CHAPTER 4

THE GOVERNMENT OF THE HONG KONG SPECIAL ADMINISTRATIVE REGION

GENERAL REVENUE ACCOUNT

GOVERNMENT DEPARTMENT

Government Laboratory

Provision of services by the Government Laboratory

Audit Commission
Hong Kong
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PROVISION OF SERVICES BY THE GOVERNMENT LABORATORY

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Summary and key findings

A. **Introduction.** The Government Laboratory (GL) provides a full range of analytical, investigatory and advisory services to enable government departments to discharge their responsibilities. In 2001-02, the financial provision is $258 million. The GL has two operational divisions, namely the Analytical and Advisory Services Division (AASD) and the Forensic Science Division (FSD). The AASD acts as the referee analyst under a number of ordinances and regulations by performing statutory testing. It also provides advisory and investigative services to the Government in the management and monitoring of the environment and in the enforcement of various pollution control measures. The FSD plays an important role in the criminal justice system by providing forensic science services to law enforcement departments, such as the Hong Kong Police Force (HKPF) (paras. 1.1 to 1.8).

B. **Audit review.** Audit has recently reviewed the operations of the GL, and has identified areas in which improvements can be made on the provision of services (para. 1.9). They are summarised in paragraphs C to J below.

C. **FSD not meeting target turnaround time of services.** Audit's examination of the performance against the target turnaround time of the AASD and the FSD revealed that the FSD had not been able to meet the targets in some service areas, while the AASD had outperformed the targets in some service areas. The turnaround time of the forensic science service is important for meeting the requirements of the GL's client departments. Any delay in providing the necessary forensic science service could have an adverse impact on the work of the law enforcement departments, especially the HKPF. To improve the performance of the FSD, which has been experiencing delay in turnaround time, the GL should consider the options of outsourcing part of the GL's work, redeployment of staff resources from the AASD, and setting up a fee charging system (paras. 2.2 to 2.25).

D. **Improvement on coordination with client departments.** Communication between the FSD and its client departments is mainly through liaison meetings. In August 2000, the GL and the HKPF signed a Memorandum of Understanding (MOU) on cooperation. However, the MOU has only set out the broad principles. Audit considers that the FSD needs to discuss with the HKPF about the need to amplify the MOU. The amplified MOU has to specify the key service requirements, such as objectives, levels and capacity of services required. This will put the client departments' service needs on a firmer basis with the agreed levels of service, and will enable the FSD to forecast its workload more accurately. The FSD needs to develop a similar MOU with other major client departments. Similar to the arrangements between the FSD and its major client departments, the AASD and its major clients hold liaison meetings to discuss on working relationships, analytical requirements etc. For services provided by the AASD, speed of delivery is a major concern to the frontline departments. It is necessary for the AASD to work with client departments to see how best to meet their needs. The levels of service should be formalised by MOUs with its major client departments (paras. 3.11 to 3.19).

E. **Need for evaluation of FSD's effectiveness.** Assessment of effectiveness is useful for helping a service provider like the FSD evaluate how it performs, and identify improvement measures to enhance outcome. The results of the assessment can help the GL focus on how its services can be improved. The GL could share the results with its client departments so as to improve coordination with them. Audit notes that the FSD does not systematically assess the extent to which its work has helped the client departments in their investigations (paras. 3.24 to 3.26).

F. **Customer surveys to gauge clients' needs.** The GL does not have a system in place to regularly gauge the changing needs of the client departments and to measure their satisfaction level. Audit considers that periodic customer surveys will provide the GL with useful information on the levels of customer satisfaction, their concerns and desired improvements. The survey results will help the GL identify its strengths and weaknesses, which will form the basis of its improvement programmes (paras. 3.30 to 3.32).

G. **Lack of a strategic plan.** The GL is facing a number of challenges in a rapidly changing environment. The GL has not developed a strategic plan to help it decide how best to achieve its objectives, and to provide a more rational basis on which priorities are determined. A strategic plan also helps ensure that resources are well targeted and used efficiently (paras. 4.2 to 4.6).

H. **Effectiveness performance indicators are required.** The GL's performance indicators largely focus on reporting operational activities and output. Although there are also performance indicators reporting efficiency, they are insufficient as they cover only part of the performance of the services. The GL does not have performance indicators for assessing the effectiveness of its services (paras. 4.10 to 4.14).

I. **Quality assurance.** In order to maintain credibility and impartiality, the GL must demonstrate high standards of reliability and accuracy in testing items of evidence. Based on the results of a randomly selected examination of the casework and test reports of the FSD and the AASD, Audit has observed that there were instances of non-compliance with the FSD's stipulated quality requirements by staff members. There is also room for improvement in the documentation of test reports of the AASD (paras. 5.2 to 5.9).

J. **Maintenance of equipment.** The GL has been using the service of the Electrical and Mechanical Services Trading Fund (EMSTF) for maintaining and repairing its equipment. In March 2000, the GL raised the issue of whether the EMSTF was really competitive. The EMSTF conducted a benchmarking exercise, which indicated the EMSTF's maintenance costs were cheaper than other maintenance contractors. The GL subsequently entered into a five-year Service Level Agreement with the EMSTF. However, Audit notes that the results of the cost comparison might not have been conducted on a like-with-like basis because the scope and scale of the maintenance covered by the EMSTF was much larger (paras. 6.2 to 6.12).

K. **Audit recommendations.** Audit has made the following major recommendations that the Government Chemist should:

Turnaround time of services

(a) explore the option of outsourcing routine analytical testing services to accredited laboratories (para. 2.26(a));

(b) provide adequate development training to the technical grade staff to enable them to acquire the skills and knowledge for working in both the AASD and the FSD (para. 2.26(b));

(c) redeploy staff who have the necessary knowledge and skills from the AASD to the FSD so as to help the FSD meet the performance targets (para. 2.26(c));

(d) in the longer-term, explore the feasibility of setting up a fee charging system for the services provided by the GL (para. 2.26(d));

Coordination with client departments

(e) consider entering into MOUs, which incorporate the agreed levels of service, with the major client departments (para. 3.20(b));

(f) develop an evaluation system so as to regularly assess the effectiveness of the role of the FSD in helping the investigations of crime by the law enforcement departments (para. 3.27);

(g) conduct periodic customer surveys, and take necessary follow-up action based upon the results of the surveys to further improve the GL's services (para. 3.33(a) and (b));

Strategic planning and performance indicators

(h) in consultation with the Secretary for Health and Welfare, develop a strategic plan for the GL, so as to better achieve the objectives and optimise the use of resources (para. 4.7(a));

(i) develop and adopt more useful and effective performance indicators, and set performance targets and monitor progress at regular intervals (para. 4.15(a) and (b));

Quality assurance

(j) take appropriate measures to ensure that the requirements stipulated in the GL's quality operation manuals are strictly followed. He should review and suitably modify the AASD operation procedures with a view to further improving the documentation of test reports (para. 5.10(a) and (c)); and

Maintenance of equipment

(k) towards the end of the five-year period of the Service Level Agreement with the EMSTF, select a group of equipment and conduct a pilot tender exercise to obtain a cost-effective maintenance service. Based on the results of the pilot tender exercise, he should determine a long-term strategy and formulate an action plan for the maintenance of all the GL's equipment (para. 6.13(a) and (b)).

L. **Response from the Administration.** The Government Chemist is in general agreement with Audit's recommendations (paras. 2.27, 3.21, 3.28, 3.34, 4.8, 4.16, 5.11 and 6.14).

PART 1: INTRODUCTION

Background

1.1 The Government Laboratory (GL) provides a full range of analytical, investigatory and advisory services to enable government departments to discharge their responsibilities for law and order, public health and safety, environmental protection, government revenue and consumer interests. In 2001-02, the financial provision for the GL is $258 million.

1.2 The Government Chemist, who heads the GL, is assisted by a team of professional, technical and supporting staff. As at January 2002, the GL had 402 staff, of which more than a quarter were professional staff in various scientific disciplines.

1.3 The GL has two operational divisions, namely the Analytical and Advisory Services Division (AASD) and the Forensic Science Division (FSD). Each operational division has two functional groups with a number of specialist sections. The Administration Division provides general administrative support. The organisation chart of the GL is at Appendix A.

AASD

1.4 The **AASD** performs **statutory testing** as the referee analyst under a number of ordinances and regulations. The work involves:

(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) assessments 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) assay of gold and platinum articles for fineness (e.g. under the Trade Descriptions (Marking) (Gold and Gold Alloy) Order);

(g) verification of products and equipment (under the Weights and Measures Ordinance — Cap. 68); and

(h) on call service to assist at scenes of accidents involving hazardous chemicals.

1.5 The **AASD** also provides **advisory and investigative services** 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 samples 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.

FSD

1.6 The **FSD** plays an important role in the criminal justice system by providing **forensic science services** to:

— 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 scenes of crimes, biochemical grouping (DNA profiling — Note 1), tracing of evidence, accident reconstruction, handwriting examination and statutory-based analysis of controlled drugs and poisonous substances; and

— the Department of Health (for the Methadone Maintenance Scheme), the Social Welfare Department, the Correctional Services Department and other organisations requiring urinalysis monitoring service on their clients.

Mission and charging of services

1.7 The GL's mission is to provide the community with quality analytical, forensic and advisory services, achieved through a committed work force. The GL strives to recognise and

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Note 1: *DNA stands for deoxyribonucleic acid. This is a chemical found in virtually every cell in the body and carries genetic information, which determines the physical characteristics of an individual. Except for identical twins, each person's DNA is unique.*

anticipate the needs of clients, working openly and cooperatively in setting work schedules and meeting targets.

1.8 The GL provides services to government departments free of charge. It may also provide appropriate scientific services for statutory bodies and the private sector on a full-cost recovery basis, provided that its main functions are not affected.

Audit review

1.9 Audit has recently reviewed the operations of the GL. The main objective of the audit is to review the efficiency and effectiveness of the operations of the GL. The review has identified areas in which audit recommendations have been made to the Government Chemist to improve the provision of services by the GL. They are:

(a) turnaround time of services (PART 2);

(b) coordination between GL and client departments (PART 3);

(c) strategic planning and performance indicators (PART 4);

(d) quality assurance (PART 5); and

(e) maintenance of equipment (PART 6).

PART 2: TURNAROUND TIME OF SERVICES

2.1 This PART reports the increasing workload of the GL and its impact on the turnaround time of testing services. This PART also suggests improvement measures to assist the GL in achieving its targets.

