manner.

6.3 As of August 2014, as recorded in the POSPD Lists of the Lands D and the BD, 62 POSPDs have been provided, of which 60 and 2 are under the purview of the Lands D and the BD respectively. The objectives in paragraph 6.2(a) might have been largely achieved following the proper design and construction of the POSPDs.

6.4 Regarding the objectives in paragraph 6.2(b), Audit Survey of 30 POSPDs found that the patronage of 8 POSPDs (see para. 2.4(b)) was low. As a result, the objective of serving the needs of local residents and the general public who can enjoy the surroundings in a leisurely manner may not have been fully achieved.

6.5 Audit examination revealed the following areas for improvement in providing POSPDs:

- (a) some sites were not easily accessible by the general public. For example, POSs 5, 6 and 7 were provided on podiums high above the ground level where members of the public needed to walk up long staircases or take passenger lifts before reaching the sites (see paras. 2.7 to 2.14);
- (b) uninterrupted public access was not fully provided at some sites. For example, members of the public needed to seek assistance from the management offices to open locked gates at the site entrances to gain access to POSs 1 and 31 (see paras. 2.15 to 2.23);
- (c) some sites were not properly maintained. For example, POS 4 was covered by long grass and fallen tree branches, and at POS 15C, a damaged canopy was not repaired, a missing drainage cover was not replaced, a broken electricity-cable cover was not fixed and potted plants at the site entrance were not removed to facilitate public access (see paras. 3.2 to 3.7);
- (d) some sites were having short opening hours. For example, although the POSPD Management Guidelines specify that the POSPD daily opening hours should not be less than 13 hours, the opening hours of POSs 6B, 31, 37B and 39 were significantly less than 13 hours (see paras. 3.10 to 3.18);
- (e) some sites were not included in the POSPD List owing to:
 - (i) certificates of compliance not having been issued, such as POSs 32, 33 and 34 (see paras. 4.4 to 4.8);
 - (ii) the provision of POSPDs not having been included as a lease condition, such as POSs 35 and 36 (see paras. 4.9 to 4.13); and
 - (iii) the provision of POSPDs had taken place before 1980 (see para. 4.14);
- (f) many members of the public were not aware of the existence of POSPD sites due to insufficient publicity (see paras. 4.19 to 4.21); and

(g) some sites were not provided with sheltered seating, rubbish bins, barrier-free-access facilities, POSPD sign boards and notice boards with essential information (see paras. 5.17 to 5.24).

6.6 With a view to better achieving the objective of serving the needs of local residents and the general public who can enjoy the surroundings in a leisurely manner, Audit has made recommendations in PARTs 2 to 5 to the Administration on related issues.

Fulfillment of TPB planning conditions

6.7 Audit examination also revealed that the planning conditions of some private developments approved by the TPB could not be fulfilled or are not legally enforceable, mainly attributable to the fact that the planning conditions had not been incorporated into the related land leases. The following are some examples:

- (a) for POS 7, although one of the conditions of the TPB's approval of the related development plan was that passenger lifts would be provided to facilitate the pedestrian movement between the main road and the local road and to improve public access to the public open space, the Government could not compel the building owners to resume the passenger lift service for public use. According to the DEVB, the passenger lift requirement was not included in the land lease because the lease had been executed before the imposition of the related planning condition (see paras. 2.10 to 2.13); and
- (b) for POS 35, although one of the conditions of the TPB's approval of the related development plan was that the developer needed to design, provide and maintain a POSPD, such a requirement had not been translated into a lease condition. According to the DEVB, the lease was an unrestricted one where no lease modification was involved for the development proposal. Furthermore, it is questionable whether an undertaking on the issue submitted by the developer is legally enforceable. In the event, POS 35 is not included in the Lands D's or the BD's POSPD List (see paras. 4.9 to 4.13).

6.8 Audit considers it unsatisfactory that the planning conditions of the TPB relating to the provision of POSPDs in some developments cannot be fulfilled or are not legally enforceable. The provision of information to the TPB about the uncertainty of fulfilling such planning conditions would have helped it in making informed decisions on development plans. In this connection, Audit has made recommendations in PARTs 2 and 4 to the Administration on related issues.

Implementation of POSPD Design and Management Guidelines

6.9 In January 2011, the DEVB published the POSPD Design Guidelines which aim at enhancing public access and enjoyment at POSPDs, and the POSPD Management Guidelines which aim to strike a reasonable balance between POSPD owners' obligations and responsibilities and the public use and enjoyment of the POSPDs concerned.

6.10 As of August 2014, there were only two POSPDs as recorded in the BD's POSPD List (see para. 3.21). The BD may wish to keep in view new POSPDs falling under its purview in future and take measures to ensure that the relevant POSPD Design Guidelines and Management Guidelines are enforceable on such POSPDs.

Audit recommendation

6.11 Audit has *recommended* that, with a view to improving the administration and management of POSPDs under the BD's purview, the Director of Buildings should keep in view new POSPDs falling under BD purview in future and take measures to ensure that the relevant POSPD Design Guidelines and Management Guidelines are enforceable on such POSPDs.

Response from the Administration

6.12 The Director of Buildings agrees with the audit recommendation. He has said that the BD will prepare an internal instruction for the purpose.

Appendix A (paras. 2.3 and 2.4 refer)

Patronage of POSPDs revealed in Audit Survey (March to July 2014)

POSPD	Weekday	Weekend and public holiday	Total	Average in a 2-hour period
	(12 hours)	(0 nours)	(18 nours)	(No of visitors)
		(INO. OF VISICOTS)	(100. 01 VISILOTS) $(c) = (a) \pm (b)$	(100. of VISITORS) $(d) = (c) \div 0$
(A) POSPD covered in patronage and opinion survey	(a)		(c) - (a) + (b)	(u)-(t) · 9
POS 1	0	0	0	0
POS 2	4	4	8	1
POS 3	5	4	9	1
POS 4	10	7	17	2
POS 5	27	10	37	4
POS 6	23	20	43	5
POS 7	57	2	59	7
POS 8	59	26	85	9
POS 9	30	116	146	16
POS 10	108	41	149	17
POS 11	93	78	171	19
POS 12	91	81	172	19
POS 13	125	82	207	23
POS 14	157	71	228	25
POS 15	46	250	296	33
POS 16	130	190	320	36
POS 17	284	59	343	38
POS 18 (Note 1)	211	135	346	38
POS 19	218	146	364	40
POS 20	311	179	490	54
POS 21	455	89	544	60
POS 22	542	63	605	67

Appendix A

(Cont'd) (paras. 2.3 and 2.4 refer)

POSPD	Weekday	Weekend and public holiday	Total	Average in a 2-hour period
	(12 hours)	(6 hours)	(18 hours)	
	(No. of visitors)	(No. of visitors)	(No. of visitors)	(No. of visitors)
	(a)	(b)	(c) = (a) + (b)	$(\mathbf{d}) = (\mathbf{c}) \div 9$
POS 23	446	303	749	83
POS 24	309	667	976	108
POS 25	655	324	979	109
POS 26	768	390	1,158	129
POS 27	1,194	111	1,305	145
POS 28	671	818	1,489	165
POS 29 (Note 2)	322	2,558	2,880	320
POS 30 $\int (1000 2)$	30	57	87	10
(B) POSPD covered in patronage survey				
POS 31	0	8	8	1
POS 32	762	685	1,447	161
POS 33	421	245	666	74
POS 34	76	26	102	11
POS 35	39	72	111	12
POS 36	2	3	5	1

Source: Audit Survey

- Remarks: For residential sites, visitor counting was conducted from 8:00 a.m. to 10:00 a.m., 4:00 p.m. to 6:00 p.m. and 6:00 p.m. to 8:00 p.m. For commercial sites, counting was from 8:00 a.m. to 10:00 a.m., 12:00 noon to 2:00 p.m. and 4:00 p.m. to 6:00 p.m. For each POSPD, visitor counting was conducted on two or more weekdays (total 12 hours) and on one or more weekends or public holidays (total 6 hours).
- Note 1: The owners incorporation of POS 18 had once submitted a proposal to the relevant District Council on waiving the requirement of opening the related public open space for public use. However, the pertinent Area Committee did not support the proposal and no waiver application had been made to the Lands D.
- *Note 2: POSs 29 and 30 were provided in two locations under the same commercial development.*

Appendix B

Acronyms and abbreviations

Audit	Audit Commission
BD	Buildings Department
B/D	Government bureau/department
DEVB	Development Bureau
DLO	District Lands Office
G/IC	Government, Institution or Community
HKPSG	Hong Kong Planning Standards and Guidelines
Lands D	Lands Department
LCSD	Leisure and Cultural Services Department
LegCo	Legislative Council
m ²	square metres
PlanD	Planning Department
POS	Public open space
POSPD	Public open space in private development
TPB	Town Planning Board

CHAPTER 8

Department of Health Education Bureau Food and Environmental Hygiene Department Leisure and Cultural Services Department

Hiring of service contractors and professionals

Audit Commission Hong Kong 30 October 2014 This audit review was carried out under a set of guidelines tabled in the Provisional Legislative Council by the Chairman of the Public Accounts Committee on 11 February 1998. The guidelines were agreed between the Public Accounts Committee and the Director of Audit and accepted by the Government of the Hong Kong Special Administrative Region.

Report No. 63 of the Director of Audit contains 10 Chapters which are available on our website at http://www.aud.gov.hk

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HIRING OF SERVICE CONTRACTORS AND PROFESSIONALS

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HIRING OF SERVICE CONTRACTORS AND PROFESSIONALS

Executive Summary

1. Government bureaux and departments (B/Ds) hire service contractors and professionals regularly to perform services including cleansing, facilities management, security and diagnostic services. The Government's procurement policy is to obtain goods and services at the best value for money and award contracts for supplying goods and services through open, fair, competitive and transparent procedures. Controlling Officers, responsible for the management of services procured, should observe and uphold the culture of compliance with the requirements set out in the Stores and Procurement Regulations (SPRs) issued by the Financial Secretary/Secretary for Financial Services and the Treasury under section 11(1) of the Public Finance Ordinance (Cap. 2).

2. In the past decade, Government expenditure on hiring service contractors and professionals under Subhead 111 of the General Revenue Account had increased from \$2.62 billion in 2004-05 to \$7.18 billion in 2013-14. In view of the significant and increasing expenditure on the hiring of service contractors and professionals, the Audit Commission (Audit) has recently conducted a review of four B/Ds' processes and practices in the acquisition of such services. A number of contracts were selected from the four B/Ds, namely the Department of Health (DH), Education Bureau (EDB), Food and Environmental Hygiene Department (FEHD), and Leisure and Cultural Services Department (LCSD), for review.

Sourcing of service providers

3. DH: Need to critically assess the tender price for the procurement of health screening service under single tenders. According to SPR 325, limited (single or restricted) tender procedures shall only be used in circumstances when open competitive tendering would not be an effective means of obtaining the requisite stores or services. Since 2003, the DH has used single tenders to obtain

health screening service for visitors at the Hong Kong International Airport from Contractor A. For the period from April 2012 to March 2016, there was a significant increase in the contract value (by 171% from \$30.6 million to \$82.9 million). The contract rate charged per man-hour for the screening services at the Airport was twice that charged for similar services obtained through open tenders at the boundary and the cruise terminal. Audit considers that the DH needs to critically assess all relevant factors during tender/contract negotiations with a view to obtaining the required services at the best value for money (paras. 2.4, 2.7, 2.9, 2.14 and 2.24).

4. *EDB: Need to review the use of single tenders and explore the market of service providers for Student Assessment (SA) programme.* Between December 2000 and January 2011, the EDB had entered into three consecutive single-tender contracts with Contractor B for the development of the Basic Competency Assessment (BCA) in Chinese Language, English Language and Mathematics. The current four-year contract was valued at \$319 million. The BCA comprises two programmes, namely the SA and the Territory-wide System Assessment (TSA). According to the EDB, the SA and TSA came as a package and, especially when the BCA was at an early development, engaging one single institution to implement the two programmes was considered more appropriate and effective in ensuring consistency. Besides, Contractor B is the only service provider who can provide the BCA service having regard to its knowledge about the local school curriculum and its ability to hold public examinations in school centres (paras. 2.25, 2.27, 2.28 and 2.38).

5. More recently, the EDB informed Audit that it had separately contracted out in 2012 certain tasks of the SA programme to another service provider as a pilot project to assess the feasibility of engaging other service providers in the development of SA items. Audit welcomes the EDB's initiative. Given that the SA programme mainly involves the development of competency assessment items and maintaining the SA system and database, Audit considers that the justification for the continued use of single tender for the SA programme (bundled with the TSA) may diminish with time and it is time to consider separating the SA programme for procurement by open competitive tenders (paras. 2.38 and 2.39).

6. *FEHD: Limited number of service providers for FEHD's cleansing contracts may increase concentration risks.* As at June 2014, the FEHD had outsourced its street cleansing services in 19 districts under 25 two-year contracts at a total value of \$1,740 million. These contracts were awarded through open tenders to five contractors, one of which was awarded 10 contracts with a total value of \$653 million (38% of \$1,740 million). Whilst Audit noted that the situation had improved as at September 2014, Audit considers that the FEHD needs to continue monitoring the situation and take necessary measures, where appropriate, to enhance competition and reduce concentration risks in future tendering exercises (paras. 2.41, 2.42 and 2.44).

7. *LCSD: Limited number of service providers for venue cleansing and supporting service contracts.* As at March 2014, the LCSD had awarded through open tendering 41 contracts for the provision of cleansing and supporting services to its venues at a total value of \$1,913 million to eight contractors. Of these contracts, 32 contracts were awarded to two contractors with a total value of \$1,780 million (93% of \$1,913 million), with one having been awarded 20 contracts totalling \$1,236 million in value. Since a large majority of the LCSD's venue cleansing and supporting services are provided by two contractors, Audit considers that the LCSD needs to critically review its tendering strategy and consider the use of more contractors to reduce concentration risks (paras. 2.45, 2.46 and 2.48).

8. *B/Ds: Procurement procedures not always adopted to enhance competition.* According to the SPRs, B/Ds shall follow tender procedures when making purchases of services exceeding \$1.43 million. Audit examination of contracts selected from the four B/Ds found that while some contractors provided same/similar services with a total value exceeding \$1.43 million during the year, such services were not or could not be aggregated into a single contract to achieve better economy of scale and follow the tender procedures for procurement in accordance with the SPRs (paras. 2.49 and 2.50).

Specification of service requirements

9. Tender specifications define the requirements of the procuring departments and what the tenderers are expected to provide. According to the SPRs, tender specifications shall meet the basic Government procurement principles of transparency, openness and fairness. In setting tender specifications, B/Ds should also guard against over-restrictive requirements which might have the effect of protecting existing service providers in the market from potential competition, thus reducing or limiting choices and potentially affecting prices (paras. 3.2, 3.10 and 3.11).

10. **FEHD:** Need to reflect street washing service requirements accurately in tender specifications. Audit noted that there were significant discrepancies between the service locations specified in the FEHD's tender documents and those specified in the work plans proposed by the successful tenderers, which formed part of the contracts. Audit considers that for fair competition, the FEHD needs to critically review the locations for street washing as specified in the tender documents to ensure that they are complete and well justified to meet the actual needs, ensure that the tenders received comply with the service requirements as specified in the tender documents, and take measures to incorporate all required locations into the contracts awarded to the successful tenderers (paras. 3.6 and 3.8).

11. LCSD: Setting of mandatory requirements specified in its venue management contracts. As at 31 March 2014, the LCSD outsourced the management support services for 14 sports centres through open tenders. All the contracts were awarded to one contractor. Audit found that according to the tender document, the tenderer needs to meet certain mandatory requirements on its year of experience in management support services at recreational or sports facilities. Audit considers that the LCSD needs to critically review whether it is possible to revise the mandatory requirements with a view to encouraging competition, increasing choices and avoiding over-reliance on a single contractor (paras. 3.12, 3.14 and 3.19).

Monitoring service delivery

12. *EDB: Monitoring of BCA contracts.* Under the terms of the BCA contracts, no sub-contracting by Contractor B is allowed except with prior written approval of the EDB. Audit notes that Contractor B has sub-contracted part of the contracts without obtaining written approval of the EDB. Besides, the utilisation of the SA system was low. In the past three years from 2011 to 2013, under the third BCA contract, some 60% of primary schools and 80% of secondary schools had not logged into the system to create assessments for their students. The EDB needs to identify the reasons for the low utilisation and closely monitor the future utilisation of the SA programme (paras. 4.5, 4.6, 4.11 and 4.15).

13. **FEHD:** Requirements specified in its recyclables collection service contracts not effectively enforced. Since 2000, the FEHD has been outsourcing its recyclables collection service. The service contracts stipulated that the contractor shall not dispose of any recyclables in any landfill, refuse transfer stations or any other waste disposal facilities without prior consent of the FEHD. In May 2013, the media reported cases of improper disposal of collected recyclables by the contractor and similar cases were also found by the FEHD's surprise inspections in the same month. Under the terms of the new recyclables collection contract for the period from August 2014 to July 2016, the contractor is required to deliver plastic recyclables collected to "recyclables recyclers" (instead of "recyclables collectors") nominated by the contractors and approved by the FEHD. However, the requirement for the contractors to deliver non-plastic recyclables to "recyclables collectors" remained unchanged (paras. 4.16, 4.18 to 4.20).

14. *FEHD: Monitoring of street washing services.* Audit analysed the service locations specified in the daily work programmes approved by the FEHD for five districts and found that they varied significantly from those locations specified in the work plans which formed part of the contracts. Audit could not find documentation to ascertain that the Health Inspectors concerned had brought such variations from contracts to the attention of the Senior Health Inspectors (paras. 4.26 and 4.27).

15. Audit review of the FEHD's inspection results revealed inadequacies in its monitoring of the contractors' services, such as conducting inspections on a fairly regular basis which might be anticipated by the street washing teams. Audit's on-site inspections in five districts to observe the actual operation of street washing by the FEHD's contractors in July and August 2014 also found irregularities. For example, in one district, Audit found, among others, that:

- (a) the street washing team had not carried out street washing at some of the scheduled service locations as specified in the daily work programmes;
- (b) the team spent much shorter than scheduled time in washing the service locations; and
- (c) the team returned to the water filling point for sign off much earlier than the scheduled time.

The FEHD needs to consider implementing a more effective mechanism for monitoring the contractors' delivery of services (paras. 4.31, 4.33 and 4.34).

Way forward

16. The audit review has identified room for improvements in a number of areas in the four B/D's hiring of service contractors and professionals. In particular, some of the procurements reported could have achieved better value for money through more determined and focused efforts to introduce competition among eligible tenderers and through closer monitoring of contractors' performance. Audit considers that B/Ds should be reminded to comply with the relevant Government regulations and guidelines on their hiring of service contractors and professionals from time to time (paras. 5.5 and 5.6).

Audit recommendations

17. Audit recommendations are made in PART 5 of this Audit Report. Only the key ones are highlighted in this Executive Summary. Audit has *recommended* that:

Sourcing of service providers

- (a) the Director of Health should critically assess all relevant factors during tender/contract negotiations with a view to obtaining the required services at the best value for money;
- (b) the Secretary for Education should consider whether other tendering options can be brought into the SA programme separately when opportunity arises so as to reap the benefits of competitive bidding;
- (c) the Director of Leisure and Cultural Services should critically review the LCSD's tendering strategy and consider the use of more contractors to reduce concentration risks;

Specification of service requirements

- (d) the Director of Food and Environmental Hygiene should critically review the service locations specified for street washing in the tender documents to ensure that such locations are justified and meet the actual needs;
- (e) the Director of Leisure and Cultural Services should critically review whether it is possible to revise the mandatory requirements for the provision of management support services at sports centres with a view to encouraging competition;

Monitoring service delivery

- (f) the Secretary for Education should identify the causes for the low utilisation of the SA programme and closely monitor the utilisation of the SA programme;
- (g) the Director of Food and Environmental Hygiene should consider implementing a more effective mechanism for monitoring the delivery of street washing services by the contractors;

Way forward

- (h) the Secretary for Financial Services and the Treasury should, in conjunction with the Director of Government Logistics, remind B/Ds to comply with the relevant Government regulations and guidelines on the hiring of service contractors and professionals; and
- (i) the Director of Government Logistics should take on board the audit observations mentioned in this audit review in the Government Logistics Department's reviews of B/Ds' compliance with the SPRs.

Response from the Administration

18. The Administration generally agrees with the audit recommendations.

PART 1: INTRODUCTION

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

Background

1.2 Government bureaux and departments (B/Ds) hire service contractors and professionals regularly to perform services including cleansing, facilities management, security and diagnostic services. In 2013-14, Government expenditure incurred by B/Ds on hiring services and professionals (Note 1) was \$7.18 billion comprising expenditure items as shown in Figure 1.

Figure 1





Source: Audit analysis of Treasury records

Note 1: The expenses are charged to Subhead 111 Hire of services and professional fees under general departmental expenses of the General Revenue Account.
1.3 During the past decade, Government expenditure on hiring service contractors and professionals had increased from \$2.62 billion in 2004-05 to \$7.18 billion in 2013-14 (see Figure 2).

Figure 2

Expenditure on hiring service contractors and professionals (2004-05 to 2013-14)



Year

Source: Audit analysis of Treasury records

1.4 B/Ds are required to comply with the laid-down policies and regulations in relation to hiring of service contractors and professionals. According to the Guide to Procurement issued by the Financial Services and the Treasury Bureau (FSTB):

- (a) the procurement policy of the Government is to obtain goods and services at the best value for money in support of its programmes and activities;
- (b) the Government is committed to providing equal opportunities for domestic and foreign suppliers and service providers, participating or competing in Government procurement;

- (c) contracts for supplying goods and services to the Government are awarded through open, fair, competitive and transparent procedures; and
- (d) procurement of goods and specified services covered by the Agreement on Government Procurement of the World Trade Organization (WTO GPA) is conducted in accordance with the provisions of the Agreement (Note 2).

1.5 According to the Stores and Procurement Regulations (SPRs) issued by the Financial Secretary/Secretary for Financial Services and the Treasury under section 11(1) of the Public Finance Ordinance (Cap. 2), Controlling Officers (COs) are responsible for the procurement of services within the financial limits set out in the SPRs, and the management of services procured. They shall observe and uphold the culture of compliance with the requirements set out in the SPRs, regularly remind all the staff concerned about their needs to always comply with the SPRs and closely monitor their compliance. The Government Logistics Department (GLD) regularly checks whether B/Ds comply with the SPRs in respect of procurement of stores, services and revenue contracts of value not exceeding the B/Ds' departmental limit (tender cases above the departmental limit are not included as they are well considered by the relevant tender boards — see para. 2.3) and management of stores, and makes recommendations for their improvement measures.

1.6 To assist B/Ds in the procurement of services, the Efficiency Unit of the Chief Secretary for Administration's Office issues best practice guides to proactively help them improve their expertise and disseminate the latest global best practices in outsourcing and contract management (Note 3).

- Note 2: The WTO GPA applies to procurement of specified services for contracts of a value not less than 130,000 Special Drawing Rights (the Hong Kong Dollar equivalent is HK\$1,541,000 for the calendar years of 2014 and 2015) which is an international currency unit set up by the International Monetary Fund. According to the 2012 Agreement, the specified services cover eight types of services, namely computer and related services, rental/leasing services without operators, courier, telecommunications and related services, environmental (e.g. sewage, refuse disposal, sanitation and similar services), financial, transport and other business services (e.g. building-cleaning and advertising services).
- **Note 3:** In 2007 and 2008, the Efficiency Unit published "A General Guide to Outsourcing (Third edition)", "Competition and Contracting: Learning from Past Experience" and "A User Guide to Contract Management".

Management and compliance risks identified in recent audit studies

1.7 Hiring of service contractors and professionals by B/Ds had attracted some public attention. From time to time, there were media reports and complaints on the hiring of service contractors and professionals, pointing to areas such as the placing of contracts with one or a few contractors, failure in service delivery, non-performance of services by contractors' staff, etc.

1.8 In the past years, the Audit Commission (Audit) had conducted a number of audit reviews that covered the use of service contractors by B/Ds, revealing cases of non-compliance and areas where improvement could be made. Some more recent examples are shown below:

- (a) five B/Ds did not conduct competitive tendering before obtaining the services from the Electrical and Mechanical Services Trading Fund (reported in Chapter 5 "Electrical and Mechanical Services Trading Fund" of the Director of Audit's Report No. 62 of April 2014);
- (b) some B/Ds made repeated purchases of less than \$1.43 million each by quotation or low value purchases of not exceeding \$50,000 by purchasing cards without consolidating them to purchase in bulk with a view to obtaining more competitive prices (reported in Chapter 8 "Procurement and supplies services provided by the Government Logistics Department" of the Director of Audit's Report No. 59 of October 2012); and
- (c) one department awarded four current cleansing services contracts of smaller scopes or shorter durations by quotations as compared with the old ones. Without such changes, tender procedures would have been required (reported in Chapter 4 "Procurement of goods and services for correctional institutions" of the Director of Audit's Report No. 58 of March 2012).

Audit review

1.9 In view of the significant and increasing expenditure on the hiring of service contractors and professionals, this audit study aims to review the processes and practices engaged by different B/Ds in the acquisition of such services and identify areas for improvement and attention. In this connection, a number of contracts were selected from four B/Ds, namely the Department of Health (DH), Education Bureau (EDB), Food and Environmental Hygiene Department (FEHD) and Leisure and Cultural Services Department (LCSD) for the review (Note 4). Focus is placed on the following areas:

- (a) sourcing of service providers (PART 2);
- (b) specification of service requirements (PART 3);
- (c) monitoring service delivery (PART 4); and
- (d) way forward (PART 5).

Audit has identified areas for improvement and attention, and 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 DH, EDB, FEHD and LCSD during the course of the audit review.

Note 4: In 2013-14, the four B/Ds spent \$3.46 billion (FEHD: \$1.63 billion, LCSD: \$1.15 billion, DH: \$0.36 billion and EDB: \$0.32 billion), i.e. 48% of the total expenditures of \$7.18 billion incurred under expenditure Subhead 111. These four B/Ds were among the top five B/Ds incurring such expenditure.

PART 2: SOURCING OF SERVICE PROVIDERS

2.1 This PART examines the sourcing of service providers by the selected B/Ds through the use of different procurement procedures. The following issues are discussed:

- (a) the hiring of service contractors through limited tenders (paras. 2.2 to 2.39);
- (b) the concentration of service contracts in a limited number of contractors (paras. 2.40 to 2.48); and
- (c) the need to use proper procurement procedures in accordance with SPRs (paras. 2.49 and 2.50).

Hiring services through open tendering is a preferred option

2.2 According to the SPRs, competition is a reliable safeguard against bidders overcharging and holding Government to ransom. In order to achieve best value for money and maintain open and fair competition, the SPRs stipulate that Government procurement exceeding \$1.43 million (for goods and services — Note 5) in value should normally be done by open tenders where all interested suppliers/service providers are free to submit their tenders. Only under exceptional circumstances are B/Ds allowed to use limited (single or restricted) tenders in Government procurement.

2.3 Since July 2013, B/Ds have the delegated authority to establish their Departmental Tender Committees (DTCs — Note 6) to approve the award of contracts through tenders with value not exceeding \$5 million without going through the GLD

Note 6: The DTC, chaired by a directorate officer not lower than D2 rank who shall be at least one rank higher than the chairman of the B/D's Tender Assessment Panel, comprises not less than three persons.

Note 5: *The term "services" in this context excludes services for construction and engineering works.*

Tender Board (Note 7). The GLD Tender Board is responsible for the award of contract through tenders with value greater than \$5 million but not exceeding \$15 million. For tenders with value exceeding \$15 million, the Central Tender Board (CTB — Note 8) is responsible for reviewing B/D's tender assessments and advising the Permanent Secretary for Financial Services and the Treasury (Treasury) on the acceptance of tenders and award of contracts, and gives advice to B/Ds for future guidance where appropriate.

Circumstances under which limited tendering can be used

2.4 Under limited tendering, tenders are invited from only one (i.e. single tendering) or a limited number of contractors/suppliers/service providers. According to SPR 325, limited tender procedures shall only be used in circumstances when open competitive tendering would not be an effective means of obtaining the requisite stores or services, for example where there is:

- (a) extreme urgency brought about by events unforeseeable by the procuring department; or
- (b) no reasonable alternative or substitute for reasons such that the stores or services can be supplied or provided only by a particular contractor/supplier/service provider.

2.5 Limited tender procedures shall only be initiated with the prior approval of the Permanent Secretary for Financial Services and the Treasury (Treasury), the Director of Government Logistics or her staff, as the case may be. The B/Ds shall

- **Note 7:** The GLD Tender Board, appointed by the Secretary for Financial Services and the Treasury under authority delegated by the Financial Secretary, is chaired by the Director of Government Logistics and comprises the Deputy Director of Government Logistics, Controller (Supplies Management) and Senior Treasury Accountant of the GLD.
- **Note 8:** The CTB, appointed by the Financial Secretary, is chaired by the Permanent Secretary for Financial Services and the Treasury (Treasury) and comprises the Director of Government Logistics, Permanent Secretary for Development (Works) or representative, a legal advisor at a rank not lower than Deputy Principal Government Counsel and Deputy Secretary for Financial Services and the Treasury (Treasury).

advise tenderers invited to submit their tenders in the same manner as open or selective tender procedures. Tenderers shall not be informed that tenders are being invited on a limited tendering basis.

Use of limited tenders by the four selected B/Ds

2.6 Audit reviewed the service contracts awarded by the four B/Ds through tenders and noted the position as shown in Table 1. It can be seen that as at March 2014, the DH had awarded three contracts through single tendering with contract values totalling \$113 million and the EDB had awarded one contract through single tendering with a contract value of \$327 million.

Table 1

B/D	Through limited tendering		Through open tendering		
	No. of contracts	Contract value (\$ million)	No. of contracts	Contract value (\$ million)	
DH	3	113 (single tender – Note)	27	173	
EDB	1	327 (single tender)	18	122	
LCSD	1	6	136	4,221	
FEHD	-	_	140	3,884	

Contracts awarded through tendering (31 March 2014)

Source: Audit analysis of GLD records

Note: The contract value included a \$83 million single-tender contract awarded by the DH in March 2014 for provision of screening services at the Hong Kong International Airport from April 2014 to March 2016 (i.e. Contract A3 mentioned in para. 2.7). The remaining contract value of \$30 million covered two single-tender contracts (i.e. Contracts A1 and A2 mentioned in para. 2.7) up to 31 March 2014.

Remarks: The contracts in force as at March 2014 may cover different contract periods.

In the light of the significant contract values involved in limited tendering, Audit examined all the four single-tender contracts, i.e. three in respect of the DH (Contracts A1 to A3 with contract value of \$113 million in total) and another for the EDB (Contract B3 with contract value of \$327 million).

Health screening services at the Hong Kong International Airport

Background

2.7 The contract value of \$113 million included a \$83 million single-tender contract awarded by the DH in March 2014 for the provision of screening services at the Hong Kong International Airport (HKIA) from April 2014 to March 2016 (i.e. Contract A3). The remaining contract value of \$30 million covered two single-tender contracts (i.e. Contracts A1 and A2) up to 31 March 2014. Since 2003, the DH has entered into single-tender contracts repeatedly with Contractor A (Note 9) to provide temperature screening service for visitors, and in recent years for inbound visitors only, at the HKIA (see Photographs 1 to 3). The two more recently completed contracts covered the period from April 2012 to March 2014 (Contract A1) and September 2013 to March 2014 (Contract A2 — Note 10). Since April 2014, the temperature and pregnant visitors screening services have been combined into a single contract (Contract A3). Appendix A shows a chronology of key events for the single-tender contracts awarded to Contractor A.

- **Note 9:** Contractor A is a private company established in 1997 as a subsidiary jointly owned by the Government (49% share) and a statutory body (51%) which is wholly owned by the Government. Contractor A is primarily set up for provision of aviation security related services, including aircraft security services, boarding gate security controls, access controls and guarding services to various facilities operators at the airport.
- **Note 10:** In September 2013, owing to the increasing number of pregnant visitors, the DH entered into Contract A2 with Contractor A to provide a pregnant visitors screening service. The service included screening pregnant visitors, directing suspected pregnant visitors to the designated immigration counters for examination and travel document inspection.

Photographs 1 to 3

Health Screening services at the HKIA

Photograph 1



Photograph 2

Photograph 3



Source: DH records



Significant increase in contract value and hourly charge rate

2.8 Audit noted that the hourly charge rate for the provision of Health Screening Assistants by Contractor A was quite stable from 2003 to 2009. However, the contract value and the hourly rate in the more recent contracts with Contractor A for the provision of health screening services had kept on increasing. Details are shown in Tables 2 and 3 respectively.

Table 2

Year	Service period	Service duration (a)	Contract value (b)	Monthly charge (c) = (b) ÷ (a)
		(Month)	(\$ million)	(\$ million)
2003	3 Jul 2003 to 2 Nov 2003 (Note 1)	4	-	-
	3 Nov 2003 to 2 Jul 2004	8	10.4	1.3
2004	3 Jul 2004 to 31 Mar 2005	9	9.6	1.1
2005	1 Apr 2005 to 30 Sept 2005	6	2.8	0.5
	1 Oct 2005 to 31 Mar 2006 (Note 1)	6	2.8	0.5
2006	1 Apr 2006 to 31 Mar 2007	12	5.5	0.5
2007	1 Apr 2007 to 31 Mar 2008	12	6.5	0.5
2008	1 Apr 2008 to 31 Mar 2009	12	7.6	0.6
2009	1 Apr 2009 to 31 Mar 2010	12	9.1	0.8
	26 May 2009 to 1 Nov 2009 (Note 2)	5.3	8.0	1.5
	2 Nov 2009 to 31 Mar 2010 (Note 2)	5	3.4	0.7
2010	1 Apr 2010 to 31 Mar 2012	24	22.7	0.9
2012	1 Apr 2012 to 31 Mar 2014 (Contract A1)	24	28.6	1.2
2013	16 Sep 2013 to 31 Mar 2014 (Contract A2)	6.5	2.0	0.3
2014	1 Apr 2014 to 31 Mar 2016 (Contract A3)	24	82.9	3.5

Contract value on provision of health screening services (July 2003 to March 2016)

Source: DH records

- Note 1: After the outbreak of the Severe Acute Respiratory Syndrome in 2003, the DH engaged Contractor A to provide temperature screening, health declaration form (suspended in December 2009) and health information leaflet distribution (suspended in June 2010) services at the HKIA. Owing to the unpredictable development of the Severe Acute Respiratory Syndrome, the DH arranged short-term contracts until 2005.
- Note 2: Owing to the outbreak of Human Swine Influenza, the DH awarded two additional contracts, covering the period from 26 May 2009 to 31 March 2010, for provision of health declaration form collection service (with service suspended in December 2009).

Table 3

Single-tender contracts for provision of health screening services by Contractor A at HKIA (April 2012 to March 2016)

	Contract A1	Contract A2	Contract A3
Service			Temperature and
	Temperature	Pregnant visitors	pregnant visitors
	screening	screening	screening
Service period	1.4.2012 -	16.9.2013 -	1.4.2014 -
	31.3.2014	31.3.2014	31.3.2016
	(24 months)	(6.5 months)	(24 months)
Contract value	\$28.6 million	\$2.0 million	\$82.9 million
Contract value per month	\$1.2 million	\$0.3 million	\$3.5 million
Daily man-hours provision:			
(a) Assistant	618 hours	68 hours	833 hours
			(Note 1)
(b) Supervisor	24 hours	17 hours	42.5 hours
Contract cost per man-hour	\$61	\$119	\$130
(Note 2)			
Staff education level			
required for Assistant			
according to:			
(a) service specifications	Secondary 3	Secondary 5	Secondary 3
		(Note 3)	(Note 3)
(b) contractor's	Same as above	Same as above	Secondary 5
recruitment criteria			

Source: Audit analysis of DH records

- *Note 1:* The daily provision of Assistants (833 man-hours) includes 68 man-hours (8%) catered for pregnant visitors screening.
- *Note 2:* The contract cost per man-hour was calculated by dividing the contract value per day of operation with the number of daily man-hours provided under each contract.
- Note 3: In Contract A2, the DH set the education level required for Assistants at Secondary 5 having regard to the service requirement to communicate with foreign visitors. However, in Contract A3, the DH re-set the education level required in the service specifications to Secondary 3. On enquiry, the DH informed Audit that the re-setting to Secondary 3 in Contract A3 was based on its experience from the operation of Contract A2.

As shown in Table 3, the monthly charge for temperature screening and pregnant visitors screening in Contract A3 had increased from \$1.5 million (\$1.2 million in Contract A1 and \$0.3 million in Contract A2) to \$3.5 million in Contract A3, or an increase of 130% even though the daily man-hours provision only increased by 20%. In Contract A3, the hourly charge rate for Assistants was 2.2 times the rate used in Contract A1 for temperature screening. Hence, the contract value had increased from \$30.6 million (\$28.6 million in Contract A1 and \$2 million in Contract A2) to \$82.9 million in Contract A3.

Tender negotiation with Contractor A

2.10 *Contract A2.* As outlined at Appendix A, the DH received a tender from Contractor A in relation to the tender for Contract A2. During the review of the tender offer, the DH noted a significant increase in the charge rates for the Assistants engaged for pregnant visitors screening and requested Contractor A to provide information on the proposed charge basis. In August 2013, Contractor A replied that:

- (a) it was not appropriate for them to give a detailed breakdown of their operating costs;
- (b) there were also indirect staff costs and operating overheads. The former related to officers at Security Inspector rank and above who were responsible for the supervision and management of the Security Officers, as well as the support and training of staff, whilst the latter covered costs incurred in the provision of uniform and equipment, accommodation, transport, etc.;
- (c) the prices quoted in Contract A2 had accurately reflected their total costs (comprising direct and indirect staff costs and operating overheads) plus a 5% mark-up to take account of the additional administrative work arising from the higher and more stringent staff criteria and requirement specified in the tender; and
- (d) in view of their good and long-standing partnership with the DH, Contractor A agreed to waive the 5% mark-up.

As a result of the tender negotiation, the contract value of Contract A2 was reduced from \$2.1 million to \$2 million. Audit found no records which indicated that the DH had further negotiated with Contractor A since the receipt of the above information. In the event, Contract A2 (for pregnant visitors screening) was entered with Contractor A at a value of \$2 million. The hourly charge rate for Assistants in Contract A2 was 1.9 times the rate used in Contract A1 for temperature screening.

2.11 *Contract A3.* Following the receipt of Contractor A's offer in February 2014, the DH requested Contractor A to provide justifications for the charge rates proposed for Contract A3. In late February and early March 2014, Contractor A replied that:

- (a) the charge rates were worked out on a cost-recovery basis;
- (b) the charge rate under Contract A1 was significantly below cost recovery and a comparison between the offered rate for the next two years with those under Contract A1 was unrealistic;
- (c) Contractor A was primarily set up for the provision of aviation security related service, and all recruitment criteria and policies were decided on such basis. Contractor A's recruitment requirement for Assistants had been adjusted from Secondary 3 to Secondary 5 level;
- (d) it had experienced substantial increases in overhead such as double-digit increases in medical insurance, uniform and accoutrement expenditures; and
- (e) the new requirement in Contract A3 for the provision of additional manpower for meal break reliefs had increased their staff cost by 14%.

2.12 According to the tender report submitted by the DH to the CTB in March 2014, the DH considered prices quoted by Contractor A for Contract A3 were fair and reasonable given Contractor A's explanations in paragraph 2.11.

Significantly higher salary rates in comparison with other control points

2.13 Audit noted that in 2013, the DH had similarly contracted out the health screening services at two other boundary control points, namely the Shenzhen Bay Port and Man Kam To (Contract A4 — Note 11), and the Kai Tak Cruise Terminal (Contract A5). In comparison, the scope and nature of temperature screening services under Contracts A3, A4 and A5 are generally similar (see Table 4), although they operate in different environments. In response to Audit's enquiry, in September 2014, the DH responded that the difference in hourly rates charged by the contractors under Contracts A3, A4 and A5 may be due to different cost factors, such as provision of office space and accessibility of work locations, adopted in these contracts. Whilst these might have accounted for the differences to a certain extent, Audit noted that Contracts A4 and A5 were let through open tendering whereas Contracts A1 to A3 were let by single tenders. With Contract A3 which involved a contract value of \$82.9 million, the DH had not obtained cost breakdown from Contractor A to support the latter's calculation of the hourly charging rates.

2.14 With Contracts A4 and A5 which were let through open tendering, the DH received five and nine conforming offers respectively. Audit compared the hourly rates charged by Contractor A in Contract A3 with that charged by the two other contractors in Contracts A4 and A5, and noted that the hourly rates charged in Contract A3 roughly doubled the rates charged for similar services at the boundary and the cruise terminal (see Table 4).

Note 11: Prior to the use of outsourcing, the DH engaged non-civil service contract staff to provide health screening services in all boundary control points. In consideration of the scale and structure of different boundary control points, in August 2013, the DH decided to carry out the first batch of outsourcing arrangements in Shenzhen Bay Port and Man Kam To Boundary Control Points.

Table 4

Comparison of contracts for provision of health screening services at various control points

	Contract A3	Contract A4	Contract A5	
Control point	Airport	Boundary	Cruise terminal	
Service	Temperature and pregnant visitors screening	Temperature and pregnant visitors screening	Temperature screening	
Type of tender	Single tender	Open tender	Open tender	
Number of conforming offers received	One	Five	Nine	
Service period	1.4.2014 – 31.3.2016 (24 months)	1.12.2013 – 30.11.2015 (24 months)	1.6.2013 - 31.5.2015 (24 months)	
Contract value	\$82.9 million	\$51.1 million	\$2.7 million	
Daily man-hours provision:	0001	1 010 51	107.51	
(a) Assistant	833 hours	1,019.5 hours	127.5 hours	
(b) Supervisor	42.5 hours	53 hours	8.5 hours	
Contract cost per man-hour	\$130	\$65	\$55	
Staff education level required for Assistant according to:				
(a) service specifications	Secondary 3	Secondary 3	Secondary 3	
(b) contractor's recruitment criteria	Secondary 5	Secondary 3	Secondary 3	

Source: Audit analysis of DH records

Risk of paying a higher price for the health screening services

2.15 According to the service specifications of Contract A3, the DH has required the Assistants providing health screening services at the HKIA to have attained at least Secondary 3 education level, which is the same education level

requirement for all Assistants working at boundary control points and the cruise terminal (see Table 4). However, Contractor A informed the DH that their recruitment requirement for such Assistants was Secondary 5 level (see para. 2.11(c)) and with Contract A3 being a single tender, the DH had no alternatives but accepted the use of Assistants with an education level of Secondary 5 level which was higher than the requirement standard set out in the service specifications and higher than that in Contracts A4 and A5. The DH estimated that the increase in service charge owing to Contractor A's higher entry requirement was around \$30.4 million for the 24-month contract period.

