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Mr Anthony CHU
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Legislative Council Complex
1 Legislative Council Road,
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9 January 2017

Dear Sir,

Public Accounts Committee

Consideration of Chapter 3 of the Director of Audit's Report No.67

Procurement and Maintenance of Fire Services Equipment

Thank you for your letter of 19 December 2016 in respect of the captioned subject.

In order to facilitate the Public Accounts Committee's consideration of the above chapter, I enclose the responses from FSD as per Appendix for your consolidation and further preparation.

Should you require further information, please feel free to contact Mr. HO Chun-pong, Dennis at 2733 7884.

Yours sincerely,


(YEUNG Yan-kin, Andy)
for Director of Fire Services

Encl. (Appendix)

- c.c. Secretary for Security (Fax no. 2877 0636)
- Secretary for Financial Services and the Treasury (Fax no. 2147 5239)
- Director of Government Logistics (Fax no. 2116 0183)
- Director of Electrical and Mechanical Services (Fax no. 2882 9042)
- Director of Marine (Fax no. 2850 8810)
- Director of Audit (Fax no. 2583 9063)

Public Accounts Committee**Consideration of Chapter 3 of the Director of Audit's Report No. 67****Procurement and maintenance of fire services equipment****Reply to Q1**

Q1. Regarding paragraph 2.8, has the Fire Services Department ("FSD") conducted risk assessments on the commissioning of the Third Generation Mobilizing System ("TGMS") before the completion of the System Acceptance Tests ("SATs") and taken corresponding measures to reduce the associated risks? According to paragraphs 2.4 and 2.16, FSD is preparing for the replacement/upgrade of TGMS which has a design serviceable life of 10 years (by 2017) and extendable to 15 years (by 2022). In preparing for the replacement/upgrade of TGMS, what measures will FSD take to ensure that the new TGMS will be commissioned only after the proper completion of SATs?

Risk assessments and corresponding measures undertaken by the Fire Services Department before the commissioning of the Third Generation Mobilising System

The Second Generation Mobilising System (SGMS) of the Fire Services Department (FSD) was put into use in 1991. As the SGMS would reach the end of its serviceable life in 2003, the FSD commissioned a consultancy study in 1999 to decide on the direction for the replacement/upgrade of the mobilising system. Given that the SGMS was ageing and its functions and capacity have reached their limits, thus failing to meet the increasing service demand, the FSD proposed developing the Third Generation Mobilising System (TGMS) to replace the SGMS. The funding for the proposal was approved by the Finance Committee in 2000.

Since the contractor could no longer provide maintenance services due to the shortage of spare parts for maintenance of the outdated hardware of the SGMS, the FSD found it difficult to mobilise fire and ambulance resources effectively and efficiently. Having conducted a comprehensive risk assessment and relevant tests, the FSD was of the view that the major functions of the TGMS available at that time should be sufficient to meet daily operational needs and to provide the public with better emergency firefighting and rescue services. The TGMS was therefore rolled out in March 2005.

Before the commissioning of the TGMS, the FSD had conducted function and reliability tests and risk assessments on all the sub-systems, including testing the simulated incident creation in the Computerised Mobilising System (CMS); verifying the addresses in the Geographic Information System (GIS); and testing the accuracy and stability of the Automatic Vehicle Location System (AVLS) of ambulances and fire appliances.

In addition, shadow operation had been employed to assess the operational risks of the system. This involved entering the information of the same incident into both the new and old systems to assess if the TGMS could deliver correct mobilisation instructions and rectify any operational problems found. The purpose was to ensure that the TGMS, when in live operation, could handle properly the changing circumstances in the wake of the incidents and deliver appropriate mobilisation instructions.

Apart from comprehensive risk assessments, the FSD had implemented the following risk reduction measures before and during the initial stage of the full commissioning of the TGMS:-

- providing a series of operation training for frontline staff before the commissioning of the system, and collecting their views on the operation of the system so that improvements could be made;
- commissioning the system by Command and by phase, namely launching the system first in the New Territories Command in March 2005, followed by the full commissioning of the system in the Hong Kong Command and Kowloon Command in June 2005, with a view to minimising the risks that might arise from the actual operation of the system;
- deploying additional staff to operate both the new and old systems simultaneously during the initial stage of launching the TGMS to ensure its smooth operation; and
- retaining all the equipment of the SGMS for backup purposes, lest the mobilisation service be affected by any instability that might occur during the initial stage of the system rollout.

During the initial stage of the full commissioning of the TGMS, frontline staff needed time to adapt to the major changes in operation and in the system. Compared with the SGMS, the TGMS employed the most advanced technology in the market at that time. For example, the system was equipped

with the AVLS and GIS for the first time to determine the precise location of fire appliances and ambulances; and there was a built-in database of mobilisation instructions for all types of emergency calls to complement the fully automatic mobilisation function of the system. It was necessary for frontline staff to familiarise themselves with the new operation interface and learn to use the applications with new functions. After the first year of adaptation and familiarisation, the target of meeting the graded response times in 92.5% of cases were met for both fire and emergency ambulance calls in 2006-07.

Replacement/upgrade of the TGMS

The FSD commissioned a consultant in 2014 to conduct a technical study on the replacement/upgrade of the TGMS, where extensive consultation was held with stakeholders, including frontline staff, representatives of various staff associations/unions, the management, relevant government departments, public organisations and trade practitioners. Their views on the design and operation of the next generation of the mobilising system were collected so that the design could fully meet the actual needs of users, and the technical risks associated with the commissioning of a new system could be minimised.