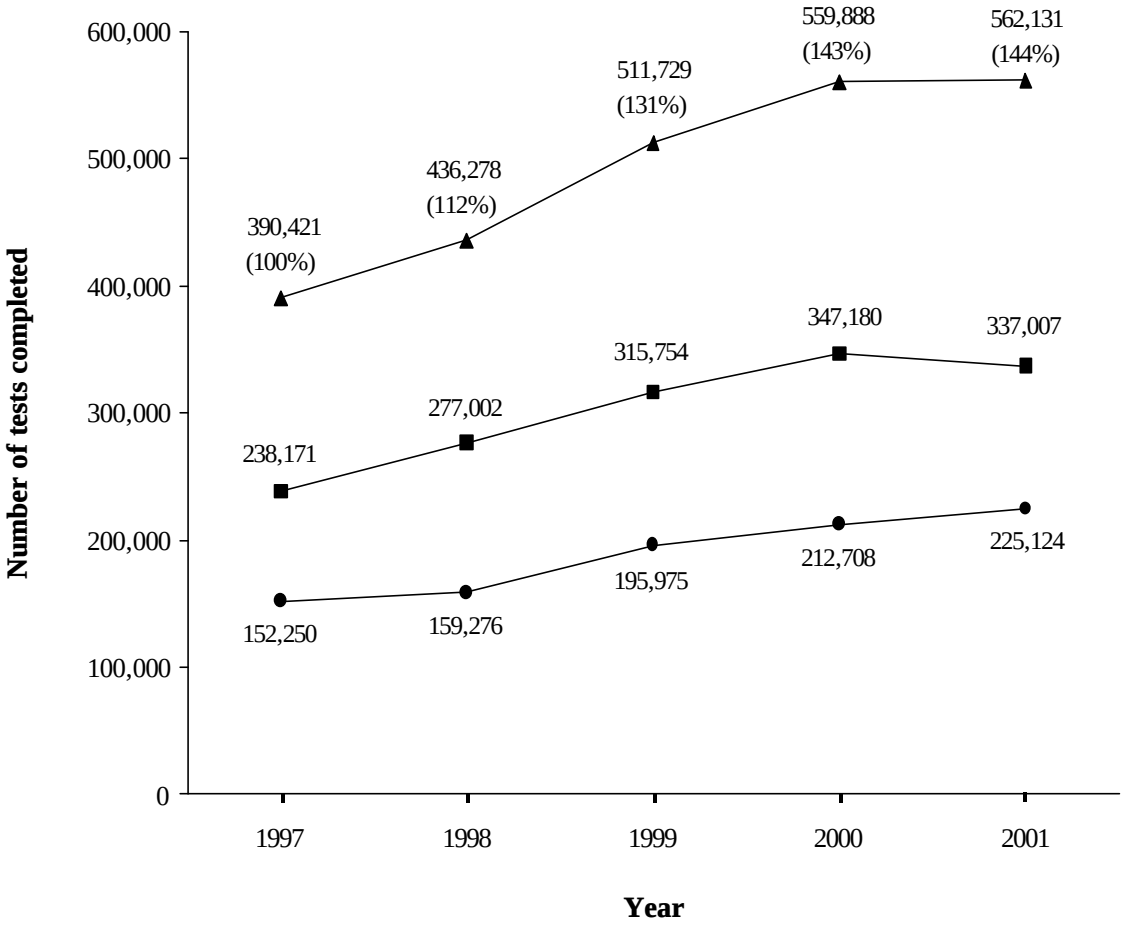
Increasing demand for scientific services

2.2 The GL is the main service provider (Note 2) for laboratory testing and forensic science services for government departments. In recent years, the GL has been facing an increasing demand for testing services from frontline government departments responsible for the environment, food, health and crime investigations. The increase in workload is not only due to more cases being submitted for testing, but also the greater complexity and range of services. The output of the AASD and the FSD has increased in the past few years and is summarised in Figures 1 and 2 below (details are shown in Appendix B).

Note 2: *The Water Supplies Department, the Department of Health and the HKPF have their own laboratories for testing water quality, pathological investigations, and forensic firearms testing and fingerprint identification respectively.*

Figure 1

AASD output for the years 1997 to 2001

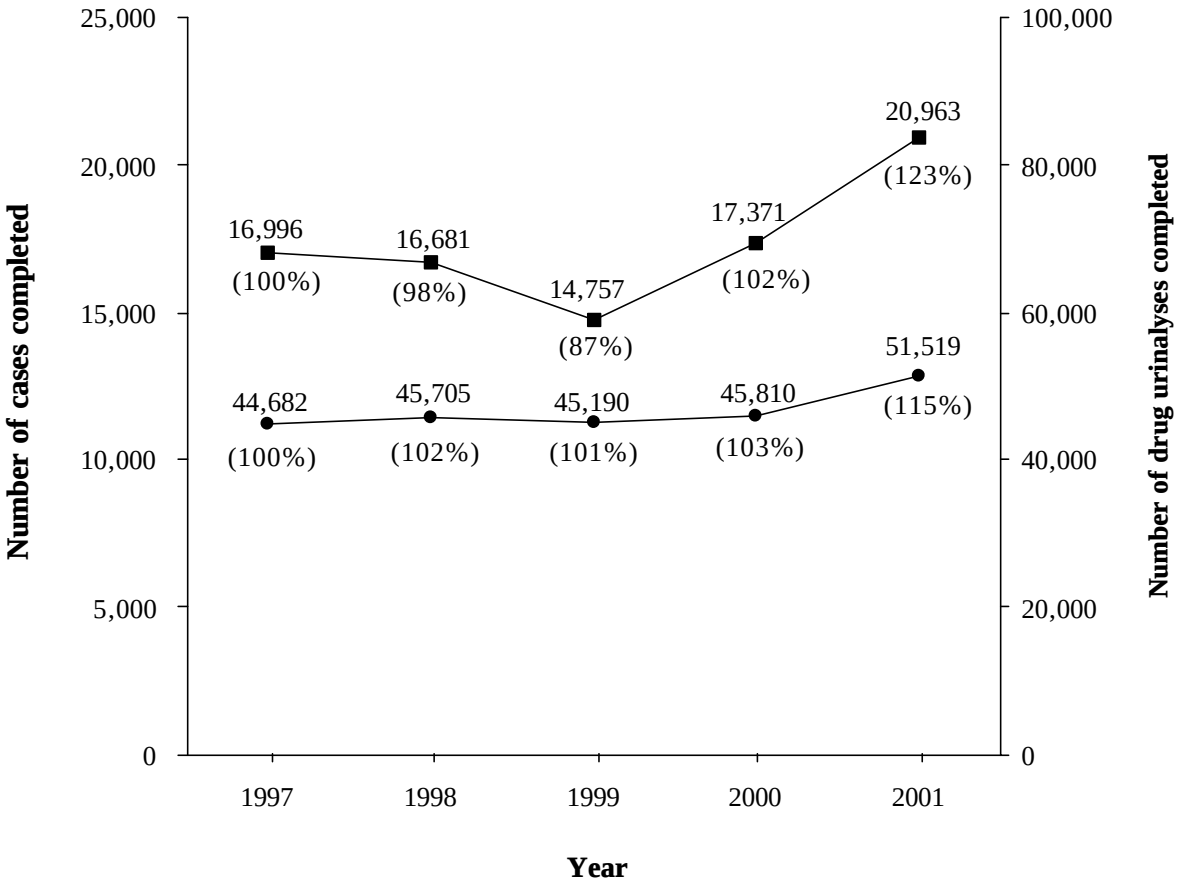


Source: *GL's records*

Note: *1997 is used as the base year for calculating the percentage increase of output for all subsequent years.*

Figure 2

FSD output for the years 1997 to 2001



Legend: —■— Cases of forensic science services

—●— Drug urinalyses of various types

Source: GL's records

Note 1: The decrease in output of the forensic science services in 1998 and 1999 was mainly due to a decline in submissions for tests of controlled drug. Such tests increased again in 2000 and 2001.

Note 2: 1997 is used as the base year for calculating the percentage changes of output for all subsequent years.

2.3 Since 1997, the case output (an indicator of workload) of the AASD has increased by 44%, and that of the FSD has increased by 23%. The expenditure of the GL during the period has also increased, as shown in Table 1 below.

Table 1

Expenditure of the GL

	1997-98	**1998-99**	**1999-2000**	**2000-01**	**2001-02 (Revised estimate)**
	($ million)	**($ million)**	**($ million)**	**($ million)**	**($ million)**
AASD					
Statutory testing	43.8 (100%)	57.5 (131%)	71.6 (163%)	68.8 (157%)	82.0 (187%)
Advisory and investigative services	51.1 (100%)	59.2 (116%)	59.5 (116%)	60.1 (118%)	64.8 (127%)
	94.9 (100%)	116.7 (123%)	131.1 (138%)	128.9 (136%)	146.8 (155%)
FSD					
Forensic science service	81.5 (100%)	89.8 (110%)	89.7 (110%)	95.3 (117%) (Note 1)	102.4 (126%) (Note 1)
Total	**176.4** (100%)	**206.5** (117%)	**220.8** (125%)	**224.2** (127%)	**249.2** (141%)

Source: Estimates of the HKSAR Government and GL's records

Note 1: Capital expenditure for the setting up of the new DNA Database Laboratory and Parentage Testing Section has been excluded.

Note 2: 1997-98 is used as the base year for calculating the percentage increase of expenditure for all subsequent years.

2.4 In view of the growing public concern about environment, food and health, it is likely that the demand for statutory testing and advisory and investigative services will continue to be high. The FSD expects to handle more cases in the coming years when the newly established Parentage Testing Section and DNA Database Laboratory (Note 3) begin to operate fully.

Turnaround time

2.5 Since 1994, for different services of the FSD and the AASD, the GL has published performance targets in the form of case turnaround time (Note 4). An audit examination of the performance of these two divisions against the target turnaround time revealed that:

(a) the FSD had not been able to meet the performance targets in some service areas (see paras. 2.6 to 2.13 below); and

(b) the AASD had outperformed the performance targets in some service areas (see paras. 2.14 to 2.16 below).

Service targets of FSD

2.6 The FSD provides 15 major services, including eleven long-established services and four new services introduced since 1997. Of the eleven long-established services, Audit has observed that the target turnaround time for:

- nine services have been extended since 1996;
- one service has been reduced; and
- one service has remained unchanged.

The targets have been defined as the number of working days required to complete **80%** of cases in different types of services. Details are shown in Table 2 below.

Note 3: *The parentage testing service and the DNA database laboratory service started in 2001. The parentage testing service was introduced after the Court of Final Appeal's ruling in January 1999 on the right of abode of persons born out-of-wedlock of Hong Kong permanent residents. The DNA database laboratory service was introduced with the aim of assisting in the detection and investigation of serious crimes.*

Note 4: *Turnaround time is 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 client department.*

Table 2

Service targets of FSD

Service	Prior to 1996	1996	1997 to 2001
	(Target turnaround time in number of working days — Note)		
Turnaround time extended			
1. Tracing of evidence	60	66	66
2. Accident reconstruction	52	66	66
3. Handwriting examination	64	66	66
4. Biochemical grouping (DNA profiling)	64	88	88
5. Routine illicit drug seizures	8	11	11
6. Major drug seizures and manufacturing	40	44	44
7. Drug urinalysis (methadone clinics)	6	11	11
8. Drug urinalysis (judicial-screening)	6	11	11
9. Drug urinalysis (judicial-confirmation)	6	11	22
Turnaround time reduced			
10. Counterfeiting/forgery	40	33	33
Turnaround time unchanged			
11. Analytical toxicology	33	33	33
New services introduced after 1996			
12. Drink-driving (with effect from 1997)	N/A	N/A	11
13. Express counterfeiting/forgery (with effect from 1999)	N/A	N/A	1
14. Parentage testing (with effect from 2001)	N/A	N/A	22
15. DNA database (with effect from 2001)	N/A	N/A	22

Source: GL's records

Note: The FSD sets the target that 80% of the cases should be completed within the target turnaround time in different types of services.