2.16 In response to Audit's enquiry, in October 2014, the Security Bureau (SB) informed Audit that:

- (a) the business of Contractor A was conducted with the principal objective of maintaining security at the airport in the public interest and not of generating profits for distribution to the shareholders. In this regard, their charges did not aim to generate profits, but only to recover the total costs incurred for service provision and operating the company; and
- (b) according to Contractor A, the substantial increase in the charging rate of Contract A3 as compared to Contracts A1 and A2 was mainly due to the following:
 - (i) the hourly service rate in Contract A1 was substantially below cost recovery level because a detailed cost analysis was not performed given the time constraint. Revisions in charges in subsequent contracts were therefore necessary to fully recover the costs;
 - (ii) the expansion of service scope in temperature screening (as entailed by a substantial increase in the number of passengers at the airport) and contract terms in Contract A3 had led to a substantial increase in the number of staff requested by the DH from Contractor A; and
 - (iii) between the contracts, Contractor A had introduced catch-up pay to reduce the high turnover rate of staff, and implemented annual salary adjustment. Qualifications and requirements of their staff had also been upgraded, which resulted in higher staff costs.

Need to review the use of single tenders to obtain health screening service

2.17 As early as September 2003, in giving its approval for the DH to use single tendering, the FSTB stated that, if security consideration was not overriding:

- (a) there was a case for the DH to seriously explore the feasibility of inviting open tenders for the health screening service, which did not seem to be highly skilled;
- (b) single tendering was a tide-over measure; and
- (c) urgency would be the only reason to justify single tendering.

2.18 In connection with the security issue, the DH had also sought advice from the SB. In September 2003, the SB advised the DH that:

- (a) the employment of Contractor A for health screening at the HKIA was highly preferred from the security point of view; and
- (b) the use of other outside agencies would create vulnerability in the security system at the airport and inevitably Contractor A's involvement would be necessary to reduce the risk.

In response to the DH's enquiry, in September 2013, the SB advised the DH that it was preferable to continue engaging Contractor A in providing the services in order to provide better assurance to aviation security of Hong Kong as a whole.

2.19 In February 2014, when approving the invitation of a single tender from Contractor A for Contract A3, the FSTB indicated that the approval was subject to the condition that Contractor A was the only suitable agency in the market for the provision of the required services on aviation security grounds.

2.20 In March 2014, when considering the DH's tender report for Contract A3, the CTB noted that the health screening services required in the contract were not the core business of Contractor A, and questioned whether single

tender should continue to be adopted for this contract in future. The CTB suggested that the DH should explore the possibility of letting out the contract by open tender in future with a view to enhancing competition.

2.21 Before proceeding with awarding Contract A3 which is a mission-critical and high-value contract, Audit however noted no documentary evidence showing that the DH had conducted market research to ascertain the number of potential bidders and their security risk profiles for the provision of the required services in line with SPR 350 (Note 12). In contrast, Audit noted that in the two open tender exercises for Contracts A4 and A5 (see Table 4 in para. 2.14), the DH had obtained five and nine conforming offers respectively. This indicates the availability of potential bidders in the market.

2.22 In response to Audit's enquiry on the justification for continuing with the single-tender procurement for Contracts A1 to A3, in October 2014, the SB informed Audit that:

- (a) the Hong Kong Special Administrative Region, through the membership of the People's Republic of China in the International Civil Aviation Organisation, was obliged to maintaining the high aviation security standards in compliance with aviation security standards and recommended practices established by the Organisation;
- (b) in view of the security risks associated with the international aviation industry, and in view of the serious potential consequences associated with these security risks, the HKIA needed to maintain security standards which were generally higher than other land or sea control points; and
- (c) since 2003, the SB had been maintaining the policy that the provision of such services by Contractor A was highly preferable in view of the importance of safeguarding the overall security at the airport. The use of

Note 12: According to SPR 350(e), for mission-critical or high-value contracts, departments may consider conducting a market research or non-binding express of interest exercise to better understand the goods or services likely to be available in the market, technological trends, number of potential bidders, etc. Such information is useful to ensure proper design of the mandatory and desirable features in order to obtain responsive and competitive tenders.

other outside agencies might increase the risks in the security system. Relevant B/Ds would continue to adopt measures that were necessary and appropriate in maintaining such high security standards at the airport.

2.23 Audit notes the SB's explanations, but also observes that apart from Contractor A which provides aviation security controls such as access control to restricted areas and baggage screening, various other companies from the private sector also provide different services (e.g. aircraft cabin cleansing, passenger escort and courier services) in airport restricted areas.

2.24 Given the significant increase in contract value for the airport health screening services (particularly with the high contract cost per man-hour at the HKIA as compared with similar contracts at other boundary control points and the Kai Tak Cruise Terminal, as shown in Table 4 in para. 2.14), Audit considers that the DH needs to critically assess all relevant factors, including the justification for accepting the provision of Assistants at Secondary 5 education level at a higher cost as compared with Secondary 3 level at other control points, during its future tender/contract negotiations with Contractor A. In the long term, it should determine an appropriate procurement strategy, balancing the need to obtain cost-effective services on one hand and the risk of aviation security on the other hand.

Language and Mathematics Basic Competency Assessment

Background

2.25 Between December 2000 and January 2011, the EDB had entered into three consecutive single-tender contracts (Contracts B1 to B3) with Contractor B for the development of the Basic Competency Assessment (BCA) in key learning areas of the three subjects, namely Chinese Language, English Language and Mathematics. The BCA was one of the proposals put forward by the Education Commission in its Report on Reform Proposals for the Education System in Hong Kong published in September 2000 to enhance the effectiveness of the assessment mechanisms in facilitating learning and teaching and accepted by the Chief Executive in the 2000 Policy Address. 2.26 Through the BCA, the concept of basic competency, which represents the essential part of the curriculum, was introduced to schools and the public as the minimally acceptable level of knowledge and skills from which a student should acquire in order to progress to the next Key Stage without extra learning support. The three Key Stages are at Primary 1 to 3 (KS1), Primary 4 to 6 (KS2) and Secondary 1 to 3 (KS3) levels.

2.27 The BCA comprises two programmes, namely the Student Assessment (SA) and Territory-wide System Assessment (TSA) programmes, as shown below:

SA programme

1. It is a <u>voluntary on-line assessment</u> programme accessed by schools at any time during the school year to diagnose individual students' basic competency in the three subjects (Chinese Language, English Language and Mathematics) at levels from KS1 to KS3, while giving timely support and guidance to students to attain basic standards. As a quality assessment tool for web-based learning and teaching support, the SA system allows teachers to use the assessment items on the web-based central assessment item bank to create assessments to address students' needs and monitor their learning progress.

2. The main objective of the SA is to provide one of the various assessment tools to be used <u>in the classroom or at home</u> that could provide feedback for teachers to evaluate the progress of students so that early intervention or improvement in teaching could be made. It provides instant feedback to students and teachers through computerized marking and instant reports on students' performance after they complete the on-line assessment.

TSA programme

3. It is a <u>mandatory</u>, large-scale, territory-wide and <u>secure assessment</u> programme centrally administered <u>and conducted in paper and pen mode in schools</u> in Hong Kong for students at Primary 3, Primary 6 and Secondary 3 levels. It aims to gauge the performance of students on the three subjects (Chinese Language, English Language and Mathematics) at the end of the three Key Stages against a defined standard of basic competency. The TSAs for Primary 3, Primary 6 and Secondary 3 are conducted annually covering oral assessments for Chinese Language and English Language on a sampling basis and written assessments on the three subjects.

(to be continued)

(Cont'd)

4. Reports on the territory-wide overall performance of schools and individual school reports with aggregated information on students' performance of the three subjects at basic competency are provided annually for the reference of schools to improve learning and teaching and for the Government to review support strategies and curricula. Together with other school-based assessment data, the TSA and SA would thus help promote the culture of Assessment for Learning (i.e. using the assessment to collect evidence of student learning as an integral part of the learning and teaching cycle for providing timely information for students to enhance their learning and enable teachers to review and improve their teaching) in schools.

2.28 A summary of the three BCA contracts covering the period from December 2000 to December 2014 are shown in Table 5.

Table 5

Contract	Contract period	Duration	(Contract value (\$ million)		
			SA	TSA	Total	
		(Year)				
B1	December 2000 to December 2006	6.0	104	117	221	
B2	May 2007 to December 2010	3.5	77	176	253	
B3	January 2011 to December 2014	4.0	99	220	319	
	Total	13.5	280	513	793	

Single-tender contracts for the development of the BCA (December 2000 to December 2014)

Source: EDB records

Justification for single tenders to acquire BCA services

2.29 According to the SPRs, single tendering could only be used when only one contractor could provide the required services. In seeking approval from the FSTB to select Contractor B through single tendering, the EDB has provided the following reasons:

- (a) Contractor B is the most experienced and respected local institution in the development of large-scale examinations and assessments;
- (b) it is the only institution in Hong Kong that has the required experience as well as technical and subject expertise in developing and administering large-scale territory-wide examinations and assessments;
- (c) the school sector requires certainty and stability in the administration of the assessment programmes;
- (d) besides technical know-how, it is imperative that the institution which administers the BCA should have a deep knowledge of the local education system and be able to inspire the school sector with confidence;
- (e) the services to be provided under the new contract should be highly compatible with those provided under the previous contracts to ensure continuity and avoid abortive work. No other local institutions can undertake this project in a seamless manner; and
- (f) overseas testing institutions are not suitable alternatives since they are unfamiliar with the local educational context.

2.30 When considering Contract B1, the FSTB had requested the EDB to provide further clarification about the nature and scope of the project as well as the single tendering approach. The FSTB had also expressed reservations about the single tendering approach regarding Contracts B2 and B3. In February 2007, when seeking approval from the FSTB for the use of single tender for Contract B2, the EDB undertook to conduct a review to examine the tendering arrangements near the end of Contract B2. In May 2010, the EDB informed the FSTB that it had conducted the review and considered it most appropriate and effective to continue with single tendering. However, the EDB informed Audit in July 2014 that no

separate review report had been prepared, but the review results were all incorporated into the relevant documents for reporting to and seeking approval from the FSTB in respect of Contract B3.

Tender negotiations with Contractor B

2.31 Although competitive tendering was not conducted, Audit noted that for Contracts B2 and B3, the EDB had negotiated the contract price with Contractor B. The audit findings are set out in paragraphs 2.32 to 2.37.

2.32 **Contract B1.** In December 2000, the EDB informed the FSTB that comparison of prices with similar contracts could not be made since it was the first time that the EDB invited a single tender to develop the BCA. Despite this, the EDB estimated the cost for the BCA service to be about \$217 million by making reference to the costs incurred in other EDB's projects (Note 13). As the tender price for Contract B1 was \$185 million, the EDB considered the tender price reasonable. Therefore, no tender negotiation was conducted for Contract B1.

2.33 *Contract B2.* The tender price received from Contractor B for Contract B2 was \$291 million. In view of the substantial increase of \$106 million as compared with Contract B1, in May 2007, the CTB requested the EDB to conduct tender negotiation with Contractor B.

2.34 In response to Audit's enquiry, in September 2014, the EDB informed Audit that:

(a) under Contract B2, Contractor B had to fulfill the substantial increase in the required services as set out in the tender invitation document;

Note 13: These included the Hong Kong Attainment Test, Secondary School Places Allocation System and Academic Aptitude Test.

- (b) the IT infrastructure supporting the BCA (Note 14) would be redeveloped;
- (c) the SA question bank would be expanded from 8,000 to 20,000 items to meet the aspiration of the school sectors; and
- (d) since the TSA was fully rolled out, the provision of assessment literacy training for teachers at primary and secondary levels would be required.

2.35 Taking into account the above, in May 2007, the EDB informed the CTB that according to Contractor B, there was no room for downward adjustment unless the EDB reduced the scope of the services required. The EDB considered that the contract price was reasonable. In the same month, the Permanent Secretary for Financial Services and the Treasury (Treasury), on the recommendation of the CTB, approved the award of Contract B2 to Contractor B at a value of \$291 million.

2.36 **Contract B3.** In view of another significant increase of tender price (\$347.5 million) over the contract value of Contract B2 (\$291 million), the EDB advised that it had conducted rounds of tender negotiation with Contractor B in August 2010. In the negotiation, the EDB considered that the tender price was on the high side, with almost 20% increase in cost but reduced service requirements in the SA programme (i.e. no system redevelopment, reduced output of SA items, no requirement for introducing computerised adaptive tests and Assessment Literacy Training for teachers) when compared with Contract B2.

2.37 In October 2010, the EDB informed the FSTB that according to Contractor B, the increase was mainly due to increase in:

Note 14: This covered both the SA and TSA for which the system would be redeveloped as a multi-tier system with: (a) web servers to handle Internet connections with teachers and students; (b) application servers comprising a number of customised programs for creating (including item selection and presentation, scheduling of assessment) and processing assessment (i.e. marking, result reporting and data analysis); and (c) database servers to provide a centralised item bank of the three subjects and storage for assessment results and students data.

- (a) the revised overheads charging rate (from 10% to 20% of direct cost) as a result of Contractor B's corporate policy change;
- (b) administration cost due to an inclusion of commercial office rental for the full contract period; and
- (c) staff cost caused by an adjustment in cost structure of SA item setting.

Following negotiations with Contractor B, in September 2010, Contractor B offered a special discount and reduced some of the costs, while producing more SA items. The tender price was reduced from \$347.5 million to \$327.4 million. According to the tender report submitted to the CTB in October 2010, the EDB considered that the tender price was fair and reasonable.

Need to review the continued use of single tender for SA programme

2.38 As mentioned in paragraph 2.29(a) and (b), the EDB considers that Contractor B is the only service provider which can provide the BCA service having regard to its knowledge about the local school curriculum and its ability to hold public examinations in school centres. However, the increasing cost of the three BCA contracts (see Table 5 in para. 2.28) is a cause for concern. In September 2014, the EDB informed Audit that:

- (a) the launch of the BCA in 2000 was to introduce a rather new concept of basic competency to the education sector through the implementation of the SA and TSA and to change the culture of assessment;
- (b) given that the SA and TSA came in a package under the BCA especially when the BCA was at an early development stage, engaging one single institution to implement both assessment programmes was considered more appropriate and effective in ensuring consistency in defining the basic competencies for different Key Stages, and hence in the quality of assessment items;
- (c) the IT infrastructure for the BCA project was redeveloped under Contract B2 in 2007 to enhance the user-friendliness of the systems;

- (d) after ten years of development, the EDB however considered that:
 - (i) the basic competencies in the three subjects had already been well defined;
 - (ii) the school sector had also become well familiar with the concept of basic competency and had gradually experienced a change in the culture of assessment; and
 - (iii) it was an opportune time to explore whether other local or overseas institutions would have the capability to develop quality SA items with a larger variety while Contractor B would continue to assume a coordinating role in running the IT system;
- (e) in 2012, the EDB separately contracted out the development of KS3 (Secondary 3) English Listening and Speaking task to another service provider as a pilot project to assess the feasibility of engaging other service providers in the development of SA items; and
- (f) the EDB was planning to upgrade the SA to another on-line assessment bank. Development of new SA items would no longer be required while only minimal support to maintain the SA system in this transitional period would be required under the next BCA contract. In case the upgraded assessment bank would need to be managed by a service provider, open tender would be considered.

2.39 Audit welcomes the EDB's initiative in paragraph 2.38(e) and (f). Given that the SA programme mainly involves the development of competency assessment items and maintaining the SA system and database, Audit considers that with the passage of time, the justification for the continued use of single tender for the SA programme (bundled with the TSA) may diminish and it is time to consider separating the SA programme for procurement by open competitive tenders.

Limited number of service providers for major contracts

2.40 To enable B/Ds to establish a good tender framework, the Efficiency Unit has issued "A General Guide to Outsourcing" to promulgate the best practice principles to be followed throughout the tender process. According to the Guide, the tender process should not create obstacles to competition against the potential tenderers. B/Ds need to guard against over-reliance on a few dominant contractors as their under-performance or non-performance could lead to significant service disruptions. The SPRs warn B/Ds to avoid over-reliance on a single contractor and to enhance open and fair competition.

Provision of cleansing services by FEHD service providers

2.41 Audit noted that most of the FEHD's cleansing services had been outsourced. As at June 2014, the FEHD had outsourced its street cleansing services in 19 districts under 25 two-year contracts at a total value of \$1,740 million, comprising different categories of services as shown in Figure 3.



Figure 3

Services specified in the street cleansing contracts

Source: FEHD records

2.42 While the street cleansing services were open to tender bids from service providers, a comparison of the two recent tender exercises indicated that the average number of tenderers per contract decreased from 4.1 to 3.6. The 25 existing contracts were awarded to five contractors, one of which was awarded 10 contracts with a total value of \$653 million (38% of \$1,740 million). Details are shown in Table 6.

Table 6

Contractor	No. of contracts	Contract value (\$ million)
C1	10 (40%)	653 (38%)
C2	5	416
C3	5	310
C4	4	280
C5	1	81
Total	25	1,740

FEHD's street cleansing contracts (June 2014)

Source: Audit analysis of FEHD records

2.43 Audit noted that the CTB, in assessing the tenders, had expressed concerns about the risks of placing contracts in the hands of a few contractors and advised the FEHD on ways to enhance competition. For example, in considering the two contracts (\$106 million) for District A, the CTB noted the award of the contracts to Contractor C1 and recommended that the FEHD should consider restricting the number of contracts to be awarded to each tenderer for risk management purpose.

2.44 In response to Audit's enquiry, in September 2014, the FEHD informed Audit that the following measures had been taken to enhance competition and reduce the risk of over-reliance:

- (a) splitting large contracts into smaller ones;
- (b) staggering tender exercises so that contracts could be let out in phases;
- (c) promoting tender exercises by means of wider publicity and tender briefing;
- (d) relaxing unnecessary mandatory/tender requirements;
- (e) avoiding assessment criteria and/or reducing the weighting of assessment criteria which were inherently in favour of the existing contractor; and
- (f) restricting the number of contracts to be awarded to the same tenderer if the tender involved more than one contract and were not subject to the WTO GPA.

The average number of tenders received per contract had been quite stable over the past years and there was no indication of a downward trend. The situation had kept on improving, with the number of the FEHD contracts held by Contractor C1 decreasing. As at September 2014, while the total number and value of contracts awarded remained at 25 and \$1,740 million respectively, Contractor C1 was awarded seven contracts (\$426 million), Contractor C2 six contracts (\$491 million) and Contractor C4 six contracts (\$432 million). The FEHD should continue monitoring the situation and take necessary measures to enhance competition, when appropriate, for the street cleansing services.

Provision of cleansing and supporting services in LCSD venues

2.45 As at March 2014, the LCSD had awarded 41 contracts for the provision of cleansing and supporting services to its venues at a total value of 1,913 million to eight contractors. Audit noted that 78% (32 contracts) of these contracts were awarded to two contractors with a total value of 1,780 million (93% of 1,913 million). Details are shown in Table 7.

Table 7

Contractor	No. of contracts	Contract value	
		(\$ million)	
D1	20 ح 32	1,236 ך 1,780	
D2	12 (78%)	544 (93%)	
D3	4	64	
D4	1	55	
D5	1	6	
D6	1	4	
D7	1	2	
D8	1	2	
Total	41	1,913	

Provision of cleansing and supporting services in LCSD's venues (March 2014)

Source: Audit analysis of LCSD records

As shown in Table 7, 20 cleansing and supporting service contracts totalling \$1,236 million in value were awarded to one contractor (Contractor D1). In Audit's view, the concentration of cleansing and supporting service contracts for LCSD venues in two contractors requires close monitoring. Audit notes that in considering the award of two contracts (totalling \$328 million) to Contractor D1 in March 2013, the CTB noted that the contractor had a lion share of such service contracts and considered that the LCSD should, subject to the legal advice on the applicability of the WTO GPA on tenders of this kind, map out a tendering strategy with a view to avoiding over-reliance on a few service providers for the services. The CTB also requested the LCSD to revert to it with the review result before the tender exercise for the next batch of leisure venues was conducted.

2.47 In response to Audit's enquiry, in September and October 2014, the LCSD informed Audit that:

- (a) tendering exercises must be conducted in accordance with the law. As advised by the FSTB, B/Ds must take heed of the Department of Justice's advice on the possible risk of challenge against the restriction on the maximum number of contracts to be undertaken by the same contractor if such a restriction was not set on the basis of the assessment of the contractors' capability of undertaking the contracts concerned. After consulting the Department of Justice in April 2013, the LCSD had been following this policy and practice;
- (b) in May 2013, after obtaining the legal advice from the Department of Justice, the LCSD informed the FSTB that it would continue to adopt its practice (i.e. without a restriction on the number of contracts to be undertaken by the same contractor) pending the formulation and promulgation of new Government-wide polices and directives in this respect;
- (c) in restricting the number of awards to individual contractor(s), the LCSD would likely have to pay more in terms of the contract price and incur increased efforts in contract management in view of the larger number of contractors of various sizes; and
- (d) from risk management perspective, the LCSD had prepared a departmental contingency plan to tackle the problems of unforeseen cessation or disruption of services by contractors due to their failure in fulfilling the contractual obligations.

2.48 Since a large majority of the LCSD's cleansing and supporting services to its venues are contracted out to two contractors (see Table 7), Audit considers that the LCSD needs to critically review its tendering strategy, and where appropriate and feasible, consider the use of more contractors, thereby reducing the management risk of relying on several contractors to deliver the services.

Procurement procedures not always adopted to enhance competition

2.49 For purchases of services not exceeding \$1.43 million in value, B/Ds are allowed to invite quotations (Note 15). According to the SPRs:

- (a) services of similar nature are, in normal practice, consolidated in a single purchase or contract;
- (b) B/Ds should ensure that they do not evade the limits by dividing procurement requirements into instalments or by reducing the usual duration of contracts;
- (c) in making the procurement, B/Ds should consolidate requirements of services of similar nature as far as possible to achieve better economy of scale; and
- (d) B/Ds shall follow tender procedures when making purchases of stores and services exceeding \$1.43 million.

2.50 **Repeated purchases exceeding \$1.43 million.** From the contracts selected from the four B/Ds under review (see para. 1.9), Audit found that while some contractors provided same/similar services with a total value exceeding \$1.43 million, such services were not or could not be aggregated into a single contract to achieve better economy of scale and follow the tender procedures for procurement in accordance with the SPRs as illustrated in Cases 1 and 2.

- (a) not exceeding \$50,000 is more than one quotation; and
- (b) exceeding \$50,000 but not exceeding \$1.43 million is not less than five written quotations.

Note 15: According to the SPRs, the number of invitations for quotation required for procuring services with a value:

Case 1

1. Since 2001, the DH has adopted quotation procedures in procuring radiology services for different health clinics. According to the contract terms, the contractor shall provide designated radiologists who are registered Specialists in Radiology of the Medical Council of Hong Kong for the provision of precise professional diagnosis and reporting services on X-ray films/images or special X-ray examinations (with direct interaction with patients). The current six contracts were awarded to Contractor E (with three radiologists). Individual values of these six contracts were all below the quotation limit of \$1.43 million (see para. 2.49) with details shown below:

Contract (Note)	Period	Diagnosis and reporting service	Service location	Duration (Month)
E1	Dec 2012 – Jun 2014	X-ray film	Clinic A	18
E2	Dec 2012 – Jun 2014	Special X-ray examination	Clinic A	18
E3	Jan 2013 – Jul 2014	X-ray film/image	Clinic A	18
E4	Jun 2013 – Jun 2015	X-ray image	Clinic B	24
E5	Jan 2014 – Jan 2016	X-ray image	Clinic A/C	24
E6	Aug 2013 – Jul 2014	X-ray film (including courier service)	Contractor's office	12

Note: Contracts E1 to E3 and E6 were renewed and awarded to Contractor E in June 2014.

2. *Inviting quotations from same list of radiologists*. In the renewal exercises for each of the six contracts since 2008, quotations had been invited from the same list of some 20 radiologists. There are no documented records indicating why the DH only used the same list of radiologists for inviting quotations. Audit considers that the DH needs to update the quotation invitation lists more regularly.

3. In September 2014, the DH informed Audit that: (a) the DH made telephone calls to potential contractors from different channels (e.g. website of the Hong Kong Medical Council, Yellow Pages) to compile the invitation list, which was last updated in 2008; and (b) for more regular updates and telephone calls, the DH considered that it needed to balance the costs and benefits, and be mindful of possible complaints from the radiologists for repeated enquiries from the DH.

Case 1 (Cont'd)

4. *Varying duration of Contract E3.* For the renewal of Contract E3 which was due to expire in January 2011 (the first renewal), the DH found that the quotation received exceeded the quotation limit of \$1.43 million (see para. 2.49) and could not accept it. Having reviewed the operational requirement, the DH decided to shorten the service period from 18 to 12 months. Instead of inviting quotation again, the DH requested the contractor to confirm if he would provide the service for the revised period at the same rate, terms and conditions as he previously quoted. Following his confirmation, the contract value was lowered to below \$1.43 million for the revised 12-month period (till January 2012).

5. For the second renewal of Contract E3 for 12 months (January 2012 to January 2013), the DH accepted the lowest quotation received which was below the quotation limit of \$1.43 million. However, for the third renewal of Contract E3, the DH renewed at the value below \$1.43 million for a longer period of 18 months (January 2013 to July 2014) without documenting the reasons for extending the contract duration.

- 6. In September 2014, the DH informed Audit that:
 - (a) for the first renewal of Contract E3, quotations were invited from the list of 19 radiologists. However, only one offer was received which quoted a rate 1.7 times of the rate of the expiring contract. Price negotiation was attempted but failed. Having considered that the price increase might be due to short-term fluctuation at that time, the DH decided to shorten the contract duration from 18 to 12 months;
 - (b) for the second renewal of Contract E3, the rate quoted by the contractor dropped by 33% and the 12-month contract was awarded. For the third renewal, the 18-month contract was awarded as the rate quoted by the contractor only increased by 7%; and
 - (c) the procurement strategy/process was designed after considering various factors, such as location of the clinics, avoidance of over-reliance on a single contractor, smaller value contracts could attract radiologists for more competitive pricing, and different service nature of the six contracts.

7. *Need for review of procurement strategy.* While individual values of Contracts E1 to E6 did not exceed the quotation limit of \$1.43 million, the aggregate value was 4.3 times of the limit. In Audit's view, the DH needs to review its procurement procedures with a view to enhancing competition and meeting the requirements of the SPRs.

Source: DH records

Case 2

1. Since 2006, the LCSD has procured special security management services quarterly to tackle noise nuisance problem at Park A. Through invitation for quotations, the contracts were awarded to a contractor who provided staff with past experience in disciplined services. The staff were required to work six hours a day in maintaining order at the park such as restricting the use of heavy duty sound equipment, and erection of sun umbrellas by the singing groups. In 2012-13 and 2013-14, the LCSD spent a total of \$5.4 million in hiring the services through repeated short-term contracts on a quarterly basis.

2. *Need to obtain competitive services through open tendering.* Audit noted that the LCSD had, since July 2013, planned to obtain the services at Park A through longer-term open tender contracts. However, up to September 2014, quarterly service contracts awarded through quotations were still in use. Audit considers that the LCSD needs to expedite action to obtain competitive services through open tendering as soon as practicable for Park A.

3. In response to Audit's enquiry, in October 2014, the LCSD informed Audit that the LCSD:

- (a) had been working closely with the District Council concerned and the district community with a view to identifying new innovative means to tackle noise nuisances. Hence, it was necessary for the LCSD to launch a number of measures as a pilot scheme and then evaluate the effectiveness of these measures before considering whether some measures should be implemented on a longer term basis; and
- (b) had decided to engage special security guards with working experience in disciplinary force with a view to stepping up the enforcement to control and contain singing activities at Park A. As these singing activities were very dynamic and reasonably localised, and the cost-effectiveness of the special security services had yet to be proven, the LCSD had to adopt a prudent approach by engaging such services on a short-term basis by invitation of quotations. After establishing that engagement of special security guards should continue, a long-term contract was being arranged to source the requisite services for Park A.

Source: LCSD records

PART 3: SPECIFICATION OF SERVICE REQUIREMENTS

3.1 This PART examines the specification of service requirements set by the selected B/Ds. The following issues are examined:

- (a) need to set out clearly service requirements in tender specifications (paras. 3.2 to 3.3);
- (b) need to reflect the FEHD's street washing service requirements accurately in tender specifications (paras. 3.4 to 3.9); and
- (c) setting of mandatory requirements specified in the LCSD's venue management contracts (paras. 3.10 to 3.19).

Need to set out clearly service requirements in tender specifications

3.2 Tender specifications define the requirements of the procuring departments and what the tenderers are expected to provide. According to the SPRs, tender specifications shall meet the basic Government procurement principles of transparency, openness and fairness. Specifications should contain sufficient information for the tenderers to determine the nature, scope and estimated quantity or value of goods or services required, their characteristics, standards to be met, performance under specified conditions and other relevant information in order to obtain conforming and competitive bids.

3.3 To assess how clear and accurate the service requirements are specified in the tender documents, Audit selected the FEHD's street washing service for review.
Need to reflect FEHD's street washing service requirements accurately in tender specifications

3.4 As highlighted in paragraph 2.41, the FEHD outsourced most of its street cleansing services to contractors. Under the street cleansing contracts, contractors are required to provide the street washing services by washing teams each comprising one supervisor-cum-driver and three cleansing staff. As at June 2014, the contract value of street washing services amounted to \$294 million (or 17%) of the total contract value of \$1,740 million for street cleansing contracts.

3.5 The requirements of street washing services, including service locations and frequency of service required for individual locations, are specified in the tender documents of the FEHD. Tenderers are required to propose detailed work plans with street washing schedules (Note 16) for the service requirements specified in the tender documents. Tenderers are also required to propose the number and posts of staff, number of street washing vehicles and their working hours for the work shifts specified in the tender documents and other proposed work shifts. Tender prices are based on the monthly rate derived from the hourly charge rate for the proposed resources (i.e. staff and vehicles) and the hours of services required/to be provided for the whole contract period. Tenders have to go through a competitive bidding which accords 70% weighting to price proposal and 30% to technical proposal. For the successful tenderer, the work plans become part of the contract with the Government.

3.6 Audit selected tender documents on the street washing services of five districts (Districts B to F) to compare the work plans of the contracts in force as at March 2014. The contract value of street washing services for these five districts was \$64 million. The contractors were required to provide 23 street washing teams with 92 staff (i.e. 69 cleansing workmen and 23 supervisor-cum-drivers) at a monthly rate of \$2.7 million. Audit noted that there were significant discrepancies, as shown in Figure 4, between the service locations specified in the tender documents and those provided in the work plans as proposed by the tenderers (see para. 3.5), which formed part of the contracts.

Note 16: The street washing schedules provided by the tenderers in their work plans showed the routes of the service locations, times of arrival and departure for each location, water-filling times and meal break (if any).

Figure 4

Discrepancies in service locations between the tender documents and the contractors' work plans (which formed part of the contracts)



Legend: Service locations specified in the tender document and included in the work plans of the contract

Service locations not specified in the tender document but proposed by contractor under "Others" category and included in the work plans of the contract

Service locations specified in the tender document but not included in the work plans of the contract

Source: Audit analysis of FEHD records

Remarks: Figure in the bracket is the number of service locations.

3.7 For example, 61% of the service locations in District D specified in the tender documents for street washing were not included in the contractor's work plan of the contract. According to the specifications of service requirements, lanes and steps of streets are required to be washed by the washing teams. Despite these discrepancies in service locations between the tender documents and the contractor's work plan, the contract was awarded at a contract value of \$73 million to Contractor C2 who was the sole tenderer in the tendering exercise and had obtained a passing

mark (Note 17) for the quality of its work plan. Audit noted that the same applied to the previous contract for District D, which was similarly awarded to Contractor C2, in which the majority of the locations as specified in the tender documents were not included in Contractor C2's work plan.

3.8 For fair competition, it is important when evaluating the street washing tenders to ensure that the service requirements as specified in the tender documents have been complied with before contracts are awarded to the service contractors. Audit considers that the FEHD needs to critically review the locations for street washing as specified in the tender documents to ensure that they are complete and well justified to meet the actual needs, and take measures to incorporate all required locations into the contracts awarded to the successful tenderers.

3.9 In response to Audit's enquiry, in September 2014, the FEHD informed Audit that it would:

- (a) remind all districts to critically review the locations specified for street washing in the tender documents to ensure that such locations were justified and met the actual needs;
- (b) set out these locations clearly in the tender documents and pay special attention to the relevant proposals in the work plans submitted by the bidders during the vetting of tenders and awarding of contracts; and
- (c) take measures to ensure that such locations were clearly set out in the contract awarded to the successful bidder.

Note 17: Under the FEHD's marking scheme for tender assessment, Contractor C2 obtained 7.5 marks (maximum 30 and passing mark 7.5) for the quality of the work plan.

Setting of mandatory requirements specified in LCSD's venue management contracts

3.10 According to the SPRs, mandatory features are those features that are so fundamental or essential to the acceptability of the tender that non-compliance with any of them will render the tender non-conforming. Desirable features are not standards or specifications that must be met but normally take the form of assessment criteria in the marking scheme and more technical scores will be given if the tenderer can provide more desirable features with performance better than the specified level. The SPRs require that in setting the tender specifications, B/Ds should guard against over-restrictive requirements.

3.11 Requirements more restrictive than necessary limit the ability of service providers in the market to compete with an incumbent. These might also have the effect of protecting existing service providers in the market from potential competition, thus reducing or limiting choices and potentially affecting prices. Audit selected the tender documents of the LCSD's management support services for sports centres, which specify at least three years of relevant experience in such services at recreational or sports facilities as mandatory requirements (see para. 3.14 below), for review.

Outsourcing the management support services of sports centres

3.12 As at 31 March 2014, the LCSD had 95 sports centres. The LCSD outsourced the management support services of 14 sports centres (including operating the computerised booking system, maintaining the sports equipment, providing cleansing and horticulture services) to one contractor (Contractor H) at a total value of \$130 million through four tender exercises.

3.13 Audit reviewed a tender exercise for outsourcing management support services of four sports centres. In April 2013, in addition to the nine sports centres already managed by Contractor H (as one was managed by another contractor at that time), the contracts for these four sports centres were awarded to Contractor H at a total value of \$44 million for a 36-month period from May 2013 to April 2016.

3.14 According to the mandatory requirements specified in the tender documents, the tenderer must have:

- (a) at least three years of cumulative experience in the provision of management services at recreational or sports facilities within the past ten years prior to 1 March 2013; and
- (b) either:
 - (i) completed a contract with an annual contract value of not less than \$1.3 million in the provision of management services at recreational or sports facilities and the last one year of that contract must fall within the past three years prior to 1 March 2013; or
 - (ii) been performing as at 1 March 2013 a contract with the contract commencement date not less than one year prior to 1 March 2013 and with an annual contract value of not less than \$1.3 million in the provision of management services at recreational or sports facilities.

3.15 In response to the tender invitation, the LCSD received offers from six to seven tenderers for individual sports centres. However, only three to four tenderers met the mandatory requirements and were further evaluated in the technical and price proposal assessment.

- 3.16 In considering the tenders in April 2013, the CTB noted that:
 - (a) there was a tenderer with rich experience in the provision of management services for heritage, educational and ecological facilities. The tenderer was not considered further by the LCSD as it failed to meet the mandatory requirement that the facilities should be recreational or sports related. The CTB suggested that the LCSD should review whether the experience required needed to be directly related to recreational or sports facilities with a view to enhancing competition in future tender exercises; and

(b) Contractor H had a lion share of the contracts for the provision of management support services to the sports centres outsourced by the LCSD. The CTB considered that the competition in tenders of this kind was obviously not healthy and recommended that the LCSD should, from a risk management angle, map out a tendering strategy with a view to avoiding over-reliance on a few service providers for the services.

3.17 In December 2013, in recommending the approval for the award of contracts for three other sports centres for a 36-month period from February 2014 to January 2017 to Contractor H, the CTB reiterated its concern after noting the LCSD's view against restricting on the number of contracts awarded to the same contractor in future tender exercises. The CTB considered that the LCSD should critically consider how tender competition for these services, which were not covered by the WTO GPA, could be enhanced as it was not desirable to over-rely on a single contractor.

3.18 In response to Audit's enquiry, in September and October 2014, the LCSD informed Audit that:

(a) the current mandatory requirements as mentioned in paragraph 3.14 were not excessive because the management support service contracts for the sports centres were complicated contracts involving heavy financial and human resources from the contractors, as well as requiring the contractors to possess the expertise of recreational and sports management (Note 18), to provide a holistic scope of services inclusive of all management duties (Note 19) in addition to security, cleansing and horticulture duties. The

Note 18: This refers to the expertise of both hardware (facilities management, maintenance and operation) and software (supervision of recreation and sports coaches and instructors, checking of their qualifications as sports coaches and instructors, organisation and delivery of recreation and sports training programmes and activities to boost up utilisation of the sports centres and to increase revenue).

Note 19: The contractor has to deal with all operational matters (including handling of general emergencies as well as accidents of sports injuries) and public enquiries (including investigation and making replies to public complaints) without the presence or immediate guidance of any LCSD staff.

contractor had to be fully conversant with the management of recreational or sports facilities to ensure high performance to provide good services to the public and to upkeep the department's image;

- (b) in the past tendering exercises, there had been more than one qualified contractors (normally three to four), illustrating that the mandatory requirements had not pre-empted any other bidders. It was a special occurrence in the last round of tendering in 2013-14 that all of the 14 contracts were awarded to one contractor;
- (c) the LCSD had assessed from a risk management angle the scenario that only one contractor was awarded with all the contracts for the sports centres. It had devised a comprehensive contingency plan for districts to deal with the default of contractors in case of failure which was already in place for years and the services could be resumed within a reasonably short period of time. Of the 95 sports centres, only 14 (15%), which are geographically dispersed, were outsourced. The overall risk on the impact of service suspension upon the default of a contractor was minimal; and
- (d) the LCSD would review the mandatory requirements, including the relevant experience, and if appropriate consider whether there was room for relaxing the requirements so that the pool of qualified contractors could be expanded to enhance competition.

3.19 Audit notes the views of the CTB and the LCSD (see paras. 3.16 to 3.18). With the current situation that all the contracts for providing management support services to the 14 sports centres are awarded to only one contractor, Audit considers that there is a need for the LCSD to critically review whether it is possible to revise its mandatory requirements with a view to encouraging competition, increasing choices and avoiding over-reliance on a single contractor.

PART 4: MONITORING SERVICE DELIVERY

4.1 This PART examines the monitoring of service delivery by the selected B/Ds. The following audit issues are examined:

- (a) requirements for monitoring contractor's performance (paras. 4.2 to 4.3);
- (b) monitoring of the BCA contracts by the EDB (paras. 4.4 to 4.15);
- (c) requirements specified in the FEHD's recyclables collection service contracts not effectively enforced (paras. 4.16 to 4.21); and
- (d) monitoring of the FEHD's street washing services (paras. 4.22 to 4.35).

Requirements for monitoring contractor's performance

4.2 COs are responsible for the management of the services procured. According to SPR 535, B/Ds shall devise an effective monitoring mechanism to ensure that a contractor performs to standard and complies with the terms of a contract. B/Ds shall evaluate the performance of their contractors and keep the performance records.

4.3 To assess the effectiveness of performance management procedures in practice, service contracts from the four B/Ds were selected for review. Audit identified areas for improvement in the EDB's monitoring of the BCA contracts and FEHD's monitoring of its recyclables collection services and street washing services.

Monitoring of BCA contracts by EDB

4.4 As mentioned in paragraph 2.25, the EDB entered into three contracts (Contracts B1 to B3) with Contractor B through single tendering to develop the BCA in Chinese Language, English Language and Mathematics since December 2000.

Sub-contracting by Contractor B

4.5 Under the contract terms, no sub-contracting by Contractor B is allowed except with prior written approval of the EDB. The EDB may determine the terms and conditions of the sub-contract and require the sub-contractor to enter into a direct undertaking in favour of the EDB on such terms as it considers appropriate.

4.6 Audit notes that Contractor B has sub-contracted part of the three contracts (Contracts B1 to B3) to different sub-contractors. In the tender proposal of Contract B1 and the subsequent correspondence between Contractor B and the EDB, Contractor B had mentioned that it intended to sub-contract the development of the application software for both the SA and TSA programmes to a service bureau through tendering. However, Audit could not find any document which indicated the EDB's formal approval of the sub-contracting. In response to Audit's enquiry, in August and September 2014, the EDB informed Audit that:

- (a) there were records showing that the EDB was in the picture of the sub-contract under Contract B1 to develop the SA system when the BCA was first launched in 2000;
- (b) Contractor B had not sought the EDB's prior approval for the sub-contracts;
- (c) Contractor B informed the EDB that following the arrangement under Contract B1, web-services related to the IT system were contracted out;
- (d) in fact, it had only come to the EDB's attention recently that contracting out the conversion of web-items to a third party had been an established practice for Contractor B since the BCA Project was first launched in 2000;
- (e) the EDB considered that the conversion of web-items only constituted a small part of the whole SA item development process; and
- (f) the EDB had reminded Contractor B of the contractual requirements and requested Contractor B to provide it with information on all major sub-contracts under Contract B3.

4.7 For one of the sub-contracts, Audit notes that the unit rate charged by the sub-contractor for developing the web-based features in the SA is only about 25% of the rate charged on the EDB by Contractor B, although such information may not be directly comparable as Contractor B might have incurred other costs to ensure the work quality of the sub-contractor. Nevertheless, such information may be useful for the EDB for tender evaluation or negotiation when assessing the reasonableness of the single-tender price proposed by Contractor B.

4.8 To protect the interest of the Government, Audit considers that the EDB should ensure that Contractor B duly complies with the contract terms on sub-contracting, and obtains its prior written approval before entering into sub-contracts with other parties.

Committed services not achieved for Contract B2

4.9 Audit noted that by the end of Contract B1 (December 2006), the web-based SA system had been developed and could house 54,000 SA items. As at December 2006, about 8,000 SA items were developed by Contractor B for use by schools to conduct the assessment for students. Under Contract B2, Contractor B could only develop 9,000 new SA items compared to the 20,000 items required. Moreover, at the end of Contract B2 (December 2010), half of the 8,000 SA items developed under Contract B1 could not be satisfactorily transferred to the SA system because of the IT system enhancement made under Contract B2. As a result, an amount agreed between the EDB and Contractor B was deducted from the contract for the under-performance of Contractor B under Contract B2.

4.10 Under Contract B3, the EDB had requested Contractor B to categorise the contract sum into fixed and variable costs so that payment could be readily calculated and deducted in case of under-performance. The EDB also requested Contractor B to submit quarterly reports for closer monitoring of the delivery of service.

Low utilisation of SA programme

4.11 According to the EDB's records, as at the completion of Contract B1 (December 2006), 65% of primary schools and 80% of secondary schools had created accounts to access the SA system to assist learning and teaching. For Contract B2 (from May 2007 to December 2010), the EDB informed Audit in

September 2014 that it did not maintain records on the utilisation rate of the SA system since the system was redeveloped and launched in July 2009. Starting from 2011, instead of using the number of schools creating accounts to measure system utilisation, system utilisation has been measured by using the number of schools creating assessments for their students. In the past three years from 2011 to 2013 under Contract B3, the EDB records indicated the following percentages of schools which had logged into the SA system to create assessments for students:

Year	Primary schools	Secondary schools
2011	31%	13%
2012	37%	17%
2013	40%	20%

In other words, in 2013, 60% of the primary schools and 80% of the secondary schools had <u>not</u> logged into the SA system to create assessments for students.