Some FSD service targets not met

2.7 Audit notes that the FSD could not meet the targets in the majority of the long-established services in 2000 and 2001, notwithstanding that the expenditure for the FSD has increased (see para. 2.3 above) and that the target turnaround times for most of its services have been extended. The services which did not meet the targets are shown in Table 3 below.

Table 3

FSD forensic science services that did not meet performance targets

Forensic science service (Note 1)	Target turnaround time	2000		2001	
		Actual turnaround time (Note 2)	Actual turnaround time exceeded target by	Actual turnaround time (Note 2)	Actual turnaround time exceeded target by
	(a)	(b)	$(c) = \frac{(b)-(a)}{(a)} \times 100\%$	(d)	$(e) = \frac{(d)-(a)}{(a)} \times 100\%$
	(No. of working days)	(No. of working days)	(%)	(No. of working days)	(%)
1. Tracing of evidence	66	95	44%	115	74%
2. Accident reconstruction	66	80	21%	75	14%
3. Handwriting examination	66	105	59%	109	65%
4. Biochemical grouping (DNA profiling)	88	99	13%	119	35%
5. Routine illicit drug seizures	11	15	36%	13	18%
6. Major drug seizures and manufacturing	44	50	14%	77	75%
7. Drug urinalysis (methadone clinics)	11	16	45%	11	N/A
10. Counterfeiting/forgery	33	53	61%	39	18%
11. Analytical toxicology	33	37	12%	47	42%

Source: GL's records

Note 1: The service reference numbers in this table are the same as those in Table 2.

Note 2: The FSD sets a target of 80% of cases meeting the target turnaround time for different types of services. The FSD, in ascertaining the actual turnaround time, has chosen to exclude 20% of cases (i.e. those cases with the longest turnaround time). It then selects from the remaining cases (i.e. the remaining 80%) the case with the longest turnaround time and treats it as the actual turnaround time for the service as a whole.

2.8 The GL set the target that 80% of cases would meet the target turnaround time for the services in 2000 and 2001. However, this target percentage had not been achieved in most cases, as shown in Table 4 below.

Table 4

Percentage of FSD cases which did not meet the service targets

Forensic science service (Note)	2000 Percentage of cases		2001 Percentage of cases	
	Meeting target	Not meeting target	Meeting target	Not meeting target
	(a)	(b) = 80% - (a)	(c)	(d) = 80% - (c)
1. Tracing of evidence	54%	26%	49%	31%
2. Accident reconstruction	67%	13%	69%	11%
3. Handwriting examination	45%	35%	50%	30%
4. Biochemical grouping (DNA profiling)	75%	5%	64%	16%
5. Routine illicit drug seizures	61%	19%	67%	13%
6. Major drug seizures and manufacturing	79%	1%	66%	14%
7. Drug urinalysis (methadone clinics)	63%	17%	83%	N/A
10. Counterfeiting/forgery	60%	20%	70%	10%
11. Analytical toxicology	76%	4%	64%	16%

Source: GL's records

Note: The service reference numbers in this table are the same as those in Table 2.

Consequences of forensic science services not meeting FSD's service targets

2.9 The turnaround time of the forensic science services is very important to the GL's client departments. Any delay in providing the necessary forensic science services could have an adverse impact on the work of the law enforcement departments, especially the HKPF.

2.10 Audit notes that, at the first liaison meeting between the HKPF and the GL held in June 1998 (the Liaison Committee was established in 1998), the HKPF representative indicated that the HKPF was generally very satisfied with the service provided by the GL. **One common complaint, however, was the long time taken by the GL to carry out the examinations.** The delays had caused the HKPF problems with the courts and the Department of Justice. The HKPF representative suggested the GL regularly publish the time taken for different types of examinations, and provide interim reports.

2.11 The GL representative said that he was aware of the problems with delivery and that in some cases performance targets were not being met. He noted that the worst area was those cases involving drugs. Subsequent to the meeting, the HKPF advised the GL about the nature and progress status of the cases so that the GL could accord suitable priority to the more urgent cases. The GL had since stamped on each HKPF submission form the expected turnaround time. With appropriate measures taken by the GL and the HKPF, the issue was regarded as resolved by both parties at a liaison meeting held in September 1999. Notwithstanding this, Audit considers that it is unsatisfactory that in 2000 and 2001 the target turnaround time had not been met in a number of services, as shown in Table 4 in paragraph 2.8 above.

2.12 In response to Audit's enquiries, the GL informed Audit in February 2002 that regarding targets not being met in the FSD, it was agreed that there was cause for concern in some cases. However, it should be pointed out that the performance figures only gave an overall picture. For individual cases, urgent requests by clients were always entertained. Generally speaking, those cases that exceeded the target performance time were those for which the client had agreed that an extended examination period would not adversely affect the overall progress of the case through the courts.

2.13 For each of the nine services quoted in Table 3 in paragraph 2.7 above as not meeting targets, there were extenuating services resulting from either large increases in workload or the preparation for an introduction of new services which had a temporary adverse effect on existing services. For example, in the case of handwriting examination, at the beginning of 2000 there was a large increase in workload resulting from increased submissions of identity documents by the Immigration Department. These were all examined as part of the "express service", which is essentially an over-the-counter service. Owing to the huge volume of this work, throughput of handwriting examinations was adversely affected. Recruiting and training staff for the identity document work took some 18 months. As of early 2002, the situation was returning to normal.

Performance of AASD

2.14 In contrast, Audit notes that the performance targets in the two years of 2000 and 2001 for both the statutory testing and the advisory and investigative services provided by the AASD had largely been achieved (see Appendix C). In addition, the AASD has made some service improvements by reducing the target turnaround times in the year 2001 for most of the services, when compared with the service targets in 1994 (see Appendix D).

2.15 Audit notes that for a number of services in the two financial years 1999-2000 and 2000-01, the AASD's actual performance had been consistently well above the targets set. Examples of such services are shown in Table 5 below. This indicates that there is room for the GL to set more challenging targets in these areas so as to provide better services to the clients in terms of time.

Table 5

Performance of AASD services against the service targets in 1999-2000 and 2000-01

	Turnaround time (Number of working days per test)			Percentage of cases that achieved the target		
Testing of	**Target in 1999-2000 and 2000-01**	**Actual (Note) 1999-2000**	**Actual (Note) 2000-01**	**Target in 1999-2000 and 2000-01**	**Actual 1999-2000**	**Actual 2000-01**
Toys and children's products	15	11	9	95%	99%	99%
Consumer goods	35	24	16	95%	98%	99%
Food samples for regulatory compliance	19	16	13	92%	97%	97%
Water samples	20	17	16	90%	98%	98%
Waste monitoring samples	27	23	23	95%	96%	97%
Chemical weapons convention services	10	3	4	90%	99%	100%

Source: GL's records

Note: The actual turnaround time is the average number of working days required to complete the tests of a particular category of samples/products.

Because the AASD was able to perform better than its service targets, it appears that, to enable the FSD to achieve its performance targets, it is worth considering redeploying some resources of the AASD to the FSD (see paras. 2.21 and 2.22 below).

2.16 In response to Audit's enquiries, the GL informed Audit in February 2002 that it should be emphasised that the targets set for the performance of the AASD were average performance targets for the work areas. Within each section, owing to the wide variety of work and the time taken to complete it, there were many sub-targets. These were not generally reported in, for example, the Controlling Officer's Report, for the sake of brevity. Performance ahead of target for some work types allowed more time to be allocated to time-consuming tasks to enable them to be completed more expeditiously.

Audit observations on achievement of performance targets

2.17 To improve the performance of the FSD, Audit has suggested that the GL should consider the following options:

- outsourcing part of the GL's work (see paras. 2.18 to 2.20 below);
- redeploying staff resources from the AASD to the FSD (see paras. 2.21 and 2.22 below); and
- setting up a fee charging system (see paras. 2.23 to 2.25 below).

Outsourcing part of the GL's work

2.18 Outsourcing is increasingly being used in government departments to reduce costs and improve its services. Outsourcing also has the benefit of subjecting a government service to market competition in order to ascertain whether it is cost-effective. The Financial Secretary, in his speech (para. 103) delivered in March 2001 for the 2001-02 Budget, stated that the Government had:

> *"increased private sector participation in the delivery of public services, through **outsourcing** to enhance efficiency and quality" (Audit emphasis).*

He further stated (in para. 106) that "*enhancing public sector productivity is our pledge to the community*", and that the Government would be exploring further private sector involvement in the delivery of public services.

2.19 Audit notes that the demand for different kinds of analytical and investigative testing services is increasing because of the growing public concern about the environment, food and health. For example, for environmental monitoring in 2000, the GL conducted 156,594 tests on air samples, 123,677 tests on water samples and 23,596 tests on waste. These tests were conducted for routine monitoring and analytical investigation. According to the 2000-01 Estimates, the GL's

expenditure per test was $130 for routine analytical testing of air samples or water samples, $500 for chemical waste samples and $150 for other waste samples. The total recurrent annual expenditure for such routine analytical testing amounted to about $44 million in 2000-01. **To meet the increasing demands and to further improve its performance, in Audit's view, the GL needs to explore the option of outsourcing routine analytical testing services to accredited laboratories (Note 5). If outsourcing is a more cost-effective option, funding arrangements should be made accordingly.**

2.20 The benefits of outsourcing are that the GL can release some of its resources and capacity for carrying out the more essential services, and competition is introduced to the GL's services, in both quality and cost.

Redeployment of staff resources

2.21 Outsourcing part of the AASD's work can release some of its resources to carry out the work of the FSD. As pointed out in paragraph 2.7 above, the FSD was not able to meet the service targets in some service areas. On the other hand, the AASD has outperformed its service standards in some service areas (see para. 2.15 above). As at January 2002, the AASD had 220 staff (including 152 technical staff), and the FSD had 147 staff (including 76 technical staff). **In order to improve the overall performance of the FSD, consideration should be given to redeploying some staff from the AASD to the FSD.**

2.22 Audit notes that, because of the increasing complexity of new technologies in various scientific disciplines, Chemists at the professional level working in the GL tend to specialise in performing investigations on particular areas of expertise. However, the level of expertise required of the technical grade staff (e.g. Science Laboratory Technicians and Science Laboratory Technologists) is less demanding. The 228 technical grade staff (152 in the AASD and 76 in the FSD) constitute more than half of the staff of the GL. Audit considers that the GL needs to provide adequate development training for the technical grade staff to enable them to possess the skills and knowledge to work in both the AASD and the FSD.