4.12 In the Annual Progress Report on Contract B3 for 2013, Contractor B reported, among other things, that there were 20% of secondary schools logged into the SA system to create assessments for students as compared to 40% of primary schools. The low number of primary and secondary school users suggested that more promotion of the SA programme was required. In October 2014, the EDB informed Audit that the SA was only an alternative assessment tool to be used by schools on a voluntary basis. Since it covered basic competencies which represented only part of the curriculum, schools were not encouraged to rely on the SA as the only assessment tool but to use it according to the progress of different levels, classes or students. Not every student in Primary 1 to Secondary 3 would use the assessment tool.

4.13 *Promotion of SA programme*. According to the Annual Progress Reports on Contract B3, Contractor B had held seminars/workshops to encourage schools to use the SA more frequently as a tool for enhancing teaching and learning. In the past three years from 2011 to 2013, Contractor B:

(a) held about 100 seminars/workshops for about 4,400 people (including heads of primary and secondary schools, primary and secondary school teachers, university academics and students, and members of general public); and

(b) launched a school-based pilot scheme on using the SA system involving three primary schools in 2012 and nine schools (six primary and three secondary) in 2013 with the aim of assisting teachers to use the SA data in diagnosing the strengths and weaknesses of individual students and help schools facilitate the development of school-based assessment through the use of the SA programme.

4.14 Despite the efforts for promoting the SA programme, the utilisation of the SA system was still low and there is still room for improvement. In response to Audit's enquiry, in September 2014, the EDB informed Audit that:

- (a) it had tasked Contractor B to conduct a survey with schools in June 2014 to better understand the usage of the SA among teachers to ascertain the underlying reasons for the low utilisation of the SA system and to seek suggestions for improvement; and
- (b) positive feedback was received from teachers who appreciated the value of the SA and agreed that the class reports and student reports had helped them identify the strengths and weaknesses of their students. It was also noted that a number of schools had been using the SA in a continuous manner.

4.15 In view of the significant financial resources involved in the SA programme (some \$280 million for Contracts B1 to B3 — see Table 5 in para. 2.28) and in order to reap its benefits, Audit considers that the EDB needs to identify the reasons for the low utilisation and closely monitor the future utilisation of the SA programme.

Requirements specified in FEHD's recyclables collection service contracts not effectively enforced

4.16 Following the publication of the Waste Reduction Framework Plan (Note 20) by the Government, the Three-Colour Waste Separation Bin Scheme was introduced in 1998 to provide three-colour bins at public places to recover waste

Note 20: The plan aims to change community attitudes and approaches to waste. It points out the need to transfer emphasis from collecting and transporting waste to landfills for disposal to waste prevention and reuse of waste materials.

paper, metal and plastic materials. Since 2000, the FEHD has been providing the recyclables collection service through the use of outsourcing. Under the Policy Framework for the Management of Municipal Solid Waste (2005-2014) published in 2005, the Government aims to tackle the waste problem by reducing the amount of municipal solid waste, increasing the recovery rate of such waste and reducing its disposal in landfills.

4.17 In July 2012, three recyclables collection service contracts for the period from August 2012 to July 2014 were awarded through open tendering to one contractor (Contractor G) at a total value of \$12.7 million. According to the contract terms, Contractor G was required to operate ten recyclable collection vehicles to collect the recyclables at over 3,000 collection points in Hong Kong and deliver the collected recyclables to the "recyclables collector" approved by the FEHD. From August 2012 to June 2014, Contractor G delivered about 1,360 tonnes of recyclables (comprising 330 tonnes of plastics, 1,000 tonnes of paper and 30 tonnes of metal) to the recyclables collector.

4.18 Contractor G was required to submit daily records showing the weight of each type of recyclables collected for the FEHD's inspection. The contract stipulated that Contractor G shall not dispose of any recyclables in any landfill, refuse transfer stations or any other waste disposal facilities without prior consent of the FEHD. Contractor G shall make available to the FEHD documentary evidence of recyclables exported or sold locally.

Improper disposal of recyclables by Contractor G

4.19 In May 2013, the media reported cases where the staff of Contractor G improperly disposed of collected recyclables in refuse collection points. Since then, the FEHD has implemented a surveillance programme to ensure the proper separation, handling and disposal of the collected recyclables by Contractor G. The FEHD deploys the Intelligence Unit (IU — Note 21) to conduct surprise inspections

Note 21: The IU, headed by a Chief Health Inspector, performs multifarious functions ranging from intelligence collection to law enforcement, acts on complaints to conduct ad hoc inspections to check the contractors' performance, and provides support service to district staff in handling complex issues that require surveillance.

along the routes of the recyclable collection vehicles. During two surprise inspections in May 2013, Contractor G was found to have disposed of collected plastic recyclables directly into refuse collection bins. In accordance with the contract terms, the FEHD served two notices of blatant default (Note 22) on Contractor G for the improper disposal of recyclables.

Revised specifications in the renewed contracts

4.20 Following consultation with the Environmental Protection Department (EPD), the FEHD revised the terms of the new recyclables collection contracts for the period from August 2014 to July 2016. The new terms require the contractors to deliver the plastic recyclables collected to "*recyclables recyclers*" (instead of "recyclables collectors") nominated by the contractors and approved by the FEHD (Note 23). However, the requirement for the contractors to deliver <u>non-plastic recyclables</u> to "recyclables collectors" remained unchanged. In Audit's view, the FEHD needs to, in consultation with the EPD, consider making similar revisions for non-plastic recyclables in future tenders.

4.21 In response to Audit's enquiry, in September 2014, the FEHD informed Audit that:

- (a) it would consult the EPD on the need and the practicality of incorporating similar requirements for other types of non-plastic recyclables, e.g. metal and paper; and
- **Note 22:** The FEHD is entitled to serve notices of blatant default on the contractor if the contractor, his employees or sub-contractors commit serious defaults in the course of providing the required services. For each notice of blatant default, the contractor is charged \$3,931. The number of such notices will affect the performance score of the contractor in future tendering exercises.
- **Note 23:** According to the FEHD, contractors are required to nominate not more than two plastic recyclers and their independent capability in handling plastic recyclables will be confirmed by the EPD through site inspections. The FEHD will take into account the results of the EPD's site inspections before approving the nominated recyclables recyclers.

(b) the key considerations included whether the collection contractor would face difficulties in properly disposing of these wastes of higher commercial value and whether there were established recyclers who would carry out the recycling processes for these wastes in Hong Kong.

Monitoring of FEHD's street washing services

4.22 As mentioned in paragraph 3.4, the contract value of the FEHD's street washing services amounted to \$294 million as at June 2014. Contractors are required to render the services by providing street washing vehicles with washing teams each comprising one supervisor-cum-driver and three cleansing staff according to the working hours for their work shifts as specified in the contracts. The FEHD pays the contractors at a monthly rate of \$12 million as calculated and specified in the contracts.

4.23 According to the contract terms, the FEHD will review the management plan, work plan, quality assurance plan and contingency plan of the contractors. Where it finds that the existing plans are inadequate, the contractors shall, upon request by the FEHD, submit revised plans with such modifications required (without involving additional payment from the FEHD) to ensure adequate provision of the services to the FEHD's satisfaction.

Daily work programmes and FEHD's inspections

4.24 According to the FEHD's "Operational Manual for Management of Public Cleansing Contracts" and "Operation Manual for Cleansing Services", contractors should provide daily work programmes which specify the time and service locations for street washing services to meet the work schedules (see Note 16 in para. 3.5) and service level requirements in such frequency, order, at such times and such locations as laid down in the contracts. Health Inspectors should require the contractors to review and revise the work schedules from time to time to ensure adequate provision of the services or to suit the actual needs. The contractor should not vary or amend such schedules which are currently in force without the prior approval from the Senior Health Inspectors concerned. 4.25 To ensure that the contractors are providing satisfactory services according to the approved work schedules and the contract terms, Senior Foremen, Health Inspectors and Senior Health Inspectors would conduct random inspections in accordance with departmental guidelines. The Senior Foremen, who are in charge of individual areas where street washing services are provided, are required to record the results of their inspections in the daily work programmes, and the Health Inspectors would sign off the programmes accordingly. During the inspection, if irregularities are found and rectification is not made within the specified response time, the Senior Foremen will recommend Health Inspectors to issue warning letters or Default Notices (Note 24) on the contractors.

Variations between service locations specified in work plans of the contracts and daily work programmes

4.26 Audit analysis of the daily work programmes as approved by the FEHD for the five selected districts (see para. 3.6) for the month of March 2014 indicates that there were significant variations between the service locations specified in the work plans which formed part of the contracts and the locations specified in the daily work programmes. Details are shown in Table 8.

- **Note 24:** The FEHD is entitled to serve the following three types of Default Notices on the contractor if the contractor, his employees or sub-contractor commit such defaults in the course of providing the required services:
 - (a) notices of blatant default for serious defaults in performance (e.g. leaving work post early without replacement and without the FEHD's consent). For each notice, the contractor is charged \$3,931;
 - (b) notices of default in performance (e.g. failing to meet the required standards or any terms and conditions of the contracts and after warning without rectification). In any month, the contractor is charged at \$2,055 for each of the first 10 notices, \$2,523 for each of the 11th to 20th notices and \$4,058 for each of the 21st and beyond; and
 - (c) notices of behavioural default for misbehaved manner of the contractor's employees while performing services (e.g. sleeping, idling, frequent idle chatting, smoking). For each notice, the contractor is charged \$749.

Table 8

Service locations specified in contracts for street washing services and in the daily work programmes (March 2014)

	Service locations		Variations on service locations	
District	Specified in contract (a)	Specified in contract and included in daily work programmes (b)	Specified in contract but <u>not</u> included in daily work programme (c) = (a)-(b)	Not specified in contract but included in daily work programme (d)
	(No.)	(No.)	(No.)	(No.)
В	161	122	39	31
С	149	102	47	37
D	128	97	31	58
Е	115	86	29	18
F	305	159	146	22

Source: Audit analysis of FEHD records

4.27 It is understood that service locations specified in the daily work programmes were agreed by the FEHD staff (usually the Senior Foremen who are also responsible directly for the random inspections) based on their assessment of the actual situation (i.e. the actual needs for street washing services in their districts), and flexibility is always needed. However, Audit could not find documentation on whether the Health Inspectors of the districts concerned had checked the daily work programmes to ensure that they really met the actual needs and that variations from the work plans of the contracts had been brought to the attention of their supervisors, i.e. the Senior Health Inspectors of the districts. 4.28 In response to Audit's enquiry, in September 2014, the FEHD informed Audit that:

- (a) the "names" of the street washing locations (and therefore the subsequent counting of number of these locations) specified by contractor in a contract might not necessarily be the same as those used/described in the daily work programmes in districts. For example, for District E, of the 29 locations specified in the work plans of the contract but not included in the daily work programmes (see Table 8), 19 locations which were described in other names had been provided with street washing services, whereas the remaining 10 locations were covered under the "high pressure hot water cleansing programmes". For District F, of those 146 locations specified in the work plans of the contract but not included in daily work programmes (see Table 8), 143 locations had been provided with street washing services;
- (b) the FEHD would review and follow up on the documentation required regarding checking of daily work programmes by district cleansing staff to ensure that the programmes met the actual needs and that any variations from contracts were brought to the attention of the appropriate officers of the districts;
- (c) the FEHD would review and revise the guidelines for approval of the daily work programmes for street washing services submitted by the contractors to ensure that any variations from contracts should be fully justified, approved by the appropriate level of officers and properly recorded; and
- (d) for ad hoc cases, the FEHD would consider requiring the Health Inspector (Contract Management) concerned to give prior verbal agreement for revision of daily work programmes which should be properly recorded.

FEHD's monitoring work

- 4.29 In September 2014, the FEHD informed Audit that:
 - (a) the aim of its management of the service contracts was to assess the overall performance of the contractors through random checking by the contract management staff;
 - (b) Senior Foremen were not required to supervise individual workmen of the contractors directly. They should focus on:
 - (i) carrying out field inspections on contractors' services to check the supervising ability and overall performance of the contractors;
 - (ii) conducting random checking on the record of services submitted by the contractors; and
 - (iii) maintaining effective communication with contractors' supervisors;
 - (c) apart from these, the Quality Assurance (QA) Section would also conduct regular audit inspections to monitor the performance of front-line supervisors and the service delivery of contractors. The IU (see Note 21 in para. 4.19) would, acting on complaints, conduct ad hoc inspections to check the contractors' performance; and
 - (d) Senior Foremen used portable electronic device (i.e. Personal Digital Assistants) to record inspection results, including satisfaction on contractors' work and notes for follow-up actions to be taken (e.g. issue of advisory letters, notices of default) as far as possible on the spot and upload the information to the Contract Management System for vetting by Health Inspectors or above.

4.30 Audit noted that during February to April 2014, the FEHD issued a total of four Default Notices (two notices of default in performance and two notices of behavioural default) in relation to the provision of street washing services in these five districts (Note 25). These included one case in District D for not providing services at the location and time specified in the daily work programme. However, the irregularities were not recorded in the daily work programme.

4.31 Audit's review of the daily work programmes of the five selected districts for February to April 2014 revealed that:

- (a) no site inspection was recorded in the daily work programmes of District B, and the Senior Foremen and Health Inspectors of this district did not sign off the daily work programmes;
- (b) the FEHD's inspection results did not indicate any irregularities found from the street washing services;
- (c) the inspections were conducted on a fairly regular basis which might be anticipated by the street washing teams. About 80% of the inspections were conducted in the first four hours of the day shifts (9 to 11 working hours per shift). For District C, about 90% of the inspections were conducted at two service locations (at around 20:30 to 22:30) of the night shifts. For District D, no inspection was conducted within the last two hours before the end of the night shifts at 23:00 in March 2014; and
- (d) the daily work programmes of two districts (Districts D and F) were not signed off on each day of the inspections by Health Inspectors. In District D, the inspection records were only stamped with the chops of the Health Inspectors in the following month.

Audit considers that the FEHD needs to improve its record keeping of all inspection records and summarise its inspection results so as to provide management with necessary information for regular review and assessment of the contractors' performance.

Note 25: During July 2013 to April 2014, the FEHD issued a total of 16 Default Notices (6 notices of default in performance and 10 notices of behavioural default) in relation to the provision of street washing services in these five districts. For one case in District C, the irregularity for not providing the correct type of washing vehicle was recorded in the daily work programme.

4.32 Audit notes that the electronic devices referred to in paragraph 4.29(d) do not record inspections conducted by Senior Foremen at individual service locations of the street washing routes. In September 2014, the FEHD informed Audit that it would review and revise the guidelines requiring the district staff to properly keep all inspection records.

Audit on-site inspections

4.33 The audit findings on the FEHD's inspection results revealed inadequacies in its monitoring of the contractors' services. In July and August 2014, Audit also conducted independent on-site inspections on the night shifts of five selected routes (with one route selected from each of the five districts) to observe the actual operation of street washing by the FEHD's contractors (Note 26). Audit noted that the contractors had provided the required resources (i.e. a street washing vehicle with a washing team of one driver and three cleansing staff) to perform the street washing work. However, Audit observed some irregularities (the audit inspection results for District B are summarised in Case 3 for illustration). By and large, similar observations were noted in the contractors' street washing services for the other four selected routes Audit inspected.

Note 26: Street washing teams, comprising a supervisor-cum-driver and three cleansing staff, are required to provide street washing services according to the sequence of the service locations specified in the daily work programme at the specified time period. Street washing services are provided unless there is announcement of black rainstorm warning signal or hoisting of tropical cyclone signal number 8 or higher. During Audit's on-site inspections, no such signals were announced.

Case 3

1. On 1 August 2014, Audit carried out an on-site inspection on the night shift of a selected street washing route in District B. The on-site inspection did not cover service locations not scheduled in the daily work programme of the selected route. Therefore, it was not known if the team had carried out street washing at any other unscheduled service locations.

2. According to the daily work programme, the contractor's team was expected to carry out street washing services at seven service locations during that night shift. Audit observed that the contractor's team had not carried out street washing at six of the seven service locations specified in the daily work programme. Among others, Audit noted that the team did not carry out any street washing work at one service location according to the time specified, apparently because of the heavy traffic conditions in the area at that moment.

3. For the only one scheduled service location which had been washed, the team washed only part of the areas of the location, taking only 27 minutes against the scheduled 50 minutes in washing.

4. The team returned to the water filling point for signing off about 1.5 hours earlier than the scheduled time (23:00), with some staff of the team leaving the water filling point at 21:37, and all the other staff left at 22:30.

5. The actual time recorded for street washing at the specified service locations in the daily work report subsequently submitted by the contractor deviated significantly from the time Audit observed. According to the daily work report submitted, all the seven service locations were reported to have been washed according to schedule except for one location which was not washed due to receipt of a special order to enhance washing at two locations (including one specified, and another not specified, in the programme). Audit however noted that at the time recorded in the daily work report for washing at these two locations, the street washing vehicle had in fact returned to the water filling point.

6. In September 2014, the FEHD informed Audit that it generally did not require contractors to submit daily work reports after completion of their daily work. Through clarification with the contractor by the FEHD on Audit's inspection results, Audit was given to understand that the street washing service for the route inspected on the date of audit inspection was seriously affected by the actual street conditions, such as busy traffic and special order for changing service location.

Source: FEHD records and Audit's inspections

- 4.34 Audit considers that the FEHD needs to:
 - (a) consider implementing a more effective mechanism for monitoring the delivery of services by its contractors, including a surprise element in conducting inspections; and
 - (b) critically review the services provided by contractors and consider revising the street washing routes by taking into factors such as:
 - (i) the practicability for the street washing teams to wash the service locations at the specified time schedule; and
 - (ii) whether there is a genuine requirement for the street washing services at the locations specified in the routes.

4.35 In response to Audit's enquiry, in September 2014, the FEHD informed Audit that it would:

- (a) remind all districts to step up checking (including surprise checks at night time) on the performance and services provided by their contractors;
- (b) review and revise the guidelines to implement effective mechanism in monitoring the contractors' performance, in particular at odd hours; and
- (c) remind the district staff to critically review the services provided by contractors and consider revising the street washing routes in future contracts by taking into account factors as mentioned in paragraph 4.34(b).

PART 5: WAY FORWARD

5.1 This PART explores good practices in other countries and examines the challenges ahead, and makes audit recommendations on the way forward. The following issues are covered:

- (a) the increasing emphasis placed on obtaining more cost-effective services by other countries (paras. 5.2 to 5.4);
- (b) the need for the FSTB and GLD to remind B/Ds to observe relevant Government regulations and guidelines (paras. 5.5 and 5.6); and
- (c) audit recommendations and response from the Administration (paras. 5.7 to 5.30).

Increasing emphasis placed on obtaining more cost-effective services by other countries

5.2 Audit has conducted research and noted that increasing attention is placed by other countries in enhancing competition and adopting good practice to obtain more cost-effective services from contractors and service providers. Management approach and good practices adopted by the U.K. and the U.S.A. are shown in the following paragraphs.

5.3 Based on a U.K. National Audit Office Memorandum for Parliament (November 2013), government contracting out can significantly reduce costs and help to improve public services. To achieve these benefits, the following three issues deserve greater attention:

- (a) There is a need for scrutiny over whether public service contracts are sufficiently competitive and whether the emergence of a few major contractors is in the public interest.
- (b) Understanding contractors' profits is important to ensure that their interests are aligned properly with that of the taxpayer.
- (c) Ensure that contractors are delivering services to the standards expected.

In particular, the government needs to ensure that the large contractors have the right culture and control environment to manage their operations. This requires transparency over contractors' performance and the use of contractual entitlement to information, audit and inspection. This should be backed up by the threat of financial penalties and being barred from future competitions if repeated and serious defaults are found.

5.4 Similarly, a U.S. Government Accountability Office Testimony (July 2013) found that most of the agencies it reviewed did not fully leverage their aggregate buying power. The greater use of a strategic sourcing approach is key to achieving successful services acquisition outcomes. Good practices under this approach include:

- (a) *Maintaining spend visibility*. Fragmented information on spending does not allow management to spot inefficiencies or opportunities for consolidating purchases. The starting point for strategic sourcing efforts is to have good data on spending through the development of compatible systems for tracking information on the government's contracting actions.
- (b) Enhancing competition by increasing the number of suppliers. It is important to share information on spending and increase market knowledge about suppliers to gain awareness of the procurement environment. This awareness positions management to make more informed contracting decisions.

(to be continued)

(Cont'd)

- (c) *Improving the specification of requirements*. Management closely examines services requirements in order to prevent unnecessary spending on services which are not absolutely needed.
- (d) *Centralising procurement.* Without a centralised procurement process, management ran the risk that different parts of the organisation could be buying the same item or service, thereby missing an opportunity to share knowledge to reduce costs. Centralising procurement does not necessarily refer to centralising procurement activity, but to centralising procurement knowledge.
- (e) *Developing category-specific strategies*. The most effective sourcing strategies, based on internal analyses of business requirements and information on spending and external analyses of market research, are used for each category of service.

Need for FSTB and GLD to remind B/Ds to observe relevant Government regulations and guidelines

5.5 The audit review has identified room for improvements in a number of areas in the Government's hiring of service contractors and professionals as illustrated from the cases selected for review. In particular, Audit has found that some of the procurements reported could have achieved better value for money through more determined and focused efforts to introduce competition among eligible tenderers and through closer monitoring of contractors' performance.

Service	Audit observations	Relevant regulations and guidelines
Health screening service at the airport	• Need to assess all relevant factors during tender/contract negotiations (paras. 2.13 and 2.15)	SPRs 370 and 385
Development of the BCA	 Need to review the use of single tender for the SA programme (para. 2.39) Sub-contracting by the contractor without prior written approval (para. 4.6) Low utilisation of the SA programme (para. 4.15) 	SPRs 325(a), 535 and Financial Circular No. 4/2013
FEHD street cleansing services Cleansing and support services in LCSD venues	• Services provided by few major contractors (paras. 2.44 and 2.48)	SPR 350(e) and Appendix III(F) of SPRs
Radiology services for different health clinics Special security management services in LCSD parks	• Adopting quotation procedures for services of a similar nature with aggregate value exceeding \$1.43 million (Cases 1 and 2 of para. 2.50)	SPR 205
FEHD street washing services	 Service requirements not accurately reflected in tender specifications (para. 3.8) Variations between service locations specified in work plans of the contracts and daily work programmes not properly documented (para. 4.27) Need to implement a more effective mechanism for monitoring the service delivery by the contractors (para. 4.34) 	SPRs 350(e), 535 and Appendix III(F) of SPRs
Management support services in sports centres	• Need to review the setting of mandatory requirements to enhance competition (para. 3.19)	SPR 126(a)(i) and Financial Circular No. 2/2014

5.6 To uphold a culture of compliance for procurement, Audit considers that the Secretary for Financial Services and the Treasury, in conjunction with the Director of Government Logistics, needs to remind B/Ds to comply with the relevant Government regulations and guidelines from time to time.

Audit recommendations and response from the Administration

PART 2: Sourcing of service providers

5.7 Audit has *recommended* that the Director of Health should:

Health screening services at the HKIA

(a) critically assess all relevant factors (e.g. the justification for accepting the provision of Assistants at Secondary 5 education level as compared with Secondary 3 level at other control points) during the DH's tender/contract negotiations with Contractor A, and determine an appropriate long-term procurement strategy, balancing the need to obtain cost-effective services on one hand and the risk of aviation security on the other hand (see para. 2.24);

Appropriate procurement procedures not always adopted to enhance competition

- (b) review the DH's procurement procedures for radiology services with a view to enhancing competition and meeting the requirements of the SPRs (see para. 7 of Case 1); and
- (c) update the quotation invitation lists for radiology services more regularly with a view to enhancing competition (see para. 2 of Case 1).

5.8 The Director of Health agrees with the audit recommendations.

5.9 The Secretary for Food and Health agrees with the audit recommendations. He has said that he will follow up the audit recommendations with the DH.

5.10 Audit has *recommended* that the Secretary for Education should, given the changes in circumstances and technology advancement, critically review the continued use of Contractor B under the single tender approach for implementing the SA programme and consider whether other tendering options can be brought into the SA programme separately when opportunity arises (such as major system enhancement and introduction of new technology) so as to reap the benefits of competitive bidding (see para. 2.39).

5.11 The Secretary for Education generally agrees with the audit recommendation. He has said that:

- (a) engaging one single institution to implement both the SA and TSA under the BCA was considered necessary in ensuring consistency in defining and assessing the basic competencies of different subjects, especially when the BCA was at an early stage of development; and
- (b) given that the concept of basic competencies has become very well-known in the school sector in recent years, the EDB plans to upgrade the SA system to a new online assessment bank. The EDB shall consider the optimal approach to procuring the services taking into account the desirability of quality assurance, more items and more diversity in item types as well as the implications of various tender options for the future sustainability, consistency and operation of the online system.

5.12 Audit has *recommended* that the Director of Food and Environmental Hygiene should continue monitoring the situation and take necessary measures (e.g. reducing the contract size where appropriate) to enhance competition in future tendering exercises for the FEHD's street cleansing services (see paras. 2.43 and 2.44).

5.13 The Director of Food and Environmental Hygiene agrees with the audit recommendation. She has said that the FEHD will continue taking effective measures to enhance competition in future tendering exercises for its street cleansing services, such as:

- (a) *Splitting large contracts into smaller ones*. This has already been implemented for the large contracts in five Districts and will be extended to other districts as appropriate;
- (b) **Promoting tender exercises and giving adequate guidance to tenderers;**
- (c) Assessing whether existing "essential" or "mandatory" tender requirements should continue to be so specified. Since 16 April 2014, the FEHD has, in line with Financial Circular No. 2/2014, stopped specifying the use of separate sealed envelopes for technical and price proposals as an "essential requirement"; and
- (d) *Reviewing and amending assessment criteria and/or marking schemes which may be inherently in favour of the existing contractor.* The FEHD has since September 2013 reviewed and fine-tuned assessment criteria such as record of past performance and record of compliance in the past 36 months with the wage level, daily maximum working hours, signed written employment contracts or standard employment contracts, wage payment by autopay for the purpose of enhancing the fairness of the tender exercise.

5.14 Audit has *recommended* that the Director of Leisure and Cultural Services should:

Limited number of tenderers for some major contracts

(a) critically review the LCSD's tendering strategy, and where appropriate and feasible, consider the use of more contractors, thereby reducing the management risk of relying on several contractors to deliver the services (see para. 2.48); and

Appropriate procurement procedures not adopted to enhance competition

(b) expedite action to obtain competitive services through open tendering as soon as practicable for the special security management services at Park A (see para. 2 of Case 2).

5.15 The Director of Leisure and Cultural Services generally accepts the audit observations and recommendations. She has said that:

Limited number of tenderers for some major contracts

(a) the LCSD has followed, and will continue to follow, the SPRs and the practices of the GLD in conducting procurement activities having regard to guiding principles such as fairness, openness, cost-effectiveness, value for money and prudent risk management whilst being mindful of the advantages of promoting competition. The LCSD would follow up on the audit recommendations as appropriate and practicable; and

Appropriate procurement procedures not adopted to enhance competition

(b) for Park A, having evaluated the effectiveness of measures introduced on a pilot basis and established the long-term need to engage special security guards who should possess working experience in disciplinary force to tackle noise nuisances arising from singing activities, the LCSD is sourcing a long-term contract through open tendering to acquire the requisite services.

PART 3: Specification of service requirements

5.16 Audit has *recommended* that the Director of Food and Environmental Hygiene should:

(a) critically review the service locations specified for street washing in the tender documents to ensure that such locations are justified and meet the actual needs (see para. 3.8); and (b) take measures to ensure that such service locations are fully incorporated into the tender documents and contracts awarded to the successful bidders (see para. 3.8).

5.17 The Director of Food and Environmental Hygiene generally agrees with the audit recommendations. She has said that the FEHD will:

- (a) remind District Offices to critically review the locations specified for street washing in the tender documents to ensure that such locations are justified and meet the actual needs;
- (b) set out these locations clearly in the tender documents and pay special attention to the relevant proposals in the work plans submitted by the bidders during the vetting of tenders and awarding of contracts; and
- (c) take measures to ensure that such locations are clearly set out in the contract awarded to the successful bidders.

5.18 Audit has *recommended* that the Director of Leisure and Cultural Services should critically review whether it is possible to revise the mandatory requirements for the provision of management support services at sports centres with a view to encouraging competition, increasing choices and avoiding over-reliance on a single contractor (see para. 3.19).

5.19 The Director of Leisure and Cultural Services generally accepts the audit observations and recommendation. She has said that the LCSD will review the mandatory requirements, including the relevant experience and, if appropriate, consider whether there is room for relaxing so that the pool of qualified contractors can be expanded to enhance competition.

PART 4: Monitoring service delivery

- 5.20 Audit has *recommended* that the Secretary for Education should:
 - (a) ensure that Contractor B duly complies with the contract terms on sub-contracting (see para. 4.8);

- (b) ensure that Contractor B obtains the EDB's prior approval before entering into sub-contracts with other parties and obtain all previous sub-contracts for assessing the reasonableness of the cost elements built into the tender prices in future tendering exercises (see paras. 4.7 and 4.8); and
- (c) in view of the significant financial resources involved and to reap the benefits of the SA programme, identify the causes for the low utilisation and closely monitor the utilisation of the SA programme (see para. 4.15).

5.21 The Secretary for Education generally agrees with the audit recommendations. He has said that:

- (a) the EDB shall ensure that the contract terms on sub-contracting would be duly complied with. The EDB has already obtained information on previous sub-contracts from the contractor and shall make reference to the sub-contract prices in assessing similar tenders in future; and
- (b) a survey on the views of the teacher users of the SA was conducted in July 2014. The EDB shall continue to explore possible means to enhance and closely monitor the utilisation of the SA.

5.22 Audit has *recommended* that the Director of Food and Environmental Hygiene should, in consultation with the EPD, consider revising the specifications of the service requirements and relevant contract terms for non-plastic recyclables in future tenders (see para. 4.20).

5.23 The Director of Food and Environmental Hygiene agrees with the audit recommendation. She has said that:

(a) the recyclables collection service contract administered by the FEHD for collection of waste paper, metal and plastic materials is primarily a collection contract. Waste plastics are of generally low commercial value, and many plastic bottles collected from collection bins at street level are contaminated, rendering them not suitable for commercial recycling. To address the claim of the previous recyclables collection contractor that it had difficulties in finding suitable local recyclers to receive the plastic recyclables it collected, the FEHD had revised the terms of the new contracts in consultation with the EPD, requiring the contractors to deliver plastic recyclables to "nominated recyclers" approved by the FEHD in consultation with the EPD. The contractor is required to nominate not more than two plastic recyclers and their capability in handling plastic recyclables will be confirmed by the EPD through site inspection. The FEHD will take into account the results of the EPD's site inspection before approving the nominated recyclables recyclers; and

(b) the FEHD will consult the EPD on the need and practicality of incorporating similar requirements for other types of non-plastic recyclables in future tenders, taking into account whether there are well-established recyclers who are indeed carrying out the recycling processes for waste paper and metal in Hong Kong.

5.24 The Director of Environmental Protection has said that the EPD will offer technical assistance to the FEHD as requested.

5.25 Regarding the FEHD's monitoring of the contractor's street washing services, Audit has *recommended* that the Director of Food and Environmental Hygiene should:

- (a) review and revise the guidelines for approval of the daily work programmes for street washing services submitted by the contractors to ensure that any variations (e.g. service locations) from contracts should be fully justified, approved by appropriate level of officers and properly recorded (see para. 4.27);
- (b) ensure the proper keeping of all inspection records so as to provide management with necessary information for regular review and assessment of the contractors' performance (see para. 4.31);
- (c) consider implementing a more effective mechanism for monitoring the delivery of services by the contractors (e.g. conduct more inspections and build in surprise element in conducting inspections see para. 4.34(a)); and

(d) critically review the services provided by contractors and consider revising the street washing routes by taking into account factors such as the practicability for the street washing teams to wash the service locations at the specified time schedule and the need for providing such services in some locations (see para. 4.34(b)).

5.26 The Director of Food and Environmental Hygiene agrees with the audit recommendations. She has said that the FEHD will:

- (a) review and revise the guidelines for approval of the daily work programmes for street washing services submitted by the contractors to ensure that any variations from the contracts should be fully justified, approved by the appropriate level of officers and properly recorded. For ad hoc cases, the FEHD will consider authorising the Health Inspector (Contract Management) of the District Office concerned to give prior oral agreement for revision of daily work programmes which should be properly recorded;
- (b) review and revise the guidelines requiring the staff of its District Offices to properly keep all inspection records;
- (c) critically review and revise the guidelines for the purpose of implementing a more effective mechanism for monitoring the contractors' performance, by including, in particular, an element of surprise in the inspection, and take appropriate actions against any default on the part of the contractors in accordance with the contract provisions; and
- (d) remind its District Offices to critically review the services provided by contractors and consider revising the street washing routes by taking into account factors such as the practicability for the street washing teams to wash the service locations at the specified time schedule and the need for providing such services in some locations.

PART 5: Way forward

5.27 Audit has *recommended* that the Secretary for Financial Services and the Treasury should, in conjunction with the Director of Government Logistics, remind B/Ds to comply with the relevant Government regulations and guidelines (see para. 5.6).

5.28 The Secretary for Financial Services and the Treasury agrees with the audit recommendation. He has said that Government procurement is governed by the SPRs, supplemented by the Financial Circulars, Financial Services and the Treasury Bureau Circular Memoranda and relevant guidelines. Observance of these regulations and guidelines is an on-going requirement for all COs and public officers. The requirements are all accessible at the Central Cyber Government Office portal. The GLD organises annual SPR training courses for staff of all B/Ds and B/Ds are reminded of the Government procurement policies and regulations. The CTB and GLD Tender Boards also remind B/Ds on a need basis of the importance of, inter alia, enhancing competition and monitoring service delivery when need be.

5.29 Audit has *recommended* that the Director of Government Logistics should:

- (a) take on board the audit observations mentioned in this audit review in the GLD's reviews of B/Ds' compliance with the SPRs (see para. 5.5); and
- (b) regularly remind B/Ds and provide support for them to properly follow the SPRs in the hiring of service contractors and professionals (see para. 5.6).

5.30 The Director of Government Logistics has said that the GLD will take note of the audit observations made in this audit review and remind B/Ds in the annual SPR training courses for staff of all B/Ds to properly follow the SPRs when handling their procurement of goods and services. She has also said that:
- (a) according to SPR 125, it is the responsibility of the COs to observe and uphold a culture of compliance with the SPRs. They are required to regularly remind the staff concerned about their need to always comply with the SPRs and closely monitor their compliance;
- (b) to assist the COs in fulfilling their self-monitoring duties as mentioned in (a) above, as a new monitoring measure, the GLD is now preparing a self-assessment checklist on compliance with the SPRs to facilitate the COs in reviewing regularly their supplies and procurement activities. After consulting various major departments and taking into account their workload involved, the GLD will suggest that the COs should conduct such self-assessment at least once every two years. The GLD will take on board the various audit observations made in this audit review and include them in the checklist for the CO's review and necessary follow-up actions;
- (c) at present, the GLD conducts supplies surveys and stock verifications (the surveys) on store units at least once every three years as prescribed in SPR 1005(a). Prior to 2014-15, these surveys covered management of stores and procurement of stores and services not exceeding the value of \$1.43 million arranged under the B/Ds' direct purchase authority. The GLD has expanded the scope of the surveys since 2014-15 to cover tender cases not exceeding the value of \$5 million (as cases above this limit are well considered by the relevant tender boards) arranged by B/Ds under the streamlined procurement procedures as promulgated under Financial Circular No. 4/2013 on "Streamlining Procurement Procedures". The GLD will take into consideration findings of the COs' review as mentioned in (b) above in conducting these surveys to cover B/Ds' tender cases not exceeding the value of \$5 million in future; and
- (d) the GLD has designated dedicated staff to provide helpdesk service to advise B/Ds on any enquiries they may have relating to procurement matters. Guidelines on Government procurement matters are also posted on the Central Cyber Government Office portal to provide easy reference for B/Ds.

Key events for awarding repeated single-tender contracts to Contractor A (July 2003 to March 2014)

Date	Event		
3 July 2003	The first contract for temperature screening service was awarded to Contractor A through single tendering.		
5 September 2003	 The FSTB advised the DH that: "Security" consideration, if overriding, would be a strong justification to support single tendering; and otherwise, the FSTB would only agree that single tendering was a tide-over measure. Urgency would be the only reason to justify single tendering. 		
16 September 2003	 The Security Bureau (SB) advised the DH that: the employment of Contractor A for the health screening at the international airport was highly preferred from the security point of view; and the use of other outside agencies would create vulnerability in the security system at the airport and inevitably Contractor A's involvement would be necessary to reduce the risk. 		
3 July 2003 to 31 March 2014	Contracts for temperature screening service were awarded to Contractor A through single tendering. Contract A1 was the most recently completed one.		
Events relating to C	Contract A2		
18 June 2013	The DH sought the FSTB's approval to invite a single tender from Contractor A for provision of pregnant visitors screening service.		
9 July 2013	The FSTB gave approval for the DH to invite a single tender from Contractor A for 12 months at an estimated cost of \$3.29 million.		
9 July & 1 August 2013	The DH issued tender invitations (two rounds) to Contractor A. The service period was revised to 6.5 months.		
21 August 2013	The DH received an offer from Contractor A at \$2.1 million and commenced tender evaluation and price negotiation.		
26 August 2013	Contractor A revised its offer to \$2.0 million.		
30 August 2013	The DH's DTC approved the award of Contract A2 to Contractor A at \$2.0 million for 6.5 months.		

Date	Event			
Events relating to Contract A3				
19 September 2013	Upon the DH's enquiry, the SB informed the DH that it was preferable to continue engaging Contractor A in providing the services in order to provide better assurance to aviation security of Hong Kong as a whole.			
17 October 2013	 The DH sought the FSTB's approval to invite a single tender from Contractor A. The DH stated that: the SB had given support vide the memo dated 16 September 2003 for Contractor A to provide health screening service at the international airport on aviation security ground (see above); the DH considered it not appropriate to obtain such services by open tender; and the pre-tender estimate of the contract value was \$72 million. 			
6 February 2014	The FSTB gave approval for the DH to invite a single tender from Contractor A subject to the condition that Contractor A was the only suitable agency in the market for the provision of the required services on aviation security reason. The DH, in the light of the FSTB's observations when processing the application, revised the pre-tender estimate of the contract value from \$72 million to \$61.2 million.			
6 February 2014	The DH issued tender invitation to Contractor A.			
21 February 2014	The DH received an offer from Contractor A at \$82.9 million and commenced tender evaluation and price negotiation.			
4 March 2014	The DH submitted tender report to the CTB for consideration.			
18 March 2014	 The CTB suggested the DH to: explore the feasibility to adopt open tender in future with a view to enhancing competition; and seek further advice from the Department of Justice on the terms and conditions of Contract A3. Clarifications on the contract terms were received from the Department of Justice on the same date. 			
26 March 2014	On the advice of the CTB, the Permanent Secretary for Financial Services and the Treasury (Treasury) approved the award of Contract A3 to Contractor A at \$82.9 million.			

Source: DH records

Appendix B

Acronyms and abbreviations

Audit	Audit Commission			
BCA	Basic Competency Assessment			
B/Ds	Bureaux/departments			
СО	Controlling Officer			
СТВ	Central Tender Board			
DH	Department of Health			
DTC	Departmental Tender Committee			
EDB	Education Bureau			
EPD	Environmental Protection Department			
FEHD	Food and Environmental Hygiene Department			
FSTB	Financial Services and the Treasury Bureau			
GLD	Government Logistics Department			
HKIA	Hong Kong International Airport			
IU	Intelligence Unit			
LCSD	Leisure and Cultural Services Department			
QA	Quality Assurance			
SA	Student Assessment			
SB	Security Bureau			
SPRs	Stores and Procurement Regulations			
TSA	Territory-wide System Assessment			
WTO GPA	Agreement on Government Procurement of the World Trade Organization			

CHAPTER 9

Civil Engineering and Development Department Transport Department Highways Department

Provision of cycle track network in the New Territories

Audit Commission Hong Kong 30 October 2014 This audit review was carried out under a set of guidelines tabled in the Provisional Legislative Council by the Chairman of the Public Accounts Committee on 11 February 1998. The guidelines were agreed between the Public Accounts Committee and the Director of Audit and accepted by the Government of the Hong Kong Special Administrative Region.

Report No. 63 of the Director of Audit contains 10 Chapters which are available on our website at http://www.aud.gov.hk

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PROVISION OF CYCLE TRACK NETWORK IN THE NEW TERRITORIES

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PROVISION OF CYCLE TRACK NETWORK IN THE NEW TERRITORIES

Executive Summary

1. Cycling is one of the popular recreational activities in Hong Kong. Many cyclists ride bicycles on cycle tracks for recreational and leisure purposes, particularly during weekends. Under the traffic management of the Transport Department (TD), cycle tracks with a total length of 218.5 kilometres (km) are provided in eight districts.

2. In 2008, with a view to enhancing the recreational value of cycle tracks and improving the quality of living of the public, the Administration pledged to carry out the New Territories (NT) Cycle-track Network for providing a continuous east-west cycle track from Ma On Shan to Tsuen Wan with a total length of 112 km, of which 70 km would be new cycle tracks. The Network was targeted to commence from mid-2009 onwards for completion in stages from mid-2011 onwards, and the Civil Engineering and Development Department (CEDD) is responsible for the planning, design and construction of the Network. As of August 2014, the Finance Committee (FC) of the Legislative Council (LegCo) had approved funding totalling \$553.9 million for implementing part of the Network.

3. In recent years, the number of bicycle accidents along cycle tracks has increased. From 2009 to 2013, there was a 66% increase in the number of accidents along cycle tracks and a 74% increase in cyclist casualties.

4. In view of the long time taken in only partially implementing the Network and the potential problems associated with cycle tracks, the Audit Commission (Audit) has recently conducted a review of the provision and management of cycle tracks in the NT with a view to identifying areas for improvement.

Implementation of NT Cycle-track Network

5. In April 2009, the Development Bureau (DEVB) informed LegCo Panel on Development that the proposed NT Cycle-track Network would be divided into four sections, with the following implementation programme:

- (a) Section A: construction of the section from Ma On Shan to Sheung Shui (of 30 km) would commence in September 2009 and be completed by July 2012;
- (b) Section B: construction of the section from Sheung Shui to Tuen Mun (of 30 km) would commence in August 2010 and be completed by July 2013;
- (c) Section C: construction of the section from Tuen Mun to Tsuen Wan (of 22 km) would commence in stages from 2011 onwards and be completed from 2013 onwards; and
- (d) Section D: construction of the six branching-off sections (of 30 km) would commence in stages from 2011 onwards and be completed from 2014 onwards (para. 2.4).

6. *Time target for completing NT Cycle-track Network not met.* In May 2008, the DEVB informed LegCo Panel on Development that there was strong public aspiration for linking the existing cycle tracks in the NT to form a continuous network. However, Audit examination revealed that for Section A works, while the target completion was set for July 2012, the related cycle tracks were completed and open to the public only in March 2014 (with a 20-month slippage). For Section B works, the original target completion date of July 2013 could not be met. As of August 2014, no timeframe for implementing Sections C and D works had been set (paras. 2.3, 2.11, 2.12 and 2.15).

7. **Overall cost information for project implementation not provided.** Audit noted that, when informing LegCo Panel on Development of the proposed implementation of the NT Cycle-track Network and seeking funding from the FC for implementing the related works projects, the DEVB and the CEDD had not provided the Panel and the FC with the estimated cost of the whole Network. The overall cost information will help stakeholders assess the cost-effectiveness of the whole programme, and is useful for the Government to plan its resource allocation for implementing the programme (para. 2.16).

Works-contract management

8. From May 2010 to November 2013, the CEDD had awarded three contracts (Contracts A1, A2 and B1) to three contractors for implementing works for Sections A and B. Contracts A1 and A2 were for implementing cycle-track works and cycle-hub works respectively in Section A, and Contract B1 was for implementing cycle-track and cycle-hub works in Section B Stage 1. Consultant A was the Engineer responsible for carrying out the detailed design, preparing the tender documents, assessing the tenders, and supervising the works under the three contracts (paras. 2.9 and 3.2).

9. *Errors in preparing Bills of Quantities (BQ) for Contracts A1 and B1.* For Contract A1, the quantities of two BQ items were erroneously stated and there were two missing items in the BQ. The errors were detected by the CEDD internal review procedures. In the event, Contract A1 had to be retendered. For Contract B1, the CEDD again found significant errors in the quantities of some BQ items. To rectify the errors, the CEDD had to conduct tender negotiation with the conforming tenderers before awarding the contract. The errors in the two cases had caused delays in awarding the related works contracts. If the above-mentioned errors had not been detected and rectified before contract award, the Government might have incurred nugatory expenditure totalling \$72 million for Contracts A1 and B1 (paras. 3.3 and 3.11 to 3.13).

10. *Widening works not carried out on some narrow cycle-track sections.* According to the Transport Planning and Design Manual issued by the TD, the minimum width of a two-way cycle track is 3.5 metres (m). Contracts A1 and B1 included works for widening related existing cycle-track sections of Sections A and B respectively to meet the minimum width standard. However, Audit site inspections revealed that some cycle-track sections of Sections A and B were narrower than 3.5 m. Some of these sections could have been widened (paras. 3.22, 3.23 and 3.26 to 3.33).

11. Long time taken in completing Contract A1 works. The original scheduled completion date of Contract A1 was September 2012. However, as of August 2014, despite that the new cycle track of Section A had been open for public use since March 2014, there were still some outstanding works, including the construction of two rest stations and improvement of some existing cycle tracks (para. 3.34).

12. **Delay in providing cycle-hub facilities for public use.** Audit noted that, notwithstanding that Section A had been open for public use since March 2014, essential cycle facilities including bicycle-rental kiosks, first-aid stations and public toilets would only be provided at the two cycle hubs at Section A in December 2014 (paras. 3.41 and 3.43(a)).

13. *General works-contract management.* Audit noted that there were significant errors in preparing the tender BQ for Contracts A1 and B1 (see para. 9 above). Audit also found in recent audit reviews on government works projects that errors were sometimes made in the tender BQ, some of which had resulted in additional costs to the Government. There were also incidents where consultants' substandard work in works design and supervision of works implementation had resulted in substantial contract claims (paras. 3.47 and 3.48).

Traffic management and maintenance of cycle tracks

14. In May 2010, the TD appointed a consultant to conduct a traffic and transport study on cycling networks and parking facilities in nine new towns in Hong Kong (2010 General Study). The Study identified 20 accident-prone sites along Sha Tin and Tai Po cycle tracks, and proposed improvement measures for implementation in two phases. Phase 1 works involving conventional measures were targeted to commence in June 2012 and for completion by April 2014. Phase 2 works involving new measures would commence at a later stage upon the completion of a pilot study to be carried out in Tai Po, and subsequent evaluation of the effectiveness of the new measures implemented under the pilot study (paras. 4.2, 4.4 and 4.5).

15. *Slow progress in carrying out improvement measures at accident-prone sites.* Since June 2012, the TD had requested the Highways Department to carry out Phase 1 improvement works at 16 accident-prone sites in Sha Tin and Tai Po for enhancing cycling safety. However, Audit noted that the works for four sites had been/would be completed 10 to 21 months after the scheduled completion dates (para. 4.10).

16. *Need for minimising regulatory dismount zones along cycle tracks.* Under the Road Traffic (Traffic Control) Regulations (Cap. 374G), cyclists must dismount and push their bicycles when crossing regulatory cycle dismount zones. However, Audit examination revealed that, if the signs were followed, cyclists needed to dismount 105 times at dismount zones during their ride along the 45.6-km cycle track in Yuen Long. In other words, cyclists on average needed to dismount at a dismount zone once every 0.4 km when riding on the cycle track (paras. 4.22 and 4.27).

17. *Cyclists not complying with dismount requirement.* Notwithstanding that cyclists are legally required to dismount and push their bicycles when crossing a cycle dismount zone, Audit surveys at a cycle dismount zone in Tung Chung during an hour on a Sunday afternoon and on a Monday morning respectively found none of the 92 cyclists and 119 cyclists dismounted while crossing the dismount zone (paras. 4.22 and 4.33).

Audit recommendations

18. Audit recommendations are provided in the respective sections of this Audit Report. This Executive Summary only highlights the key recommendations. Audit has *recommended* that the Administration should:

Implementation of NT Cycle-track Network

- (a) endeavour to ensure that a publicly announced public-works programme is implemented according to the committed timeframe and scope as far as possible (para. 2.17(a));
- (b) expedite actions to implement works for Section B Stage 2, Section C and Section D (para. 2.17(b));
- (c) inform LegCo Panel on Development that the timeframe for completing the NT Cycle-track Network cannot be attained, and the Administration has not decided on a revised timeframe for completing the whole Network, including those for Sections C and D (para. 2.17(e));

(d) when seeking funding from the FC for implementing a works programme in stages in future, inform the FC as far as practicable of the estimated cost of the whole programme (para. 2.17(f));

Works-contract management

- (e) take early actions to implement the recommendations made by the CEDD Task Group for improving the preparation and checking of tender BQ items (para. 3.18(a));
- (f) review the feasibility of widening the cycle-track sections with a width of less than 3.5 m along Sections A and B as far as possible (para. 3.35(a));
- (g) strengthen actions to ensure that Contract A1 works are completed as early as possible (para. 3.35(c));
- (h) in implementing a public-facilities project in future, take measures to ensure that essential related public services are timely provided upon opening of the facilities for public use (para. 3.45(b));
- (i) conduct a review of the system for engaging consultants and managing their work with a view to identifying better mechanisms for minimising errors made by consultants, and making them more accountable for their work (para. 3.49);

Traffic management and maintenance of cycle tracks

- (j) take measures to ensure that improvement works at accident-prone sites are completed on schedule as far as possible (para. 4.19);
- (k) consider taking measures, as far as possible and without compromising cycling safety, to minimise mandatory cycle dismount zones along existing cycle tracks and in planning new cycle tracks in future (para. 4.34(b)); and

(1) conduct a review of cyclists' compliance with the dismount requirement when crossing mandatory cycle dismount zones (para. 4.34(c)).

Response from the Administration

19. The Administration agrees with the audit recommendations.

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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

Cycling community

1.2 Cycling is one of the most popular recreational activities in Hong Kong. Some people, particularly those in the New Territories (NT), also use bicycles for short-distance commuting purposes. According to a survey commissioned by the Transport Department (TD) in 2011 (Note 1), it was estimated that around 150,000 and 225,000 Hong Kong residents aged 15 and over had used self-owned bicycles for recreational and leisure purposes on weekdays and weekends respectively for one time or more in a three-month period, and 121,000 and 242,000 residents had rented bicycles for recreational and leisure purposes on weekdays and weekends respectively during the same period. Most of them usually rode bicycles on cycle tracks (see Appendix A).

Note 1: The Travel Characteristics Survey aimed to collect travel characteristics data for transport planning purposes.

Cycle tracks

1.3 Cycle tracks are mainly designed for recreational and leisure purposes. As of August 2014, cycle tracks with a total length of 218.5 kilometres (km) under the traffic management of the TD were provided in the following eight districts:

District	Length (km)	
Sha Tin	56.0	
Yuen Long	45.6	
Tai Po	35.0	
North District	27.0	
Sai Kung	20.6	
Tuen Mun	20.0	
Lantau Island	14.0	
Cyberport in Southern District	0.3	
Total	218.5	

1.4 The following Government bureaux and departments (B/Ds) are responsible for planning, implementation, management and maintenance of cycle-track facilities:

B/D	Responsibility	
Civil Engineering and Development Department (CEDD) under the policy directives of the Development Bureau (DEVB)	Planning, design and construction of a cycle-track network in the NT for leisure and recreational purposes, and new cycle tracks in new towns and new development areas	
TD under the policy directives of the Transport and Housing Bureau (THB)	Traffic management of cycle tracks and related facilities	
Highways Department (HyD) under the policy directives of the THB	Implementation of related minor improvement works, and maintenance of cycle tracks and related facilities	
Leisure and Cultural Services Department (LCSD — Note 2) under the policy directives of the Home Affairs Bureau	Management of first-aid stations and cycle rental kiosks in cycle hubs	
Food and Environmental Hygiene Department (FEHD) under the policy directives of the Food and Health Bureau	Management of public toilets along cycle tracks and general cleansing of cycle tracks	
Hong Kong Police Force (HKPF) under the policy directives of the Security Bureau	Enforcement of pertinent laws under the Road Traffic Ordinance (Cap. 374 – Note 3)	

- **Note 2:** The LCSD is also responsible for managing cycling facilities located at public parks and playgrounds.
- **Note 3:** The Road Traffic Ordinance contains provisions for regulating cycling, such as penalty clauses relating to reckless cycling and careless cycling. The Road Traffic (Traffic Control) Regulation (Cap. 374G) also contains penalty clauses relating to cyclists failing to comply with traffic signals and signs.

NT Cycle-track Network

1.5 In the 2007-08 Policy Agenda, the Administration pledged to expedite capital works projects which would improve the quality of living of the public, including the development of comprehensive cycle tracks in the NT. In May 2008, the DEVB informed Legislative Council (LegCo) Panel on Development that:

- (a) the Government had planned to develop a network for providing a continuous east-west backbone of cycle-track network in the NT from Ma On Shan to Tsuen Wan and branching-off sections from the backbone network, with a total length of 112 km (NT Cycle-track Network);
- (b) the NT Cycle-track Network would comprise constructing some new cycle-track sections to connect together individual sections of existing cycle tracks, carrying out improvement works to existing sections, and building six branching-off sections; and
- (c) the construction works of the Network were expected to commence in mid-2009 for completion from mid-2011 onwards (see Table 1 in para. 2.3).

1.6 In April 2009, the DEVB informed LegCo Panel on Development that the proposed Network would comprise the following four sections (see Figure 1 and Table 2 in para. 2.4):

- (a) Ma On Shan to Sheung Shui (Section A under Project A): construction would commence in September 2009 and be completed by July 2012;
- (b) Sheung Shui to Tuen Mun (Section B under Project B): construction would commence in August 2010 and be completed by July 2013;
- (c) Tuen Mun to Tsuen Wan (Section C under Project C): investigation, preliminary design and construction would commence in stages from 2011 onwards and be completed from 2013 onwards; and
- (d) six branching-off sections (Section D under Project D): investigation, preliminary design and construction would be planned in stages from 2011 onwards and be completed from 2014 onwards.

Figure 1



Proposed NT Cycle-track Network (April 2009)

- *Remark 1:* Dotted lines in the Figure denote proposed new cycle tracks, while solid lines denote existing cycle tracks.
- *Remark 2:* The \leftarrow \rightarrow *lines denote six new branching-off sections under Project D, as follows:*
 - (a) Sai Kung Section;
 - (b) Sam Mun Tsai Section;
 - (c) Tai Wo Section;
 - (d) Lok Ma Chau Section;
 - (e) Nam Sang Wai Section; and
 - (f) Lung Kwu Tan Section.
- *Remark 3:* Cycle rental and repair kiosks, cycle parking spaces, route maps, information boards, first-aid stations and toilets would be provided at Cycle Hubs A, B, C and D.

Source: CEDD records

Introduction

1.7 From June 2009 to July 2013, LegCo Finance Committee (FC) had approved funding totalling \$553.9 million (see Table 4 in para. 2.8) for Projects A, B and C. As of August 2014:

- (a) following the substantial completion of new cycle-track works, Section A had been fully open for public use since March 2014;
- (b) Section B Stage 1 works (see para. 2.6(a)) were in progress and were targeted for completion in end 2016. The DEVB had not sought funding from the FC for Section B Stage 2 works (see para. 2.6(b));
- (c) for Section C works, the DEVB had sought funding from the FC for the detailed design and site investigation of advance works and Stage 1 works (see para. 2.7(a) and (b)), and alignment review of Stage 2 works (see para. 2.7(c)), but not for the related construction works; and
- (d) the CEDD was reviewing in consultation with the DEVB the way forward for implementing four of the six branching-off sections under Project D (see para. 2.10(h)).

Cycling accidents

1.8 *Cycling accidents on cycle tracks.* Figure 2 shows the number of accidents involving bicycles and cyclists on cycle tracks from 2009 to 2013. During the five-year period, the annual number of accidents along cycle tracks had increased from 709 to 1,179 (a 66% increase) and that of cyclist casualties from 670 to 1,163 (a 74% increase). Furthermore, the number of cyclists suffering serious injury (Note 4) or death arising from cycling accidents on cycle tracks had also increased from 66 to 204 (a 209% increase) during the period.

Note 4: A serious injury is one suffered by a person who is admitted to hospital as an in-patient for more than twelve hours after an incident, or one suffered by a person who dies resulting from an incident 30 or more days after the incident.





Accidents involving bicycles and cyclists on cycle tracks (2009 to 2013)

Source: TD records

Remarks: There were 726 cycling accidents from January to August 2014. According to the TD, about 90% of the related cyclists were slightly injured in the accidents, and 60% of the accidents were non-collision related, such as cyclists losing balance while cycling.

- 1.9 *Cycling accidents in Hong Kong.* According to the TD:
 - (a) as a result of increasing cycling activities, the total number of cycling accidents in Hong Kong had increased in recent years, as follows:

Year	Number of cycling accidents	
2009	1,793	
2010	1,914	
2011	2,348	
2012	2,582	
2013	2,549	

- (b) even though the number of cycling accidents along cycle tracks causing casualties had increased in recent years, the rising trend had become more or less levelled off after 2011 (see Figure 2). Furthermore, the 726 cycling accidents on cycle tracks in the first eight months of 2014 were less than the 749 cycling accidents in the corresponding period in 2013;
- (c) the increase in the number of seriously injured cyclists on cycle tracks from 2009 to 2013 might have been attributable to more cyclists using the tracks. However, the 114 seriously injured cyclists in the first eight months of 2014 were less than the 135 such casualties in the same period of 2013; and
- (d) the number of cyclists who died resulting from accidents occurring on cycle tracks was:

Year	Number of deaths
2008	3
2009	2
2010	1
2011	1
2012	2
2013	0
2014 (up to August)	0

The fatality was mainly attributed to careless cycling (either by cyclists themselves or other cyclists involved in the accidents) and loss of control of bicycles.

1.10 With a view to enhancing cycling safety, the TD has taken actions to improve the design of cycle tracks and related facilities. Furthermore, the Road Safety Council (Note 5) has made efforts to promote and educate cyclists on cycling safety. The HKPF has also taken enforcement actions against cyclists not complying with pertinent laws under the Road Traffic Ordinance.

Audit review

1.11 Cycling is a popular recreational activity in Hong Kong and many cyclists ride on cycle tracks both on weekdays and weekends. The cyclists have a demand for cycle-track facilities. With a view to enhancing the recreational value of cycle tracks and improving the quality of living of the public, the Administration informed LegCo Panel on Development in May 2008 of its plan to commence construction of the NT Cycle-track Network in phases. However, as of August 2014, only cycle-track works for Section A had been completed.

1.12 In view of the long time taken in only partially implementing the Network, the Audit Commission (Audit) has recently conducted a review of the provision and management of cycle tracks in the NT with a view to identifying areas for improvement. The review focuses on the following areas:

- (a) implementation of the NT Cycle-track Network (PART 2);
- (b) works-contract management (PART 3); and
- (c) traffic management and maintenance of cycle tracks (PART 4).

Note 5: The Council is chaired by a Deputy Commissioner of Police with nine members from various B/Ds and seven members from non-governmental organisations. Its main role is to coordinate actions by relevant B/Ds and organisations for improving road safety.

1.13 In this Audit Report, Audit has found that there are areas where improvements can be made by the Administration in implementing the NT Cycle-track Network and in the traffic management and maintenance of cycle tracks to enhance cycling safety, and has made a number of recommendations to address the issues.

Acknowledgement

1.14 Audit would like to acknowledge with gratitude the full cooperation of the staff of the relevant B/Ds (including the THB, the DEVB, the CEDD, the TD and the HyD) during the course of the audit review.

PART 2: IMPLEMENTATION OF NT CYCLE-TRACK NETWORK

2.1 This PART examines the implementation of the NT Cycle-track Network.

Proposed Network

2.2 The planning and implementation of the NT Cycle-track Network under the Public Works Programme involve three key stages, namely preliminary stage, design and investigation stage, and implementation stage (see Appendix B). From November 2002 to June 2006, the CEDD commissioned a consultant at a consultancy fee of \$4.1 million to conduct a feasibility study of developing a continuous cycle-track network in the NT. The study took into account the recreational value, environmental impacts, ease of implementation and costs of different cycle tracks.

2.3 In May 2008, based on the findings of the consultancy study, the DEVB informed LegCo Panel on Development that:

- (a) access to some popular cycling spots in the NT was not convenient due to inadequate provision of public transport services;
- (b) some supporting facilities provided along existing cycle tracks were inadequate to meet the increasing demand and higher expectation for a quality city life;
- (c) there had been strong aspiration for linking the existing cycle tracks together to form a continuous cycle-track network; and
- (d) the Government had planned to provide a continuous east-west backbone of cycle-track network in the NT in stages by implementing the NT Cycle-track Network (see Table 1).

Table 1

Proposed NT Cycle-track Network implementation programme (May 2008)

Section	Length	Туре	Expected commencement date	Expected completion date
Ma On Shan via Sheung Shui to Tuen Mun	60 km	Both new and existing cycle tracks	Mid-2009	Early 2012
Tuen Mun to Tsuen Wan	22 km	A new cycle track	2011 (for suitable standalone sections)	In stages from 2013 onwards
Six branching-off sections (Note)	30 km	New cycle tracks	Not specified	Mid-2011 (for straightforward sections)

Source: CEDD records

2.4 In April 2009, in seeking support for funding of \$230.3 million for implementing the first stage of the Network (for the cycle-track section between Ma On Shan and Sheung Shui), the DEVB informed LegCo Panel on Development that, for implementing the Network in stages, some revisions (see Table 2) had been made to the implementation programme of the proposed Network reported to the Panel in May 2008 (see Table 1).

Note: The six branching-off sections comprised Sai Kung Section, Sam Mun Tsai Section, Tai Wo Section, Lok Ma Chau Section, Nam Sang Wai Section and Lung Kwu Tan Section.

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Table 2

Revised 1	NT Cycle-t	rack Network imple (April 2009)	ementation progra	imme

Section	Length	Туре	Expected commencement date	Expected completion date
Ma On Shan to Sheung Shui (Section A)	30 km	Both new and existing cycle tracks	September 2009	July 2012
Sheung Shui to Tuen Mun (Section B)	30 km	Both new and existing cycle tracks	August 2010	July 2013
Tuen Mun to Tsuen Wan (Section C)	22 km	A new cycle track	In stages from 2011 onwards	From 2013 onwards
Six branching-off sections (Section D)	30 km	New cycle tracks	From 2011 onwards	From 2014 onwards

Source: CEDD records

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In June 2009, in seeking the FC's funding approval of \$230.3 million for commencing works for Section A, the CEDD also informed the FC that Section A was expected to be completed by July 2012.

Network implementation

2.5 Between September 2006 and July 2012, the CEDD employed four consultants under five consultancy agreements to carry out investigation, design and construction supervision of the NT Cycle-track Network (see Table 3).

Table 3

Date	Consultant	Consultancy	Work	Consultancy fee (\$ million)
September 2006	A	A	Investigation, design and construction supervision of Sections A and B	7.0
June 2008	В	В	Investigation of three branching-off sections, namely Sai Kung Section, Nam Sang Wai Section and Lung Kwu Tan Section	4.5
August 2008	С	С	Investigation, design and construction supervision of the remaining three branching-off sections, namely Tai Wo Section, Sam Mun Tsai Section and Lok Ma Chau Section	0.8
September 2008	D	D	Investigation of Section C	8.8
July 2012	D	E	Detailed design of advance works and Stage 1 works, and alignment review of Stage 2 works of Section C	16.0
			Total	37.1

Consultancies for implementing the Network (September 2006 to July 2012)

Source: CEDD records

Note: Funding for Consultancies A to D was provided under block allocations of the Capital Works Reserve Fund and that for Consultancy E under a project vote for implementing Section C.

- 2.6 In 2011, Section B works were subdivided into the following two stages:
 - (a) Stage 1: implementing improvement works at selected existing cycle-track sections between Yuen Long and Tuen Mun, and constructing a new cycle-track section each in Sheung Shui and Yuen Long; and
 - (b) Stage 2: constructing a new cycle track between Sheung Shui and Yuen Long.

2.7 In the same year, Section C works were also subdivided into the following three stages:

- (a) Advance works: constructing a new cycle track cum footpath of 2.3 km from Tsing Tsuen Bridge to Bayview Garden;
- (b) Stage 1: constructing a new cycle track cum footpath of about 4.5 km from Bayview Garden to Ting Kau; and
- (c) Stage 2: constructing a new cycle track cum footpath of about 15.2 km from Ting Kau to Tuen Mun.

2.8 The design and construction of Sections A, B, C, and D were carried out under four capital works projects, namely Projects A, B, C and D. Between June 2009 and July 2013, the FC had approved funding totalling \$553.9 million for the investigation, design and construction works of Project A, works of Project B Stage 1 and parts of the works of Project C (see Table 4). As of August 2014, the Administration had not yet sought funding from the FC for the construction works of Section B Stage 2, Section C and Section D.

Table 4

FC funding approvals (June 2009 to July 2013)

Date	Project	Works	Amount (\$ million)
June 2009	А	Construction works of Section A	230.3
July 2013	В	Construction works of Section B Stage 1	295.4
April 2012	С	Detailed design and site investigation of advance works and Stage 1 works, and alignment review of Stage 2 works of Section C	28.2
		Total	553.9

Source: CEDD records

2.9 From May 2010 to November 2013, the CEDD had awarded three contracts (Contracts A1, A2 and B1) to three contractors for implementing works under Projects A and B (see Table 5). The estimated contract completion dates were September 2012, October 2012 and March 2016 respectively. Consultant A was the Engineer responsible for supervising the works carried out under Contracts A1, A2 and B1.

Table 5

Contracts A1, A2 and B1 (May 2010 to November 2013)

Contract	Project (Section)	Works	Commencement date	Original contract completion date	Original contract sum (\$ million)
A1	Project A (Section A)	Construction of a new cycle-track section (of 5 km) between Tai Po and Fanling Construction of 4 rest stations	May 2010	September 2012	138.9
		Improvement works at selected existing cycle track sections (of 550 m) in Tai Po and Sheung Shui			
A2	Project A (Section A)	Construction of 2 cycle hubs (Hubs A and B) with ancillary facilities	June 2011	October 2012	27.1
B1	Project B (Section B Stage 1)	Construction of a new cycle-track section (of 1.5 km) in Sheung Shui and another one (of 1 km) in Yuen Long Construction of 2 cycle hubs (Hubs C and D) and 5 rest stations Improvement works at selected existing cycle-track sections	November 2013	March 2016	193.9
		(of 3.8 km) between Yuen Long and Tuen Mun			

Source: CEDD records

Network implementation progress as of August 2014

2.10 Major works of Contract A2 were certified substantially completed in November 2013 and cycle-track sections of Section A were fully open for public use in March 2014. As of August 2014:

Section A

- (a) the Engineer had certified the completion of all new cycle track works under Contract A1 but there were some outstanding works under the contract yet to be certified completed by the Engineer;
- (b) the up-to-date expenditure of Contract A1 was \$144.5 million (104% of the original contract sum of \$138.9 million see Appendix C);
- (c) the up-to-date expenditure of Contract A2 was \$39.8 million (147% of the original contract sum of \$27.1 million (Note 6) see Appendix C);

Section B

- (d) Section B Stage 1 works under Contract B1 were in progress;
- (e) an amendment scheme for Section B Stage 2 works (see para. 2.6(b)) would be gazetted in late September 2014 (Note 7);
- (f) according to the CEDD, it planned to seek funding from LegCo for Section B Stage 2 works in the second quarter of 2015 for completion in 2019;

Note 6: The contract-cost increase was mainly attributable to the construction of a public toilet installed with a biological treatment plant and sewerage system costing \$8 million, which was an initiative in response to public requests.

Note 7: *The scheme was gazetted on 19 September 2014.*
Section C

(g) Section C was at the planning and design stage and Consultant D was reviewing the cycle track alignment. The CEDD had obtained funding from the FC for the detailed design and site investigation of advance works and Stage 1 works, and alignment review of Stage 2 works. According to the CEDD, funding for each stage of construction works would be separately sought after completion of the related detailed design; and

Section D

(h) in April 2013, the CEDD informed LegCo Panel on Development that the Lok Ma Chau Section would be implemented under the Lok Ma Chau Loop Development Project (Note 8). According to the CEDD, there were serious physical and environmental constraints for constructing four of the six branching-off sections (see Table 6).

Of the total 112 km of the proposed NT Cycle-track Network, 70 km (63%) would be new cycle-track sections and the remaining 42 km (37%) existing sections.

Note 8: In his Policy Address of 2007, the Chief Executive announced the development of Lok Ma Chau Loop as one of the ten major infrastructure projects.

Table 6

Major constraints for constructing four branching-off sections (August 2014)

Branching-off section	Constraint
Nam Sang Wai Section (9.2 km)	The Environmental Protection Department and green groups had expressed concerns that the number of visitors to the ecologically sensitive area would increase upon completion of the cycle-track section. Furthermore, the proposed construction of a cycle bridge over Shan Pui River would have serious ecological impacts on the surrounding area.
Sai Kung Section (7 km)	Some green groups had expressed concerns about the felling of 1,600 trees along Sai Sha Road for constructing the cycle-track section. There were also physical constraints due to steep gradients at some road sections and close proximity of the proposed cycle track to some local houses. There would also be significant visual impact due to the proposed construction of a cycle bridge over Tai Mong Tsai Road roundabout.
Lung Kwu Tan Section (4.2 km)	The existing road reserve should be kept for potential future road widening works. Furthermore, the gradient of some road sections might be too steep for cycling.
Tai Wo Section (0.7 km)	The pertinent District Council did not agree with the works because there were local objections on using the existing greening area for the purpose.

Source: CEDD records

Remarks: As of August 2014, the CEDD had consulted Sai Kung North Rural Committee and Tai Po District Council regarding the proposed abandonment of constructing Sai Kung Section. According to the CEDD, it would proceed to consult the concerned parties after completing a review of the way forward for the other three branching-off sections.

Areas for improvement

Time target for completing NT Cycle-track Network not met

2.11 In October 2007, the Government pledged to the public in the 2007-08 Policy Agenda that it would expedite capital works projects for improving the quality of living of the public, including the development of comprehensive cycle tracks in the NT (see para. 1.5). In May 2008, the DEVB informed LegCo Panel on Development that, in view of the strong aspiration for linking the existing cycle tracks to form a continuous cycle-track network, the Government had planned to implement the NT Cycle-track Network in phases, and expected that the works would commence in mid-2009 for completion in stages from mid-2011 onwards. However, the implementation progress indicates that the time target for completing the Network could not be met (see Table 7).

Table 7

	Commencement date		Completion date	
Section	Planned in April 2009	Actual/ Revised	Planned in April 2009	Actual/ Revised
Section A	September 2009	May 2010	July 2012	March 2014 (20 months behind schedule)
Section B Stage 1	August 2010	November 2013	July 2013	March 2016 (Note 1)
Section B Stage 2		Second quarter of 2015		2019
Section C	In stages from 2011 onwards	(Note 2)	From 2013 onwards	(Note 2)
Section D	From 2011 onwards	(Note 2)	From 2014 onwards	(Note 2)

Time for completing NT Cycle-track Network (August 2014)

Source: CEDD records

- Note 1: Section B Stage 1 works included some ancillary improvement works, such as planting of trees along the cycle-track sections, which were targeted for completion by May 2017.
- *Note 2: As of August 2014, the CEDD had not set revised commencement and completion dates for Sections C and D.*

2.12 Table 7 shows that Section A had not been completed on schedule with a slippage of 20 months and there would be significant slippages in completing Section B. Furthermore, as of August 2014, there was still no timeframe for implementing Section C works and Section D works. It is not known as to when the Government's announced plan in May 2008 of completing a continuous cycle-track network from Ma On Shan to Tsuen Wan and six branching-off sections could be realised.

2.13 The DEVB and the CEDD need to draw lessons in implementing similar networks in future. They need to make every endeavour to ensure that a publicly announced public-works programme is implemented according to the announced timeframe and scope as far as possible. Subject to funding allocations and approvals, they also need to expedite actions to implement works for Section B Stage 2, Sections C and D, and closely monitor Section B Stage 1 works to ensure that they are completed on schedule.

2.14 According to the CEDD, the Administration's plan to implement the branching-off sections announced in 2008 had been based on a preliminary feasibility study which had taken into account the recreational value, environmental impacts, ease of implementation and costs (see para. 2.2). However, after conducting in-depth assessments and noting the public concerns, the CEDD found that there were serious environmental problems, safety concerns and physical constraints for related works implementation. The CEDD would still need to consult the stakeholders on when some of the branching-off sections could be implemented. In Audit's view, when making public announcements of proposed public works in future, the CEDD needs to inform the public if the proposed works are subject to environmental and technical difficulties.

2.15 Audit also noted that, in seeking funding from the FC for implementing Section B works in June 2013, the DEVB had informed the FC of the revised commencement and completion dates of Sections A and B. However, up to August 2014, the DEVB had not informed LegCo that the timeframe for completing the NT Cycle-track Network provided to the LegCo Panel on Development in April 2009 could not be attained, and timeframe for completing the whole Network, including those for Sections C and D had not yet been set. For public accountability purposes, the DEVB needs to keep LegCo informed of significant changes and developments of the Network.

Overall cost information for project implementation not provided

2.16 Audit noted that, when informing LegCo Panel on Development of the proposed implementation of the NT Cycle-track Network and seeking funding from the FC for implementing the related works projects, the DEVB and the CEDD had not provided the Panel and the FC with the estimated cost of completing the whole Network. While Audit agrees that at times a large capital works programme needs to be implemented in stages over time, such as the NT Cycle-track Network, the responsible B/Ds need to make a best estimate of the overall cost of the programme and, where practicable, provide LegCo with such information. The overall cost information will help stakeholders assess the cost-effectiveness of the whole programme, and is useful for the Government to plan its resource allocation for implementing the programme.

Audit recommendations

2.17 Audit has *recommended* that the Director of Civil Engineering and Development, in collaboration with the Secretary for Development, should:

Time target for completing NT Cycle-track Network not met

- (a) endeavour to ensure that a publicly announced public-works programme is implemented according to the committed timeframe and scope as far as possible;
- (b) subject to funding allocations and approvals, expedite actions to implement works for Section B Stage 2, Section C and Section D;
- (c) closely monitor Section B Stage 1 works to ensure that they are completed on schedule;
- (d) when making public announcements of proposed public works in future, inform the public if the works are subject to environmental and technical difficulties;

(e) inform LegCo Panel on Development that the timeframe for completing the NT Cycle-track Network provided to the Panel in April 2009 cannot be attained, and the Administration has not decided on a revised timeframe for completing the whole Network, including those for Sections C and D; and

Overall cost information for project implementation not provided

(f) when seeking funding from the FC for implementing a works programme in stages in future, inform the FC as far as practicable of the estimated cost of the whole programme.

Response from the Administration

2.18 The Director of Civil Engineering and Development agrees with the audit recommendations. He has said that:

- (a) the Government has always made efforts to implement a project according to the publicly announced programme and scope; and
- (b) adherence to the announced programme of a project is subject to various uncertainties. In announcing implementation of similar projects at early stages in future, more information such as scope of works, tentative programmes and possible programming risks will be provided to the public as far as possible.

2.19 The Secretary for Development also agrees with the audit recommendations. He has said that:

- (a) actions are in hand to seek funding approval for the works of Section B
 Stage 2. The scope and programme of works for Sections C and D are
 under review and subject to the outcome of public consultation. The
 progress of these works is being closely monitored;
- (b) the DEVB and the CEDD are closely monitoring Section B Stage 1 works with a view to ensuring that they will be completed on schedule;

- (c) in announcing implementation of projects at early stages in future, more information on possible risks and uncertainties associated with environmental, technical and other difficulties that may affect the project scope, programme and costs will be provided to the public as far as possible;
- (d) the DEVB and the CEDD reported the progress and revised programme of different sections of the NT Cycle-track Network to LegCo Panel on Development on 28 April 2009, 19 December 2011 and 23 April 2013. The DEVB and the CEDD will further update the Panel on the latest progress and programme for the Network at appropriate time; and
- (e) the DEVB and the CEDD will provide the FC with latest estimated overall cost of works projects when seeking funding approval in future. However, the cost estimation at the early stage of a project is bound to be preliminary and subject to various risks and uncertainties.

PART 3: WORKS-CONTRACT MANAGEMENT

3.1 This PART examines the CEDD's management of Contracts A1 and A2 for implementing Section A works and Contract B1 for implementing Section B Stage 1 works, focusing on the following audit issues:

- (a) tendering of Contracts A1, A2 and B1 (paras. 3.2 to 3.21);
- (b) implementation of cycle-track improvement works (paras. 3.22 to 3.38);
- (c) provision of cycle-hub facilities (paras. 3.39 to 3.46); and
- (d) general works-contract management (paras. 3.47 to 3.50).

Tendering of Contracts A1, A2 and B1

Contract A1 for cycle-track works

3.2 In September 2006, the CEDD appointed Consultant A under Consultancy A to carry out investigation, design and construction supervision for Sections A and B (see Table 3 in para. 2.5). Under the Consultancy, Consultant A was responsible for carrying out the detailed design, preparing drawings, specifications and tender documents, assessing tenders received and administering Contracts A1, A2 and B1 works. In July 2009, the CEDD received six tenders in response to a tender invitation for Contract A1 (a remeasurement contract), of which only two (Tenders I and II) were conforming ones. Between the two conforming tenders, Tender I price was the lowest. The other four tenders were found to be non-conforming because they did not include a required design on works to be carried out on some private land lots which would be resumed after contract commencement. After examining Consultant A's tender evaluation report, the CEDD found that the quantities of some items in the Bills of Quantities (BQ - Note 9) of the tender document were incorrect (see Table 8).

Note 9: The BQ contains estimated quantities of various works items. A tenderer needs to provide a tender price for each of the relevant BQ items. Under a remeasurement contract, the costs of works are based on the actual quantities of works done and the unit prices of different works items as stated in the BQ of the contract.

Table 8

	Incorrect excavation BQ quantity stated in tender (a) (m ³)	Correct excavation BQ quantity (b) (m ³)	Tender I	
BQ item			BQ rate (c) (\$/m ³)	BQ amount (d)=(a)×(c) (\$)
Item A (Note 1)	10,490	1,880	21	220,290
Item B (Note 2)	100 250 (Note 3)	860 7,400	8,233 7,600 (Note 3)	823,300 1,900,000

BQ items in tender for Contract A1 (May 2009)

Source: CEDD records

- *Note 1: Item A works comprised "Excavation for foundations maximum depth not exceeding 3 m" for three locations.*
- *Note 2: Item B works comprised "Excavation for foundations maximum depth exceeding 3 m but not exceeding 6 m" for the same three locations relating to Item A.*
- *Note 3:* Tenderer I submitted a rate of \$8,233/m³ for 100 m³ of excavation at one location and \$7,600/m³ for 250 m³ of excavation at another two locations.

3.3 In addition, the CEDD also found two missing items in the BQ, involving total estimated quantity of 5,440 m³ of "Excavation for foundations — maximum depth exceeding 6 m but not exceeding 9 m" (collectively referred to as Item C). The CEDD noted that Tender I's rates of \$7,600/m³ and \$8,233/m³ for Item B were 330 and 358 times higher than the pre-tender estimated rate of \$23/m³. If the BQ quantities of Items A and B had not been corrected and the outturn quantities had been 1,880 m³ and 8,260 m³ (860 m³+7,400 m³) respectively, the payment for these two items of work would have been \$60 million (Note 10) higher than Tenderer I's

Note 10: $(860 \ m^3 - 100 \ m^3) \times \$8,233/m^3 + (7,400 \ m^3 - 250 \ m^3) \times \$7,600/m^3 - (10,490 \ m^3 - 1,880 \ m^3) \times \$21/m^3 = \$60,416,270.$

BQ sum for these two items. In November 2009, after rectifying the BQ quantities of Items A, B and C and with the approval of the Central Tender Board (CTB — Note 11), the CEDD invited Tenderers I and II to re-submit tender rates for Items A, B and C.

3.4 According to the CEDD, of the Approved Project Estimate (APE) of \$230.3 million of Project A (see Table 4 in para. 2.8), \$176.8 million and \$34.3 million were allocated for Contracts A1 and A2 respectively, with the remaining \$19.2 million for meeting contingency expenditures. Nevertheless, the CEDD found that the re-submitted tenders of Tenderers I and II both exceeded the APE allocation of \$176.8 million and the pre-tender estimate of \$174.4 million of Contract A1. In addition, the CEDD noted from the non-conforming tenders that the Government might obtain a lower tender price by conducting retendering. In December 2009, on the advice of the CTB, the Permanent Secretary for Financial Services and the Treasury (Treasury) approved cancellation of the tender of Contract A1 in the public interest.

3.5 In February 2010, the CEDD conducted retendering of Contract A1. In the revised tender document, the original requirement of submitting a design on works to be carried out on some private land lots was removed (see para. 3.2). In April 2010, the CEDD received 16 tenders, all of which were conforming ones. In May 2010, the CEDD awarded Contract A1 at a sum of \$138.9 million to Contractor A1 (Note 12) who submitted the lowest tender. The contract works commenced in the same month, after taking additional nine months for conducting retendering of the contract.

Note 12: Contractor A1 originally submitted a non-conforming tender in July 2009 (see para. 3.2).

Note 11: The CTB was chaired by the Permanent Secretary for Financial Services and the Treasury (Treasury) and comprised four members to consider tender matters and make recommendation on acceptance of tenders.

Contract A2 for cycle-hub works

3.6 In December 2010, the CEDD invited tenders for Contract A2. In the tender BQ, the CEDD included some items of proprietary products (Note 13) and materials (mainly related to toilet facilities) and required tenderers to submit rates for the items. According to the tender document, after contract award, subject to the agreement of Consultant A, the successful tenderer might adopt alternative products or materials having equivalent functions and performance, but savings from using the alternative products or materials would be deducted from the contract sum. Furthermore, tenderers were required to make a submission (Submission A) acknowledging their understanding of the above-mentioned arrangements.

3.7 In January 2011, the CEDD received 14 tenders, of which 10 were conforming ones. The other four tenders were found to be non-conforming because they did not make Submission A. The CEDD found that the lowest conforming tender sum, while lower than the APE allocation of \$34.3 million, was higher than the pre-tender estimate of \$26.5 million. The CEDD also found that a saving of \$6 million to \$7 million could be achieved by using some alternative products instead of the proprietary products stated in the BQ.

3.8 In March 2011, in seeking approval to retender Contract A2, the CEDD informed the Public Works Tender Board (Note 14) that:

(a) a significant proportion of works (about 40% in value) under Contract A2 were building works, which, upon completion, would be handed over to the FEHD and the LCSD for management and the Architectural Services Department (ArchSD) for maintenance;

Note 14: The Board, chaired by the Deputy Director of Architectural Services and comprising two members, considered and decided on the acceptance of tenders of works not exceeding \$30 million and other related matters.

Note 13: A proprietary product is a product sold under a brand name owned by a company, instead of under a generic name.

- (b) at the design stage, the design of the toilets, details of the building services and sanitary materials were required to be presented to the FEHD Vetting Committee for approval. In addition, alterations of materials and products for the toilets, kiosks, landscaping features and outdoor facilities were also required to be submitted to the Design Advisory Panel of the ArchSD for comments. Most of these approved proprietary products and materials were very unique in nature in terms of their design and outlook. As it would be difficult to provide functional specifications with sufficiently precise way of describing these products, proprietary brand names were therefore used in the specifications in the original tender documents;
- (c) at the time of preparing the tender documents, the CEDD made reference to a contract condition adopted by the ArchSD in its building works contracts, which required tenderers to price specified products during the tender stage and to consider adopting alternative products and materials, if any, after the award of the contract; and
- (d) tenderers who normally submitted tenders for civil works contracts were not familiar with the contract condition in (c) for building works.

3.9 With the approval of the Public Works Tender Board, the CEDD conducted retendering of Contract A2. In the revised BQ included in the re-tender document for Contract A2, tenderers were given an option to submit rates based on alternative products or materials having equivalent functions and performance. In May 2011, the CEDD received 10 tenders, of which 9 were conforming ones. In June 2011, the CEDD awarded Contract A2 at a sum of \$27.1 million to Contractor A2 who submitted the lowest tender. The contract works commenced in the same month.

3.10 In November 2013, Consultant A certified the substantial completion of major works of Contract A2. Nevertheless, as of August 2014, while the new cycle tracks of Section A had been certified completed and fully open for public use in March 2014, some outstanding works were yet to be completed (see Figure 3).

Figure	3
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Time of completing Contracts A1 and A2 (May 2010 to September 2014)

Extended contract period after granting of Extension of Time (EOT)

Source: CEDD records

- Note 1: As of September 2014, EOT of 457 days (mainly due to inclement weather, water-main bursts and work restrictions at related rivers and streams during the wet season) had been granted to Contractor A1, and the completion date had been extended to 21 December 2013. The EOT assessment and the contract account had not yet been finalised, and the approved completion date and payment to Contractor A1 might be further adjusted.
- Note 2: As of September 2014, EOT of 165 days (mainly due to inclement weather and some additional works) had been granted to Contractor A2, and the completion date had been extended to 8 April 2013. The EOT assessment and the contract account had not been finalised, and the approved completion date and payment to Contractor A2 might be further adjusted.

Areas for improvement

Errors in preparing BQ for Contracts A1 and B1

3.11 As shown in Table 8 in paragraph 3.2, significant errors had been made in preparing the BQ for the original tender for Contract A1. In the event, the CEDD had to conduct retendering and additional nine months were involved in the process. If the errors had not been identified during the tender assessment, the Government might have incurred nugatory expenditure of \$60 million for the contract (see para. 3.3).

3.12 In September 2013, in examining the 12 tenders (all were conforming ones) received for Contract B1 (see para. 2.9), the CEDD again found significant errors in the quantities of some items in the BQ.

3.13 In October 2013, after rectifying the errors in the BQ for Contract B1, the CEDD conducted tender negotiation with the 12 tenderers and requested them to submit new rates for the revised quantities of the related BQ items. Subsequently, the CEDD awarded Contract B1 at a sum of \$193.9 million to Contractor B1 who submitted the lowest tender (Contractor B1 had also submitted the lowest tender before the tender negotiation). Audit estimated that, if the BQ errors had not been identified, the Government might have incurred nugatory expenditure of \$12 million for the contract.