Setting up a fee charging system

2.23 At present, the scientific services are provided to government departments by the GL free of charge. Departments can request the GL to provide such services whenever there is a need. The GL also provides services to statutory bodies (e.g. the Hospital Authority) and the private sector on a full-cost recovery basis, provided that the main functions of the GL are not affected. In 2000-01, the fees received were $4.6 million.

2.24 Under the existing system, there is no mechanism to ensure that, in requesting the GL's services, the client departments will make an assessment of the cost-effectiveness of the services. A fee charging system can overcome this problem. It has the following additional advantages:

Note 5: *Outsourcing to overseas laboratories can also be considered. For example, the Laboratory of the Government Chemist in the U.K. (formerly a government agency which was privatised in 1996) provides services to outside customers.*

(a) as the service provider, the GL will have to continually ensure that its resources are used efficiently and cost-effectively;

(b) it would bring benefits in terms of improved customer service levels, better and stronger customer relationship, and development of new services in partnership with customers; and

(c) as fee-paying clients, user departments will be encouraged to articulate their requirements by paying due regard to the cost and the cost-effectiveness of the services provided. This would better balance the supply and demand for the GL's services and enable the GL to better focus on the clients' requirements.

2.25 In this connection, Audit notes that, according to the consultation document on Review of Government Financial Reporting Policy issued in April 2001, eleven departments are expected to adopt inter-departmental charging. **In line with the principles of improving financial reporting and use of resources, Audit considers that in the longer-term, a fee charging system for using the GL's services should be considered, in order to properly reflect the usage of its resources by other departments (Note 6).**

Audit recommendations on achievement of FSD targets

2.26 **To help ensure that the performance standards and targets set for forensic science services are achieved, Audit has *recommended* that the Government Chemist should:**

(a) **explore the option of outsourcing routine analytical testing services to accredited laboratories, having regard to:**

(i) **the nature of the analytical service;**

(ii) **the capacity, competence and creditability of the laboratories which can provide such services; and**

(iii) **the costs and benefits for both the GL and its clients;**

Note 6: *Audit notes that in the U.K., the Forensic Science Service (an executive agency of the Home Office) provides services to law enforcement departments on a full-cost recovery basis. The Central Science Laboratory (an executive agency under the Department for Environment, Food and Rural Affairs) also provides services to its clients in the public and private sectors on a full-cost recovery basis. The Laboratory of the Government Chemist (privatised in 1996 but retains its statutory role as Government Chemist), acting as the referee in cases where there is a dispute over analytical results or their interpretation, also charges its clients in the public and private sectors on a full-cost recovery basis.*

(b) **provide adequate development training to the technical grade staff to enable them to acquire the skills and knowledge for working in both the AASD and the FSD;**

(c) **redeploy staff who have the necessary knowledge and skills from the AASD to the FSD so as to help the FSD meet the performance targets; and**

(d) **in the longer-term, explore the feasibility of setting up a fee charging system for the services provided by the GL.**

Response from the Administration

2.27 The **Government Chemist** welcomes the recommendations. He has said that:

Outsourcing

(a) this avenue will be explored. However, without appropriate funding the GL is not in a position to outsource work directly. Should resources become available either from enhancement of budget from government or, in the longer term, from revenue generated from inter-departmental charging, then the GL would be better placed to utilise outsourcing. It is certainly agreed that, given the appropriate resources, there exist some services that could be outsourced;

(b) one further note of constraint results from the statutory nature of a lot of the GL's work. This may make outsourcing not an option either because of legal reasons, i.e. the statutory requirement for results to be reported on a Government Chemist's Certificate, or because of chain of custody considerations. The latter problem would be exacerbated in the event of sending samples overseas;

Redeployment of staff resources

(c) currently, staff in both the technical and professional grades in the GL are streamed into one of the two operational divisions. This situation, which has been in place for over 25 years, resulted from the considerable difference in work nature between the two divisions making cross-divisional transfer counter-productive;

(d) while this is certainly still the case for the professional grade where expertise and specialisation is fundamental to operations, for technical staff it is agreed that a wider

base of training could possibly be implemented. However, this is a long-term process and redeployment across divisions to solve short-term crises could be a viable possibility only after it has been in place for some time;

Fee charging

(e) this suggestion is welcomed as a way forward to providing a more effective solution to efficient services for clients; and

(f) given the nature of the GL's work as a service provider to departments, such a move would require the agreement of and cooperation with the relevant bureaux and departments, since there would be significant start-up costs incurred by both sides.

2.28 The **Secretary for the Treasury** has said that she agrees that in the longer-term, a fee charging system should be explored. However, before a decision is made as to whether the system should be introduced by the Government Laboratory, she needs to thoroughly evaluate the cost of setting up and running such a system and the benefits which may accrue.

2.29 The **Commissioner of Police** has said that:

(a) the recommendation of exploring the scope for outsourcing is agreed; and

(b) the recommendation of exploring the feasibility of a fee charging system would need to be carefully considered.

2.30 The **Commissioner of Customs and Excise** has said that he has no objection to the recommendations of outsourcing part of the GL's work and redeployment of suitable staff from the AASD to the FSD, provided that the current levels of services delivered by the GL to its clients are not affected. The benefits of outsourcing routine analytical testing services to accredited laboratories will have to be weighed against the potential risks.

2.31 The **Director of Environmental Protection** has said that:

(a) while he agrees that there may be benefits for outsourcing some testing services, the routine water quality monitoring services required by the Environmental Protection Department (EPD) should stay within the GL for the time being until there are proven local laboratories that could provide as good a level of standard and consistency (in terms of analytical method, instrument, accuracy and quality assurance) in services as the GL;

(b) he has no objection to the recommendation of exploring outsourcing part of the GL's work provided that the current levels of services delivered by the GL to its clients are not affected; and

(c) any redeployment of staff should not affect the EPD's work, in particular the enforcement activities and legal proceedings. Therefore, the EPD considers that it is essential that any reduction in staff should go hand in hand with other carefully designed compensating improvement measures, so as to achieve an overall improvement in turnaround time and service level.

2.32 The **Secretary for Health and Welfare** has said that he has no objection to the recommendations. The option of outsourcing routine analytical testing services to accredited local or overseas laboratories has to be subject to the agreement of relevant bureaux which appoint the GL as the referee analyst to perform statutory testing under respective ordinances and regulations. It is ultimately the policy decisions of the relevant bureaux as to whether analytical testing services under their purview should be outsourced. Likewise, the issue of setting up a fee charging system will need to be further deliberated by the funding bureaux and client departments.

Audit observations on management information system

2.33 Audit notes that the GL does not have a management information system to capture the relevant costing information in providing its services to government departments. Such a system would assist the Government Chemist in the monitoring of the activities of the GL. Furthermore, it will capture the time and costs of different types of testing services (e.g. the staff time, staff cost, and material cost of performing tests).

Audit recommendation on management information system

2.34 **Audit has *recommended* that the Government Chemist should develop a time-recording and costing system to capture all the relevant costing information for different types of services, if it is decided to set up a fee charging system for services provided.**

Response from the Administration

2.35 The **Secretary for the Treasury** has said that she agrees that if it is decided to set up a fee charging system, the GL should develop a time-recording and costing system to capture all the relevant costing information for providing different types of services.

2.36 The **Government Chemist** has said that if a fee charging system is pursued, it is agreed that a system of time-recording and costing would need to be implemented. Previous attempts at this have demonstrated that it is a very complex process and that it would need to be kept at a relatively macro level in order to prevent it from becoming too cumbersome. Professional actuarial support would be required for setting it up.

PART 3: COORDINATION BETWEEN GL AND CLIENT DEPARTMENTS

3.1 This PART reviews the coordination between the GL and its major client departments and suggests improvement measures.

Demand forecast of AASD's services

3.2 To facilitate effective planning of staff resources, the GL asks its major client departments (e.g. the EPD, the Food and Environmental Hygiene Department and the C&ED) to provide estimates of their demands for testing services. At the beginning of each financial year, the departments provide the AASD of the GL with a five-year forecast of their yearly requirements. (For the FSD services, the GL's major client departments have found it difficult to provide accurate forecasts.) The AASD plans its resources based on the annual forecast of the client departments.

3.3 The GL calculates the average quarterly workload based on the annual forecasts made by the client departments. The GL reports in a Quarterly Progress Report for each area of its services the actual workload against the quarterly forecast of workload to the relevant policy bureaux (e.g. the Health and Welfare Bureau and the Environment and Food Bureau).

3.4 However, Audit notes that the actual workload for the AASD has varied significantly, when compared with the forecast demand. Examples are shown in Table 6 below.

Table 6

Forecast and actual demand for AASD services in 2000-01

Type of testing work	Major client department	Full year		Each quarter				
		Forecast	Actual workload	Forecast	Actual workload			
					1st Qtr	2nd Qtr	3rd Qtr	4th Qtr
		(a)	(b)	(c) = (a) ¸ 4				
		Number of tests (percentage of forecast)		Number of tests (percentage of forecast)				
Pharmaceuticals (quality control)	DH/ C&ED	14,600	24,797 (170%)	3,650	6,886 (189%)	6,889 (189%)	4,793 (131%)	6,229 (171%)
Consumer goods	C&ED	16,900	18,779 (111%)	4,225	5,021 (119%)	2,269 (54%)	6,355 (150%)	5,134 (122%)
Toys and children's products	C&ED	9,100	11,008 (121%)	2,275	2,234 (98%)	2,378 (105%)	2,554 (112%)	3,842 (169%)
Air samples	EPD	109,135	145,457 (133%)	27,284	36,929 (135%)	36,148 (132%)	38,123 (140%)	34,257 (126%)
Testing arising from field investigations	EPD	3,700	5,733 (155%)	925	1,075 (116%)	1,600 (173%)	1,306 (141%)	1,752 (189%)
Waste samples (for EPD litigation)	EPD	2,200	1,509 (69%)	550	464 (84%)	346 (63%)	391 (71%)	308 (56%)
Dangerous goods (advisory services)	Fire Services Department	500	883 (177%)	125	89 (71%)	410 (328%)	147 (118%)	237 (190%)

DH: Department of Health

Source: GL's records

3.5 As illustrations, for Pharmaceuticals (quality control), 14,600 tests were forecast for the year 2000-01. The actual demand turned out to be 70% higher. For the testing of air samples for environmental monitoring, the actual annual demand was 33% higher. There were also significant variances in other types of testing work.

3.6 The fluctuation of workload was even bigger in each quarter. For example, the actual demand in the second quarter of 2000-01 for the tests of consumer goods was only 54% of the forecast, whereas in the third quarter, the actual demand was 150% of the forecast. The testing of dangerous goods (advisory services) was only 71% of the forecast in the first quarter, but jumped to 328% in the second quarter of 2000-01. The unexpected fluctuations of workload could affect the GL's planning of its use of resources.

3.7 Furthermore, for the year 1999-2000, variances in the annual demands were noted. For instance, the actual demand for testing of air samples for environmental monitoring (148,668 tests) was 33% higher than the annual forecast (111,388 tests). The actual demand for testing of general pharmaceutical products (33,798 tests) was 41% higher than the annual forecast (24,000 tests).

3.8 Audit appreciates that forecasts may not always be accurate. **Nevertheless, there is scope for better coordination between the AASD and its major clients to improve the accuracy of the forecasts.** Audit notes that the AASD plans the use of resources for its work on an annual basis. The AASD has a system in place to hold technical liaison meetings with the major client departments at which work coordination is discussed. However, the client departments have not been asked to provide accurate annual forecasts, or to provide revised forecasts taking into account changed circumstances.

3.9 For example, the actual demand for testing of air samples for environmental monitoring was much higher than the annual forecast provided by the EPD for 2000-01 and 1999-2000 (see paras. 3.5 and 3.7 above). At the liaison meetings held with the EPD during that period, the AASD had not asked the EPD to provide more accurate or updated forecasts, for better planning of the use of its resources.

3.10 Audit considers that the AASD needs to formally request the major client departments to provide more accurate annual forecasts, and revised forecasts of the demand for its services, so as to enable the AASD to forecast its workload more accurately.

Coordination between FSD and client departments

3.11 The FSD holds liaison meetings with its client departments at which matters of working relationship, analytical requirements, testing arrangements and procedures, resource constraints are discussed. In 1998, a Liaison Committee was established between the HKPF and the GL to discuss matters of mutual interest.

3.12 In June 1998, the HKPF representative raised the possibility of setting up a service level agreement. The GL agreed that this was worth pursuing. At a meeting held in September 1999, the HKPF representative said that most overseas jurisdictions preferred to have a Memorandum of

Understanding (MOU) with their testing laboratories. It was decided that the HKPF and the GL representatives would draft a suitable document having regard to the circumstances in Hong Kong.

3.13 In August 2000, the GL and the HKPF signed an MOU. The MOU states that the FSD and the HKPF shall, among others:

(a) consult each other regularly on policy issues and matters of common interest for the purpose of realising their objectives and coordinating their respective activities;

(b) exchange information with a view to promoting effective coordination and to avoiding duplication of efforts;

(c) agree upon the most effective way to organise particular activities and to optimise the use of their resources;

(d) make reciprocal representation at meetings and in dealing with matters in which the other party has an interest or technical competence; and

(e) each designate a person to act as the focal point of contact for ensuring the smooth implementation of the MOU.

3.14 Audit considers that the MOU between the GL and the HKPF is a step in the right direction. However, the MOU has only set out the broad principles. Essential requirements such as agreed performance measures and targets (e.g. turnaround time), and the method of operation are not covered in the MOU. Furthermore, there are no similar memoranda of understanding for other major client departments (e.g. the C&ED and the Immigration Department).

Audit observations on coordination between FSD and client departments

3.15 In the light of the important role played by the FSD in combating crime, coordination between the FSD and client departments should be improved. **Audit considers that there is a need for the FSD to discuss with the HKPF about the need to amplify the MOU. The amplified MOU needs to specify the key service requirements, such as objectives, levels and capacity of services required, method of operation, performance measures and standards. This will put the client departments' service needs on a firmer basis, and will also enable the FSD to forecast its workload more accurately. The FSD also needs to develop MOUs with other major client departments (e.g. the C&ED and the Immigration Department).**

3.16 An amplified MOU by way of specifying service levels can help the GL achieve its core value of striving to recognise and anticipate the needs of clients by working openly and cooperatively in setting work schedules and meeting targets. It is a good practice for a provider of forensic science services to develop an MOU with its clients so as to include agreed key service

requirements. Audit's research has found that, for example, in the U.K., the Forensic Science Service (an executive agency of the Home Office) has service level agreements with its client departments, which specify the key service requirements.

Coordination between AASD and client departments

3.17 The AASD and its major clients (the EPD, the Food and Environmental Hygiene Department and the C&ED) also hold liaison meetings to discuss matters on working relationship, analytical requirements, testing arrangements and procedures, and resource constraints. **For the services provided by the AASD, speed of delivery is a major concern to its client departments.**

3.18 Audit notes that at the coordinating meeting with the C&ED held in June 2001, the representative of the C&ED mentioned that traders had aired grievances about the long time taken by the C&ED for the investigation of consumer goods (e.g. flammability test of pillows). The C&ED was keen to formalise a performance pledge about the time needed for the investigation and analysis of seized goods, but such an assurance largely depended on the testing turnaround time of the GL. He asked whether it was possible to shorten the turnaround time. The GL representative referred to a mutual understanding between the C&ED and the GL in 1995 that the turnaround time for testing of routine toys and children's products was **15** working days, while that of consumer goods was **35** working days. The C&ED proposed to establish a performance pledge or a performance indicator mutually agreed by both departments on the testing work every year. The matter is being pursued by the C&ED and the GL.

Audit observations on coordination between AASD and client departments

3.19 Audit notes that in 2000-01, the routine testing of toys and children's products took an average of **9** working days to complete, while the average turnaround time for testing of consumer goods was **16** working days. This indicates that the current targets referred to in paragraph 3.18 above can be improved. However, unless the GL agrees to reduce the target turnaround time, the C&ED is unable to inform its clients that the turnaround time for testing is in fact shorter. Reducing the turnaround time would benefit the business community. **Audit considers that it is necessary for the AASD to work with its client departments to ascertain how best to meet their clients' needs. In this connection, the agreed service levels should be formalised in the form of MOUs.**

Audit recommendations on coordination between GL and client departments

3.20 **Audit has *recommended* that the Government Chemist should:**

(a) **request major client departments of the AASD to provide more accurate annual forecasts of their demand for services, and revised forecasts resulting from changed circumstances. This will enable the AASD to better plan the use of its resources;**

(b) **consider entering into MOUs, which incorporate the agreed levels of services, with major client departments of the GL. The MOUs will put their service needs on a firmer basis, and will help the GL assess more accurately the demands for different services and facilitate effective planning of the use of its resources; and**

(c) **ensure that the MOUs will include the following essential requirements:**

(i) **objectives of the agreement;**

(ii) **responsibilities of the parties involved;**

(iii) **duration of the agreement and a review date;**

(iv) **scope of services and agreed service levels;**

(v) **performance measurements and monitoring; and**

(vi) **liaison and coordination.**

Response from the Administration

3.21 The **Government Chemist** has said that:

(a) he agrees that a more accurate annual forecast of demand for services, with on-going revisions, would facilitate better planning for use of resources. However, given the wide variety of work from clients, the sometimes short-term nature and unpredictability of testing requests, such forecasts can only ever be estimates. Nevertheless, the GL will attempt through wider communication with clients to improve the situation; and

(b) MOUs have been a positive step forward in improving liaison and therefore efficiency in dealing with clients. He welcomes the suggestion to make these MOUs more detailed and also to extend them to include other clients. This will be actively pursued.

3.22 The **Commissioner of Police** has said that the recommendation of expanding the MOU, perhaps through a service level agreement including targets, is supported.

3.23 The **Director of Environmental Protection** has said that although the current liaison meetings between the GL and the EPD are serving sufficiently well, the EPD recognises the additional merits associated with MOU arrangements.

Evaluation of FSD's effectiveness

3.24 The GL uses considerable resources for providing forensic science services (including DNA profiling, blood pattern analysis, tracing of evidence, chemical examination and fire investigation, etc.) to law enforcement departments to help them investigate serious crimes (e.g. homicide, rape, arson, robbery and wounding). With advances in science and technology and more sophisticated investigation techniques such as DNA analysis, forensics plays an even more important role in the investigation and prosecution of crime nowadays.

Audit observations on evaluation of FSD's effectiveness

3.25 Assessment of effectiveness is useful for helping a service provider like the FSD evaluate its performance, and identify improvement measures (e.g. better design of processes or procedures, and training of the GL and the HKPF staff) to enhance the outcome. The results of the assessment can help the GL focus on how its services can be improved. The GL could share the results of assessments with its client departments so as to improve coordination with the departments. Audit notes that the FSD does not systematically assess the extent to which its work has helped the client departments in their investigations.

3.26 Audit considers that it is a good practice for a forensic science service provider to conduct an evaluation of the effectiveness of its services. Audit's research has found that, for example, the Forensic Science Service in the U.K. conducts evaluations to assess to what extent its work is helping the law enforcement departments, particularly the Police, in their investigations (Note 7).

Audit recommendation on evaluation of FSD's effectiveness

3.27 **Audit has *recommended* that the Government Chemist should develop an evaluation system so as to regularly assess the effectiveness of the role of the FSD in helping the investigations of crime by the law enforcement departments.**

Response from the Administration

3.28 The **Government Chemist** has said that:

Note 7: *Forensic analysis of materials left at the scene of crime is performed mainly to substantiate whether a crime has been committed or linked to a suspect, or to eliminate the suspect from further enquiry. On completion of work for serious crime, scientists of the Forensic Science Service in the U.K. are required to assess the effectiveness of their work from a scientific viewpoint by establishing the extent to which forensic analysis is conclusive in supporting or refuting the linkage between the evidence and the suspect.*

(a) he recognises the need to review any work areas that may consistently produce inconclusive results in order to ensure that such results are an inevitable consequence of the evidence available rather than the effectiveness of the operator to extract it. Such reviews are made at a qualitative level already and in the light of the audit recommendation, they will be re-examined to ensure that they are sufficiently effective; and

(b) it must be emphasised that forensic examinations in criminal cases, while increasingly important with advances in technology, are still only part of the process. Forensic evidence is a tool for the court that may help it to come to a conclusion when it is considered together with all the other evidence; it is only part of the process and does not prove the case for the court. In view of this, the GL is, and should only ever be, in possession of a limited amount of detail in any case and normally not in a position to assess the "value" of the evidence it provides in the context of the case. The in-house assessment quoted from overseas can at best only be subjective and hence of limited value.

3.29 The **Commissioner of Police** has said that, if the development of an evaluation system on the effectiveness of the FSD is to be a meaningful exercise, it will require substantial input from the law enforcement departments.

Audit observations on customer surveys

3.30 In 1997, the GL commissioned a consultant to undertake a Human Resources Management Study. As part of the Study, the Consultant sought the views of the GL's major client departments on their expectations and assessment of the GL's services. The response showed that all of them had "absolute trust" in the GL's professional judgement. However, some client departments expressed the view that the scope of the GL's services and the response time did not fully meet their expectations. Communication with the GL on matters such as test procedures, resource constraints and service prioritisation mechanism was inadequate.