3.14 In October 2013, the CEDD set up a Task Group to review the practice of its consultants and Development Offices (Note 15) in preparing and checking tender BQ items for Contracts B1 and another contract (Note 16), and to formulate improvement measures with a view to avoiding recurrence of similar incidents in future. In April 2014, the CEDD submitted a review report to the DEVB with the following recommendations:

Improvement measures to be carried out by consultants

- (a) improving work procedures to prepare BQ items and quantities properly, and conducting checking of BQ quantities with reference to design drawings, assumptions and methodologies adopted;
- (b) conducting independent checking of cost-significant BQ items, with the results properly documented for CEDD reference;
- (c) developing a standard checklist for typical types of BQ items in different major categories of works;
- (d) enhancing training to staff to reduce human errors in the preparation and checking of BQ;

Improvement measures to be carried out by CEDD Development Offices

- (e) if resources permitted, conducting spot-checks of quantities of selected cost-significant items, and preferably on other non-cost-significant items after the BQ had been prepared by the consultant. Such spot checks should be properly documented; and
- (f) for in-house managed contracts, passing the above recommendations to the relevant Divisions for their consideration if such measures had not been implemented in their contracts.
- **Note 15:** The CEDD has four Development Offices, namely Hong Kong Island and Islands, Kowloon, NT East and NT West Development Offices.
- **Note 16:** This was an infrastructural works contract. During tender assessment, the CEDD also discovered significant under-estimated quantities for two BQ items in the tender. The CEDD conducted tender negotiation with the conforming tenderers after making rectifications to the errors.

3.15 In May 2014, the DEVB agreed in principle to the findings and recommendations of the CEDD's review report. The DEVB further informed the CEDD that consultants' performance should be more tightly controlled and duly reflected in the existing appraisal mechanism. In Audit's view, the CEDD Task Group's recommendations would help strengthen controls over accuracy of BQ items. Therefore, the CEDD needs to take early actions to promulgate and implement the recommendations. Furthermore, some of the enhanced measures might also help other B/Ds in conducting tender exercises. Hence, the DEVB needs to promulgate these measures to other B/Ds.

Proprietary products leading to higher tender prices for Contract A2

3.16 According to the Stores and Procurement Regulations, tender specifications should be framed to encourage open and fair competition, and should not include any features which could be perceived as discriminatory because it is specific to a trademark or trade name, patent, copyright, design, type, origin, producer, supplier or brand of product. According to the CEDD, following the arrangement adopted by the ArchSD for building works contracts, it included some proprietary products in the BQ of the original tender for Contract A2. In the event, the outturn BQ rates were found to be much higher than the rates for alternative items having similar functions and performance. Under the original tender, while the successful tenderer might propose the adoption of alternative products after contract award, he might not have the incentive to do so because any resulting savings would be deducted from the final contract sum. Subsequently, in conducting retendering of Contract A2, the CEDD revised the tender documents where tenderers were given an option to submit rates based on alternative products or materials having equivalent functions and performance. Moreover, the requirement to deduct from the final contract sum any saving arising from adopting alternative products was also removed from the revised tender. Eventually, the CEDD awarded Contract A2 at a lower contract price than the original lowest conforming tender price.

3.17 For Contract A2, additional three months were involved for conducting retendering. Moreover, tenderers were required to make additional efforts in preparing tenders twice. In Audit's view, the CEDD needs to provide flexibility for tenderers to propose cost-effective alternative products or materials to replace proprietary products or materials stated in the BQ of a tender in future.

Audit recommendations

3.18 Audit has *recommended* that the Director of Civil Engineering and Development should:

- (a) take early actions to implement the recommendations made by the CEDD Task Group for improving the preparation and checking of tender BQ items; and
- (b) provide flexibility for tenderers to propose cost-effective alternative products or materials to replace proprietary products or materials stated in the BQ of a tender in future.

3.19 Audit has also *recommended* that the Secretary for Development should take actions to promulgate the recommendations of the CEDD Task Group on preparing and checking tender BQ items for adoption by relevant B/Ds.

Response from the Administration

3.20 The Director of Civil Engineering and Development agrees with the audit recommendations in paragraph 3.18. He has said that:

- (a) improvement measures mentioned in paragraph 3.14(a), (c) and (d) have been promulgated and implemented, whereas the improvement measures mentioned in paragraph 3.14(b), (e) and (f) will be promulgated as soon as possible; and
- (b) the CEDD will draft contractual provisions to suit the nature and requirements of individual contracts. When drafting the contractual provisions, reference will also be made to the established arrangements of other government departments for similar types of works and the prevailing practices in relevant trades in the construction industry.

3.21 The Secretary for Development also agrees with the audit recommendation in paragraph 3.19. He has said that:

- (a) remedial measures to deal with BQ errors have been prepared which will soon be included in a forthcoming DEVB Technical Circular (Works) to replace Environment, Transport and Works Bureau Technical Circular (Works) No. 7/2004; and
- (b) preventive measures to deal with BQ errors are being reviewed for incorporation into Chapter 6 of the Project Administration Handbook for Civil Engineering Works in the forthcoming revision of the Handbook.

Implementation of cycle-track improvement works

3.22 All sections along the proposed NT Cycle-track Network are two-way tracks. According to the Transport Planning and Design Manual (TPDM — Note 17) issued by the TD, the minimum width of a two-way cycle track is 3.5 metres (m) and the desirable width of it is 4 m (these requirements have been stipulated since December 2001). As some of the existing cycle tracks along Sections A and B were narrower than 3.5 m, improvement works were specified in Contracts A1 and B1 for widening the pertinent sections.

Areas for improvement

Widening works not carried out on some narrow cycle-track sections

3.23 Contract A1 involved constructing a new cycle track of 5 km and carrying out improvement works on selected sections of the 25 km of existing cycle tracks of Section A from Ma On Shan to Sheung Shui. Of the 25 km (or 25,000 m) of existing cycle tracks, Consultant A found that 2,900 m (12% of 25,000 m) were narrower than 3.5 m.

Note 17: The TPDM, first issued in March 1984 and periodically updated thereafter, provides information and guidance for the planning and design of transport infrastructures in Hong Kong.

3.24 After conducting site inspections in March 2008, Consultant A found that some portions of some existing narrow cycle-track sections could not be widened to 3.5 m because the cycle-track widening works would:

- (a) reduce the width of nearby footpaths to less than the minimum width of 1.6 m stated in the TPDM (Note 18); and
- (b) affect substantial number of existing large trees.

3.25 Owing to site constraints, Consultant A only specified 550 m of cycle-track sections (19% of 2,900 m) in Contract A1 for carrying out improvement works. In other words, no improvement works were carried out on the remaining 2,350 m (81%) of the narrow sections of the cycle tracks.

3.26 From May to August 2014, Audit conducted site inspections along Section A. Audit found that some cycle-track sections narrower than 3.5 m might not be subject to site constraints for carrying out widening works (see Case 1).

Note 18: According to the TPDM, for single track access roads in rural and urban fringe areas, the minimum width of a footpath is 1.6 m and the desirable minimum effective widths are from 2 m to 4.5 m depending on the type of the adjacent land use and pedestrian volume. In cases where a footpath in rural and urban fringe areas is obstructed by lamp posts and fire hydrants, an effective clear width of at least 1 m should be provided and the obstructions should be placed at the rear of the footpath. The TPDM also states that at all times a flexible approach should be adopted with a view to producing an economic design commensurate with safety and practical considerations.

Case 1

- 1. A cycle-track section of 1,000 m parallel to Ting Kok Road near an industrial centre was of 2 m to 3 m wide. A section of 260 m of the 1,000 m of the cycle track was included in Contract A1 for widening works, and no widening works would be carried out for the remaining 740 m of the cycle track.
- 2. However, Audit noted that there was a footpath of 2.7 m to 3.5 m wide along the cycle track (see Photograph 1 for a section of the track). According to the TPDM, the minimum width and desirable minimum width of a footpath in the related area (Residential Zone 2) are 1.6 m and 2.75 m respectively.

Photograph 1

Cycle track parallel to Ting Kok Road near an industrial centre (August 2014)



Source: Photograph taken by Audit on 27 August 2014

3. *Audit comments.* In Audit's view, there is scope for widening some parts of the related narrow cycle-track sections.

3.27 In September 2014, the CEDD informed Audit that justifications for not including the cycle-track sections mentioned in paragraph 3.26 in the scope of improvement works had not been fully documented. The CEDD's recent review of the cycle-track sections revealed that, of the cycle-track section of 740 m (see para. 1 in Case 1) not having been included in Contract A1 for widening works:

- (a) widening works for 540 m of the section could not be carried out because the works would reduce the width of the adjoining footpath near a residential zone to below the desirable minimum width, and would affect a substantial number of existing trees; and
- (b) the feasibility of widening the remaining section of 200 m was subject to further detailed assessments and public consultation with the related parties.

3.28 Regarding Contract B1, it included constructing two new cycle tracks with a total length of 2.5 km and carrying out improvement works on selected sections of the 16.5 km of existing cycle tracks of Section B Stage 1 from Sheung Shui to Tuen Mun. Of the 16.5 km (or 16,500 m) of existing cycle tracks, Consultant A found that 6,230 m (38% of 16,500 m) were narrower than 3.5 m. On the grounds of site constraints and minimising impacts on the nearby environment, Consultant A only specified 3,635 m (58% of 6,230 m) of the cycle-track sections in Contract B1 for carrying out widening works. In other words, no widening works would be carried on the remaining 2,595 m (42%) of the cycle tracks. In addition, other improvement works were also carried out on 165 m of the cycle-track sections. However, Audit noted that, similar to Case 1, justifications for not carrying out widening works for some cycle-track sections narrower than 3.5 m under Contract B1 had not been documented.

3.29 Audit site inspections from May to August 2014 along Section B found that some cycle-track sections narrower than 3.5 m might not be subject to site constraints for carrying out widening works (see Case 2).

Case 2

1. A cycle-track section of 800 m parallel to Castle Peak Road near Long Lok Road was of 2.5 m to 3 m wide (see Photograph 2 for a section of the track). However, this cycle-track was not included in Contract B1 for widening works.

Photograph 2

Cycle track parallel to Castle Peak Road near Long Lok Road (July 2014)



Source: Photograph taken by Audit on 14 July 2014

2. Audit noted that there was a footpath of 3.5 m wide along the cycle track. As stated in the TPDM, the minimum width and desirable minimum width of a footpath in the related area (Residential Zone 2) are 1.6 m and 2.75 m respectively. According to the CEDD, one of the reasons for not carrying out widening works for this section was to minimise the impacts on the nearby environment.

3.30 In September 2014, the CEDD informed Audit that justifications for not including the cycle track section mentioned in paragraph 3.29 in the scope of improvement works had again not been fully documented. The CEDD's recent review of the cycle track section revealed that, of the cycle-track section of 800 m (see para. 1 in Case 2) not having been included in Contract B1 for widening works:

- (a) a section of 300 m had been temporarily demolished or blocked due to works relating to an adjacent property development project;
- (b) another section of 250 m was temporarily fenced off due to a road improvement project being carried out in the vicinity by the HyD; and
- (c) there were planned property developments adjoining the remaining cycle-track section of 250 m.

3.31 In December 2007, the TD informed the CEDD that the proposed NT Cycle-track Network should be coherent, direct, safe and attractive, and any substandard sections should not be included in the proposed Network. In response, the CEDD informed the TD that the Network would be designed in accordance with the TPDM, and cycle-track sections with a width of a bit less than 3.5 m at some spots would be justified if there were site constraints, such as limited spaces and existence of old valuable trees.

- 3.32 In September 2014, the TD informed Audit that:
 - (a) the minimum width of a cycle track stipulated in the TPDM was to provide a guideline for the design of cycle tracks under normal circumstances. The guideline was subject to professional judgment to suit prevailing conditions, such as cycle flow, road configuration, local views and other site constraints; and
 - (b) in the case of a relatively wide footpath cum narrow cycle track, it was not a definite requirement to convert part of the footpath into part of a cycle track by reducing the width of the footpath for the purpose of fulfilling the minimum cycle-track width requirement. The minimum width itself should not be interpreted as a threshold value below which the cycle track would be unsafe.

3.33 According to the TPDM, the minimum width of a two-way cycle track is 3.5 m. In Audit's view, the CEDD needs to review the feasibility of widening the related cycle-track sections as far as possible. Furthermore, the CEDD needs to take measures to ensure that justifications for adjusting the scope of a project are properly documented in future. Moreover, the TD should consider taking measures at appropriate locations to alert cyclists to ride more carefully along narrow cycle-track sections.

Long time taken in completing Contract A1 works

3.34 As of August 2014, almost two years after the original scheduled completion date of September 2012, despite that the new cycle track of Section A had been open for public use since March 2014, there were still some outstanding works, including the construction of two rest stations and improvement of some existing cycle tracks. According to the CEDD, the long time taken to complete Contract A1 was mainly due to inclement weather, a water-main burst incident and other work restrictions. In Audit's view, with a view to minimising the delay already caused to the completion of the works, the CEDD needs to strengthen actions to ensure that the works are completed as early as possible.

Audit recommendations

3.35 Audit has *recommended* that the Director of Civil Engineering and Development should:

- (a) review the feasibility of widening the cycle-track sections with a width of less than 3.5 m along Sections A and B as far as possible;
- (b) take measures to ensure that justifications for adjusting the scope of a project are properly documented in future; and
- (c) strengthen actions to ensure that Contract A1 works are completed as early as possible.

3.36 Audit has also *recommended* that the Commissioner for Transport should consider taking measures at appropriate locations where warranted to alert cyclists to ride more carefully along narrow cycle-track sections.

Response from the Administration

3.37 The Director of Civil Engineering and Development agrees with the audit recommendations in paragraph 3.35.

3.38 The Commissioner for Transport also agrees with the audit recommendation in paragraph 3.36.

Provision of cycle-hub facilities

3.39 Under Contract A2, Contractor A2 was responsible for constructing two cycle hubs (Hubs A and B) with ancillary facilities along Section A which would be handed over to the following B/Ds for management:

Ancillary facilities at Hubs A and B	Managing B/D	
(a) Bicycle practising areas, gathering places, bicycle-rental kiosks, pavilions, information boards, first-aid stations	LCSD	
(b) Public toilets	FEHD	
(c) Cycle-parking spaces	TD (Note 19)	

3.40 In order that facilities at Hubs A and B would be open for public use at the same time of the opening of Section A, the contract completion dates of Contract A1 (for cycle-track works) and Contract A2 (for cycle-hub works) were set in September and October 2012 respectively (see Figure 3 in para. 3.10). In the event, the new cycle track of Section A was open for public use in March 2014. Regarding Contract A2, the cycle parking spaces at Hub A were open for public use in July 2012, and major works of Contract A2 were certified substantially completed in November 2013.

Note 19: According to the TD, it is only responsible for traffic management at cycle-parking spaces.

Areas for improvement

Delay in providing cycle-hub facilities for public use

3.41 In April 2014, the LCSD invited tenders for providing bicycle-rental services at Hubs A and B. According to the CEDD, it needed to complete some additional works and some defect rectification works requested by the related B/Ds before handing over the cycle-hub facilities to the managing B/Ds (see para. 3.39). In Audit's view, it was unsatisfactory that essential cycle facilities including bicycle-rental kiosks, first-aid stations and public toilets had not been provided for use by cyclists since opening of Section A in March 2014. The lack of bicycle-rental kiosks may have impeded cyclists without bicycles from using the completed cycle tracks, first-aid stations affected the provision of timely medical care to needy persons, and public toilets affected provision of essential facilities required by cyclists.

3.42 According to Contract A2, Contractor A2 needed to complete outstanding works and rectify defects within 365 days after substantial completion of works in November 2013. Otherwise, the CEDD may take actions to complete the outstanding works and rectify defects and recover the costs from Contractor A2. In Audit's view, the CEDD needs to take actions to ensure that all outstanding works and defects are timely completed and rectified as early as possible.

3.43 In September 2014, the CEDD informed Audit that:

(a) since July 2013, the CEDD had been closely liaising with the LCSD, the FEHD and the TD on arranging handing over the related facilities at the two cycle hubs along Section A. The CEDD was striving to complete all works (including some additional works such as barrier-free access requested by the LCSD and some defect-rectification works requested by the FEHD for the purpose of enhancing the operation, maintenance and management of their facilities) and arrange handing over the completed works to the related B/Ds before the scheduled opening of the bicycle-rental kiosks in December 2014; and

(b) there was no requirement from the relevant B/Ds that the cycle tracks under Contract A1 and cycle hubs under Contract A2 should be open at the same time. The contract completion dates were different at the outset. Moreover, while the cycle track could be open for public use as soon as the works were completed, additional time was required for awarding the service contracts for the bicycle-rental kiosks.

3.44 Audit noted that the original target completion date of Contract A1 was September 2012 and that of Contract A2 was October 2012. In Audit's view, if the target completion date of Contract A2 had been set several months earlier than that of Contract A1, the situation that some of the essential cycle facilities were not available, including bicycle-rental kiosks, first-aid stations and public toilets, after the opening of Section A could have been avoided. Audit considers that the CEDD needs to draw lessons in this incident that essential related public services should be timely provided upon opening of public facilities for public use.

Audit recommendations

3.45 Audit has *recommended* that the Director of Civil Engineering and Development should:

- (a) take actions to ensure that all outstanding works and defects under Contract A2 are timely completed and rectified as early as possible; and
- (b) in implementing a public-facilities project in future, in collaboration with the related B/Ds, take measures to ensure that essential related public services are timely provided upon opening of the facilities for public use.

Response from the Administration

3.46 The Director of Civil Engineering and Development agrees with the audit recommendations.

General works-contract management

3.47 In recent audit reviews on government works projects, Audit also found that errors were sometimes made by consultants in the tender BQ, some of which had resulted in additional costs to the Government. There were also incidents where consultants' substandard work in works design and supervision of works implementation had resulted in substantial contract claims.

3.48 Under the present system for engaging consultants and managing their work, a B/D may issue an adverse performance report to a consultant who is found having unsatisfactory performance, and he may be suspended from bidding new agreements of the same category of works for a certain period of time after receiving some consecutive adverse performance reports. The consultant's past performance will be taken into account in future tender exercises. In view of the many errors found in the tender BQ prepared by consultants and their substandard design and supervision work, Audit considers that the present system for engaging and managing consultants' work may not be totally effective. Therefore, the DEVB needs to conduct a review of the system with a view to identifying better mechanisms for minimising errors made by consultants, and making them more accountable for their work.

Audit recommendation

3.49 Audit has *recommended* that the Secretary for Development should conduct a review of the system for engaging consultants and managing their work with a view to identifying better mechanisms for minimising errors made by consultants, and making them more accountable for their work.

Response from the Administration

3.50 The Secretary for Development agrees with the audit recommendation. He has said that:

- (a) the recommendation aligns with the current practice of the DEVB of seeking continuous improvement to the consultancy procurement and management system. Under the present system, any errors of consultants should be duly reflected in the consultants' performance reports and managing departments would exercise professional judgment on regulatory actions against poorly performed consultants. There are standard consultancy agreement provisions requiring poorly performed consultants to indemnify the Government against any loss;
- (b) the DEVB has promulgated DEVB Technical Circular (Works) No. 1/2014 with more emphases on innovation, creativity, cost effectiveness and design quality in the consultants' performance management and selection system. In addition, the enhanced measures in the forthcoming revision of Project Administration Handbook for Civil Engineering Works will require consultants to establish internal procedures for checking the BQ, which will need to be approved by the related project offices of the works departments. The new requirement in the Handbook will help facilitate works departments in taking regulatory action against consultants, and thus making consultants more accountable for their work;
- (c) the DEVB will continue to carry out reviews and improvement to the existing system to ensure that the performance of consultants will meet the required standards and be accountable for any substandard work; and
- (d) regarding the audit observations in paragraphs 3.11 to 3.13, the existing mechanism to locate items of exceptionally high or low tendered rates is so far effective in capturing problematic BQ items when a tenderer submits abnormal or erratic prices for the items. By properly assessing the risks therein and mitigating those significant ones by necessary post-tender negotiations, the Government has not incurred additional costs in the cases concerned.

PART 4: TRAFFIC MANAGEMENT AND MAINTENANCE OF CYCLE TRACKS

4.1 This PART examines the traffic management of cycle tracks by the TD and the maintenance of cycle tracks by the HyD, focusing on the following audit issues:

- (a) measures on enhancing cycling safety (paras. 4.2 to 4.21);
- (b) designation of cycle-dismount zones (paras. 4.22 to 4.36); and
- (c) maintenance of cycle tracks (paras. 4.37 to 4.47).

Measures on enhancing cycling safety

2010 General Study and associated additional services

4.2 Over the years, the TD has made efforts to enhance cycling safety in Hong Kong. In May 2010, the TD appointed a consultant (Consultant F) under a consultancy (Consultancy F) to conduct a traffic and transport study on cycling networks and parking facilities in nine new towns in Hong Kong (2010 General Study — Note 20). One of the major tasks was to identify common deficiencies of existing cycle-track networks within the nine new towns and recommend generic (i.e. non-site specific) improvement measures.

Note 20: The nine new towns were Sha Tin (including Ma On Shan), Tai Po, Fanling (including Sheung Shui), Tin Shui Wai, Tseung Kwan O, Tsuen Wan, Tuen Mun, Tung Chung and Yuen Long.

4.3 In July 2011, the TD instructed Consultant F to conduct the following tasks (Note 21) as an additional service under the 2010 General Study:

- (a) identifying and reviewing accident-prone sites along Sha Tin and Tai Po cycle tracks, and designing improvement measures at these sites; and
- (b) proposing a pilot scheme to evaluate the effectiveness of recommended new improvement measures (see Category 2 measures in Table 9 in para. 4.6).

4.4 In the event, based on cycling-related accident data (Note 22), Consultant F identified 20 accident-prone sites (see Appendix D) and proposed conducting a pilot scheme in Tai Po (Tai Po Pilot Scheme). For the 20 accident-prone sites, the TD accepted Consultant F's proposals to implement improvement measures in two phases by HyD term contractors, as follows:

- (a) Phase 1 works involving conventional measures, including repainting cycle-track markings, erecting appropriate traffic signs, replacing related steel bollards with plastic bollards and widening/realigning existing cycle tracks, would be implemented at 16 sites at an estimated cost of \$2.5 million. The works were targeted to commence in June 2012 and for completion by April 2014; and
- (b) Phase 2 works involving new measures were subject to evaluation of the measures tested under the Tai Po Pilot Scheme. Such new measures included installing plastic bollards at sharp bends to segregate two-way traffic and applying new cycle-track markings which would be implemented at 14 sites at an estimated cost of \$1.5 million. The works would commence at a later stage upon the completion of the Tai Po Pilot Scheme and subject to the outcome of the evaluation of the effectiveness of the new measures.

Note 22: The data were related to about 1,600 cycling accidents occurring on cycle tracks in Sha Tin and Tai Po from 2008 to 2010.

Note 21: The additional service also included conducting an observation survey on cyclists wearing safety helmets, reviewing problematic sites, and proposing improvement schemes and strategic implementation plans.

4.5 In May 2012, the TD further extended the service under 2010 General Study and instructed Consultant F to evaluate new improvement measures tested under the Tai Po Pilot Scheme before implementing such measures under Phase 2 works for the accident-prone sites. Work under the Tai Po Pilot Scheme was originally targeted for completion by May 2013, and the evaluation of improvement measures under the Scheme were targeted for completion by March 2014. The total consultancy fee for the 2010 General Study including the two associated additional services (see paras. 4.3 and 4.5) was \$1.37 million.

2010 General Study recommendations

4.6 In March 2013, Consultant F substantially completed the 2010 General Study and recommended, inter alia, the implementation of 17 improvement measures on safety, connectivity and traffic management of cycle tracks (see Table 9). The TD has endorsed the 17 improvement measures.

Table 9

Cycle-track improvement measures recommended in 2010 General Study

	Recommended improvement measure			
Cat	Category 1: Measures without further study/testing required, subject to site constraint			
(a)	Enhancement of steep ramp, sharp bend, visibility, traditional steel bollards, obstacles along cycle tracks, inadequate width for a long section, insufficient lighting			
(b)	Provision of railings to segregate cycle tracks and footpaths			
(c)	Provision of more directional signage			
(d)	Enhancement of cycle-track continuity at bus stops and Light Rail Transit stops subject to space availability			
(e)	Enhancement of training and promotion activities			
(f)	Standardisation of cycle-track colours			
(g)	Increase in regular cycle-track inspections			
(h)	Improvement in traffic signs			
(i)	Provision of more cycling practicing areas			
Cat	egory 2: Measures subject to pilot test and evaluation, including Tai Po Pilot Scheme			
(j)	Enhancement of steep ramp, sharp bend and visibility			
(k)	Yellow colour surface of cycle tracks at hazardous/conflicting locations			
(1)	Improvements to cycle-track intersections for enhancing connectivity			
(m)	Provision of planter beds and shrubs to separate cycle tracks from footpaths			
Category 3: Measures subject to further studies				
(n)	Adoption of new paving materials and road markings			
(0)	Replacing cycle-dismount traffic signs by words			
(p)	Provision of supporting facilities along trunk cycle-track networks			
(q)	Provision of cycle crossings at signal-controlled junctions			

Source: Audit analysis of TD records

4.7 Consultant F also recommended that, as Category 1 improvement measures did not require a further study and testing and they were of low implementation difficulty, they should be implemented within a short period of time.

- 4.8 In August 2014, the TD informed Audit that:
 - (a) in considering whether, when and how to follow up the measures recommended by Consultant F, the Government needed to carefully and holistically consider various factors, including the prevailing policy, public sentiments, resources and works priority. Related locations having safety concerns and involving less complicated works would be accorded higher priority for implementing the measures;
 - (b) for works-related measures, the TD had adopted Category 1 measures in Table 9 as appropriate in the daily maintenance works. For Category 2 measures, they would be followed up in the 2013 Site Study taking into account the evaluation results of the Tai Po Pilot Scheme. For Category 3 measures, the TD needed to carefully consider the benefits that might be achieved prior to their implementation; and
 - (c) for non-works-related measures, some would require consultations with other B/Ds, and some would require legislative amendments before taking forward these measures.

2013 Site Study

4.9 In October 2013, after conducting an open tendering exercise, the TD appointed Consultant F under Consultancy G at a fee of \$6.3 million to, based on the findings and recommendations of the 2010 General Study, conduct a study on specific sites for the practical implementation of improvement measures at existing cycle tracks and cycle parking facilities in new towns (2013 Site Study). Some of the main tasks of the 2013 Site Study, which were scheduled for completion in 2016, were to:

- (a) identify sites along existing cycle tracks in nine new towns requiring improvements in terms of safety, connectivity and provision of parking facilities;
- (b) review and design the implementation details in applying the improvement measures to each site identified in (a) above. The improvement measures included the new measures as recommended under the 2010 General Study, some of which had been tested under the Tai Po Pilot Scheme; and
- (c) formulate a mechanism for prioritising and packaging the identified sites for short-term, medium-term and long-term implementation of improvement measures.

Areas for improvement

Slow progress in carrying out improvement measures at accident-prone sites

4.10 Since June 2012, the TD had requested the HyD to carry out Phase 1 improvement works at 16 accident-prone sites in Sha Tin and Tai Po for enhancing cycling safety, including repainting cycle-track markings and replacing related steel bollards with plastic ones (see para. 4.4(a) and Appendix D). In the event, improvement works for 15 sites had been completed from September 2012 to July 2014 and those for the remaining site would be completed by December 2014. According to the target completion dates stated in the TD's works requests sent to the HyD, the works for nine sites had been/would be completed later than the target completion dates, with the works for four sites having been/likely be completed ten months or more after the scheduled completion dates (see Table 10).

Table 10

	Site	Target completion date	Actual/Planned completion date	Delay (Month)
(a)	Junction of Sha Tin Rural Committee Road and Yuen Wo Road (Item 1 at Appendix D)	31/12/2012	31/7/2014	19
(b)	Shing Mun River Cycle Track near Hang Tai Road (Item 7 at Appendix D)	30/11/2012	18/10/2013	10
(c)	Lion Rock Tunnel Road (near Tai Chung Kiu Road) (Item 19 at Appendix D)	15/3/2013	21/1/2014	10
(d)	Tolo Highway Cycle Track near Sui Cheung Street Roundabout (Item 20 at Appendix D)	31/3/2013	31/12/2014	21

Works completion at four sites

Source: Records of TD and HyD

4.11 According to the HyD, for item (d) in Table 10, owing to the time required for finalising the related temporary traffic arrangements, the target completion date has been extended to December 2014, 21 months later than the original target completion date.

4.12 In October 2014, the HyD informed Audit that:

- (a) the HyD and the TD held regular meetings to discuss the programme of all works requests taking into consideration the relative urgency and site constraints. Updated commencement and completion dates had been set for application of funding (within the HyD) for the works; and
- (b) the HyD had made constant monitoring of the works progress based on updated commencement and completion dates. According to the updated commencement and completion dates of the works items (see (a) above),
other than works for three accident-prone sites (Items 9, 19 and 20 at Appendix D), works for 13 of the 16 accident-prone sites had been completed either on schedule or within two weeks after the updated completion dates. Regarding the works at a site not having been completed (see Item 20 at Appendix D), the works involved removal of trees and the HyD had taken much time to convince the related authorities for alignment diversions of the associated utility services. The works were anticipated to complete in end 2014 which would meet the updated completion target.

4.13 In Audit's view, with a view to improving cycling safety at the accident-prone sites, the HyD needs to take measures to ensure that the cycle-track improvement works are completed on schedule as far as possible.

Progress in implementing Phase 2 works affected by delay in completing Tai Po Pilot Scheme

4.14 Regarding the implementation of Phase 2 works including installation of bollards for segregating the two-way traffic and applying new cycle-track markings at 14 accident-prone sites (see para. 4.4(b) and Appendix D), the works would be implemented upon the completion of evaluation of measures tested under the Tai Po Pilot Scheme, which was originally scheduled for completion in March 2014. However, according to the TD:

- (a) the completion of the Tai Po Pilot Scheme and the evaluation of the related improvement measures had been extended to December 2014 (Note 23), due to various site issues which were beyond the TD's control (e.g. the need to conduct tree surveys before commencement of works); and
- (b) the process could not be compressed to shorten the delay because the evaluation could only be made after individual improvement measures had been put in place for at least three months.
- Note 23: Owing to site constraint, the evaluation of the provision of a double-deck parking facility under the Tai Po Pilot Scheme would not be completed in December 2014.

In Audit's view, in order that further improvement works at related accident-prone sites under Phase 2 works could be carried out as early as possible, which would help enhance cycling safety at these locations, the TD needs to expedite action to implement Phase 2 improvement works at the accident-prone sites where applicable after evaluation of the measures implemented under the Tai Po Pilot Scheme.

Follow-up action on regular cycle-track-safety inspections

4.15 In November 2011, the TD set up a Task Force on Promotion of Cycling Safety (Note 24), and the main objectives were to propose, advise and formulate improvement measures focusing on quick-win and short-term measures to enhance cycling safety and to monitor the implementation of improvement works. At its first meeting in November 2011, the TD reported to the Task Force that it planned to carry out, among others, the following tasks:

- (a) exploring the feasibility of conducting on-site safety inspections along cycle tracks in future with a view to identifying areas with accident risks for improvement; and
- (b) carrying out a pilot cycle-track-safety inspection, including compiling a cycle-track-safety inspection checklist for use in inspections in future.

4.16 In December 2012, a TD inspection team completed a pilot cycle-track-safety inspection in Tuen Mun. In the safety-inspection report, the TD inspection team:

- (a) compiled a proposed cycle-track-safety checklist;
- (b) proposed that regular safety inspections could follow the procedures as identified from the pilot cycle-track-safety inspection exercise with a view to upkeeping the safety condition of cycle tracks, which would cover site inspections of the physical conditions, and adequacy of appropriate traffic signs and road markings; and
- **Note 24:** The Task Force was chaired by the Assistant Commissioner/Technical Service of the TD, and comprised representatives of the TD, the HyD and the HKPF as members.

(c) suggested that safety inspections on a cycle track section be conducted by TD regional offices once every 12 to 24 months.

4.17 In December 2012, the Task Force on Promotion of Cycling Safety was disbanded. Audit noted that, as of August 2014, there was no TD record indicating that the TD had made decisions on whether to proceed with the regular safety inspections mentioned in the Task Force's plan (see para. 4.15(a)) and the TD inspection team's recommendation (see para. 4.16(c)). In September and October 2014, the TD informed Audit that:

- (a) the safety-inspection report mentioned in paragraph 4.16 (covering findings on technical aspects but not resource implications of the proposals) was prepared for internal deliberation; and
- (b) there were actually deliberations within the TD and it was concluded that the proposed regular inspections would be too resource demanding and, to a certain extent, the effort would duplicate the TD's daily tasks. For this reason, the proposal of conducting regular safety inspections on cycle tracks had not been pursued further.

In Audit's view, the TD needs to put on record its decision taken on the way forward for not conducting periodical cycle-track-safety inspections by its regional offices.

Audit recommendations

- 4.18 Audit has *recommended* that the Commissioner for Transport should:
 - (a) expedite action to implement Phase 2 improvement works at the accident-prone sites in Sha Tin and Tai Po where applicable after evaluation of the measures implemented under the Tai Po Pilot Scheme; and
 - (b) **put on record TD decision made on the way forward for not conducting periodical cycle-track-safety inspections by its regional offices.**

4.19 Audit has also *recommended* that the Director of Highways should take measures to ensure that improvement works at accident-prone sites are completed on schedule as far as possible.

Response from the Administration

4.20 The Commissioner for Transport agrees with the audit recommendations in paragraph 4.18. She has said that:

- (a) the TD will closely monitor the work progress in order to complete the Tai Po Pilot Scheme as early as possible. Subject to the outcome of the evaluations of the improvement measures, Phase 2 improvement works at the accident-prone sites in Sha Tin and Tai Po will be reviewed and revised as necessary for the HyD's early implementation; and
- (b) the TD agrees that the decision not to conduct periodical cycle-track-safety inspections by its regional offices and the reasons supporting this decision should be documented.

4.21 The Director of Highways also agrees with the audit recommendation in paragraph 4.19. He has said that the HyD has been taking all reasonable measures to complete the improvement works at accident-prone sites on schedule as far as possible, and the outstanding one is scheduled for completion in December 2014.

Designation of cycle-dismount zones

4.22 For the safety of cyclists and pedestrians, cyclists need to dismount at cycle-track locations with steep ramps and sharp bends, side-road crossings and vehicular entrances, and near bus stops. Under the Road Traffic (Traffic Control) Regulations:

- (a) traffic sign of TS227 (see Figure 4 (a)) is a regulatory cycling restriction sign indicating that cycling is prohibited beyond the sign and cyclists must dismount and push their bicycles to proceed beyond the sign; and
- (b) traffic sign of TS228 (see Figure 4 (b)) indicates the end of the cycling restriction in (a) above.

A cyclist may be prosecuted for failing to dismount at dismount zones and is liable to a maximum fine of \$2,000 on conviction.

Figure 4

Regulatory traffic signs of TS227 and TS228



4.23 Furthermore, the TD at times erects an advisory dismount sign of TS483 (see Figure 5 (a)) at cycle-track locations where it may be safer for cyclists to dismount and to push their bicycles, such as approaching a vehicular ingress/egress point and a narrow road section, and an advisory dismount sign of TS485 (see Figure 5 (b)) is erected for advising cyclists to dismount and not to ride their bicycles down steep roads.



Advisory traffic signs of TS483 and TS485



Source: TD records

Areas for improvement

Dismount signs causing confusion

4.24 In the 2010 General Study, Consultant F expressed a view that traffic signs of TS227 and TS228 were confusing as TS227 sign was commonly misinterpreted by cyclists as "Cycling is allowed" whereas TS228 sign as "Cycling is prohibited". Consultant F proposed conducting a further study on amending the legislation to replace the sign symbols by words, namely "Cyclist Dismount/ 騎單車者下車" for TS227 and "End of Cyclist Dismount Zone/下車管制區終止" for TS228. This proposal was one of the Category 3 improvement measures recommended by Consultant F (see item (o) in Table 9 of para. 4.6).

4.25 In September 2014, the TD informed Audit that enhancing education and publicity would increase public understanding of the meaning of the related signs. In Audit's view, to help prevent misinterpretation of traffic signs and enhance cycling safety, the TD needs to consider taking measures to enhance public understanding of the meaning of TS227 and TS228 signs.

Need for minimising regulatory dismount zones along cycle tracks

4.26 One of the tasks of the 2010 General Study and the 2013 Site Study was to identify sites requiring improvement in cycle track connectivity (see paras. 4.6 and 4.9). Audit noted that cyclists were required to frequently dismount along cycle tracks. For example, as of August 2014, there were 215 TS227 signs and 187 TS228 signs (Note 25) erected along the 45.6-km cycle track in Yuen Long. Of the 215 TS227 signs, 5 were erected at the end of cycle tracks where cyclists were normally required to dismount.

Note 25: There are more TS227 signs than TS228 signs because, while a TS227 sign is erected at a location where a cycle-track section terminates, a TS228 sign sometimes is not required to be erected at another location where another cycle-track section begins.

4.27 As the cycle tracks are two-way ones, a pair of TS227 or TS228 are normally erected at a location warranting the sign. Accordingly, cyclists needed to dismount around 105 times (Note 26) at dismount zones while riding along the 45.6-km track in Yuen Long. In other words, cyclists on average needed to dismount at a dismount zone once after riding every 0.4 km (45.6 km \div 105) along Yuen Long cycle track.

- 4.28 In September 2014, the TD informed Audit that:
 - (a) regulatory signs of TS227 and TS228 were placed at locations where road safety could not be compromised; and
 - (b) dismount zones were set up at critical locations where potential hazards or conflicts between cyclists and other road users might exist. The focus should not be on cycling convenience at the possible expense of cycling safety.

4.29 In Audit's view, the fact that cyclists need to dismount so frequently along cycle tracks would disrupt their enjoyment of the cycling activity and diminish the recreational value of the cycle-track facilities. Therefore, the TD needs to consider taking measures, as far as possible and without compromising cycling safety, to minimise mandatory cycle dismount zones along existing cycle tracks and in planning new cycle tracks in future.

Cyclists not complying with dismount requirement

4.30 In September 2014, Audit site inspection on a cycle track section parallel to Yu Tung Road (from Lantau North Police Station to Yat Tung Estate) in Tung Chung found a dismount zone (Dismount Zone A — see Photograph 3).

Note 26: $(215 \ signs - 5 \ signs) \div 2 = 105 \ times \ (see \ para. 4.26).$

Photograph 3

Dismount Zone A along cycle track parallel to Yu Tung Road (September 2014)



Source: Photograph taken by Audit on 7 September 2014

4.31 Audit noted that:

- (a) Dismount Zone A was located adjacent to two bus stops (for Bus No. 37P and 38X) on Yu Tung Road, and was provided for access of passengers using two nearby bus stops; and
- (b) the two bus routes only provided services from 7:00 am to 8:32 am during weekdays and no services would be provided on Saturdays, Sundays and public holidays.
- 4.32 In September and October 2014, the TD informed Audit that:
 - (a) Dismount Zone A was situated between a bus stop and a housing estate, and there were cycle parking areas adjacent to the bus stop. Hence, there would be pedestrian/cyclist conflicts during the morning peak hours; and
 - (b) the cycling restriction was imposed with the intention to protect the safety of cyclists and pedestrians.

4.33 Audit noted that bus-passenger access at Dismount Zone A was only required for a short time (1 hour 32 minutes in a day) during weekdays. In September and October 2014, Audit conducted two surveys at Dismount Zone A to count the number of cyclists complying with the dismount-zone requirement there. The survey results are shown in Table 11.

Table 11

		Date and time of survey		
	Particular	7 September 2014 (Sunday) (3:30 p.m. to 4:30 p.m.)	13 October 2014 (Monday) (7:30 a.m. to 8:30 a.m.)	
(a)	Number of cyclists crossing the dismount zone with bicycles	92	119	
(b)	Number of cyclists walking across the dismount zone after dismounting from bicycles	0	0	
(c)	Number of cyclists riding cross the dismount zone without dismounting from bicycles (see Photograph 3)	92	119	

Audit survey at Dismount Zone A

Source: Audit survey

The survey results indicated that no cyclists complied with the requirement to dismount at Dismount Zone A. In Audit's view, the objective of providing a dismount zone at the site for enhancing public safety could not be achieved. Therefore, the TD, in collaboration with the HKPF, needs to conduct a review on the issue with a view to making improvement.

Audit recommendations

- 4.34 Audit has *recommended* that the Commissioner for Transport should:
 - (a) consider taking measures to enhance public understanding of the meaning of TS227 and TS228 signs;
 - (b) consider taking measures, as far as possible and without compromising cycling safety, to minimise mandatory cycle dismount zones along existing cycle tracks and in planning new cycle tracks in future; and
 - (c) in collaboration with the Commissioner of Police, conduct a review of cyclists' compliance with the dismount requirement when crossing mandatory cycle dismount zones.

Response from the Administration

4.35 The Commissioner for Transport agrees with the audit recommendations. She has said that:

- (a) in constructing cycle tracks, the TD has provided comments to the works department on the design with a view to minimising cycle dismount zones. For existing cycle tracks, the prevailing cycle dismount zones are necessary at critical locations where there are apparent or potential conflicts among vehicles, cyclists and pedestrians, and are justified on traffic engineering and safety grounds. Cyclists using cycle tracks include novice cyclists, occasional cyclists and children. Nevertheless, when opportunities arise in future (e.g. in carrying out cycle-track improvements and nearby new developments or projects), the TD may review whether some mandatory dismount zones can be removed or replaced by advisory dismount zones; and
- (b) non-compliance with traffic signs requiring cyclists to dismount is not a design flaw but an enforcement issue. The TD will work in collaboration with the HKPF on this issue.

4.36 The Commissioner of Police has said that, regarding the audit recommendation in paragraph 4.34(c):

- (a) the HKPF fully supports improvements to cycling safety and will provide comments on proposals to improve cycling safety at mandatory dismount zones; and
- (b) designation of dismount zones is not a policing issue. It requires an engineering solution and, if necessary, establishing physical barriers at dismount zones to ensure cyclists complying with the dismount requirements. The HKPF does not agree to any proposal that relies solely upon police enforcement to ensure cyclists' compliance with the dismount requirement.

Maintenance of cycle tracks

4.37 The HyD is the TD's works agent responsible for the maintenance of cycle tracks. The HyD appoints term contractors to carry out safety inspections and detailed inspections of cycle tracks, and carry out repairs and maintenance works to ensure that cycle tracks are kept in good and safe conditions. Furthermore, upon receiving public complaints or reports, the HyD also instructs its term contractors to conduct inspections and carry out necessary repair works. As of August 2014, the HyD had awarded three term contracts for the management and maintenance of roads and cycle tracks in three districts in the NT, namely: (a) Sha Tin, Sai Kung and Islands District; (b) Tai Po and North District; and (c) NT West District. The three contract periods ranged from four to six years.

4.38 Safety inspections are carried out once every three months (Note 27). As stated in HyD Road Inspection Manual and contract conditions, term contractors are required to place on record any defects (such as potholes) identified which may constitute imminent hazards. According to the contracts, the term contractors should repair such defects within 48 hours from identification.