3.31 Audit notes that the AASD and the FSD hold liaison meetings with its major client departments. However, Audit considers that the GL needs to carry out periodic surveys to obtain from its clients feedback and their expectations so as to further improve its services (Note 8). **Such surveys will provide the GL with useful information on the levels of customer satisfaction, their concerns and desired improvements. The survey results will help the GL identify where further improvements can be made.**

Note 8: *Audit's research indicates that the U.K. Central Science Laboratory conducts a customer survey every year. The U.K. Forensic Science Service also conducts surveys of its customers biennially.*

3.32 In January 2002, the GL said that it agreed with Audit that the arrangements for seeking customers' feedback on satisfaction of services should be formalised. The customer survey could be incorporated into the MOU with major client departments (see para. 3.20(b) and (c) above).

Audit recommendations on customer surveys

3.33 **To gauge the needs and satisfaction level of the GL's client departments, Audit has *recommended* that the Government Chemist should:**

(a) **conduct periodic customer surveys covering:**

(i) **customers' satisfaction levels in terms of timeliness, quality and usefulness of the GL's services;**

(ii) **adequacy of the range of services provided;**

(iii) **procedures for the collection and submission of items for scientific analysis;**

(iv) **the extent and nature of training provided by the GL to clients' staff on science services; and**

(v) **suggestions for further improvement; and**

(b) **take necessary follow-up action based upon the results of the surveys to further improve the GL's services.**

Response from the Administration

3.34 The **Government Chemist** has said that he welcomes the recommendations and will implement them as part of an enhanced liaison with clients.

3.35 The **Director of Environmental Protection** welcomes the recommendation to conduct periodic customer satisfaction surveys, which the EPD thinks could be integrated into the MOU to achieve even better benefits.

PART 4: STRATEGIC PLANNING AND PERFORMANCE INDICATORS

4.1 This PART examines the adequacy of strategic planning and performance indicators of the GL, and observes that there is room for improvement.

Strategic planning

4.2 With a financial provision of $258 million in 2001-02, the objectives of the GL are:

(a) to carry out statutory functions as the referee analyst under a number of ordinances and regulations;

(b) to provide a wide range of analytical and advisory services to other government departments and public institutions; and

(c) to provide a comprehensive and unbiased forensic science service to the criminal justice system.

4.3 The GL is facing a number of challenges in the delivery of its services. These challenges include:

(a) coping with increasing demand from client departments for new or better scientific services due to the introduction of new policies/legislation involving analytical considerations and growing public awareness of environment, public health and consumer interests (see paras. 2.2 and 2.4 above);

(b) achieving the overall savings required by the Enhanced Productivity Programme initiated by the Government, whilst at the same time, ensuring achievement of performance targets;

(c) equipping its staff with the necessary skill, knowledge and ability to cope with the rapidly changing environment and to provide the range and level of scientific services demanded by clients (see paras. 2.21 and 2.22 above);

(d) making use of opportunities brought about by technological advance to provide services in new ways and with greater economy through automation and computerisation; and

(e) continuing to develop better and more effective forensic science techniques to support investigation of more sophisticated crimes (see para. 3.24 above).

4.4 To determine how its objectives can best be achieved and how it would meet the challenges of a changing environment, the GL needs to adopt a strategic planning process and to formulate a strategic plan.

Audit observations on strategic planning

4.5 Audit notes that the GL has not developed a strategic plan to help it decide how best to achieve its objectives, and to provide a more rational basis on which priorities are determined. A strategic plan also helps ensure that resources are well targeted and are used efficiently and effectively.

4.6 A strategic plan of the GL should include:

(a) a vision and mission statement;

(b) long-term goals (say three to five years);

(c) short-term objectives;

(d) priorities to be determined to achieve the goals;

(e) ways to improve continuously the quality, efficiency and value for money of the scientific services; and

(f) a planned approach to monitoring and evaluating outcomes to enable the measurement of performance against predetermined benchmarks and the making of adjustments to the plan.

Audit recommendations on strategic planning

4.7 **Audit has *recommended* that the Government Chemist should, in consultation with the Secretary for Health and Welfare:**

(a) **develop a strategic plan for the GL, so as to better achieve the objectives and optimise the use of resources;**

(b) **in developing the strategic plan, take into consideration the other audit findings and recommendations of this audit report; and**

(c) **update periodically the strategic plan, based on evaluations of the implementation of the plan.**

Response from the Administration

4.8 The **Government Chemist** welcomes the recommendation of setting up a strategic plan. He has said that this will be actively discussed in-house and be raised with the Secretary for Health and Welfare.

4.9 The **Secretary for Health and Welfare** supports the recommendation that the GL should develop a strategic plan.

Performance indicators

4.10 Performance indicators provide a means to measure how well an organisation has performed. In developing performance indicators, an organisation should, in addition to reporting operational activities and throughput, also report efficiency and effectiveness. This will facilitate the stakeholders to assess whether the resources used by the organisation have produced the desired outcomes, and in an efficient and cost-effective manner.

Performance indicators used by GL

4.11 The GL compiles performance indicators to measure the performance of its programme activities. These indicators are published in the Controlling Officer's Report of the GL in the Annual Estimates. Table 7 below shows examples of the performance indicators used by the GL.

Table 7

Examples of performance indicators used by the GL

Programme area	Performance indicator for operational activities and output	Efficiency performance indicator
Statutory testing and advisory and investigative services	• number of samples/products tested for each type of services	• target/actual/planned percentage achieving the target turnaround times for each type of services
Forensic science services	• number of cases investigated for each type of services • number of drug urinalysis samples tested • number of statutory certificates/ technical reports/witness statements issued • number of crime scenes attended	• target/actual/planned number of working days required to complete a case for each type of services

Source: 2001-02 Estimates

Audit observations on performance indicators

4.12 The GL's performance indicators in Table 7 above have largely focused on reporting operational activities and output. Although there are also performance indicators reporting efficiency (such as a target percentage meeting the target turnaround time for each type of services), they are insufficient as they cover only part of the performance of the services. Furthermore, the GL has not provided performance indicators to assess the effectiveness of the services.

4.13 To further improve the standards of performance reporting, the GL needs to explore and develop more useful performance indicators which help stakeholders assess the efficiency and effectiveness of its services. Table 8 below gives illustrative examples of other performance indicators that may be adopted by the GL.

Table 8

Illustrative examples of efficiency and effectiveness indicators which GL may adopt

	Remarks
Efficiency indicators	
• expenditure per major client	
• staff productivity	Number of cases/tests completed per staff
• administration cost expressed as a percentage of total cost	
Effectiveness indicators	
• satisfaction rating	Customers' satisfaction rating for each type of services
• effective rating for forensic science casework	
• number of profile matches reported by the DNA database	Further breakdown into the following types of matches: — suspect to crime — crime to crime — suspect to suspect
• number of non-conformances and areas worthy of improvement found in quality audits	

4.14 Audit considers that there are benefits of developing and adopting more useful and effective performance indicators to measure how well the GL has performed.

Audit recommendations on performance indicators

4.15 **Audit has *recommended* that the Government Chemist should:**

(a) **develop and adopt more useful and effective performance indicators to measure how well the GL has performed; and**

(b) **for the efficiency and effectiveness indicators developed, set performance targets and monitor progress at regular intervals.**

Response from the Administration

4.16 The **Government Chemist** has said that he welcomes the recommendation to explore and develop more useful and effective performance indicators. Of those suggested by Audit, the ones considered likely to be useful relate to staff productivity, administration costs and the number of profile matches reported by the DNA database. The profile matches are in fact already captured but, in view of the service being so new, have not yet been reported. Other possible indicators will be examined and implemented if found to be useful.

4.17 The **Secretary for Health and Welfare** supports the recommendation that the GL should devise appropriate performance indicators.

PART 5: QUALITY ASSURANCE

5.1 This PART examines the extent of compliance with the GL's stipulated quality assurance requirements and makes recommendations for improvement.

Quality assurance system

5.2 In order to maintain its credibility and impartiality, the GL must demonstrate high standards of reliability and accuracy in testing items of evidence. The FSD is accredited by the American Society of Crime Laboratory Directors/Laboratory Accreditation Board. The AASD is accredited with the ISO (International Organisation for Standardisation) certifications.

5.3 The GL has procedures in place to provide quality assurance of its work. The operational requirements of quality assurance of the FSD are set out in the FSD Divisional Quality Manual, and those of the AASD are laid down in the AASD Standard of Procedures. Furthermore, there are casework or test report quality assurance reviews, internal quality audits and external peer reviews, as follows:

- ***Casework quality assurance reviews.*** These require that the results and conclusions of the scientific examination/testing should be reviewed by a second authorised Chemist or Senior Chemist, who checks them against the supporting records and material on the case file for ensuring that the examinations/testing comply with the laid down operation procedures.

- ***Internal quality audits.*** These audits are conducted annually by a Chemist or Senior Chemist of another section who examines a number of completed cases for determining whether the established operation procedures have been complied with.

- ***External peer reviews.*** These are carried out periodically to review the quality requirements, and the results of the testing for ensuring that they are scientifically valid.

5.4 To verify the level of compliance with the quality assurance requirements stipulated in the quality operation manuals, Audit examined 22 cases and 20 test reports randomly selected from the FSD and the AASD respectively. Audit's examination focused on the quality of the administration and documentation of the completed casework/test reports. Because of the difference in the operational requirements of the quality system between the FSD and the AASD, the results of the audit examination of the two divisions are separately reported in paragraphs 5.5 to 5.8 below.

Audit examination of FSD's casework

5.5 The function of the FSD is to provide forensic service to the criminal justice system. It is necessary for the FSD to achieve the highest standard of quality in carrying out its work. Audit examined 22 cases randomly selected from the FSD to check whether the GL's staff members follow the instructions in the FSD Divisional Quality Manual. The instances of non-compliance with the GL's quality requirements are summarised in Table 9 below.

Table 9

Cases of non-compliance identified in 22 forensic cases handled by FSD

Area	FSD's quality requirement	Number of cases in which non-compliance was noted	Percentage of cases with non-compliance noted
(a)	**(b)**	**(c)**	**(d) = $\frac{(c)}{22} \times 100\%$**
1	All pages of the case file must be (i) uniquely identified by a Laboratory Number and (ii) the completeness of these pages must be ensured by a page numbering system; and (iii) all pages prepared by the Reporting Officer must be initialled.	(i) 3	14%
		(ii) 1	5%
		(iii) 1	5%
2	The starting date of the test must be recorded.	1	5%
3	The exhibits must be sealed when received in the forensic counter.	1	5%
4	Casework must be carefully checked to ensure that it is complete, correct and logical.	3	14%
5	Case number of the submitting agency must be correctly quoted.	1	5%

Source: GL's records

5.6 For the first three areas of quality requirement in Table 9 above, Audit notes that similar observations had been cited in the GL internal quality audit report in 2001. Corrective measures had been instituted to rectify the deficiencies identified. However, there is a need to strengthen the casework quality assurance review and the GL internal quality audit to ensure compliance.

Audit examination of AASD test reports

5.7 Audit also examined 20 test reports randomly selected from the AASD to ascertain the extent of compliance with the quality requirements stated in the AASD Standard of Procedures. The results of the examination indicate that the quality requirements were generally complied with. However, Audit has observed that there is room for improving the documentation of the AASD test reports in the following areas:

(a) a page numbering system should be adopted to ensure completeness of all testing records;

(b) the identity of the person collecting the test report should always be recorded; and

(c) the date of analysis as recorded in the test report should always tally with that in the supporting test records.

5.8 Audit notes that, although the practices mentioned in paragraph 5.7 above are not stipulated in the AASD Standard of Procedures, some sections of the AASD regard them as good practices and have already adopted them. The practices for improving the documentation of test reports should be suitably included in the AASD Standard of Procedures to enhance the level of quality assurance.

Audit observations and recommendations on quality assurance

5.9 Based on the results of a randomly selected examination of the casework and test reports of the FSD and the AASD, it is evident that there were instances of non-compliance with the FSD's stipulated quality requirements by staff members. There is also room for improvement in the documentation of test reports of the AASD.

5.10 **Audit has *recommended* that the Government Chemist should:**

(a) **take appropriate measures to ensure that the requirements stipulated in the GL's quality operation manuals are strictly followed. Staff members should be regularly**

reminded of the requirements so as to ensure that the quality assurance system is working properly;

(b) **strengthen the quality assurance review and the GL internal quality audit, taking into account Audit's observations on cases of non-compliance with the stipulated requirements; and**

(c) **review and suitably modify the AASD operation procedures with a view to further improving the documentation of test reports.**

Response from the Administration

5.11 The **Government Chemist** has said that:

(a) he agrees that vigilance in implementation of the quality system is paramount. While the GL staff have a strong quality management and quality assurance culture and understanding, steps will be taken to remind staff on a more regular basis of the need to apply the utmost care in all quality-related points;

(b) he agrees that, although some procedures are not specifically required in the AASD Standard of Procedures or by ISO rules or guidelines, their adoption in some sections enhances the overall quality system. Their wider implementation will be examined; and

(c) clerical errors comprise most of the points raised in Table 9 in paragraph 5.5 above. A distinction has to be made between errors that are random slips and those that are systemic. One random clerical error does not invalidate a report nor imply that its quality is being compromised. The professional accreditation body American Society of Crime Laboratory Directors/Laboratory Accreditation Board that undertakes the full and very comprehensive accreditation inspection of the FSD has undertaken a full examination of the FSD reports and found that there are no systemic errors. The inspectors were aware of the occasional clerical slips during their re-accreditation inspection in 2001, but these were accepted since they appreciated the reality that no laboratory system involving huge numbers of clerical procedures could avoid the occasional clerical slip.

5.12 The **Secretary for Health and Welfare** has said that he generally agrees with the recommendations on quality assurance. However, it should be noted that the GL's work has to be examined not only from administrative and clerical aspects but also from technical aspects.

PART 6: MAINTENANCE OF EQUIPMENT

6.1 The GL uses an extensive range of scientific equipment in its daily operations. This PART examines the arrangements for the maintenance of equipment, and observes that there is room for improving the arrangements.

Maintenance by EMSTF

6.2 The existing scientific equipment in the GL is estimated to be worth about $120 million. The GL has been using the service of the Electrical and Mechanical Services Trading Fund (EMSTF) to maintain and repair its equipment since the establishment of the EMSTF on 1 August 1996.

6.3 In mid-1998, the GL approached an equipment firm, which provided about 30% of the high value analytical equipment of the GL, for a quotation of the annual maintenance charge of equipment at the GL. The quotation received was incomplete as only labour charges were quoted (costs of spare parts and advisory services were excluded). Moreover, the firm could not provide an accurate estimate of the annual maintenance of all the GL equipment because they might not be able to guarantee the same level of service quality for other brands of equipment.

6.4 In June 1999, the Secretary for the Treasury announced in Financial Circular No. 9/99 that a number of government departments, including the GL, would be free to decide whether to retain the service of the EMSTF or to choose alternative service providers to meet part or all of its service needs with effect from 1 August 2000. The Secretary for the Treasury also asked the departments to take the opportunity to review their service requirements and plan ahead.

6.5 In March 2000, the GL raised two major issues on the EMSTF services. The first issue was whether the EMSTF services were really competitive, and the second was how to outsource some EMSTF services upon untying on 1 August 2000.

Benchmarking exercise

6.6 To address the first issue, the Electrical and Mechanical Services Department (EMSD) conducted a benchmarking exercise on the maintenance cost for 1999-2000. During that period, the EMSTF was responsible for maintenance of 1,116 items of equipment/systems of the GL. In turn, the EMSTF outsourced the maintenance work of 27 items to six maintenance contractors. The EMSD computed the maintenance costs of the EMSTF as a percentage of the corresponding equipment costs, for comparison with similar maintenance contracts. The results indicated that the

EMSTF's maintenance costs were about 4.8% of the corresponding equipment costs, whereas in the case of the maintenance contracts, the percentage was 6%. The results indicated that the EMSTF maintenance costs were about 20% [(1 − 4.8/6) × 100%] cheaper.

Flexibility for GL to outsource maintenance work

6.7 In May 2000, the EMSTF informed the GL the results of the benchmarking exercise and proposed that both parties enter into a five-year Service Level Agreement. The EMSD also gave the GL the flexibility to outsource the maintenance work during the five-year period. The EMSD stated that *"We consider EMSTF provides best value-for-money services to GL. However, should GL consider necessary to devise a mechanism to experiment with outsourcing during the 5-year period, we would be very pleased to assist."*.

Five-year Service Level Agreement with EMSTF

6.8 The GL subsequently entered into a five-year Service Level Agreement with the EMSTF covering the period 1 April 2001 to 31 March 2006. Under the Service Level Agreement, the GL would pay the EMSTF a maintenance fee of about $40 million over the five-year period.

Audit observations on the benchmarking exercise

6.9 Audit examined the benchmarking exercise conducted by the EMSTF in 2000. Audit notes that the results of the cost comparison might not have been conducted on a like-with-like basis because the scope and scale of the maintenance covered by the EMSTF was much larger. This could provide the EMSTF with the advantage of economies of scale. The expertise required for the maintenance of different types of equipment was also different. This had an impact on the maintenance costs. The differences are shown in Table 10 below.

Table 10

Audit's comparison of EMSTF and maintenance contractors' services and costs

	Aspects of comparison	EMSTF	Maintenance contractors
(A)	**Value of equipment covered**	$117.8 million	$12.5 million (Note) (ranging from only $287,000 to $4.7 million for each contractor)
(B)	**Amount of maintenance fees a year**	$5,635,000	$750,000 (Note) (ranging from $16,500 to $195,000 for each contractor)
		(or 4.8% of the value of (A) above)	(or 6% of the value of (A) above)
(C)	**No. of equipment/ systems covered**	1,116 equipment items/ systems	27 equipment items/ systems
(D)	**Expertise required**	EMSD staff could cope	EMSD did not have the expertise to cope with some high-tech equipment

Source: EMSD's records

Note: The EMSD outsourced the maintenance of the 27 GL's equipment items/systems together with similar equipment of the Hospital Authority to the maintenance contractors. The total value of equipment covered in these contracts was about $28 million and the total amount of maintenance fees was $2.5 million a year.

6.10 According to Table 10 above, there were significant differences between the services provided by the EMSTF and the maintenance contractors in terms of the scope and expertise required. The benchmarking exercise conducted by the EMSD might not have fully revealed whether the equipment maintenance service provided by the EMSTF was really competitive. Financial Circular No. 9/99 allows current user departments of the EMSTF to retain the use of the EMSTF services, without conducting a competitive exercise in deciding whether or not to continue using the EMSTF services. **Notwithstanding this, Audit considers that, for the GL to determine the most cost-effective means to maintain its scientific equipment in the future, the GL needs to conduct a competitive tendering exercise for all its equipment requiring maintenance.** This will enable the GL to test the market and assess the competitiveness of various service providers, including the EMSTF.

6.11 The benchmarking exercise did not provide full information on the efficiency of the services provided by the EMSTF. According to a survey conducted by the GL internally on the performance of the EMSTF in 2001, the respondents within the GL shared a common view that the EMSTF services would be better if the repair time could be further shortened.

6.12 In response to Audit's enquiries, in February 2002, the GL informed Audit that it had equipment items from some 50 different manufacturers, many of whom did not have local servicing facilities. Hence there were inherent difficulties in obtaining servicing from some manufacturers at a reasonable cost. The service offered by the EMSTF provided not only economies of scale but also rapid response from on-site engineers. The terms of the current agreement between the GL and the EMSTF were cost-effective and value-for-money. Given the charges negotiated in the agreement and the inherent difficulties described above, it was justified for the GL to follow the guidelines of Financial Circular No. 9/99 in not conducting a formal competitive exercise in making the decision to continue using the EMSTF services.

Audit recommendations on equipment maintenance

6.13 **In order to ensure that the maintenance of the GL's equipment is cost-effective, Audit has *recommended* that the Government Chemist should:**

(a) **towards the end of the five-year period of the Service Level Agreement, select a group of equipment and conduct a pilot tender exercise to obtain a cost-effective maintenance service; and**

(b) **based on the results of the pilot tender exercise, determine a long-term strategy and formulate an action plan for the maintenance of all equipment, having regard to the cost and quality of services of various service providers, including the EMSTF.**

Response from the Administration

6.14 The **Government Chemist** has said that the Service Level Agreement with the EMSTF is still only in its first year and that it has been found to be working very satisfactorily. He accepts that it would be appropriate to consider alternative avenues for servicing closer to the end of the five-year period when such servicing may be available locally.

6.15 The **Director of Electrical and Mechanical Services** has said that:

(a) the EMSTF would be happy to cooperate with the GL; and

(b) he would like to point out that care must be taken to assess the overall cost-effectiveness of the pilot tender exercise. The EMSD experience is that clients might incur additional public money/resources for conducting a pilot exercise as a lot of extra work is involved, especially in consideration of the small annual maintenance cost of only about $5.6 million a year under the Service Level Agreement with the GL. The extra work that the client department has to perform includes project feasibility study, specification preparation and tendering exercise, contractor supervision and performance monitoring, professional advisory services and technical support services not normally covered by private service providers, and developing and implementing a contingency plan.

6.16 The **Secretary for Health and Welfare** has said that the suggestion to conduct a pilot competitive tender on a selected group of equipment is worth exploring, with a view to devising a long-term strategy and formulating an action plan to meet the maintenance requirements of all equipment.

Audit observations and recommendation on the Service Level Agreement with EMSTF

6.17 Financial Circular No. 9/99 requires that, when open tendering procedures are adopted by departments, clauses providing for remedies and dispute resolutions should be included in the service level agreements with service suppliers, including the EMSTF. The purpose is to impose comparable legal and financial obligations on the contractors in a legally binding contract.