Note 27: For some major cycle track sections, safety inspections are conducted more frequently, either once every seven days or once every month.

4.39 Detailed inspections are carried out once every six months. According to the Road Inspection Manual and contract conditions, term contractors are required to place on record any defects (such as defective surfaces, cracks, worn surfaces, depressions, and uneven surfacing) which are likely to require routine maintenance under the HyD's maintenance works programme, and any defects which may constitute imminent hazards.

4.40 If a cycle track section has deteriorated to an unsatisfactory condition, the HyD may propose to include the repavement works in the Capital Works Programme for carrying out the works. In 2013-14, the related expenditure amounted to \$5 million.

Areas for improvement

Need for enhanced maintenance of cycle tracks

4.41 Audit conducted site inspections of cycle track sections in Tai Po in May 2014 and identified 10 defects in four locations (see Photographs 4 to 7 and Table 12). In July 2014, the HyD informed Audit that all the 10 defects identified by Audit would not cause imminent hazards to cyclists (see para. 4.38), and the last detailed inspections were carried out by the responsible term contractor in March 2014. The HyD's comments on each case are also shown in Table 12.

Photographs 4 to 7

Defects found in four cycle track locations in Tai Po (May 2014)





Tai Mei Tuk section

Photograph 5



Ting Kok Road near Tai Po Industrial Estate

<image>

Ting Kok Road near Kau Yan College





Ting Kok Road near Tai Ping Industrial Estate

Source: Photographs taken by Audit on 26 May 2014

Table 12

Defects identified by Audit on cycle tracks in Tai Po (May 2014)

	Location	No. of defect	Defect	Defect recorded in HyD contractor's detailed inspection report of March 2014	Target repair date
(a)	Tai Mei Tuk section	1	Aging surface (see Photograph 4)	Not recorded	October 2014
(b)	Ting Kok Road near Tai Po Industrial Estate	1	Pavement surface cracks (see Photograph 5)	Recorded	September 2014
(c)	Ting Kok Road near Kau Yan College	1	Subsided pavement surface (see Photograph 6)	Not recorded	(Note 1)
(d)	Ting Kok Road near Tai Ping Industrial Estate	7	Pavement surface cracks (see Photograph 7 for one of the defects)	All recorded	(Note 2)

Source: HyD records and Audit site inspection on 26 May 2014

- Note 1: In May 2014, the HyD received a public complaint on the subsided surface in the vicinity and it arranged temporary patching up and fencing off of the area. In view of the fact that the defect was caused by water works carried out in the area, the defect had been referred to the Water Supplies Department for repair works.
- Note 2: In July 2013, the HyD received a public complaint on the defects. The HyD originally planned to carry out related improvement works in December 2013. The proposed works were suspended due to the scheduled commencement of the CEDD's cycle-track widening works in the vicinity. In June 2014, the HyD completed temporary repair works to avoid further deterioration of the defects. Cycle-track widening works in the area would be carried out at a later stage.

- 4.42 In September and October 2014, the HyD informed Audit that:
 - (a) of the 10 defects shown in Table 12, the HyD's term contractor had omitted to include 1 defect (see Photograph 4) in his inspection report of March 2014;
 - (b) the defect at Ting Kok Road near Kau Yan College (see Photograph 6) did not exist at the time of the detailed inspection in March 2014, and therefore it could not have been recorded at that time; and
 - (c) the HyD had a comprehensive system in place to assess the performance of a contractor's road inspection works by conducting audit inspections on random samples. Measures such as deduction of contract payments and reflecting performance in contractor appraisal had been used to deter substandard performance.

4.43 Furthermore, in 2013, the HyD received 164 complaints relating to cycle tracks, of which 138 cases were handled by the HyD (Note 28). The HyD has adopted a performance pledge of completing repair works of potholes on a cycle track which would affect cycling safety within 48 hours after receipt of a related complaint. According to the HyD, only one of the 138 cases was pothole related and the repair works had been completed within 18 hours. Audit examination revealed that, as of June 2014, of the 138 complaint cases handled by the HyD:

- (a) defects of 93 cases (67%) had been repaired within seven days from receipt of complaints;
- (b) defects of 22 cases (16%) had been repaired from seven days to one month;
- (c) defects of 12 cases (9%) had been repaired between one and six months;
- (d) defects of 6 cases (4%) had been repaired between six and 14 months; and
- **Note 28:** *The remaining 26 complaints were related to public utility companies and other works B/Ds which were responsible for the repair works.*

(e) defects of 5 cases (4%) had not been repaired pending approval of the related excavation-permit applications.

4.44 According to the HyD, the reasons for the long time taken in completing some of the repair works included:

- (a) time was required for applying for excavation permits and liaising with relevant authorities and departments (such as the TD, the HKPF and utilities companies) on the detailed work arrangements and for tying in with the scheduled repaving works in the area for the purpose of achieving effective use of public money;
- (b) some cases were complicated and complex, and some related procedures were outside the HyD's control; and
- (c) for defects identified which would not cause imminent safety risks to cyclists, corresponding improvements would be included in the HyD's scheduled maintenance programme.

4.45 In Audit's view, defects along cycle tracks would cause nuisance and safety risks to cyclists and they should be repaired within a reasonable time. The HyD therefore needs to strengthen actions against term contractors who have not properly carried out inspections.

Audit recommendation

4.46 Audit has *recommended* that the Director of Highways should strengthen actions against term contractors who have not properly carried out inspections.

Response from the Administration

4.47 The Director of Highways agrees with the audit recommendation. He has said that:

- (a) the HyD has a system in place to assess the performance of a contractor's road inspection works. It has closely monitored performance of the term contractors in this respect, and will continue to do so; and
- (b) the HyD will continue to closely monitor the progress of works, and endeavor to rectify defects as early as possible even in cases of severe constraints.

Appendix A (para. 1.2 refers)

Travel Characteristics Survey (2011)

According to the survey:

- (a) 245,300 households (10.4% of the total 2,363,000 households) owned a total of 347,000 bicycles.
- (b) 4,034,000 Hong Kong residents aged 15 and over knew how to cycle, of whom 535,000 residents (13%) had bicycles available for use.
- (c) Of the 535,000 residents in (b), 150,000 (28%) and 225,000 (42%) residents had used their bicycles for recreational and leisure purposes on weekdays and weekends respectively in the past 3 months from the day of interview.
- (d) Of the 535,000 residents in (b), 64,000 (12%) and 43,000 (8%) residents had used their bicycles for business, commuting or school trips on weekdays and weekends respectively in the past 3 months from the day of interview.
- (e) Of the 4,034,000 residents in (b), 121,000 (3%) and 242,000 (6%) residents had rented a bicycle for recreational and leisure purposes on weekdays and weekends respectively in the past 3 months from the day of interview.
- (f) 85% of the respondents who had cycled in the 3 months before interview usually cycled on cycle tracks while 15% on public roads.

Source: Audit analysis of TD records

Appendix B (para. 2.2 refers)

Key stages of the Project

Preliminary stage	 Need for the project Preliminary project appraisal Project definition statement Technical feasibility statement Feasibility study
Design and investigation stage	 Resource allocation exercise Environmental Protection Department's approval of Environmental Impact Assessment study report/Environmental Review Report Detailed design and ground investigation Cost estimation Preparation of tender documents Funding approval
Implementation stage	 Tendering Contract award Construction (mainly based on Engineer's design)

Source: Project Administration Handbook for Civil Engineering Works

Appendix C (para. 2.10 refers)

Contract payments of Contracts A1 and A2 (August 2014)

Particulars	Contract A1	Contract A2
	(\$ million)	(\$ million)
Contract works completed	125.8	38.5
Contract price fluctuation	16.0	1.3
Claim relating to late possession of works areas	2.7	_
Total	144.5	39.8

Source: CEDD records

Appendix D

(paras. 4.4, 4.10, 4.12(b) and 4.14 refer)

20 bicycle accident-prone sites along Sha Tin and Tai Po cycle tracks

	Location	Phase 1 works (see para. 4.4(a))	Phase 2 works (see para. 4.4(b))
1	Junction of Sha Tin Rural Committee Road and Yuen Wo Road	\checkmark	\checkmark
2	Shing Mun River near Banyan Bridge	\checkmark	\checkmark
3	Lion Rock Tunnel Road near Museum of Heritage	\checkmark	\checkmark
4	Junction of Ting Kok Road and Lo Fai Road	\checkmark	—
5	A Kung Kok Street near Mui Tsz Lam Road	\checkmark	\checkmark
6	Ting Kok Road near Wong Yue Tan	\checkmark	\checkmark
7	Shing Mun River Cycle Track near Hang Tai Road	\checkmark	\checkmark
8	Junction of Nam Wan Road and Tai Po Tai Wo Road	_	—
9	Junction of Yuen Wo Road and Fo Tan Road	\checkmark	\checkmark
10	Lok King Street near Jubilee Garden	\checkmark	—
11	Junction of Tate's Cairn Highway and Bridge across Shing Mun River	~	\checkmark
12	Kiu Ha Road near Vehicle Weighing Station	\checkmark	\checkmark
13	Footbridge near Ma On Shan Bypass, Hang On Estate	\checkmark	\checkmark
14	Tai Chung Kiu Road near Belair Garden	_	_
15	Pak Shek Kok Promenade near Science Park	_	\checkmark
16	Lion Rock Tunnel Road (near Che Kung Temple Mass Transit Railway Station)	\checkmark	\checkmark
17	Che Kung Miu Road near Sha Tin Tau Road	—	—
18	Lion Rock Tunnel Road (near Shing Mun River)	\checkmark	\checkmark
19	Lion Rock Tunnel Road (near Tai Chung Kiu Road)	\checkmark	\checkmark
20	Tolo Highway Cycle Track near Sui Cheung Street Roundabout	\checkmark	_

Source: Audit analysis of TD records

Appendix E

Acronyms and abbreviations

APE	Approved Project Estimate
ArchSD	Architectural Services Department
Audit	Audit Commission
BQ	Bills of Quantities
B/D	Government bureau/department
CEDD	Civil Engineering and Development Department
СТВ	Central Tender Board
DEVB	Development Bureau
EOT	Extension of time
FC	Finance Committee
FEHD	Food and Environmental Hygiene Department
HKPF	Hong Kong Police Force
HyD	Highways Department
km	kilometre
LCSD	Leisure and Cultural Services Department
LegCo	Legislative Council
m	metre
m ³	cubic metre
NT	New Territories
TD	Transport Department
THB	Transport and Housing Bureau
TPDM	Transport Planning and Design Manual

CHAPTER 10

Government Laboratory

Services provided by the Government Laboratory

Audit Commission Hong Kong 30 October 2014 This audit review was carried out under a set of guidelines tabled in the Provisional Legislative Council by the Chairman of the Public Accounts Committee on 11 February 1998. The guidelines were agreed between the Public Accounts Committee and the Director of Audit and accepted by the Government of the Hong Kong Special Administrative Region.

Report No. 63 of the Director of Audit contains 10 Chapters which are available on our website at http://www.aud.gov.hk

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SERVICES PROVIDED BY THE GOVERNMENT LABORATORY

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SERVICES PROVIDED BY THE GOVERNMENT LABORATORY

Executive Summary

1. The Government Laboratory (GL) provides a broad range of analytical, advisory and forensic services to enable government bureaux and departments (B/Ds) to meet their responsibilities. In 2014-15, the financial provision of the GL is \$436 million. As at 31 March 2014, the GL had about 460 professional, technical and supporting staff. Headed by the Government Chemist, the GL is organised into three Divisions, namely the Analytical and Advisory Services Division (AASD), the Forensic Science Division (FSD), and the Administration Division. The former two Divisions are further divided into 27 Sections. The AASD performs statutory testing as the referee analyst under a number of ordinances and regulations. It also provides a wide range of chemical testing and advisory services to B/Ds and public institutions. The FSD provides forensic science services to the criminal justice system. The Audit Commission (Audit) has recently conducted a review of the services provided by the GL.

Provision of laboratory services to user bureaux and departments

2. **Turnaround time of services.** Many requests for laboratory tests need to be performed in a timely manner. The work performance of the GL is published in its Controlling Officer's Report (COR). The GL sets performance targets expressed primarily as a compliance rate, i.e. the percentage of completion of case submissions from its user B/Ds within a specified turnaround time for each type of testing service. Audit found that the practices used for counting the actual turnaround time were not uniformly adopted by individual Sections of the GL and the actual turnaround times of some types of testing had been excluded from the calculation of work performance. Audit also found that the target turnaround times of the sub-categories of services managed by individual Sections of the GL were

well above their actual turnaround times, thus accounting for the high compliance rates achieved. In spite of the high compliance rates of turnaround times, results of Audit's survey of July 2014 on 17 user B/Ds (the Audit Survey) revealed that there were requests from some user B/Ds for expediting the GL's services to better serve their operational needs (paras. 2.4, 2.5, 2.11 to 2.14, 2.19 and 2.20).

3. *Quality assurance*. Audit examination of the GL's internal quality audit reports revealed that the FSD had reported root cause analysis in the summary report of the annual quality audit and submitted to Division Heads for endorsement and necessary actions, while the AASD had not. Audit reviewed the root cause analyses conducted by the FSD and noted that some of these analyses were not thoroughly carried out. Audit analysis of the "non-conformities" and "areas worth improvement" identified by the GL's quality audits revealed some irregularities common among different Sections and some recurring year after year (paras. 2.32 to 2.34 and 2.37).

4. **Coordination with user B/Ds.** To promote effective coordination and facilitate regular consultations, the GL signed a Memorandum of Understanding (MOU) with the Hong Kong Police Force (HKPF) in 2000 and the Customs and Excise Department (C&ED) in 2003. In the Audit Survey, the HKPF and the C&ED considered that the MOU was useful for the GL to understand their needs and there was a need to review the MOU on a regular basis. Of the 15 surveyed B/Ds without such an MOU, four agreed that it would better serve their operational needs if MOUs were signed with the GL. Furthermore, seven of the 17 surveyed B/Ds considered that the GL could provide more types of testing services. Four B/Ds considered that the GL could provide more tests for each type of service (paras. 2.42, 2.45, 2.46 and 2.52).

Outsourcing of laboratory services

5. *Tender evaluation and contract administration.* Since 2008, the GL has outsourced some of its regular food surveillance testing work to local accredited laboratories. In 2013-14, about 120,000 food tests were outsourced at a total contract sum of \$2.63 million, accounting for some 60% of the AASD's routine food testing work (or 17% of the AASD's testing work). The GL outsourced a total

of 17 food testing contracts in 2013-14. Of the four private laboratories involving outsourcing by the GL, one was awarded 97% of the food testing (in 13 separate contracts). Audit considers that reliance on a dominant contractor for the food testing may pose concentration risks to the GL. Audit also noted that the past performance of laboratories (such as late reporting of test results or warnings issued) had not been taken into account in tender assessment (paras. 3.5, 3.9, 3.10 and 3.15).

6. *Monitoring contractor performance.* To safeguard the quality of outsourcing services, the GL regularly monitors the performance of contractors. During each contract period, the Chemist-in-charge conducted at least one routine on-site inspection. The on-site inspections were normally announced one or two days in advance. There is a need for the GL to consider introducing unannounced inspections to enhance the monitoring of contractor performance. Although the GL formulated in 2011 a comprehensive checklist as a guide for inspections, this checklist was not used by GL staff. Audit considers that using the checklist by different inspection teams would help ensure completeness and consistency (paras. 3.18 to 3.21).

7. Post-implementation review (PIR) of outsourcing. Audit found that the GL's outsourcing had improved the turnaround times tremendously in conducting food tests. The turnaround times in conducting outsourced food tests were much shorter than those for in-house food tests. After six years of implementation since 2008, it is timely for the GL to conduct a PIR on the outsourcing of the laboratory testing so as to take stock of the position and plan the way forward. The Audit Survey also found that some user B/Ds would like to outsource the laboratory services to private laboratories (directly by themselves or by the GL). Additionally, Audit noted that some user B/Ds wanted to have staff seconded from the GL. The Secretary for Food and Health has allocated a recurrent funding of \$12 million a year to the GL for outsourcing its routine food tests to commercial laboratories. Audit however found that of the \$10.33 million expenditure on outsourcing in 2013-14, only \$2.69 million (26%) was spent on contract payments to contractors, while \$7.64 million (74%) was spent on items not directly related to outsourcing (paras. 3.36, 3.37, 3.42 to 3.44).

Management of chemicals, samples, exhibits and equipment

8. *Stock management of chemicals.* The GL spends about \$120 million a year on purchasing equipment and chemicals. Audit noted that there were stock discrepancies between stock balance reports and stocktaking records. Audit selected 20 items with discrepancies for the year 2014 and checked whether the discrepancies were properly adjusted. It was found that the stock balances of six items had not been adjusted accordingly. Audit conducted a stocktaking exercise on 28 July 2014 at the GL main store, and found discrepancies in 20% of the items checked. Audit also noted that no expiry dates of chemicals were recorded in the stock system. There was no requirement for the GL's Sections to conduct stocktakes regularly on the stock held and to check the expiry dates of the stock items (paras. 4.2, 4.4 to 4.7, 4.9 and 4.14).

9. *Handling of samples and exhibits.* Many of the samples received by the GL are formal exhibits used for prosecution purposes. The reports are required to be delivered, and the exhibits to be returned, to the user B/Ds. Taking 28 July 2014 as the cut-off date, Audit found that 32% of the cases with reports and/or exhibits had not been collected for over 3 months after the completion date (including 14% over one year). Audit noted that there were no stocktaking requirements stipulated in the quality manuals for samples/exhibits, nor were there any guidelines for handling exhibits remaining uncollected by user B/Ds for a long time. Audit also found cases in which the exhibits were only collected a long time (e.g. over 1 year in 56 cases) after the reports were completed. As such, the GL may need extra storage space/facilities to keep these long-outstanding exhibits (paras. 4.23 to 4.25).

Maintenance of equipment. The GL has been using the service of the 10. Electrical and Mechanical Services Trading Fund (EMSTF) to maintain and repair its equipment since the establishment of the EMSTF in 1996. The GL entered into a five-year Service Level Agreement (SLA) with the EMSTF starting from 1 April 2001. Under the current SLA (1 July 2011 to 31 March 2016), the GL would pay the EMSTF a maintenance fee of about \$40.38 million over the period according to the equipment list. The current SLA will expire on 31 March 2016. In April 2014, the GL was exploring the way forward and the strategy for the maintenance of all equipment in use. In this regard, the GL identified some major challenges, including: (a) the warranties of many items of scientific equipment would expire in the next few years; (b) the additions to the equipment list for maintenance services might increase the SLA fee substantially; and (c) for some scientific equipment with advanced technology, the EMSTF might not have the required expertise to provide maintenance services (paras. 4.28, 4.30, 4.32 and 4.35).

Way forward

11. Given its limited resources and the wide spectrum of government services that require its support, the GL is facing challenges to continuously improve its efficiency and cost-effectiveness in the provision of laboratory services. The frequent occurrence of emergency incidents (notably food incidents) in recent years has also put pressure on the GL in providing support to various B/Ds in dealing with such incidents. The GL is meanwhile reviewing its way forward to meet the challenges (paras. 5.2 and 5.5).

Audit recommendations

12. Audit recommendations are made in the respective sections of this Audit Report. Only the key ones are highlighted in this Executive Summary. Audit has *recommended* that the Government Chemist should:

Provision of laboratory services to user B/Ds

- (a) critically review the GL's compilation of performance information on turnaround times reported in the COR to ensure that it is clearly and fairly presented (para. 2.22(a));
- (b) continue to make efforts to shorten the target turnaround times of laboratory services to help user B/Ds better meet their operational needs (para. 2.22(e));
- (c) take measures to ensure that root cause analyses are thoroughly conducted and the results are documented, so as to identify appropriate corrective actions (para. 2.38(b));
- (d) liaise with user B/Ds for signing an amplified version of MOU with the GL in order to better define and predict the service needs and facilitate effective planning of the use of resources (para. 2.55(c));

Outsourcing of laboratory services

- (e) consider the need to limit the number of outsourcing contracts that each private laboratory may be awarded so as to reduce concentration risks (para. 3.16(a));
- (f) introduce unannounced on-site inspections, and remind the inspecting officers to use the inspection checklist to properly document the results for each inspection (para. 3.22(a) and (b));
- (g) conduct a PIR on the outsourcing of laboratory services, including exploring the feasibility of more outsourcing of laboratory services and staff secondment to user B/Ds, and reviewing the propriety of charging to the outsourcing vote items which are not directly related to outsourcing (para. 3.46(b) and (c));

Management of chemicals, samples, exhibits and equipment

- (h) ensure that the expired stocks are disposed of periodically and the stock lists are updated promptly (para. 4.18(d));
- (i) provide more management information for monitoring long-outstanding cases pending collection by user B/Ds (para. 4.26(b)); and

Way forward

(j) take on board the audit observations and recommendations in this Audit Report in taking forward the GL's long-term strategic development plan (para. 5.6).

Response from the Administration

13. The Government Chemist agrees with the audit recommendations.

PART 1: INTRODUCTION

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

Background

1.2 The Government Laboratory (GL), with the Food and Health Bureau as its housekeeping Bureau, provides a broad range of analytical, advisory and forensic services to enable government bureaux and departments (B/Ds) to meet their responsibilities for law and order, public health and safety, environmental protection, government revenue, consumers' interests, and implementation of government policies. It also provides similar services to other statutory bodies. Appendix A shows the main services provided by the GL.

1.3 The GL provides services to B/Ds free of charge. It may also provide scientific services to statutory bodies and the private sector on a full-cost recovery basis, provided that its main functions are not affected.

- 1.4 The GL provides services under the following three categories:
 - (a) *Statutory testing.* The Government Chemist discharges statutory functions as referee analyst under various ordinances and regulations;
 - (b) *Advisory and investigative services.* The GL provides a wide range of chemical testing and advisory services to B/Ds and public institutions; and
 - (c) *Forensic science services.* The GL provides forensic science services to the criminal justice system.

1.5 In 2014-15, the financial provision of the GL is \$436 million. Figure 1 shows the financial provision for each category of services.



Financial provision for the GL (2014-15)



Source: GL records

Mission of the GL

1.6 The GL's mission is to provide our community with quality analytical, forensic and advisory services achieved through advancing measurement science and standards. The GL strives to:

- (a) keep up with the latest development in measurement science and technology;
- (b) be prepared to meet the needs of community;
- (c) strengthen international collaborations; and
- (d) develop metrology in chemistry and biology.

1.7 The GL aims to be a leading laboratory in the region offering significant contributions to the testing community at large. It actively participates in the activities organised by the international and regional metrological organisations and offers necessary support to the local testing and certification sectors.
Organisation of the GL

1.8 As at 31 March 2014, the GL had about 460 professional, technical and supporting staff. Headed by the Government Chemist, the GL is organised into three Divisions, namely the Analytical and Advisory Services Division (AASD), the Forensic Science Division (FSD), and the Administration Division. The former two Divisions, each headed by an Assistant Government Chemist, are responsible for providing laboratory testing services. These two Divisions are further divided into four Groups and 27 Sections according to different scientific disciplines (such as biochemical sciences, environmental chemistry, forensic toxicology, etc.). Reporting to a Group Head at the Chief Chemist level, each Section is headed by a Senior Chemist who is supported by several Chemists and Science Laboratory Technologists (SLTs). Appendix B shows an extract of the GL's organisation chart. Appendix C shows the number of staff and the workload of the GL for the past five years.

1.9 The headquarters of the GL is situated in Homantin. It also has six satellite laboratories which are spread out in different locations. Of the 27 Sections of the GL, 18 are located in Homantin headquarters and 9 in the satellite laboratories.

AASD

1.10 The AASD performs 11 categories of statutory testing (see Appendix D for details) as the referee analyst under a number of ordinances and regulations, including:

- (a) analysis of food products for regulatory compliance (e.g. under the Public Health and Municipal Services Ordinance — Cap. 132);
- (b) examination of western and Chinese medicines for registration and quality control (e.g. under the Pharmacy and Poisons Ordinance Cap. 138);
- (c) testing of dutiable commodities for tariff classification (under the Dutiable Commodities Ordinance - Cap.109);

- (d) assessment of toys, children's products and consumer articles for health and safety hazards (e.g. under the Consumer Goods Safety Ordinance – Cap. 456);
- (e) determination of tar and nicotine yields in cigarettes (e.g. under the Smoking (Public Health) Ordinance Cap. 371);
- (f) analysis and authenticity tests on consumer products, in particular those related to valuable goods (e.g. under the Trade Descriptions Ordinance Cap. 362); and
- (g) verification of products and measuring equipment (under the Weights and Measures Ordinance Cap. 68).

1.11 The AASD also provides 10 categories of advisory and investigative testing services (see Appendix D for details) to the Government in the management and monitoring of the environment, and in the enforcement of various pollution control measures. Under this service category, chemical testing of air, water and waste sample for a variety of pollution level indicators constitutes the main activities. Other activities include examination of seepage samples and feed-stocks, and identifying products made from endangered species.

1.12 In 2013, the AASD performed 421,335 statutory tests and 258,973 tests in respect of advisory and investigative services. Figure 2 shows the number of tests completed by the AASD in 2013.





Number of tests completed by the AASD (2013)

Category of testing services

Source: GL records

FSD

1.13 The FSD provides 18 categories of forensic science services (see Appendix D for details) to:

(a) law enforcement departments such as the Hong Kong Police Force (HKPF), the Customs and Excise Department (C&ED) and the Immigration Department. The services include examination of crime scenes, biochemical grouping (DNA profiling), trace evidence, accident reconstruction, handwriting examination, and statutory-based analysis of controlled drugs and poisonous substances; and (b) the Department of Health (for the Methadone Maintenance Scheme), the Social Welfare Department, the Correctional Services Department and other organisations requiring urinalysis monitoring service.

1.14 In 2013, the FSD investigated 61,103 cases (including 42,158 urinalysis cases) and attended 474 crime scenes. Figure 3 shows the number of cases (apart from urinalysis cases) investigated by the FSD in 2013.



Figure 3

Number of cases investigated by the FSD (2013)

Category of testing services

Source:	GL records
Remarks:	42,158 urinalysis cases are not included.

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Audit review

1.15 *Audit review of 2002.* In March 2002, the Audit Commission (Audit) completed a review to examine the operations of the GL (the 2002 Audit Review). The review found that there was room for improvement in a number of areas including turnaround time of services, coordination with user B/Ds, and maintenance of equipment. In particular, the review recommended the GL to explore the option of outsourcing its routine analytical testing services to accredited laboratories. The review results were included in Chapter 4 of Director of Audit's Report No. 38 of March 2002.

1.16 Some 12 years have elapsed since the 2002 Audit Review. Audit has recently conducted a review to follow up the implementation of the 2002 Audit Review's recommendations, and examine the measures (including outsourcing of laboratory services) taken by the GL to improve the efficiency and effectiveness of its services to user B/Ds. In conducting this review, Audit conducted a survey (Audit Survey) to gather information from 17 major user B/Ds on the quality of services provided by the GL as well as the related coordination mechanism. The audit review focused on the following areas:

- (a) provision of laboratory services to user B/Ds (PART 2);
- (b) outsourcing of laboratory services (PART 3);
- (c) management of chemicals, samples, exhibits and equipment (PART 4); and
- (d) way forward (PART 5).

Audit has found room for improvement in the above areas, and has made a number of recommendations to address the issues.

Acknowledgement

1.17 Audit would like to acknowledge with gratitude the assistance and full cooperation of the staff of the GL and the 17 user B/Ds (see para. 1.16) during the course of the audit review.

PART 2: PROVISION OF LABORATORY SERVICES TO USER BUREAUX AND DEPARTMENTS

2.1 This PART examines the GL's provision of services to user B/Ds, focusing on the following areas:

- (a) turnaround time of services (paras. 2.2 to 2.23);
- (b) quality assurance (paras. 2.24 to 2.39);
- (c) coordination with user B/Ds (paras. 2.40 to 2.56); and
- (d) handling emergency incidents (paras. 2.57 to 2.63).

Turnaround time of services

2.2 The GL is committed to achieving the goal of valid analytical measurements and quality forensic examination service that is impartial and The AASD provides a wide variety of analytical, investigative, and accurate. technical advisory services in the field of applied chemistry and related scientific disciplines to B/Ds, public institutions and official international organisations. The services offered by the AASD are classified under 11 categories of "statutory testing" services and 10 categories of "advisory and investigative services". Additionally, 18 of the 21 categories of services have sub-categories of testing services (see Appendix D for details). The FSD provides a comprehensive range of forensic investigative services to the law enforcement departments in Hong Kong. The services offered by the FSD are classified under 6 categories of services managed by the Criminalistics and Quality Management Group and 12 categories of services managed by the Drugs, Toxicology and Documents Group (see Appendix D for details).

2.3 The GL classifies the user B/Ds' testing requirements as urgent service requests or non-urgent ones. For urgent requests, the tests would be completed within two days to support user B/Ds in response to emergency situations or public health safety concerns (such as food incidents). For example, the AASD handled some 250 urgent cases in 2013.

Setting of performance targets

2.4 Many requests for laboratory tests need to be performed in a timely manner. The work performance of the GL is published in its Controlling Officer's Report (COR) and is presented by test category with the volume of testing and the performance target. The COR generally showed a high rate of compliance with its performance targets.

2.5 To measure and manage GL's ability to meet the user B/Ds' demands, the GL sets performance targets expressed primarily as a compliance rate, i.e. the percentage of completion of case submissions from its user B/Ds within a specified turnaround time (Note 1) for each type of testing service.

Databases of test sample information

2.6 The GL maintains two web-based application systems for storing the centralised database of test sample information, one for AASD's samples and the other for FSD's samples. Details of test samples received by the AASD are input into the Sample Information Management System (SIMS) while details of those received by the FSD are input into the Extended Sample Information Management System (ESIMS). Both the SIMS and the ESIMS are used by GL staff for making enquiries and tracking of the status of the testing. The design of the systems is to enable the GL staff to make use of the system information to respond to user B/Ds' enquiries of the laboratory testing services.

2.7 The information stored in the databases of both systems includes data such as reference/case number, date of receipt, sample description/category, responsible section, number of tests and the target turnaround time. The centralised database information is eventually copied (downloaded) to the corresponding Sectional databases.

Note 1: *Turnaround time is the case-completion time defined as the number of working days between the date of receipt of the exhibits/case at the GL and the date that the exhibits/report are available for return to the user B/D concerned.*

2.8 The Section users responsible for the input of the individual data would update their own Section's database with data such as the test report/certificate date and the Chemist code. The AASD Section users subsequently transfer (upload) the completed data records back to the SIMS which would be aggregated and summarised in various statistical reports generated for the AASD. The FSD Section users use the Sectional databases to generate the statistical reports.

2.9 Management reports are regularly generated by the systems. Year-end progress review reports are generated for preparing the COR. Quarterly progress reports are generated for reporting to the relevant bureaux. Monthly statistical returns/Section reports, including the returns for the Divisions showing the percentage of samples that achieved the target turnaround time, are generated for internal discussion during the Divisional Management Meetings of the AASD and the FSD.

Audit analysis of actual turnaround time

2.10 Audit Review. The 2002 Audit Review (see para. 1.15) noted that for some service performance, the GL could set more challenging targets given the fact that their actual performance had consistently been well above the targets set. In this review, Audit reviewed the 2013 COR compiled by the GL. The COR listed 39 categories of testing, with actual compliance rate well above 90% for substantially all of the categories (see Appendix D). Of the 39 categories of testing disclosed in the COR, 18 have sub-categories. These 18 categories with sub-categories are for "statutory testing" and "advisory and investigative services" (see paras. 1.4 and 2.2). According to the GL, different samples require different analytical procedures, thus different reporting time applies for each sub-category. The quoted number of working days for a specific category in the GL's COR represents an average of reporting time for the different types of samples/test requests within the category, while the target and actual compliance rates, expressed in percentages, represent the total compliance rate of the concerned samples/test requests within a particular category against their sub-categories' respective target turnaround times (not disclosed in the COR). In other words, for the categories with sub-categories, the average reporting time quoted in the COR is for reference only, but not used for measuring the compliance rate.

2.11 According to Financial Services and the Treasury Bureau Circular Memorandum 12/2013, Controlling Officers should make sure that information set out in the CORs is substantiated and accurate, and also satisfy themselves that proper performance records are maintained and, as far as practicable, can be validated. Audit reperformed the calculations of the compliance rate for 2013, but the results did not match or could not be reconciled to the information reported in the GL's COR. As reported in the COR, while targets were met for all categories of laboratory services, the actual compliance rates for 20 of these categories as calculated by Audit were lower than the reported achievements. Audit expressed concerns to the GL that data in the GL systems did not seem to support the information reported in the COR. In response, the GL provided additional information to Audit for reconciling the differences. According to the GL, the difference between audit calculations of the compliance rate and that reported in the COR was very much due to the differing practices of the Sections in counting the number of days taken to provide the services. Audit counted the day of receipt of test sample consistently while some Sections excluded the day. While the difference was not significant for the targets with longer turnaround time, it made a significant difference for those with short turnaround time. According to the GL, the GL comprised many Sections which provided different services to different user B/Ds, there were many differences among them due to historical and operational reasons. Another reason noted by Audit was that some types of testing had been excluded by some Sections of the GL in the calculation of its work performance reported in the COR.

2.12 Key findings arising from the audit analysis of the reconciliation of the differences are summarised in Table 1.

Table 1

Key audit findings

		Audit findings	Audit comments			
• The turn adoj (No	pra aroun pted te 1).	ctices for counting the actual nd time were not uniformly by the individual Sections	The practice for counting the actual turnaround time should be formally adopted by the GL and consistently applied to all its Sections.			
• The type the report exclored of doct	actu es of calc orted usion the umen	tal turnaround times of many testing had been excluded from rulation of work performance in the COR (Note 2). Such his were made at the discretion Sections and not properly ited for management review.	The exclusions should be fully justified, properly approved, and documented for management review.			
Source.	: Auc	lit analysis of GL records				
Note 1	Erc	munulas of the different practices inclu	da			
1000 1.	LAU	imples of the afferent practices thema	et .			
	(a)	some Sections counted the day of receipt of test samples (the first day) as one day, but some did not; and				
	(b)	the number of working days taken for the testing was approximated by multiplying the number of calendar days by the factor of 5/7, except one Section which deducted the actual holidays in calculating the working days.				
Note 2:	• Тур	es of testing excluded from the calcul	ation of turnaround time are:			
	(a)	a) some Sections included proficiency tests for calculating the work performance, but some did not;				
	(b)	some Sections included samples from the Hospital Authority for calculating the work performance, but some did not;				
	(C)	some Sections excluded cases whic some Sections included them for co NFA status as the sample-out day;	h required no further action (NFA), but alculation, taking the day confirming the			

Table 1 (Cont'd)

(<i>d</i>)	some newly introduced testing services which were more complicated in nature and longer turnaround times were required;
(e)	some non-routine samples;
(f)	some microbiology samples involving inter-laboratory exercises;
(g)	some mutually-agreed annual targets or pledges, made at regular meetings of the Drug Related Working Group (comprising officers from the GL and the C&ED);
(h)	fire investigation, miscellaneous chemical investigation, and some trace evidence tests;
(i)	complicated cases requiring longer turnaround times;
(j)	ad-hoc research and development work; and
(k)	hair drug tests and drug urinalysis tests conducted under the Healthy School Programme.

2.13 Audit also noted that different Sections in the AASD input into the SIMS different target turnaround times for different sub-categories, which were used by the system to generate the compliance rates. When the testing turnaround time was shorter than that specified for the relevant sub-category, that testing was considered to have met the relevant target turnaround time set in the COR. However, these target turnaround times had not been approved by the Government Chemist. It appeared that these target turnaround times for the sub-categories were input at the discretion of the Sections concerned.

2.14 Audit calculated the average target turnaround times of the sub-categories that made up the categories based on the data captured by the SIMS and found that some of them were actually well above the average turnaround times specified in the COR (see Table 2).

Provision of laboratory services to user bureaux and departments

Table 2

Longer average target turnaround times against those specified in the COR (2009 to 2013)

		Average	Average target turnaround time of the sub-categories that made up the category (Working day)				
		turnaround time specified in the COR					
		(Working day)	2009	2010	2011	2012	2013
A. \$	Statutory testing			1		1	1
1	Other food samples	19	35	38	33	32	33
2	Pharmaceuticals (quality control — Note)	14	46	49	51	47	33
3	Pharmaceuticals (registration)	30	36	36	35	37	40
4	Toys and children's products	15	17	16	17	16	17
B. Advisory and investigative services					1	I	
5	Air pollution samples for litigation purposes	18	35	36	36	37	34
6	Field investigation (air pollution) samples	12	15	15	16	15	15
7	Water quality monitoring samples	20	25	25	25	24	24
8	Environmental waste samples for litigation purposes	12	20	22	24	19	14
9	Miscellaneous — other samples	25	43	54	68	72	60

Source: Audit analysis of GL records

Note: For an illustration of the calculation of the average target turnaround time, please see Appendix E. It can be seen that the category "pharmaceuticals (quality control)" comprised 34 sub-categories with target turnaround times ranging from 2 to 180 working days.

2.15 Audit found that the target turnaround times set by the Sections for the sub-categories that were included in a category of services could be substantially different (sometimes longer) than the average shown in the COR. Taking "Pharmaceuticals (quality control)" (i.e. Item 4 at Appendix D) as an example, the average turnaround time specified in the COR was 14 working days. However, if a weighted average had been taken to calculate the target turnaround time of all the tests performed in the 34 sub-categories within the category, the average target turnaround time in 2013 would have been 33, and not 14 working days (see Item 2 in Table 2). Audit selected the category "Pharmaceuticals (quality control)" for case study to illustrate the reconciliation of the differences between Audit's calculations and those of the GL for 2013. Audit found from the case study that:

- (a) not all the test requests had been included for calculating the compliance rate;
- (b) the target turnaround times of the sub-categories were generally much higher than the actual turnaround times; and
- (c) the turnaround time stated as an average in the COR was not the benchmark used to measure the compliance rate of the sub-categories.

Details are given in Case 1 at Appendix F.

2.16 In general, setting longer target turnaround times would make it easier for the GL to meet the target compliance rates set in the COR. Audit considers that the GL needs to take measures to ensure that the target turnaround times for the sub-categories input into the SIMS are subject to regular verification and management review, and that the range of target turnaround times used by the Sections for the sub-categories may be more accurate and descriptive than the average target turnaround times for reporting in the COR.

Management information for user B/Ds

2.17 As mentioned in paragraph 2.6, the SIMS and the ESIMS are used by the GL for handling user B/Ds' enquiries on related testing information and status checking of the testing. They had been developed for many years. However, Audit found that:

- (a) the SIMS and the ESIMS were not designed for providing comprehensive information as they could not readily generate information on the actual turnaround time of each test category;
- (b) it took quite a long time to extract accurate information required for audit analysis. Some data needed to be extracted from records of individual Sections (i.e. they were not readily available from the centralised systems); and
- (c) during the process of audit analysis, Audit found some doubtful/illogical cases with the sample-in dates later than the sample-out dates. Upon enquiry, the GL informed Audit in September 2014 that the ESIMS contained some system bugs, and hence it was not used for generating performance reports. However, the doubtful/illogical cases were more likely due to errors in data entry.

For better management control purposes, Audit considers that the SIMS and the ESIMS need to be enhanced in order to provide more readily comprehensive management information for the GL.

GL's customer surveys

2.18 The GL seeks annual feedbacks from its user B/Ds through questionnaire surveys. The feedbacks shall be analysed and used to improve the management system testing and calibration activities as well as customer services.

2.19 Audit examination of these customer surveys for the past three years revealed that there were requests for expediting the GL's services from some user B/Ds in order to better serve their operational needs (see Table 3 for details).

Table 3

Laca D/D	Comments on the services	Descoração has des CI
User B/D	provided by the GL	Response by the GL
Α	• It expected that Government Chemist's certificate (GCC) could be provided for all cases for examination of drugs within 6 weeks (related to Items 28-35 at Appendix D).	• It would be difficult for the GL to produce the GCCs for all drug cases within 6 weeks irrespective of their case nature and complexity.
	• Some cases had time bar restriction of 6 months and many cases would involve seeking legal advice based on the FSD report which generally required 3 to 4 months to complete (related to Items 35 and 36 at Appendix D).	• The GL understood the specific need in traffic cases. Officers-in-charge of cases were welcome to discuss with relevant Section of the GL on the urgency of any particular case in order that priority and resources could be strategically deployed to meet the challenge.
В	• The GL needed to speed up to provide test results within three weeks or less (related to Item 33 at Appendix D).	• The pledge of urinalysis was 22 working days for 85% of the submitted cases. It needed to be discussed between the management of the two departments if a change in pledge was contemplated.
	• Department B appreciated the arrangement of giving verbal replies over the phone in late cases and wondered if facsimile of the reports could be facilitated.	• It was against the policy of the FSD quality system to fax the reports to user B/Ds.

Examples of requests for expediting the GL's services

User B/D	Comments on the services provided by the GL	Response by the GL
C	• It would be extremely helpful if the total net narcotic content could be stated in each and every chemist's certificate. It was available on most certificates but not all (related to Items 28-30 at Appendix D).	• There were situations where stating such information in the certificate might not be helpful or could even be misleading. The GL would base on their experience and case information in providing total narcotic contents in the GCC. Should the total narcotic content be not given in the GCC, the user B/D concerned was welcome to contact the Chemist to clarify the issue.

Table 3 (Cont'd)

Source: GL records

Results of Audit Survey on turnaround times

2.20 In the Audit Survey conducted in July 2014 (see para. 1.16), 8 (47%) of the 17 surveyed B/Ds responded that some turnaround time targets were too long for meeting their operational needs. Ten of 17 B/Ds agreed or strongly agreed that it would be beneficial if the GL could consult them more thoroughly on the setting of turnaround time targets. Moreover, 10 B/Ds considered that the testing turnaround time should be shortened in order to improve the GL's services.

2.21 Audit's review in 2002 had already indicated that there was room for the GL to set more challenging turnaround time targets so as to provide better services to its users. Over the years, the GL had made efforts in shortening the turnaround time for some examinations. Nonetheless, Audit considers that there is still scope for improvement in this regard.

Audit recommendations

- 2.22 Audit has *recommended* that the Government Chemist should:
 - (a) critically review the GL's compilation of performance information on turnaround times reported in the COR to ensure that it is clearly and fairly presented (e.g. disclosing the range of turnaround times of the sub-categories actually used to measure the compliance rates);
 - (b) establish management controls over the creation of sub-categories and their target turnaround times in the computer systems;
 - (c) fix the system bugs (see para. 2.17(c)) and enhance procedures for validating data input to ensure data accuracy and enable efficient generation of management information;
 - (d) enhance the SIMS and the ESIMS in order to provide more readily comprehensive management information for the GL; and
 - (e) continue with the GL's efforts to shorten the target turnaround times of its services so as to help user B/Ds better meet their operational needs.

Response from the Administration

2.23 The Government Chemist generally agrees with the audit recommendations. He has said that the GL will:

- (a) review the compilation of performance information;
- (b) enhance the computer and information management systems to facilitate management control and the generation of management information; and
- (c) continue the efforts to improve the target turnaround times of its services and/or the percentages of work meeting these targets.

Quality assurance

2.24 The GL has adopted the ISO/IEC 17025 (the International Standard – Note 2) quality system and acquired ISO 17025 accreditation under the Hong Kong Laboratory Accreditation Scheme (HOKLAS – Note 3) operated by the Hong Kong Accreditation Service (HKAS).

- 2.25 According to the International Standard:
 - (a) the laboratory shall establish, implement and maintain a management system appropriate to the scope of its activities. The laboratory shall document its policies, systems, programmes, procedures and instructions to the extent necessary to assure the quality of the test and/or calibration results. The system's documentation shall be communicated to, understood by, available to, and implemented by the appropriate personnel; and
 - (b) in accordance with a predetermined schedule and procedure, the laboratory's top management shall periodically conduct a review of the laboratory's management system and testing and/or calibration activities to ensure their continuing suitability and effectiveness, and to introduce
- Note 2: This International Standard, jointly published by International Organisation for Standardisation (ISO) and International Electrotechnical Commission (IEC), specifies the general requirements for the competence to carry out tests and/or calibrations, including sampling. It covers testing and calibration performed using standard methods, non-standard methods, and laboratory developed methods. This International Standard is applicable to all organisations performing tests and/or calibrations. It is also applicable to all laboratories regardless of the number of personnel or the extent of the scope of testing and/or calibration activities.
- **Note 3:** The HOKLAS is an accreditation scheme operated by the Hong Kong Accreditation Service. The scheme is open to voluntary participation from any Hong Kong laboratory, proficiency testing provider, and reference material producer that performs objective testing and calibration, provides proficiency tests, produces reference material falling within the scope of the scheme, and meets the HOKLAS criteria of competence.

necessary changes or improvements. Findings from management reviews and the actions that arise from them shall be recorded. The management shall ensure that those actions are carried out within an appropriate and agreed timescale.

2.26 Under its quality policy, the GL is committed to achieving the goal of valid analytical measurements and quality forensic examination service that is impartial and accurate. The GL shall provide user B/Ds at all times with a service complying with recognised standards of practice. A quality system in line with ISO 17025 has been implemented in the GL to achieve its management objectives.

2.27 The Divisional management system implemented in the AASD and the FSD shall be reviewed separately once a year for its effectiveness in achieving Divisional management objectives and for identifying any need for improvement due to changing external circumstances. This shall be done through the use of the quality policy, quality objectives, audit results, proficiency testing results, client feedback, corrective and preventive action, and management review.

2.28 For the above purpose, Divisional Management Review Meetings chaired by Division Heads shall be convened each year. Notes of meeting shall be prepared and maintained by the Divisional Quality Assurance (QA) Managers. The following shall be specified for any action arising from the meeting:

- (a) the nature and details of the action to be taken;
- (b) the responsible action officer; and
- (c) the scheduled implementation date.

2.29 The Divisional QA Managers are responsible for the follow-up verification of the implementation and effectiveness of the proposed actions. The findings of the follow-up verifications shall be recorded by the Divisional QA Managers and reported to the responsible Division Heads.

2.30 To evaluate the effectiveness of the quality system implemented by the GL in achieving its quality objectives, Audit examined the Management Review Reports of both the AASD and the FSD for the past three years. Audit noted that the established quality systems of the GL were generally operating satisfactorily. However, Audit also noted some areas where improvements could be made. Details are given in paragraphs 2.31 to 2.37.

Internal quality audit

2.31 Generally in line with the International Standard, the GL conducts Divisional internal quality audit of the Section's activities annually to verify that its operations comply with the requirements of the Laboratory's quality documents (Note 4), the Security Manual, the Safety Manual, and the accreditation criteria set out in the HOKLAS operated by the HKAS. The Divisional quality audit comprises on-site inspections and reviews of the operation of each Section. The internal quality audit findings are categorised as non-conformities (NCs — Note 5) and areas worth improvement (AWIs — Note 6). A summary report of the annual quality audit will be compiled and submitted by the Divisional QA Managers to Division Heads for endorsement and necessary actions.

2.32 Audit examination of the recent three years' internal quality audit reports of both the AASD and the FSD revealed that quite a number of NCs with the laid-down quality documents as well as AWIs were identified as shown in Table 4.

- **Note 4:** The GL's quality documents include the Laboratory's Quality Assurance Protocol (QAP), Standard Operating Procedures (SOPs) of the AASD and the FSD, Sectional Analytical Methods Manuals, Sectional Work Manuals (SWMs), and Miscellaneous Work Instructions.
- **Note 5:** An NC is a disagreement or an inconsistency with a written clause in the internal quality documents or the HKAS or the HOKLAS related documents by an individual or by the Section.
- **Note 6:** An AWI is an area of concern identified by internal auditors, which may lead to a potential source of NC, or simply suggestions to enhance or further improve on the present quality system. Preventive action may be recommended in the former case.

Table 4

	2011 (Note)		2012 (Note)		2013 (Note)	
	AASD	FSD	AASD	FSD	AASD	FSD
	Number of AWI/NC					
AWI	6	46	22	33	19	26
NC	0	16	0	30	0	16
Total	6	62	22	63	19	42

Results of internal quality audits (2011 to 2013)

Source: Audit analysis of GL records

Root cause analysis

2.33 **Different Divisional practices.** Corrective actions shall be taken to rectify any identified non-conforming work or departures from the documented quality systems. The corrective actions taken shall include the necessary investigations to reveal the root cause of the NC. However, there is no similar root cause analysis requirements in GL's quality manuals in handling identified AWIs. As AWIs are potential sources of NCs, Audit considers it worthwhile for the GL to set down root cause analysis requirements in the GL's quality manuals in handling identified AWIs. In practice, the GL had conducted root cause analysis on both AWIs and NCs identified. However, Audit noted that the FSD had reported such root cause analysis in the summary report of the annual quality audit and submitted to Division Heads for endorsement and necessary actions (see para. 2.31), while the AASD had not.

2.34 *Root cause analysis of some NCs not thoroughly conducted.* As shown in Table 4, the AASD had not identified any NCs in the past three years and it was not its practice to report a root cause analysis on identified AWIs in the summary

Note: The internal quality audits of the AASD and the FSD have different audit periods. The former covers the preceding financial year and the latter covers the preceding calendar year.

report for senior management review. Audit's review of the root cause analyses therefore only covered the FSD. Audit noted that some root cause analyses were not thoroughly carried out by the FSD as shown in Table 5.

Table 5

Root cause analysis conducted by the FSD (2011 to 2013)

	2011		2012		2013		
	AWI	NC	AWI	NC	AWI	NC	Total
	(No.)	(No.)	(No.)	(No.)	(No.)	(No.)	(No.)
Root cause not identified	6	0	10	6	4	2	28 (17%)
Root cause identified	(Note 1):	-		-		-	-
 Overlooking requirements 	20	6	9	12	12	8	67 (40%)
 Specific causes (Note 2) 	20	10	14	12	10	6	72 (43%)
Total	46	16	33	30	26	16	167 (100%)

Source: Audit analysis of GL records

- Note 1: These included cases with genuine root cause.
- *Note 2: Examples of specific causes included inconsistent practices in keeping technical records, improper maintenance of quality documents, and improper control of Sectional forms.*
- 2.35 As can be seen from Table 5:
 - (a) in some (17%) cases, root causes were not identified; and

(b) a considerable proportion (40%) of the inadequacies identified in the quality internal audits were due to the overlooking of quality requirements.

2.36 Audit considers that root cause analysis is an important part in the corrective action procedure. Potential causes involve methods and procedures, staff skills and training, consumables, or equipment and its calibration. The GL needs to carry out the root cause analysis thoroughly for future improvement.

Common types of NCs

- 2.37 Audit analysis also revealed that:
 - (a) some NCs and AWIs occurred in more than one Section. Table 6 shows the details;

Table 6

Year	NC/ AWI	Category	Sub-category	Number of Sections involved
2012	AWI	Test and examination methods, and method validation	Format of Analytical Methods Manual	3
2012	NC	Management of test and measuring equipment	Documentation and maintenance of records of training, and authorisation	4
2012	AWI	Quality and technical records	Requirements on preparation of quality and technical records	5

NCs and AWIs occurred in more than one Section

Source: Audit analysis of GL records

(b) some common NCs occurred (see Table 7); and

Table 7

Some common NCs

Type of NC	2011	2012	2013
Inadequate control of external documents	N/A	\checkmark	\checkmark
Requirements on preparation of quality and technical records not met	\checkmark	~	~

Source: Audit analysis of GL records

(c) as NCs and AWIs occurred in a number of Sections and there were some common types of irregularities, Audit considers that the GL needs to implement corrective actions that would prevent the recurrence of these AWIs/NCs.

Upon enquiry, the GL informed Audit in September 2014 that many repeated occurrence of similar NCs and AWIs in the FSD in the period 2011 to 2013 were due to the fact that new quality requirements were introduced as the FSD made its transition to ISO 17025 in 2011. Time was required for GL staff to accustom to the new criteria. In GL's view, the NC and AWI observations were not critical issues and did not invalidate or compromise the quality of the reports or results as already established during the external ISO 17025 quality audits conducted by the HKAS by qualified external technical experts and assessors in the period 2011 to 2013.

Audit recommendations

2.38 Audit has *recommended* that the Government Chemist should:

(a) consider aligning the Divisional practices in reporting root cause analysis on NCs and AWIs to Division Heads for endorsement and necessary actions;

- (b) take measures to ensure that root cause analyses are thoroughly conducted and the results are documented, so as to identify necessary corrective actions to address the risks relating to the identified NCs and AWIs; and
- (c) step up efforts to implement effective corrective actions to tackle those cases of common types of irregularities of AWIs/NCs.

Response from the Administration

2.39 The Government Chemist agrees with the audit recommendations. He has said that measures were in place to ensure that root cause analyses were conducted so as to identify necessary corrective or preventive actions to address the identified NCs and AWIs.

Coordination with user bureaux and departments

2.40 The GL provides a wide range of laboratory tests on samples from various B/Ds. For the purposes of maintaining the GL's work performance, good communication is required for discussion with user B/Ds on matters such as working relationships, analytical requirements, testing arrangements and procedures, resource constraints, etc.

2.41 The GL holds periodic (annually or quarterly) Senior Management Meetings (SMMs) with major user B/Ds. According to the GL, its staff would sometimes directly discuss with the user B/Ds' senior management for important issues. There would also be frequent liaisons and discussions at Section Head or Chemist level.

Memorandum of Understanding

2.42 To promote effective coordination and facilitate regular consultations on policy issues and matters of common interests, the GL signed a Memorandum of Understanding (MOU) with the HKPF in 2000. Subsequent to the 2002 Audit Review, another MOU was signed in 2003 with the C&ED to enhance cooperation.

According to the MOU with the C&ED, the GL and the C&ED shall, among others:

- (a) agree on the scope, capacity, and levels of services to enable effective planning of the resources for the provision of services;
- (b) agree on the performance measures and standards to ensure the targets are relevant and the needs of the C&ED are addressed;
- (c) regularly review the scope of services and the associated demand for services to facilitate better planning for use of resources; and
- (d) review the terms of the MOU at a two-year interval.

SMMs

2.43 Audit noted that the terms of the MOU with the C&ED were comparatively more comprehensive than those of the HKPF. In the 2013 SMM with the C&ED, key service achievements of the 2012 testing were tabulated for review and key service requirements for 2013 to 2015 were projected for mutual agreement. During the SMM, the C&ED enquired about the test services they needed but were not provided by the GL so that it could make a better sample submission plan to the GL as well as the outsourcing arrangements with private laboratories. The C&ED also opined that outsourcing was not the ultimate alternative as test services provided directly by the GL would have the unique advantages of building up information databank and expertise useful for the continuity and improvement measures to support long-term operations.

2.44 For other user B/Ds, the testing targets were mainly based on the pledge in the COR and had been conventionally adopted. According to the GL, the COR targets and the details of testing services including key service requirements would be reviewed and discussed during meetings when necessary. When there was no significant change in the overall testing requirements, the meetings would then focus more on the new service requirements and specific test types/parameters. The user B/Ds may be updated on the progress of service provision if necessary.

Results of Audit Survey on MOUs with the GL

2.45 In the Audit Survey conducted in July 2014 (see para. 1.16), the C&ED and the HKPF expressed the view that the MOU was useful for the GL to understand their needs regarding the services provided and there was a need to review the MOU on a regular basis. The HKPF also agreed that there was a need to further amplify the MOU.

2.46 Of the 15 surveyed B/Ds that have not signed MOUs with the GL, 4 (27%) B/Ds agreed that it would better serve their operational needs if MOUs were signed with the GL. However, 4 (27%) of the 15 B/Ds considered that there would be difficulties in working out a mutually agreed MOU with the GL.

Reviewing the service requirements of user B/Ds

2.47 The significant advances in technology in recent years coupled with the introduction of new government policies and regulations involving scientific considerations, the launching of new materials and products in the local market as well as the sophistication of criminal activities have contributed to significant changes in the work patterns of, and methodology employed at the GL. This has led not only to a broader coverage in scope of service provision, a higher degree of specialisation among the professional staff, but also to the installation of a powerful array of modern scientific instruments. Therefore, the GL needs to closely liaise with user B/Ds for planning the service requirements to suit the changing circumstances. In this regard, the Audit Survey showed that some user B/Ds considered that the signing of MOUs with the GL would better serve their operational needs.

2.48 Apart from the signing of MOUs, the GL may also model on the SMM arrangement with the C&ED to hold meetings with the senior management of other user B/Ds. At these meetings, a more comprehensive review of the key service achievements can be conducted to identify difficulties in the existing testing services (e.g. the testing samples, the collection method, testing results, etc.). Such meetings also provide a good opportunity for reviewing effectiveness of the newly introduced services (e.g. hair drug tests).

Need to review and amplify the MOUs

2.49 Audit noted that, subsequent to the 2002 Audit Review, the GL discussed signing an MOU with a number of user B/Ds in July 2002, October 2002, August 2003 and May 2004 respectively. However, at that time, they did not consider that there was a need to sign such an MOU, but would keep in view the need to do so. For the existing MOUs with the HKPF and C&ED, they had remained unchanged since they were signed in 2000 and 2003 respectively. As far as could be ascertained, there had not been any comprehensive review of the MOU of the HKPF.

2.50 The 2002 Audit Review recommended that the MOU should be amplified in specifying the key service requirements (e.g. objectives, levels and capacity of services required, method of operation, performance measures and standards, etc.). The amplification could refine and predict the user B/Ds' service needs, and enable a more accurate workload forecast. The GL should continue to liaise with the user B/Ds concerned for developing an amplified version of the existing MOU.

GL's customer surveys

2.51 Audit examination of the GL's customer surveys for the past three years revealed that there were requests for the GL to provide more training, briefing and sharing sessions on a regular basis from some user B/Ds. Table 8 shows some examples of such requests.

Table 8

Examples of requests from user B/Ds for more training/briefings/sharing sessions by the GL

User B/D	Comments on the training/ briefings/sharing sessions provided/arranged by the GL	Response by the GL
Х	• It suggested that the FSD could provide training/briefings to frontline officers with a view to allowing them to have more understanding of the work of the FSD.	• Training could be organised on request, and interested parties might contact the GL for further arrangement.
Y	• It disagreed that the training/ briefings by the FSD of less than 10 hours per year would be sufficient.	• Close liaison would be made with the training unit of the user B/D concerned in arranging more effective custom-made training to their officers.
Z	• Sharing session would be useful for mutual understanding of each department's work and hence hoped that such arrangement would be continued.	• GL supported holding such sharing sessions on an annual basis to strengthen mutual communication.

Source: GL records

Results of Audit Survey on services/training provided by the GL

2.52 In the Audit Survey conducted in July 2014, 7 (41%) of the 17 surveyed B/Ds would like to see the GL provide more types of testing services. Four (24%) B/Ds considered that the GL could provide additional number of tests for each type of service.

Provision of laboratory services to user bureaux and departments

2.53 A majority (10 or 59%) of the surveyed B/Ds agreed or strongly agreed that training provided by the GL enabled their staff to understand the laboratory services provided. Nine (53%) B/Ds agreed or strongly agreed that more training provided by the GL could better meet their operational needs.

2.54 In Audit's view, the GL needs to consider expanding the scope of their laboratory services and providing more testing for its user B/Ds. The GL also needs to consider providing more training to user B/Ds.

Audit recommendations

- 2.55 Audit has *recommended* that the Government Chemist should:
 - (a) strengthen the coordination with the user B/Ds' senior management by conducting in the GL's periodic meetings with them a more comprehensive review of the laboratory services provided, including:
 - (i) providing more information such as key service achievements and the actual turnaround testing times; and
 - (ii) projecting and agreeing on the key service requirements and performance targets;
 - (b) consider amplifying the existing MOUs by including more details such as the scope of services, agreed service levels, performance measurements and monitoring, liaison and coordination, etc.;
 - (c) continue to liaise with user B/Ds for signing an amplified version of MOU with the GL in order to better define and predict the service needs and facilitate effective planning of the use of resources;
 - (d) consider the need to expand the scope of laboratory services and provide more testing for user B/Ds; and
 - (e) consider providing more training to user B/Ds.

Response from the Administration

2.56 The Government Chemist agrees with the audit recommendations.

Handling emergency incidents

2.57 Emergency incidents refer to those unpredictable events which are caused by unforeseeable factors, resulting in serious damage to or concern of the community. There were quite a number of emergency incidents in recent years, including food incidents such as the radiation contamination of food products imported from Japan following the Fukushima nuclear accident in March 2011, and the plasticiser contamination of a wide variety of Taiwanese food and drinks in June 2011. More recently, in 2014, the gutter oil scandal also posed food safety threat to the general public. The GL was required to render testing and advisory services to support various B/Ds in dealing with these incidents. In general, these emergency incidents arouse great public concerns and time is of the essence in taking effective measures to handle these cases. As the nature of an emergency incident is very often unprecedented, there is no established methodology for providing the laboratory testing services required. Such emergency incidents pose great challenges to the GL in providing the urgent laboratory services necessary to support the handling of the cases.

2.58 The Government Chemist issued a document entitled "Contingency Plan for Major Crises". The scale of crises is classified into three levels, which varies with the importance and scale of the crises. Upon activation of this Plan, the Departmental Emergency Coordinating Centre (DECC) will be set up and activated automatically for coordinating the work in times of crisis. The DECC consists of an Emergency Director, Operation Director, Human Resource Coordinator and Physical Resource Coordinator. The composition of the DECC varies at different levels of crises. Operation procedures are also included in the contingency plan. 2.59 In July 2014, Audit requested the GL to provide for examination the case files containing all relevant documents and correspondence relating to food incidents (e.g. incidents relating to oil fish and radiation contamination of food products). However, no such files were available for audit examination. Upon enquiries, GL staff informed Audit in August 2014 that they did not have a separate file to keep all documents relating to an emergency incident. Audit examined the relevant correspondence files, but could not find any correspondence relating to the emergency incidents.

2.60 Audit noted that the documents relating to an emergency incident were not organised in a separate subject file. In the circumstances, when there are staff changes, it would be difficult for new staff to learn from the past experience. When similar crises occur in the future, the GL's staff might have to work from scratch. The emergency incidents may occur from time to time unpredictably. Prompt actions need to be taken by the GL in order to provide support to various B/Ds to tackle the incidents. Audit considers it important for the GL to learn from the past experiences and the precedent cases. The methodologies in collecting the necessary evidence, methods to obtain the expertise from various fields, difficulties encountered, and the lessons learnt and whether the categorisation and assignment of the three levels of crisis had provided an adequate scaled response to each incident, should be documented properly. This is conducive to the sharing of experience with other staff (especially new staff) and strengthening the GL's capability in handling similar crises in future.

2.61 Upon enquiry, the GL informed Audit in September 2014 that there might not be written communications between users and the GL on food incidents due to the urgent nature of the request (verbal communications are preferred and more direct in many food incidents). All test methods employed by the GL during the incidents were properly validated. These methods together with the validation data and the corresponding test records were documented according to the requirements of the quality system and could be retrieved easily. On the other hand, the full set of "Emergency Case Report" related to emergency services for dealing with incidents involving hazardous chemicals had been maintained since 2001. The reports could be viewed by all professional staff of the AASD. In the yearly Emergency Respond Team Review Exercise, team members were reminded to study the past case reports for reference and selected special cases would be discussed in detail.

Audit recommendation

2.62 Audit has *recommended* that the Government Chemist should ensure that all relevant documents and correspondence relating to emergency incidents (e.g. food incidents) are properly filed for future reference, so that the experience in tackling such incidents can be shared with all staff concerned in the GL.

Response from the Administration

2.63 The Government Chemist agrees with the audit recommendation. He has said that the "Emergency Case Reports" related to emergency services for dealing with incidents involving hazardous chemicals had been properly maintained. Information about the testing services provided during food incidents, including all testing records and method development and validation data, had also been properly filed.

PART 3: OUTSOURCING OF LABORATORY SERVICES

3.1 This PART examines issues relating to the GL's outsourcing of laboratory services, focusing on the following areas:

- (a) tender evaluation and contract administration (paras. 3.2 to 3.17);
- (b) monitoring contractor performance (paras. 3.18 to 3.23);
- (c) proficiency testing programmes (paras. 3.24 to 3.32); and
- (d) post-implementation review of outsourcing (paras. 3.33 to 3.47).

Tender evaluation and contract administration

Outsourcing of food testing work

3.2 **2002** Audit Review. In the 2002 Audit Review, Audit noted that the demand for different kinds of analytical and investigative testing services was increasing because of the growing public concern about the environment, food and health. To meet the increasing demand and to further improve the GL performance, Audit had recommended that the GL should explore the option of outsourcing routine analytical testing services to accredited laboratories. The GL welcomed the audit recommendation.

3.3 In 2007, the GL commissioned the Efficiency Unit (EU) to conduct a study to identify outsourcing opportunities for laboratory services of the AASD. The EU study team considered that the outsourcing allowed the AASD of the GL to focus its resources on tackling priorities on policy and complicated testing services, and enabled the private sector to take up those routine services. The study team further proposed the outsourcing and development opportunities for the AASD. The study team recommended that the AASD should outsource those services classified as highly feasible for outsourcing in the first phase (e.g. testing on Chinese medicines and wastewater monitoring) and consider outsourcing other services in the second phase.

3.4 The EU also sought Department of Justice's advice regarding the legal implications/limitations on outsourcing routine testing of the AASD's services. The legal advice was that routine testing not involving law enforcement was not subject to any legislative restrictions.

3.5 Since 2008, the GL has outsourced some of its regular food surveillance testing work (which will not normally result in any legal actions) to local accredited laboratories. The scope covered the testing of food preservatives, heavy metals, additives, pesticide residues, and veterinary drug residues. Since the commencement of outsourcing in 2008 and up to March 2014, the GL had entered into 83 outsourcing contracts with a total contract value of \$24.12 million. The scale of outsourcing activities had increased from 22,000 food tests (involving 2,900 samples) in 2008-09 to around 120,000 food tests (about 13,400 samples) in 2013-14. It accounted for about 60% of the AASD's routine food testing work (or 17% of all the AASD's testing work) in 2013-14. Figure 4 shows the trend of the GL's outsourcing activities. Although the number of tests continued to increase, the total contract sums for outsourcing dropped significantly from \$6.49 million in 2010-11 to \$2.63 million in 2013-14. This is possibly the result of competitive tendering.





GL's outsourcing activities (2008-09 to 2013-14)

Financial year

Source: Audit analysis of GL records

GL's Outsourcing Management (OM) Section

3.6 The OM Section (comprising 1 Senior Chemist, 2 Chemists and 4 technical staff), established in 2009-10, is responsible for the planning and management of outsourcing contracts. The Section's annual expenditure was \$4.6 million for 2012-13, \$4.8 million for 2013-14, and estimated to be \$5 million for 2014-15. Its main responsibilities include:

- (a) preparing the tender documents;
- (b) researching the potential service providers;
- (c) assessing the tender;
- (d) preparing check samples;
- (e) conducting on-site inspections; and
- (f) reviewing the test reports of the contract laboratories.

Tender evaluation and contract administration

- 3.7 The GL tender procedures for the outsourcing of services are as follows:
 - (a) *Determination of outsourcing contracts.* Each year (normally in November), the Centre for Food Safety of the Food and Environmental Hygiene Department (FEHD) and the GL work out a food surveillance plan and agree on the number of chemical analyses to be conducted for the coming year. According to the test types and timeframe, the GL comes up with an outsourcing plan for the coming year;
 - (b) *Invitation of tenders.* Only laboratories having accreditation from the HKAS are invited for tenders. The OM Section from time to time maintains a list of potential service providers. As at July 2014, the list compiled contained 11 local private laboratories. The Supplies Section of the GL invites the contractors in the list to tender;
 - (c) *Two-envelope approach.* The GL adopts a two-envelope approach to tendering. A tenderer has to submit his technical offer and price offer in separate envelopes;
 - (d) *Tender evaluation.* A tender assessment team is formed to evaluate the tenders received. The team will first conduct a technical assessment and then a price assessment. Tender evaluation is conducted in accordance with a pre-approved standard marking scheme; and
 - (e) *Submission of tender report.* The tender assessment team will submit a tender evaluation report to the Assistant Government Chemist of the AASD and seek approval for awarding the contract to the selected tenderer.

Reliance on a dominant contractor

3.8 Since 2008, the GL's outsourcing contracts had been awarded to five private laboratories. Table 9 shows the food tests that had been outsourced to the private laboratories in the past six years.

Table 9

Number of tests outsourced by the AASD to the private laboratories				
(2008-09 to 2013-14)				

	Private laboratory					
Period	Α	В	С	D	Ε	Total
2008-09	18,000 (82%)	_	4,000 (18%)	_	_	22,000 (100%)
2009-10	62,588 (80%)	—	11,350 (14%)	—	5,000 (6%)	78,938 (100%)
2010-11	92,702 (86%)	—	13,630 (12%)	1,190 (1%)	350 (1%)	107,872 (100%)
2011-12	84,260 (73%)	22,202 (19%)	6,300 (6%)	1,950 (2%)	_	114,712 (100%)
2012-13	30,250 (26%)	62,730 (53%)	_	1,100 (1%)	24,500 (20%)	118,580 (100%)
2013-14	1,040 (1%)	117,020 (97%)	415 (1%)	950 (1%)	_	119,425 (100%)

Source: Audit analysis of GL records

3.9 In 2013-14, of the four private laboratories involving outsourcing, one laboratory was awarded 97% of food testing (in 13 separate contracts). Audit considers that reliance on a dominant contractor for the food testing may pose concentration risks to the GL. If the dominant contractor fails to operate effectively, the food testing work would be severely affected. In order to reduce

such risks, Audit considers that the GL needs to consider limiting the number of contracts awarded to each laboratory for the provision of testing. In response, the GL advised that it would need to seek advice from the Government Logistics Department or other relevant authority on restricting the maximum number of contracts to be undertaken by one contractor. Meanwhile, Audit considers that the GL needs to devise a contingency plan to deal with the situation in case the dominant contractor fails to operate effectively.

Short duration of outsourcing contracts

3.10 The GL awarded 17 separate food testing contracts each year during the period 2011-12 to 2013-14. Audit noted that the duration of all the GL outsourcing contracts was no more than one year (see Table 10).

Table 10

Duration (Month)	Number of contracts	Percentage
3	2	12%
4 to 6	5	29%
7 to 12	10	59%
Total	17	100%

Duration of outsourcing contracts (2011-2012 to 2013-14)

Source: Audit analysis of GL records

3.11 Audit examined the tender exercises of these 17 contracts in 2013-14. Though 12 accredited laboratories were invited to submit their tenders, the average number of tenders received was only about 5 in each tender exercise, i.e. less than half of those invited. Market interest in tendering for these testing services appeared to be on the low side. 3.12 Preparation for tender submission is often time-consuming and costly. This might be a reason for the general lack of market interest in tendering for the GL's outsourcing contracts, especially those which were of small contract sums and short contract duration. The short-term contract arrangement also increased GL's administrative costs arising from frequent contract renewals.

3.13 According to the EU report "A General Guide to Outsourcing" in 2008, "Departments should determine the optimum scope of outsourcing from the point of view of both the department and the potential service providers. Surveys of departments and service providers have identified the loss of economy, efficiency and effectiveness in letting contracts that are too small and have short contract duration." Audit considers that the GL should assess the benefits of bundling services and strike a balance between the benefits and risks involved in engaging contractors. The arrangement of longer-term contracts may provide better incentive for potential service providers to bid the GL's outsourcing contracts. This will also encourage the service providers to invest more in equipment, technology and people, as overhead costs and return on investment can be spread over a longer time period.

Tender evaluation

3.14 In assessing the tenders, the GL adopts the two-envelope approach — technical assessment (accounting for 40% of the combined score) and price assessment (accounting for 60% of the combined score). For the technical assessment, the experience, number of customer complaints received, competence, personnel, and analytical techniques and facilities of the potential laboratories are taken into consideration.

3.15 Audit analysis of the turnaround time of testing services provided by the outsourced contractors indicated that 6% of the test samples results for the years 2012-13 (762 of 12,848 samples) and 2013-14 (748 of 13,365 samples) were not reported by the contractors to the GL in a timely manner. Warnings of unsatisfactory performance were issued to two contractors in the past two years. However, Audit noted that the past performance of laboratories (such as late reporting of test results or warnings issued) had not been taken into account in tender assessment. As the food testing results have public health implications, timely reporting and quality of the test results are crucial contractual requirements.

Audit considers that the GL should take due account of the past performance of contractors when evaluating future tenders.

Audit recommendations

- 3.16 Audit has *recommended* that the Government Chemist should:
 - (a) consider the need to limit the number of contracts that each private laboratory may be awarded for the provision of testing services so as to reduce concentration risks;
 - (b) prepare a contingency plan to deal with the situation in case the dominant contractor fails to operate effectively;
 - (c) take measures to increase market interest in the outsourcing contracts (e.g. arranging longer-term contracts); and
 - (d) take due account of the contractors' past performance when evaluating future tenders.

Response from the Administration

3.17 The Government Chemist agrees with the audit recommendations.

Monitoring contractor performance

3.18 To safeguard the quality of outsourcing services, the OM Section regularly reviews and monitors the performance of contractors on individual contracts. Performance monitoring measures include:

- (a) conducting on-site inspections of the contract laboratory;
- (b) issuing quality check (QC) samples;
- (c) reviewing the contractor's test and quality records; and

(d) checking other matters that affect the delivery of testing services.

On-site inspections

3.19 During each contract period, the Chemist-in-charge will conduct at least one routine on-site inspection for auditing the relevant test and quality records, as well as inspecting the operation of the contractor for assessing the contractor's technical competence and compliance with contract requirements. Follow-up inspections (if required) will be conducted in cases where irregularities had been found. After the inspection, the inspecting Chemist needs to prepare a report listing significant observations of the inspection and submits it to the Senior Chemist for information.

Arrangement of QC samples

3.20 For each contract period, the Chemist-in-charge arranges QC samples (at least two QC samples for each contract) to the contractor for evaluating its performance. According to the contract monitoring schedule of OM Section, relevant controlled samples are planted in a batch of food samples which will be collected by the private laboratories concerned for testing. The Chemist-in-charge assesses the results submitted by the contractor, prepares a summary report and submits it to the Senior Chemist for review.

3.21 Audit found that there was room for improvement in the GL's monitoring measures, as follows:

(a) Announced inspection conducted. In response to enquiries, GL staff informed Audit in July 2014 that the on-site inspections were normally announced one or two days in advance. However, carrying out unannounced inspections might be needed if there is reason to doubt the quality of the contractor's laboratory services. For example, when a laboratory has received a complaint about its testing activities which cast doubt on the laboratory's standards. Audit considers that the GL needs to consider introducing unannounced on-site inspections to see if there is room for improvement in sample storage conditions, handling of tests and calibration items, equipment location and utilisation, etc.;

- The GL formulated in 2011 a (b) Inspection checklist not used. comprehensive checklist as a guide for their inspections. The checklist management requirements (including organisation, covers the management system, document control, etc.), technical requirements (personnel, accommodation and environmental conditions, test and calibration methods, equipment, etc.), and contract requirements (services specifications). The use of the checklist by different inspection teams would help ensure completeness and consistency. However, Audit noted that this checklist was not used by GL staff for facilitating the conduct of inspections and documenting the inspection results; and
- Issuing of QC samples. Audit analysis indicated that for 2013-14, the (c) number of QC samples sent to contractor laboratories did not seem to be correlated with the quantum of the food samples outsourced. For example, in 2013-14, two QC samples each were included among the 1,350 food samples outsourced to one contractor laboratory, and among the 260 food samples outsourced to another contractor laboratory. The QC sample may be an inter-laboratory comparison test sample (such as Food Analysis Performance Assessment Scheme (FAPAS) QC sample -Note 7), spiked sample (Note 8), split sample (Note 9), etc. Audit analysed the 77 QC sample reports of 2013-14, but found that the GL used FAPAS in 69 (90%) QC samples. Audit noted that the FAPAS QC sample is a blend test material which can easily be identified by the contractors. Audit considers that the GL should use more varieties in its QC samples to evaluate the contractors' performance.

- **Note 7:** *FAPAS QC test materials are real food matrices with one or more properties that have been established from the results of laboratories participating in a proficiency test and are used by laboratories as quality control materials.*
- **Note 8:** A spiked sample is a sample that has been added a known amount of analyte (a spike) by the GL. The spiked sample is analysed by a private laboratory. A comparison is made between the laboratory's and GL's known results.
- **Note 9:** A split sample is a sample that is divided into two subsamples. Both subsamples are analysed by a private laboratory. The results are compared.

Audit recommendations

- 3.22 Audit has *recommended* that the Government Chemist should:
 - (a) enhance the monitoring of contractor performance, for example by conducting unannounced inspections to ensure that the contractors comply with the terms of the contracts;
 - (b) remind the inspecting officers to use the comprehensive inspection checklist to properly document the results for each inspection; and
 - (c) make better use of QC samples for evaluating contractor performance (e.g. issuing QC samples to contractors with reference to the quantum of the food samples outsourced, and making more use of other types of QC samples such as spiked samples and split samples).

Response from the Administration

3.23 The Government Chemist agrees with the audit recommendations.

Proficiency testing programmes

3.24 In order to undertake the GL's outsourcing contracts, private laboratories must get the HKAS's accreditation in the test parameters concerned, and maintain the accreditation status throughout the contract period.

3.25 Accreditation is granted by the HKAS on a test-by-test basis. It will only be granted to a laboratory in respect of a specific test after an expert team has confirmed the laboratory's competence in performing the test through an on-site assessment. After accreditation is granted, the HKAS will continue to monitor the performance of the laboratory through periodic on-site re-assessments, on-site surveillance visits and proficiency testing (PT) programmes. 3.26 A PT programme is an important tool used by laboratory accreditation bodies to assess the competency of field laboratories. The GL, as an accredited PT provider in Hong Kong, has organised PT programmes to provide opportunities for participating laboratories to benchmark and improve their performance in specific testing disciplines. Participation in PT programmes is one of the mandatory requirements for laboratory accreditation. In each PT programme, the GL evaluates the performance of the participating laboratories and issues performance reports to them. Accreditation would be granted upon the satisfactory results of relevant PT programme.

Need for diversification of the PT programmes

3.27 The GL has provided PT programmes to support the development of the local testing industry. For the past five years (up to June 2014), the GL had organised a total of 18 PT programmes, comprising 15 (83%) programmes on food safety testing, 2 (11%) on environmental testing, and 1 (6%) on forensic science testing. It can be seen that the scope of PT programmes mainly covered the food safety testing category.

3.28 The GL has conducted annual surveys on the needs of the local testing community. Audit examined the survey results for the period 2011 to 2013. Audit found that other than the topic on food testing, the industry welcomed more PT programmes for tests relating to phthalates in plastics, and analysis for air and permanent gases. In order to assist the testing industry in building up the capability and capacity to take up government's outsourcing of laboratory testing of different disciplines, the GL should consider organising more types of PT programmes in the longer term.

Need to assess the effectiveness of the PT programmes

3.29 Though the GL organised PT programmes periodically, it did not conduct customer surveys for all the programmes. For the past five years (up to June 2014), of the 18 PT programmes organised, the GL conducted customer surveys for only 9 (50%) programmes. In order to measure the achievement of the PT programmes towards their planned objectives, and assess the overall effectiveness of the PT programmes to facilitate future planning, the GL needs to conduct formal evaluation for all the PT programmes conducted so as to identify areas for improvement.

Need to promote the PT programmes

3.30 When the GL launches a PT programme, invitations to join the programme are made to local laboratories through the HKAS. Audit noted that there were not many (ranging from 1 to 10) local laboratories participating in each programme. To help enhance the capability of local laboratories, Audit considers that the GL needs to step up efforts to promote the PT programmes (e.g. making all PT programme information accessible to all interested laboratories).

Audit recommendations

- 3.31 Audit has *recommended* that the Government Chemist should:
 - (a) consider organising more types of PT programmes for different testing disciplines in the longer term;
 - (b) conduct formal evaluation for all the PT programmes organised by the GL so as to identify areas for improvement; and
 - (c) step up efforts to promote the PT programmes organised by the GL.

Response from the Administration

3.32 The Government Chemist agrees with the audit recommendations.

Post-implementation review of outsourcing

3.33 The introduction of outsourcing is to facilitate the GL to release its resources to focus on new test method development, to cope with new testing work arising from amendments of food legislation and perform other duties including analytical tests for urgent food incidents.

3.34 In 2013-14, the GL's outsourcing increased to about 120,000 tests involving 13,400 samples, accounting for about 60% of its actual routine food testing work and about 17% of all the AASD's testing work.

3.35 Audit notes that the demand for different kinds of analytical and investigative testing services has been increasing with growing public concerns about the environment, and food and health. Audit summarised in Table 11 some of the regular testing work for routine monitoring and analytical investigations conducted by the GL.

Table 11

	Colored		Number of tests			
Category		2011	2012	2013		
1	Other food samples (Note)	184,950	185,557	193,840		
2	2 Water quality monitoring samples		123,168	121,775		
3	3 Chinese medicines		77,784	86,479		
4	4 Seepage and swimming pool water samples		38,771	40,068		
5	5 Pharmaceuticals (quality control)		35,244	31,657		
6	6 Cigarette samples		13,536	13,680		
	Total	469,215	474,060	487,499		

Examples of regular testing work (2011 to 2013)

Source: GL records

Note: About 60% *of the tests had been outsourced.*

3.36 Audit found that the GL's outsourcing had improved the turnaround times tremendously in conducting food tests (see Table 12). It can be seen that the turnaround times in conducting outsourced food tests were much shorter than those for in-house food tests. Upon enquiry, the GL informed Audit in September 2014 that in general the more routine and less complex food tests were outsourced, and

this might be the reason for the shorter turnaround times for the outsourced food tests. Moreover, the target turnaround times of local laboratories were the required turnaround times stated in the contracts. These turnaround time requirements by design must be shorter than the GL's own target turnaround time, in order to allow for sample pick-up, data review, and all other follow-up work by the GL, before the test results could be released to the user B/Ds concerned.

Table 12

	Target turnaround time in conducting food tests			
Food testing	GL (Note)	Local laboratory		
	(Day)	(Day)		
Preservatives	32	10-15		
Heavy metals	35	10		
Pesticides	40	14		
Colouring matter	40	12		
Veterinary drug residues	40	10		
Contaminant — melamine	40	3		

Target turnaround times in conducting food tests (2013-14)

Source: GL records

3.37 Audit considers that, after six years of implementation since 2008, it is now an opportune time for the GL to conduct a post-implementation review (PIR) on the outsourcing of the laboratory testing so as to take stock of the position and plan the way forward. In this connection, the GL also needs to review whether there is scope for outsourcing more of its laboratory services.

Note: The target set by the AASD was that 95% of the cases should be completed within the target turnaround times for different types of services. For urgent samples relating to food incidents, the GL set the target turnaround time at 2 days.

Results of Audit Survey on outsourcing and staff secondment

3.38 *Opinion on outsourcing by the GL.* In the Audit Survey conducted in July 2014 (see para. 1.16), the FEHD, as the only department that had services outsourced by the GL, strongly agreed that the outsourcing of food testing had not compromised the quality of testing services and had improved the turnaround time of testing services.

3.39 For the other 16 B/Ds with services performed by the GL, 6 (38%) considered that it could better meet their service needs if they could outsource the laboratory testing directly to accredited private laboratories instead of having to go through the GL. Five (31%) B/Ds considered that outsourcing of testing services by the GL would not affect the quality of testing services. Seven (44%) B/Ds considered that outsourcing could improve the turnaround time of testing services. One user B/D indicated that it had enlisted private accredited laboratories and outsourced some testing directly to accredited laboratories as the GL could not fully satisfy its testing needs.

3.40 *Opinion on staff secondment from the GL.* A total of 48 professional or technical staff are currently seconded by the GL to departments. Most of them (38 or 79%) are seconded to the FEHD. In the Audit Survey, two user B/Ds (including the FEHD) strongly agreed that the staff secondment helped them achieve their service objectives. The FEHD further considered that more secondment from the GL could better meet its operational needs.

3.41 For the other 15 B/Ds surveyed that did not have staff secondment from the GL, 6 (40%) considered that it would be helpful if the GL seconded staff to them. However, 6 (40%) B/Ds agreed that there would be difficulties in arranging staff secondment from the GL.

3.42 Audit noted that a number of user B/Ds of the GL would like to outsource the laboratory services to private laboratories (directly by themselves or by the GL). Audit considers that the GL needed to communicate more with these departments to ascertain the feasibility for outsourcing of their laboratory services. Audit also noted that some departments wanted to have staff seconded from the GL. Audit considers that the GL should ascertain the needs of these departments regarding staff secondment.

Utilisation of the outsourcing budget

3.43 In November 2008, the Secretary for Food and Health allocated a recurrent funding of \$9 million from his operating expenditure envelope to the GL to fund the outsourcing of testing work for samples of routine food surveillance to commercial laboratories. The OM Section was then established in 2009-10. In November 2009, the Secretary for Food and Health allocated an additional recurrent funding of \$3 million making a total of \$12 million a year to the GL for outsourcing not less than 70% of the routine food tests to the commercial laboratories. In doing so, the Secretary for Food and Health hoped that the GL would provide more assistance and support to the commercial laboratories in upgrading their capabilities and in obtaining accreditation. The budget and expenditure relating to outsourcing from 2009-10 to 2013-14 are shown in Table 13.

Table 13

Particulars	2009-10	2010-11	2011-12	2012-13	2013-14
	(\$ million)				
(a) Budget	9.00	12.00	12.00	12.00	12.00
Expenditure					
Contract sum	4.72	6.35	5.95	2.81	2.69
Chemicals	0.92	0.03	1.39	1.93	2.24
Equipment	0.39	0.12	0.22	0.05	1.61
Miscellaneous	1.10	0.43	2.42	0.91	3.79
(b) Total expenditure	7.13	6.93	9.98	5.70	10.33
(c) = (a) - (b) Underspending	1.87 (21%)	5.07 (42%)	2.02 (17%)	6.30 (53%)	1.67 (14%)

Budget and expenditure relating to outsourcing (2009-10 to 2013-14)

Source: Audit analysis of GL records

3.44 As can be seen from Table 13, the outsourcing budgets had all along been underspent, ranging from \$1.67 million (14%) to \$6.30 million (53%). Audit also noted that the total contract sums for outsourcing dropped significantly from a high of \$6.35 million in 2010-11 to \$2.69 million in 2013-14. In the same period, however, the related expenditure on chemicals, equipment and particularly miscellaneous items had increased significantly. In 2013-14, of the \$10.33 million expenditure on outsourcing, \$2.69 million (26%) was spent on the contract payments to contractors, while \$7.64 million (i.e. \$2.24 million + \$1.61 million + \$3.79 million) or 74% was spent on chemicals, equipment and miscellaneous items.