6.18 Audit noted that no legal remedies and dispute resolution clauses were incorporated in the Service Level Agreement signed by the GL and the EMSTF in 2001. In case of a dispute, the GL and the EMSTF may not have a proper basis to reach a settlement. Audit considers that, as a good practice, suitable remedies and dispute resolution clauses should be incorporated into the Service Level Agreement with the EMSTF.

6.19 **Audit has *recommended* that the Government Chemist should, in consultation with the Director of Electrical and Mechanical Services, arrange for the incorporation of suitable remedies and dispute resolution clauses into the Service Level Agreement with the EMSTF.**

Response from the Administration

6.20 The **Government Chemist** has said that he agrees that incorporation of suitable legal remedy and dispute resolution clauses into the Service Level Agreement would be appropriate. This matter will be actively pursued with the EMSTF.

6.21 The **Director of Electrical and Mechanical Services** has said that:

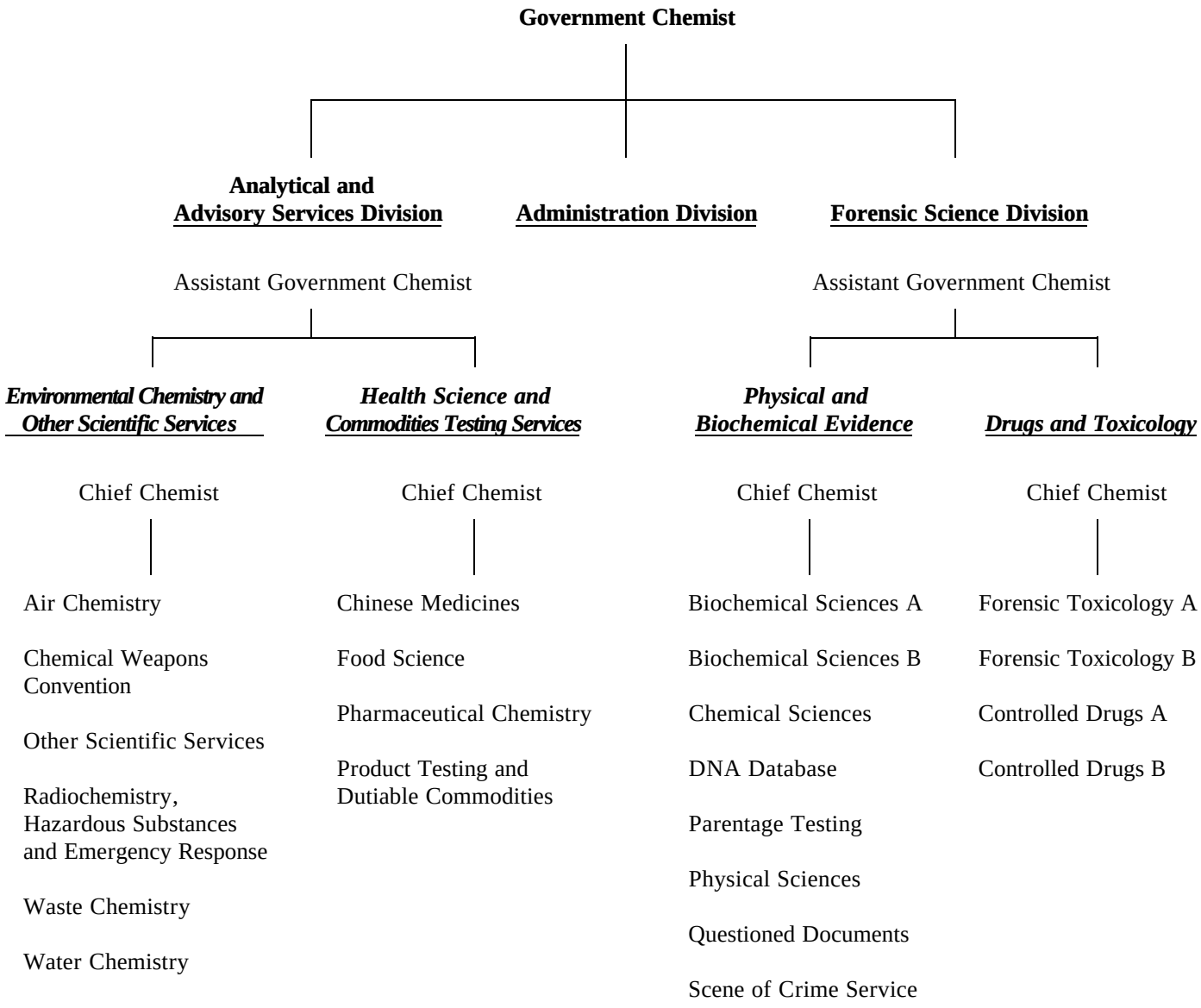
(a) he has no strong view on this. Any disputes between the EMSTF and its client departments will be settled at the policy secretary level; and

(b) the EMSTF's vision is to become the most preferred service provider. Its mission is to provide total engineering solutions and quality services delivered according to the principle of "customer focus", "caring", "integrity", "service excellence" and "commitment". The EMSTF prides itself on its proven track record of having absolutely no dispute with clients in the past five years since becoming a trading fund. The EMSTF would continue to deliver quality and value-for-money electrical and mechanical services with the spirit of partnership with clients.

6.22 The **Secretary for Health and Welfare** has said that the suggestion to incorporate suitable legal remedy and dispute resolution clauses into the Service Level Agreement between the GL and the EMSTF is worth exploring.

Appendix A
(para. 1.3 refers)

Organisation chart of the Government Laboratory as at January 2002



Source: GL's records

Output of AASD and FSD for the years 1997 to 2001

AASD	**1997**	**1998**	**1999**	**2000**	**2001**
			(Number of tests completed)		
(I) ***Statutory testing***					
Food samples	54,212	64,862	70,829	72,535	76,845
Pharmaceuticals	14,809	17,622	28,382	42,031	44,575
Chinese medicines	6,163	9,866	18,471	23,373	25,022
Dangerous goods	3,997	4,447	6,100	6,624	6,222
Dutiable commodities	22,698	21,680	31,127	29,790	30,406
Cigarette samples	15,986	15,413	15,519	13,176	13,524
Toys, children's products and consumer goods	34,385	25,386	25,547	25,179	28,530
Sub-total	**152,250**	**159,276**	**195,975**	**212,708**	**225,124**
(II) ***Advisory and investigative services***					
Air monitoring samples	81,832	92,473	127,385	156,594	135,639
Samples from field investigation	2,526	3,425	3,869	4,563	5,406
Water samples	117,703	125,395	127,926	123,677	126,110
Waste monitoring samples	13,104	20,162	20,419	23,596	25,946
Waste samples for litigation	1,867	2,363	2,415	1,606	1,093
Radioactivity monitoring samples	4,638	4,471	4,686	4,721	4,733
Miscellaneous samples	16,501	28,713	29,054	32,423	38,080
Sub-total	**238,171**	**277,002**	**315,754**	**347,180**	**337,007**
Total [(I) + (II)]	**390,421**	**436,278**	**511,729**	**559,888**	**562,131**

FSD	**1997**	**1998**	**1999**	**2000**	**2001**
		(Number of tests completed)			
Forensic science services					
Biochemical sciences	615	713	750	731	1,020
DNA database	N/A	N/A	N/A	N/A	792
Parentage testing	N/A	N/A	N/A	N/A	75
Chemical sciences	1,190	1,739	1,445	1,356	2,208
Physical sciences	361	447	465	501	412
Questioned documents	595	1,092	1,276	2,479	2,824
Controlled drugs	11,350	9,572	7,912	9,461	10,477
Analytical toxicology	2,721	2,943	2,767	2,663	2,998
Drink driving	164	175	142	180	157
Total	**16,996**	**16,681**	**14,757**	**17,371**	**20,963**
Drug urinalyses					
Drug urinalysis (methadone clinics)	25,025	24,495	22,463	20,626	21,265
Drug urinalysis (judicial screening)	6,995	9,812	11,565	11,870	11,256
Drug urinalysis (judicial confirmation)	12,662	11,398	11,162	13,314	18,998
Total	**44,682**	**45,705**	**45,190**	**45,810**	**51,519**

Source: GL's records

Appendix C
(para. 2.14 refers)

Service targets and achievements of AASD

	Target turnaround time (Working days)	Percentage of tests meeting target turnaround time			
		2000		2001	
		Target (%)	Actual (%)	Target (%)	Actual (%)
(A) ***Statutory testing***					
Samples relating to food poisoning	1	100	100	100	100
Food samples for regulatory compliance	19	92	97	92	98
Pharmaceuticals (quality control)	14	92	95	92	97
Pharmaceuticals (registration)	30	85	94	85	92
Chinese medicines	30	90	100	90	98
Dangerous goods	14	90	90	90	96
Dutiable and other commodities	10	90	87	90	91
Toys and children's products	15	95	99	95	99
Consumer goods	35	95	99	95	95
(B) ***Advisory and investigative services***					
Air monitoring samples	20	94	100	95	100
Other field investigation samples	12	90	100	95	100
Water monitoring samples	20	90	98	90	96
Waste monitoring samples	27	95	97	95	98
Waste samples for litigation	12	95	98	95	99
Radioactivity monitoring samples	12	90	99	95	97
Other samples	14	95	95	95	95

Source: GL's records

Note: Target turnaround time is the number of working days between the date of receipt of the exhibits/case at the GL and the date the exhibits/report are available for return to the client. In different types of services, the AASD sets different percentage target of the cases that should be completed within the target turnaround time.

Appendix D
(para. 2.14 refers)

Changes in service targets of AASD

	Target turnaround time (per test)	
	1994	**2001**
	(Number of working days)	
(A) ***Statutory testing***		
Samples relating to food poisoning	1	1
Food samples for regulatory compliance	25	19
Pharmaceuticals (quality control)	16	14
Pharmaceuticals (registration)	N/A (Note)	30
Chinese medicines	N/A (Note)	30
Dangerous goods	14	14
Dutiable and other commodities	14	10
Toys and children's products	14	15
Consumer goods	N/A (Note)	35
(B) ***Advisory and investigative services***		
Air monitoring samples	24	20
Other field investigation samples	14	12
Water monitoring samples	25	20
Waste monitoring samples	30	27
Waste samples for litigation	14	12
Radioactivity monitoring samples	20	12
Other samples	21	14

Source: GL's records

Note: Service targets for the testing service of pharmaceuticals (registration), Chinese medicines and consumer goods were set after 1994.

Appendix E

Acronyms and abbreviations

AASD	Analytical and Advisory Services Division
C&ED	Customs and Excise Department
EMSD	Electrical and Mechanical Services Department
EMSTF	Electrical and Mechanical Services Trading Fund
EPD	Environmental Protection Department
FSD	Forensic Science Division
GL	Government Laboratory
HKPF	Hong Kong Police Force
MOU	Memorandum of Understanding