3.45 Upon enquiry, the GL informed Audit that while the chemicals, equipment and miscellaneous items were not used by contractors under the outsourcing contracts, many of these items were used in support of the local testing industry through conducting in-house method development work and the subsequent technological transfer, as well as providing PT programmes to local testing laboratories. Audit considers it questionable whether such a significant proportion of the budget allocated for outsourcing should be spent on items which were not directly related to outsourcing. The GL needs to critically review the proper use of its outsourcing budget in future.

Audit recommendations

3.46 Audit has *recommended* that the Government Chemist should conduct a PIR on the outsourcing of the laboratory services to take stock of the position and plan the way forward. In conducting the PIR, the GL should among other things:

- (a) review whether the objective of releasing its resources to focus on new test method development and to cope with new testing work arising from amendments of food legislation as well as urgent food incidents (see para. 3.33) has been achieved;
- (b) in consultation with the user B/Ds, explore the feasibility and desirability of the following options:

- (i) outsourcing more of the laboratory services currently provided by the GL for user B/Ds;
- (ii) assisting user B/Ds to outsource laboratory services themselves; and
- (iii) arranging staff secondment to user B/Ds to meet their laboratory service needs; and
- (c) critically review the propriety of charging to the outsourcing vote items which are not directly related to outsourcing.

Response from the Administration

3.47 The Government Chemist agrees with the audit recommendations.

PART 4: MANAGEMENT OF CHEMICALS, SAMPLES, EXHIBITS AND EQUIPMENT

4.1 This PART examines the GL's management of chemicals, samples, exhibits and equipment, focusing on the following areas:

- (a) stock management of chemicals (paras. 4.2 to 4.19);
- (b) handling of samples and exhibits (paras. 4.20 to 4.27); and
- (c) maintenance of equipment (paras. 4.28 to 4.39).

Stock management of chemicals

4.2 The GL spends about \$120 million a year on purchasing equipment and chemicals, and uses an extensive range of scientific equipment in delivering its services. When procuring the equipment and chemicals, the GL follows the requirements of the Government's Stores and Procurement Regulations (SPRs). It also has to adhere to the procedural requirements laid down in the GL's QAP and the SOPs. The QAP is the highest level quality document which outlines the GL's policy on the quality system, whereas the SOPs set out the procedures to be followed when implementing particular aspects of the quality system in individual Divisions. The Supplies Section under the Administration Division is responsible for the coordination of procurement in the GL.

4.3 The Supplies Section is tasked to control the stock of commonly used chemical items using a computer requisition system known as Internal Ordering, Inventory Keeping, External Purchases and Budgetary Control System (IIEB) which has been put in place since 1999. The inventory system basically maintains the list of stock items, keeps track of purchase orders, captures deliveries, facilitates reorder notification, and tracks slow-moving items. Reports are provided for stock management (e.g. stock movement transaction report, stock balance report, slow-moving items and excessive stock report). There are four supplies storerooms for keeping common inventories and consumables used by the GL.

Review of stock records of the GL main store

4.4 *Stock discrepancies.* Audit examined the stock balance reports generated from the IIEB and the stocktaking records by the Supplies Section of 2013 and 2014. Audit noted that there were stock discrepancies between stock balance reports and stocktaking records as shown in Table 14.

Table 14

Year	2013	2014
Number of stock items with discrepancies	206	143
Total number of stock items	488	488
Percentage of stock items with discrepancies	42%	29%

Stock discrepancies between stock balance reports and stocktaking records

Source: Audit analysis of GL records

4.5 According to the GL, before the annual stock take, the Supplies Section would print a Stock Balance Reports for checking first. They would mark all the discrepancies found on the report and check against the in and out records in the system and the physical documents to try to reconcile the discrepancies. Audit selected 20 items with discrepancies for the year 2014 and checked whether the discrepancies were properly adjusted. It was found that the stock balances of six items had not been adjusted accordingly (up to September 2014). Audit considers that the procedures under SPRs should be followed in dealing with the stock discrepancies, and a final stock balance report should be printed out and signed by the supervisory staff to ensure that all the discrepancies are rectified and stock records are adjusted.

4.6 *Stock disposal.* Upon examination of the 2013 stocktaking report, Audit found that there were four items marked "item not found" by the staff of Supplies Section. Upon Audit's enquiry, the Supplies Section confirmed that most of the unfound items (mainly chemical items which already expired) were passed to the Safety Officer for disposal. Audit noted that the stock records were not timely updated after the disposal of stock.

4.7 *Audit stocktaking exercise.* Audit conducted a stocktaking exercise on 28 July 2014 at the GL main store. There were 437 stock items listed in the Stock Balance Report as at 28 July 2014. Audit selected 20 (about 5%) of the stock items for checking. Audit found that there were discrepancies for four (20%) of the 20 items.

4.8 According to SPRs 610 and 620(c), departments should keep complete records of the receipt and issue of all stores held in a departmental store unit and post all ledgers promptly, and support each entry of the ledgers by a voucher, the nature and number of which should be recorded against the entry. Audit considers that the GL needs to remind all officers to record and update the store records promptly to avoid any discrepancies. If there are any discrepancies found, prompt action needs to be taken to investigate into the reasons and rectify the records accordingly.

4.9 *Expiry dates of chemicals.* Audit noted that no expiry dates of chemicals were recorded in the IIEB. In the circumstances, it would be difficult for the Supplies Section to monitor the usage of such chemicals stock. Moreover, using expired products may undermine the accuracy of laboratory testing. While the Supplies Officer informed Audit that they regularly checked whether the chemicals had expired, there was no documentation of such checking. Audit considers that the expiry dates of the chemicals should be included in the IIEB for better stock management in order to prevent the use of expired chemicals.

Stock kept at the user Sections

4.10 According to the SOPs of the AASD and the FSD, Section Head shall conduct regular supervisory checks on items kept in stock under the Section, especially those of high-value items like certified reference materials. The Section Head may also assign officers who are not involved in day-to-day stock keeping to conduct the checks and to investigate any discrepancies found.

Management of chemicals, samples, exhibits and equipment

4.11 The user Sections obtain the chemicals/reagents from the Supplies Section. According to the SWMs of the Sections in the FSD, the Section staff (usually an SLT) is responsible for ensuring that chemicals/reagents are not used beyond the expiry date. The SLT also monitors the stock balance to initiate stock replenishment and proposes disposal of expired items for approval by the Senior Chemist concerned. However, no such detailed requirements were found in the SWMs (Note 10) of the Sections in the AASD.

4.12 Audit found in a stocktake of one Section in the FSD that there were 174 solid chemical items and 38 solvent items which had been in the stock list of the Section for over 10 years (some of them even over 20 years). Although no expiry date was marked on the stock list, it is not sure whether the solvents could still be used. They might have already expired but not yet been disposed of. It was also found that 11 solid chemical items and 11 solvent items had already expired but not yet been disposed of. There were four solvent items which were only disposed of over 5 years after their expiry. Upon enquiry, the GL informed Audit in September 2014 that some solvents were very stable in nature and could be used without any problem.

4.13 According to the SOPs of both Divisions, minimum stock levels based on the advice of the user Sections are set for each stock item and are reviewed at a regular interval by the Supplies Section to ensure that an optimum stock is maintained at all times to support the laboratory activities. However, there was no evidence to show that the Supplies Section regularly checked the stock kept by the user Sections or asked the user Sections to file a return on the stock kept. The Supplies Section mainly checked the stock at the GL main store, while the user Sections managed their own stock.

4.14 *Lack of regular stocktakes.* After reviewing the QAP, SOPs and SWMs, Audit found that there were no guidelines on the requirement for the user Sections to conduct stocktakes regularly on the stock held on hand and to check the expiry dates of the stock items.

Note 10: The SWMs stipulate the quality control plans for the tests conducted, the sample handling procedures adopted by the Sections and the training modules arranged in the Sections.

4.15 Audit considers it a good practice for the user Sections to conduct regular stocktakes on the chemicals/solvents on hand and dispose of the expired chemicals within a reasonable period of time. Furthermore, as some chemicals are dangerous, special care is needed to handle the disposal of the chemical waste. Audit considers that good stock management can save storage space, prevent the use of expired chemicals and the accumulation of useless but dangerous chemicals. When the stock is disposed of, the stock record should be updated accordingly.

4.16 Audit noted that the last exercise for the disposal of the expired chemicals of the main store and the user Sections was conducted in 2009. No other disposal exercise had thereafter been conducted. Upon enquiry, the GL informed Audit in October 2014 that general chemicals like solvents could be disposed of as chemical wastes to be collected by the authorised contractor every week. However, for the disposal of other specialty chemicals, special arrangements have to be made with the authorised contractor. Up to August 2014, the Safety Officer had received requests from a few user Sections to dispose of 335 chemical/solvent/reagent items under special arrangement. However, the Sections were not required to file any returns regularly on the items to be disposed of under special arrangements to the Supplies Section or the Safety Officer. Audit considers that regular filing of items to be disposal exercise more effectively and also the Supplies Section to monitor the stock level.

4.17 Audit considers that the GL needs to improve its stock management by conducting regular stocktakes in both the main store and user Sections, disposing of the expired stock items periodically, and updating the stock list promptly.

Audit recommendations

- 4.18 Audit has *recommended* that the Government Chemist should:
 - (a) ensure that proper stock records are kept in accordance with the SPRs;
 - (b) establish departmental stocktaking guidelines (e.g. procedures before and after the stocktake, and review of stocktake results by supervisory officers), and ensure regular stocktakes are conducted for all stocks;

- (c) include the expiry dates of the items in the stock list of the main store to facilitate better stock management; and
- (d) ensure that the expired stocks are disposed of periodically and the stock lists are updated promptly.

Response from the Administration

4.19 The Government Chemist agrees with the audit recommendations. He has said that for general chemicals and reagents, there might not be a need to keep track of their expiry dates as they were normally chemically stable under storage conditions and their turnover was high. For those reference materials, expiry dates and detailed stock list were kept and regularly reviewed by Sections.

Handling of samples and exhibits

4.20 According to the QAP and SOPs, all samples and exhibits submitted by user B/Ds should be handled with care. All samples and exhibits are logged in the individual Division's computerised central sample register using unique laboratory numbers for identification (with the AASD using the SIMS and the FSD using the ESIMS). Records of chain-of-custody for regulatory samples/exhibits are maintained. The sample registration officer is required to ensure that all samples submitted are properly sealed to prevent loss or contamination. Proper security can be achieved by storing the samples in locked cabinets or rooms. For items which require registration, plastic bins fitted with locks are used. The names of officers with access to the exhibits must be properly recorded.

4.21 According to the SOPs, the custody of the exhibits during the course of examination lies with the examiner in possession of the samples/exhibits (i.e. either the reporting officer or his/her subordinates). To ensure that the integrity of evidence is preserved, Sections shall provide their staff with detailed procedures in the SWMs on maintaining the custody of the samples and exhibits during the course of examination. Subsequent handling of the test samples within Sections after registration shall be in accordance with the SWMs on "Handling of Test Samples".

Since the types/nature of the exhibits received by different Sections are different, each Section has its own SWM providing different sets of guidelines. These guidelines include the assignment of cases, and the procedures for receiving, storage, examination, returning and transferring of the exhibits.

4.22 Most of the samples received by the AASD and part of the samples received by the FSD are routine samples. After completion of cases, the GL will dispose of them within a designated period of time unless requested otherwise by the user B/Ds. The procedures for disposal of the exhibits are separately stipulated in different SWMs as different samples require different treatments. For the formal samples received by the AASD, the GL did not keep any information on the exhibit return dates in the computer system. They only keep it in manual form by marking on the file. The AASD could not provide a full database on the return dates of the exhibits.

4.23 On the other hand, most of the samples received by the FSD and some of the samples received by the AASD are formal exhibits used for prosecution purposes. Such exhibits are required to be returned to the user B/Ds. The reporting officers of these Sections will normally only return the exhibits directly to the user B/Ds if there is urgency or if the case involves a large number of exhibits. Otherwise, in most cases, the reporting officer concerned will deliver the case file and exhibits for a case in person to the Forensic Counter Exhibit Officer who shall take immediate possession of the exhibits. The exhibits and the reports are ready for collection by the user B/Ds at the Forensic Counter.

4.24 Audit took 28 July 2014 as the cut-off date and checked the completion dates of the files (together with the exhibits pending collection by the user B/Ds) at the Forensic Counter and calculated the number of working days between the cut-off date and the report completion date. Audit found that 32% of the cases with reports and/or exhibits had not been collected for over 3 months after the completion date (including 14% over 1 year). Two of the cases had been completed some four years ago but were still not yet collected by the user B/Ds. Audit noted that there were no stocktaking requirements stipulated in the QAP, SOPs and SWMs for samples/exhibits, nor were there any guidelines for handling exhibits that have remained uncollected by user B/Ds for a long period of time.

4.25 Audit examined the time elapsed before the user B/Ds collected the exhibits in the period 2009 to July 2014 by analysing the number of working days between the exhibit collection dates and the report completion dates. The total number of cases with exhibits collected during the period was 127,523. In 809 cases, the exhibits were collected before the cases were completed. Audit found that out of 73,094 cases with return dates provided, most (about 98%) of the exhibits were collected within 3 months after the completion of the reports. However, there were 53,620 cases (i.e. 42% of a total of 127,523 cases) in which no such information was readily available in the computer system. Also, there were 56 cases in which the exhibits were collected over one year after the reports were completed. As such, the GL may need extra storage space/facilities to keep these long-outstanding exhibits. Audit considers that the GL needs to take measures to enhance the management of reports/exhibits pending collection by user B/Ds.

Audit recommendations

4.26 Audit has *recommended* that the Government Chemist should take measures to enhance the GL's management of reports/exhibits pending collection by user B/Ds by, for example:

- (a) reminding and urging user B/Ds to collect the reports and the exhibits promptly;
- (b) providing more management information (e.g. the completion dates and the exhibit collection dates) for monitoring long-outstanding cases pending collection by user B/Ds; and
- (c) conducting periodic stocktakes of the exhibits at both the user Sections and the Forensic Counter in order to identify exhibits that have remained uncollected for a long period of time.

Response from the Administration

4.27 The Government Chemist agrees with the audit recommendations.

Maintenance of equipment

4.28 The GL has been using the service of the Electrical and Mechanical Services Trading Fund (EMSTF) to maintain and repair its scientific equipment, and electrical, mechanical, air-conditioning and building services equipment since the establishment of the EMSTF in 1996. According to Financial Circular No. 9/99 "Untying Departments from the Services of the EMSTF" issued in June 1999, upon untying from August 2002, user departments would be free to retain the services of the EMSTF or to choose alternative service providers to meet part or all of their electrical and mechanical service needs.

4.29 Furthermore, Financial Circular No. 6/2001 "Use of Trading Fund Services" issued in August 2001 states that a Controlling Officer may choose to enter into a service agreement with a trading fund direct, without recourse to competitive bidding, if he or she is clearly satisfied that:

- (a) the trading fund is fully capable of delivering in a cost-effective manner specific services that his or her department needs; and
- (b) having regard to the circumstances of the case (such as the urgency or the special circumstances of the services required), inviting competitive bidding for the delivery of such services is not appropriate.

The Controlling Officer will be accountable for the decision on why competitive bidding is not appropriate.

Renewal of Service Level Agreements with the EMSTF

4.30 The GL entered into a five-year Service Level Agreement of Comprehensive Engineering Services for Government Laboratory (SLA — Note 11) with the EMSTF starting from 1 April 2001. The SLA was renewed in April 2006 and July 2011 with an intervening three-month SLA for the period April 2011 to June 2011. Details of the SLAs are shown in Table 15.

Note 11: An SLA between the EMSTF and a user department incorporates the technical requirements, specifications, and terms and conditions for the provision of EMSTF services.

Table 15

	1 April 2001 to 31 March 2006	1 April 2006 to 31 March 2011	April 2006 1 April 2011 to to March 2011 30 June 2011	
	(First SLA)	(Second SLA)		(Third SLA)
Contract period	5 years	5 years	0.25 year	4.75 years
No. of scientific equipment (Note)	1,100	3,400	5,200	5,200
Value of scientific equipment (Note)	\$131 million	\$208 million	\$380 million	\$380 million
Contract sum	\$40.00 million	\$43.02 million	\$1.92 million	\$40.38 million

Details of SLAs between the EMSTF and the GL

Source: Audit analysis of GL records

- *Remarks:* The terms were agreed at the time of signing the SLA, subject to revisions arising from changes to the equipment list during the period.
- *Note:* The number and value of electrical, mechanical, air-conditioning and building services equipment were not explicitly shown in the SLA.

Pilot tender exercise conducted by the GL

4.31 In April 2011, the GL conducted tender exercises for nine maintenance contracts for selected items of major scientific equipment and 107 fume cupboards. Results of the tender evaluations indicated that the total contract sum for the lowest bids of the nine contracts for 93 items (out of 5,200 items of equipment in the GL) and the 107 fume cupboards would be \$7.9 million (individual contract sums ranging from \$0.15 million to \$1.92 million) and \$0.77 million a year respectively. In the event, only one of the nine maintenance contracts (annual fee of \$0.15 million for two items of scientific equipment) was awarded to a private service provider. The GL agreed with the EMSTF to undertake the maintenance services of the other eight contracts as part of the third SLA (1 July 2011 to 31 March 2016).

Fee adjustment under the current SLA

4.32 Under the third (current) SLA (1 July 2011 to 31 March 2016), the GL would pay the EMSTF a maintenance fee of about \$40.38 million over the period. The annual baseline fee was set at \$8.5 million (\$40.38 million over 4.75 years) according to the equipment list. The baseline fee would be adjusted according to additions and deletions to the equipment list during the period. However, at the time of signing the SLA in July 2011, the equipment list was not yet finalised and the old equipment list (5,200 items with a total value of \$380 million) was adopted. It was agreed that the baseline fee would be revised when the equipment list was finalised.

4.33 In October 2012, the equipment list was finalised at \$288 million (with some 2,800 items of equipment) and the annual baseline fee was revised downwards from \$8.5 million to \$7.47 million. It was agreed between the EMSTF and the GL that the revised baseline fee should be dated back to 1 July 2012. However, Audit noted that the SLA fee was not revised until 1 April 2013, nine months after 1 July 2012. As such, the amount of SLA fee paid during the period might involve an overpayment of \$0.77 million. Audit considers that the equipment list should be finalised before the start of a new SLA as far as possible, so that the annual baseline fee can be accurately and promptly determined. Moreover, the revised SLA fee should be implemented according to the agreed timeframe.

4.34 Upon enquiry, the GL informed Audit in September 2014 that the overpayment of \$0.77 million was a result of the trim down of annual SLA baseline fee in accordance with the updated equipment list completed in October 2012. The revised fee took retrospective effect from July 2012 but was eventually implemented from April 2013. The reconciliation of arrear in payment was not implemented in 2012 because:

(a) the GL anticipated that the equipment list would be increased in the remaining contract period ending 31 March 2016. The amount of \$0.77 million could be used to offset the increase in SLA baseline fee and thus the GL would not need to seek supplementary provision in this respect as far as possible; and (b) the overpayment would be settled upon the final instalment of SLA fee that would be made prior to the expiry of the 5-year SLA period by 31 March 2016.

Impending expiry of current SLA

4.35 The current SLA will expire on 31 March 2016. In April 2014, the GL was exploring the way forward and the strategy for the maintenance of all equipment in use. In this regard, the GL identified some major challenges, including:

- (a) in the next few years, the warranties of many items of scientific equipment would expire. The additions to the equipment list for maintenance services might increase the SLA fee substantially; and
- (b) for some scientific equipment with advanced technology, the EMSTF might not have the required expertise to provide maintenance services.

4.36 The GL decided that market tests through a tendering exercise should be carried out to see whether some of the maintenance work could be done by other service providers before the equipment list to be covered by the SLA was finalised with the EMSTF.

Audit recommendations

- 4.37 Audit has *recommended* that the Government Chemist should:
 - (a) plan ahead for the arrangement for equipment maintenance before expiry of the current SLA by March 2016 with a view to addressing the challenges mentioned in paragraph 4.35;
 - (b) in collaboration with the EMSTF, enhance the mechanism on updating the equipment list and revision of SLA fee, and ensure that the equipment list is finalised before the start of a new SLA; and

(c) examine the SLA fee paid for the period 1 July 2012 to 31 March 2013, and take measures to recover from the EMSTF any overpayment.

Response from the Administration

4.38 The Government Chemist agrees with the audit recommendations.

4.39 The Director of the Electrical and Mechanical Services agrees with the audit recommendations. He has said that:

- (a) the EMSTF is working closely with the GL to update the equipment list and revise the SLA fee through regular meetings. The EMSTF would fully support and assist the GL in enhancing the updating mechanism and preparing the updated list for SLA renewal; and
- (b) the SLA fee adjustment due to reduction in equipment items effective from July 2012 was examined and agreed between the GL and the EMSTF. It was agreed that the fee adjustment, including the overpayment for the period from 1 July 2012 to 31 March 2013, would be settled within the current SLA period ending on 31 March 2016.

PART 5: WAY FORWARD

5.1 This PART explores the way forward for the provision of laboratory services by the GL.

Challenges facing the Government Laboratory

5.2 The GL provides a broad range of analytical, advisory and forensic services to B/Ds. Given its limited resources and the wide spectrum of government services that require its support, the GL is facing great challenges to continuously improve its efficiency and cost-effectiveness in the provision of laboratory services. In particular, the frequent occurrence of emergency incidents (notably food incidents) in recent years has put great pressure on the GL in providing urgent and complex laboratory testing and advisory services to support various B/Ds in dealing with such incidents.

Areas for improvement

5.3 The 2002 Audit Review had found that there was room for improvement in a number of areas including turnaround time of services and coordination with user B/Ds, and highlighted the need to explore the option of outsourcing the GL's routine analytical testing services to accredited laboratories. In the current review, Audit has followed up the implementation of the 2002 audit recommendations and examined the measures (including outsourcing of laboratory services) taken by the GL to improve the efficiency and effectiveness of its services to user B/Ds. Audit has identified a number of areas that call for improvement. Key areas for improvement are set out in PARTs 2 to 4.

Government Laboratory's long-term strategic development plan

5.4 The GL recognises that there have been changes in the demand of the services in recent years, especially in the areas of food safety, public health and consumer protection. In particular, the growing number of incidents requiring urgent services in the last few years (including melamine, phthalates and

radioactivity in food products) called for not only emergency responses and round-the-clock testing services, but also development of testing methods to meet the highest possible international standards within a very short time. The GL also recognises that, under the current organisational structure and the constraints of compartmentalised locations of its laboratories, the professional exchange among staff working in the same testing discipline could not be established.

5.5 In order to better prepare for the future needs of the society and maintain its quality of services to meet the increasing unpredictable demand for laboratory services, the GL considers that a paradigm shift in its operations is needed. The GL is meanwhile reviewing its existing operations and will discuss its long-term strategic development plan with the Food and Health Bureau to better prepare the GL to face the upcoming challenges and demands in serving the community.

Audit recommendation

5.6 Audit has *recommended* that the Government Chemist should take on board the observations and recommendations in this Audit Report in taking forward the GL's long-term strategic development plan.

Response from the Administration

5.7 The Government Chemist agrees with the audit recommendation. He has said that he would implement the recommendations made in the Audit Report as appropriate.

Services provided by the Government Laboratory

Regime	Type of service	Main user	
Food and environmental hygiene	Analytical tests for verification of compliance with the statutory standards	Centre for Food Safety under the Food and Environmental Hygiene Department	
	Support law enforcement and routine surveillance monitoring programmes	Agriculture, Fisheries and Conservation Department	
Drug safety	Support the surveillance programme	Department of Health	
	proprietary Chinese medicines sale in the market; control programme to	Government Logistics Department	
	exercises for procuring	Hospital Authority	
	pharmaceutical products	Customs and Excise Department	
Environmental protection	Management and monitoring of air and water quality; enforcement of ordinances for environmental protection	Environmental Protection Department	
Consumer protection	Scientific services covering various products (e.g. cigarettes, toys and children's products, consumer goods and dutiable commodities) and authenticity testing	Customs and Excise Department	
Public safety	Classification of dangerous goods; 24-hour emergency response service for chemical incidents	Fire Services Department	
	Monitoring of radiation level	Hong Kong Observatory	

Appendix A (Cont'd) (para. 1.2 refers)

Regime	Type of service	Main user
	Surveillance of radioactive contamination of foodstuff	Food and Environmental Hygiene Department
	Technical support for the implementation of Chemical Weapons Convention	Trade and Industry Department
		Customs and Excise Department
24-hour scene investigation service	Scientific examination and professional evaluation of forensic evidence	Hong Kong Police Force
DNA examination	Law enforcement	Hong Kong Police Force
	Parentage testing	Immigration Department
Contact evidence	Physical examination (e.g. traffic	Hong Kong Police Force
	evidence investigation	Fire Services Department
Controlled drugs	Law enforcement	Hong Kong Police Force
		Customs and Excise Department
		Department of Health
Forensic toxicology	Death inquiries and criminal	Hong Kong Police Force
	under the drug use surveillance programme	Social Welfare Department
		Correctional Services Department
		Department of Health

Appendix A (Cont'd) (para. 1.2 refers)

Regime	Type of service	Main user
	Examination of drivers' drug/alcohol concentrations for law enforcement	Hong Kong Police Force
	Hair drug testing service (under the Healthy School Programme)	Narcotics Division of the Security Bureau
Questioned documents	Determination of authorship of questioned handwriting and signatures	Hong Kong Police Force
	Authenticity of identity documents	Immigration Department

Source: 2012 Annual Report of the GL

Remarks: The GL also provides technical advice to support B/Ds for amending ordinances where its scientific expertise is required. It also pursues research and development work and continues to share its findings and experiences with peers.



Source: GL records

The number of staff and the workload of the Government Laboratory (2009 to 2013)

Year	2009	2010	2011	2012	2013
Establishment (Number of staff)	416	423	434	448	453
Number of tests performed					
Statutory testing	383,528	437,970	414,763	403,138	421,335
Advisory and investigative services	259,960	261,583	247,095	265,513	258,973
Number of statutory certificates/technical	reports iss	ued and o	crime sce	nes attend	led
Forensic science services:					
(i) statutory certificates/technical reports issued	21,708	18,202	16,932	17,372	18,752
(ii) crime scenes attended	546	432	391	413	474

Source: Controlling Officer's Reports of the GL
(paras. 1.10, 1.11, 1.13, 2.2, 2.10, 2.15, 2.19 and Appendix F refer)

Actual compliance rates reported in the Controlling Officer's Report (2013)

		Target set		
		Turnaround time	Compliance rate	Actual compliance rate reported in COR
		(Working day)	(%)	(%)
A.	Statutory testing			
1.	Food complaint samples (Note)	25	83%	85%
2.	Urgent samples relating to food incidents (Note)	2	100%	100%
3.	Other food samples (Note)	19	95%	98%
4.	Pharmaceuticals (quality control — Note)	14	95%	99%
5.	Pharmaceuticals (registration — Note)	30	90%	94%
6.	Chinese medicines (Note)	30	95%	97%
7.	Dangerous goods (Note)	14	95%	99%
8.	Dutiable and other commodities (Note)	10	95%	99%
9.	Non-pharmaceutical consumer goods (trade descriptions)	35	90%	96%
10.	Toys and children's products (Note)	15	95%	98%
11.	Consumer goods (Note)	35	95%	99%

(Cont'd) (paras. 1.10, 1.11, 1.13, 2.2, 2.10, 2.15, 2.19 and Appendix F refer)

	Target set		
	Turnaround time	Compliance rate	Actual compliance rate reported in COR
	(Working day)	(%)	(%)
B. Advisory and investigative	e services	<u>.</u>	
12. Air pollution monitoring samples (Note)	20	95%	98%
13. Air pollution samples for litigation purposes (Note)	18	97%	100%
14. Field investigation (air pollution) samples (Note)	12	96%	100%
15. Water quality monitoring samples (Note)	20	96%	99%
16. Environmental waste monitoring samples (Note)	27	95%	99%
17. Environmental waste samples for litigation purposes	12	97%	100%
18. Pesticides formulation samples (Note)	36	93%	96%
19. Seepage and swimming pool water samples	10	96%	97%
20. Miscellaneous — radioactivity monitoring samples (Note)	12	95%	100%
21. Miscellaneous — other samples (Note)	25	90%	99%

(Cont'd) (paras. 1.10, 1.11, 1.13, 2.2, 2.10, 2.15, 2.19 and Appendix F refer)

	Target set			
	Turnaround time	Compliance rate	Actual compliance rate reported in COR	
	(Working day)	(%)	(%)	
C. Forensic science services				
Criminalistics and Quality Man	agement Group:	1	1	
22. DNA database	22	90%	99%	
23. Biochemical sciences — non-complicated	66	90%	98%	
24. Biochemical sciences — complicated	130	90%	95%	
25. Parentage testing	22	90%	96%	
26. Chemical sciences — trace evidence	66	90%	94%	
27. Physical sciences— accidentreconstruction	66	90%	92%	
Drugs, Toxicology and Docume	ents Group:		•	
28. Controlled drugs— illicit drug seizures	11	90%	94%	
 29. Controlled drugs major illicit drug seizures and manufacturing 	44	90%	90%	
 30. Controlled drugs — other illegal drug activities 	120	90%	94 %	
31. Analytical toxicology	33	85%	92%	
32. Drug urinalysis — methadone clinics	11	90%	91%	

(Cont'd) (paras. 1.10, 1.11, 1.13, 2.2, 2.10, 2.15, 2.19 and Appendix F refer)

	Target set		
	Turnaround time	Compliance rate	Actual compliance rate reported in COR
	(working day)	(%)	(%)
 33. Drug urinalysis — judicial-confirmation (routine) 	22	85%	98%
 34. Drug urinalysis — judicial-confirmation (enhanced probation) 	5	100%	100%
35. Drug-driving	33	85%	93%
36. Drink-driving	11	90%	96%
 37. Questioned documents — handwriting examination 	66	85%	95%
38. Questioned documents — counterfeiting/ forgery	33	90%	96%
39. Questioned documents — express counterfeiting/ forgery service	1	99%	99%

Source: Audit analysis of the GL records

Note: This category has sub-categories. The quoted number of working days required for its turnaround time represents an average of reporting time for the different types of samples and test requests in its sub-categories within the category, while the target (in percentage) is the total compliance rate of the concerned samples and test requests within a particular category against their sub-categories' respective targets (which are not disclosed in the COR).

Appendix E (Note to Table 2 in para. 2.14 and Appendix F refer)

Illustration of calculation of average target turnaround time for "Pharmaceuticals (quality control)"

		Number of submissions			Target turnaround	Su	mmatio	n of wo	rking da	ays		
	Sub- category	Year 2009	Year 2010	Year 2011	Year 2012	Year 2013	time (Working day)	Year 2009	Year 2010	Year 2011	Year 2012	Year 2013
		A1	A2	A3	A4	A5	В	$C1 = A1 \times B$	C2= $A2 \times B$	$C3 = A3 \times B$	$C4 = A4 \times B$	$C5=A5 \times B$
1.	C&E	1	_	_	_	_	2	2	_	_	_	_
2.	C&E	-	_	1	_	_	5	_	_	5	_	_
3.	C&E	1	10	1	_	_	7	7	70	7	_	_
4.	C&E	1	_	_	_	_	10	10	_	_	_	_
5.	C&E	-	_	2	_	_	14	_	_	28	_	_
6.	C&E	1	_	1	_	—	20	20	_	20	_	_
7.	C&E	5	_	2	1	—	30	150	_	60	30	_
8.	C&E	-	1	_	_	—	35	_	35	_	_	_
9.	C&E	2	3	_	_	_	40	80	120	_	_	_
10.	C&E	1	_	_	_	—	45	45	_	_	_	_
11.	C&E	-	1	_	_	_	50	_	50	_	_	_
12.	C&E	31	8	3	2	_	60	1,860	480	180	120	_
13.	C&E	1	_	_	_	—	80	80	_	_	_	—
14.	C&E	49	37	45	12	—	90	4,410	3,330	4,050	1,080	_
15.	C&E	11	1	4	6	_	120	1,320	120	480	720	_
16.	C&E	4	30	28	47	_	180	720	5,400	5,040	8,460	_
17.	GSD1	_	1	_	_	_	14	_	14	_	_	_
18.	GSD1	13	4	_	1	_	30	390	120	_	30	_
19.	GSD1	_	3	6	14	_	35	_	105	210	490	
20.	HA	_	1	_	_	_	35	_	35	_		
21.	HA	43	79	95	62	62	45	1,935	3,555	4,275	2,790	2,790
22.	HA	4	_	_	1	_	90	360	_	_	90	_

Appendix E

(Cont'd) (Note to Table 2 in para. 2.14 and Appendix F refer)

		Number of submissions		Number of submissions Targ turnard time				Target turnaround	Summation of wor				rking days		
	Sub- category	Year 2009	Year 2010	Year 2011	Year 2012	Year 2013	(Working day)	Year 2009	Year 2010	Year 2011	Year 2012	Year 2013			
		A1	A2	A3	A4	A5	В	$C1 = A1 \times B$	$C2=A2 \times B$	$C3 = A3 \times B$	$C4 = A4 \times B$	$C5=A5 \times B$			
23.	PM1	51	58	51	59	4	8	408	464	408	472	32			
24.	PM1	36	28	37	38	42	14	504	392	518	532	588			
25.	PM1	_	_	1	—	_	35	_	_	35	—	_			
26.	PM2	_	_	5	_	_	8	_	_	40	_	_			
27.	PM2	1	_	—	—	_	14	14	_	_	_	_			
28.	PM2	520	472	519	544	576	35	18,200	16,520	18,165	19,040	20,160			
29.	PM3	_	_	_	_	50	8	_	_	_	_	400			
30.	PP	_	204	56	5	_	15	_	3,060	840	75	_			
31.	PP	3	_	51	10	_	30	90	_	1,530	300	_			
32.	PP	_	_	6	—	_	60	_	_	360	—	_			
33.	PP	_	_	1	—	_	150	-	_	150	—	_			
34.	PP	42	97	81	28	—	180	7,560	17,460	14,580	5,040	—			
	Total	821	1,038	996	830	734		38,165	51,330	50,981	39,269	23,970			
	Average target turnaround time							46	49	51	47	33			

Legend: C&E Customs and Excise Department

- GSD1 Government Logistics Department
- HA Hospital Authority
- PM1 Pharmaceutical manufactory single
- PM2 Pharmaceutical manufactory multiple
- PM3 Pharmaceutical manufactory others
- PP Certification of pharmaceutical product

Source: Audit analysis of GL records

Appendix F (para. 2.15, Appendices D and E refer)

Case 1

Audit analysis of the COR performance information for testing of "Pharmaceuticals (quality control)"

1. This category includes routine analytical works relating to the quality control of pharmaceutical preparations being manufactured and/or procured by the Department of Health and the Hospital Authority (HA), and its performance information reported in the COR is a composite of the performance results of its 34 underlying sub-categories (see Appendix E).

COR targets: turnaround time averaging 14 working days and compliance rate of 95% (see para. 2.10 and Item 4 at Appendix D)

2. According to the COR, the GL set a turnaround time averaging 14 working days and a target that 95% of test requests would be completed within the respective target turnaround time specified for each of its 34 sub-categories as applicable. In 2013, 5 of the sub-categories received a total of 734 test requests from their user B/Ds (see also Appendix E). The GL reported that it achieved actual compliance of 99%, with a target turnaround time averaging 14 working days.

Not all test requests included for calculating compliance rate

3. The GL provided the 2013 data for audit analysis in August 2014. Audit reperformed the calculation of the compliance rates by comparing the actual turnaround time of each submission with its target turnaround time of the respective sub-category, and found that the compliance rate was 94%. This was different from that reported of 99% in the COR. In September 2014, Audit made an enquiry with the GL about the reasons for the discrepancy. The GL informed Audit that some sub-categories (test requests from the C&ED and HA) had been excluded from calculating the compliance rates. According to the GL, the testing work for the HA, and similarly some testing work which had been agreed with the user B/Ds, had not been included for calculation because they were testing work of lower priority, and had been taken up on the condition that the GL's main functions were not affected. Audit re-calculated the compliance rate taking into account GL's explanations and found that it matched with the compliance rate published in the COR. Details are given below:

Appendix F (Cont'd) (para. 2.15, Appendices D and E refer)

	2013 data	for the category
	Before exclusion	After exclusion of some data
Number of sub-categories involved	34	15
Range of target turnaround time (working days)	2 to 180	8 to 180
Number of cases included for calculation	734	672
Range of target turnaround time (working days) for test sub-categories	8 to 45	8 to 35
Average actual turnaround time (working days)	13	10
Compliance rate calculated by Audit (A)	94%	99%
Compliance rate published in COR (B)	99%	99%
Difference (B)-(A)	5%	0%

4. Audit analysed the actual turnaround time of the 62 (734 - 672) cases relating to the HA's sub-category (i.e. Item 21 at Appendix E with 45 working days as the target sub-category turnaround time) which had been excluded from the performance measurement calculation. Details are given below:

	HA sub-category with target turnaround time of 45 working days
Number of cases	62
Cases completed:	
within 14 working days (COR's average)	3 (5%)
within the sub-category's target turnaround time	35 (57%)
average of actual turnaround time for this sub-category	43 working days
Actual turnaround time	Number of cases
1 to 5 working days	0 (0%)
6 to 10 working days	2 (3%)
11 to 14 working days	1 (2%)
15 to 20 working days	5 (8%)
21 to 30 working days	11 (18%)
31 to 45 working days	16 (26%)
46 to 60 working days	13 (21%)] 43%
Over 61 working days	$14 (22\%) \int 43\%$

Appendix F (Cont'd) (para. 2.15, Appendices D and E refer)

5. It can be seen from paragraph 4 above that about half of the cases (43%) could not be completed within the target turnaround time of 45 working days. Furthermore, Audit could not find any written justification and authority for the exclusion of the cases from the performance measurement calculation. Upon enquiry, the GL informed Audit in October 2014 that all analytical examinations for items from subvented organisations and similar bodies, including the HA, were charged on a cost-recovery basis commencing 2000. The Government Chemist might refuse any item for analytical examinations requested by such bodies. The GL therefore considered that "written justification and authority" for the exclusion of the services to the HA from the performance measurement calculation was not necessary.

The target turnaround times of the sub-categories were generally much higher than the actual turnaround time

6. Audit further analysed the 2013 information of 576 cases relating to the largest sub-category (i.e. Item 28 at Appendix E with 35 working days as the target sub-category turnaround time).

	Sub-category with target turnaround time of 35 working days
Number of cases	576
Cases completed:	
within 14 working days (COR's average)	494 (86%)
within the sub-category's target turnaround time	576 (100%)
average of actual turnaround time for this sub-category	10 working days
Actual turnaround time	Number of cases
1 to 5 working days	101 (17%)
6 to 10 working days	223 (39%)
11 to 14 working days	170 (30%)
15 to 20 working days	67 (11%)
21 to 30 working days	15 (3%)

Appendix F (Cont'd) (para. 2.15, Appendices D and E refer)

7. It can be seen from paragraph 6 above that the actual case turnaround time was much shorter than the target 35 working days. The sub-category reported a compliance rate of 100% using the 35 working days as the turnaround compliance measure. In fact, all cases were completed within 30 working days and a large majority of them (97%) were completed within 20 working days. However, if 14 working days as reported in the COR had been used as the measure, the compliance rate would have dropped to 86%. Nevertheless, it seems that there is scope for the GL to shorten the target turnaround time for the sub-category to a level of less than 35 working days.

Turnaround time stated in the COR not used to measure the compliance rate

8. Audit noted that what was stated as average turnaround time in the COR (average of 14 working days) was not what was used by the GL to measure the compliance rate. As can be seen from Appendix E, there were 734 test requests involving 5 sub-categories (Items 21, 23, 24, 28 and 29) in 2013. However, the target turnaround times used to measure compliance of these 5 sub-categories' turnaround time were 45, 8, 14, 35 and 8 working days respectively, and not the stated turnaround time of 14 working days mentioned in the COR (see Appendix E). The compliance rates of these 5 sub-categories were 57%, 75%, 90%, 100% and 96% respectively.

9. Upon Audit's enquiry, the GL explained that the stated turnaround time of 14 working days actually represented the average of the turnaround times of the 734 items, which had achieved target turnaround times ranging from 8 to 45 working days. While noting that the GL did not use the 14 working days to measure the compliance rate, Audit used it as a benchmark to reperform the measurement of compliance rate of this category. Audit found that had 14 working days been used as the benchmark to measure the turnaround time of all 734 items, the actual compliance rate would have been 80%, not the 99% reported (see Item 4 at Appendix D). Even if the HA sub-category had been excluded, the actual compliance rate would have been 87%.

Audit comments

10. Audit considers that the GL should qualify its performance targets if it intends to exclude certain classes of testing work from calculating the performance result. The GL should set down clearly the criteria of testing work that would be excluded from calculation. Audit also considers that the GL should critically review and monitor the performance target achievement and set reasonable target turnaround times for sub-categories to further improve its service provision. Additionally, the GL should consider revising the description of the performance indicator to make it clear that the average turnaround time of 14 working days is not used to measure the compliance rate of the test items, and also consider disclosing the range of respective target turnaround times (8 to 45 working days) actually used to measure the compliance rate.

Source: Audit analysis of GL records

Appendix G

Acronyms and abbreviations

AASD	Analytical and Advisory Services Division
Audit	Audit Commission
AWIs	Areas worth improvement
B/Ds	Bureaux and departments
COR	Controlling Officer's Report
C&ED	Customs and Excise Department
DECC	Departmental Emergency Coordinating Centre
EMSTF	Electrical and Mechanical Services Trading Fund
ESIMS	Extended Sample Information Management System
EU	Efficiency Unit
FAPAS	Food Analysis Performance Assessment Scheme
FEHD	Food and Environmental Hygiene Department
FSD	Forensic Science Division
GCC	Government Chemist's certificate
GL	Government Laboratory
НА	Hospital Authority
HKAS	Hong Kong Accreditation Service
HKPF	Hong Kong Police Force
HOKLAS	Hong Kong Laboratory Accreditation Scheme

Appendix G (Cont'd)

IEC	International Electrotechnical Commission							
IIEB	Internal Ordering, Inventory Keeping, External Purchases and Budgetary Control System							
ISO	International Organisation for Standardisation							
MOU	Memorandum of Understanding							
NCs	Non-conformities							
NFA	No further action							
ОМ	Outsourcing Management							
PIR	Post-implementation review							
РТ	Proficiency testing							
QA	Quality Assurance							
QAP	Quality Assurance Protocol							
QC	Quality check							
SIMS	Sample Information Management System							
SLA	Service Level Agreement of Comprehensive Engineering Services							
SLTs	Science Laboratory Technologists							
SMMs	Senior Management Meetings							
SOPs	Standard Operating Procedures							
SPRs	Stores and Procurement Regulations							
SWMs	Sectional Work Manuals							