In planning for the next generation of the mobilising system, the FSD will consider the consultant's report of the technical study, deliberate the feasibility of the design and technical requirements, and set out relevant details in the tender. By following the recommendations made in the Office of the Government Chief Information Officer Circulars No. 1/2014 and No. 2/2015, the FSD will engage the stakeholders as soon as possible in the development of the next generation of the mobilising system. A steering committee chaired by a directorate officer will be set up to oversee the project and formulate practical and feasible terms for the system design in light of the users' comments so as to avoid any unnecessary design changes during system development that may affect the progress of the project.

In handling the contract for developing the next generation of the mobilising system, the FSD will enhance its supervision of the contractor's performance. On top of conducting regular meetings with the contractor to monitor the work progress and ensure that the progress of the project is in compliance with the contract requirements, the FSD will also appoint technical managers of

individual sub-systems to monitor closely the progress of the project in accordance with the timetable set, making sure that the system will be put into operation only after the completion of all testing and acceptance tests. Should there be any delay, the person in charge of the project must report immediately to the steering committee. If necessary, the FSD will follow up with the contractor and claim damages in accordance with the terms of the contract.

Public Accounts Committee

Consideration of Chapter 3 of the Director of Audit’s Report No. 67

Procurement and maintenance of fire services equipment

Reply to Q2

Q2. Regarding paragraphs 2.8(b) and 2.14, please advise what dedicated department or professional staff were tasked by FSD to draw up the TGMS contract or other similar contracts? Does FSD agree that it is necessary to require such dedicated department, before drawing up a contract, to meet with the professional regulatory departments to examine whether the contract terms are reasonable and forward looking?

In procuring the Third Generation Mobilising System (TGMS), a dedicated team of professionals and engineers from relevant professional departments (including the Fire Services Department (FSD), the Electrical and Mechanical Services Department, the Lands Department, the former Office of the Telecommunications Authority and the former Information Technology Services Department) was formed to draw up the contract for the development of the TGMS and to oversee the project’s progress. The tender for the TGMS project was vetted by the Government Logistics Department (GLD) and the Department of Justice (DoJ) to ensure that the contract terms were reasonable and forward-looking. As for the drafting of other similar contracts, such as those for new information and communications technology projects, the FSD will appoint professionals seconded from relevant departments to oversee the work in addition to seeking advice from the GLD and the DoJ.

Drawing on the experience of the TGMS project, the FSD will follow the recommendations made in the Office of the Government Chief Information Officer Circulars No. 1/2004 and No. 2/2015 and engage the stakeholders as soon as possible in the development of the next generation of the mobilising system and other similar projects. The FSD will also set up a steering committee chaired by a directorate officer to oversee the progress of a project. Before drawing up a contract, the FSD will liaise closely with the aforesaid professional regulatory departments and meet with them regularly to examine whether the contract terms are reasonable and forward-looking.

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Consideration of Chapter 3 of the Director of Audit's Report No. 67
Procurement and maintenance of fire services equipment
Reply to Q3

Q3. According to paragraph 2.10, it was the estimation of FSD in 2000 that a funding of \$13 million was available for engaging the Government's trading funds to provide professional advice on TGMS. However, a total of \$81.2 million had been spent so far on the project concerned. Furthermore, after the completion of SATs for TGMS in April 2007, it took FSD and Contractor A four years to agree on the arrangements for handling the outstanding contractual work items. After that, Contractor A took another four years to complete all the agreed and outstanding contractual work in August 2015. Please advise on :

- (a) the reasons for failing to work out an estimate on the additional expenditure to be incurred; the reasons for failing to expeditiously deal with the outstanding contractual matters; who should be held responsible; and**
- (b) the reasons why it was only after FSD had accepted TGMS did FSD lay down the condition with Contractor A that outstanding contractual work items were to be handled separately.**

3(a) Unforeseen difficulties encountered at various stages of the Third Generation Mobilising System (TGMS) project have caused delays. As a result, \$81.2 million was spent engaging the Government trading fund services to provide professional advice for the project. The details are as follows:-

From system development to full commissioning

From 2001 to June 2005 when the TGMS came into operation, the Electrical and Mechanical Services Department and the former Office of the Telecommunications Authority received accountable payments from the Fire Services Department (FSD) on a monthly basis. The FSD paid a total service fee of \$33.4 million for professional advice from trading funds, of which \$24.1 million was paid to the Electrical and Mechanical Services Trading Fund (EMSTF) and \$9.3 million to the former Office of Telecommunications Authority Trading Fund. During this period, the FSD encountered the following technical difficulties:-

- In June 2001, the Architectural Services Department informed the FSD that its contractor was unable to take up the design works of the Fire Services Communications Centre (FSCC) because of the specific requirements in workflow, operational accuracy, efficiency and resilience of disaster recovery, etc. The FSD had to reassign the design works to the TGMS contractor by means of a contract variation. This resulted in a 21-month delay in the development of the TGMS. The professional staff of the trading funds had to devote extra resources and time to monitor the work progress of the contractor.
- The outbreak of Severe Acute Respiratory Syndrome (SARS) in 2003 impeded the TGMS contractor's deployment of technical staff from Singapore, Finland, Canada, Taiwan and mainland China to Hong Kong. The situation persisted for four months, resulting in the extended engagement of the trading funds services.
- To meet the changing needs of society, the FSD launched the First Responder Programme and Fire Motor Cycle services in 2003 to keep up its quality emergency firefighting and rescue services. As a result, the contractor had to modify the design of the TGMS, including the redesign of system commands, modification of all relevant contingency programs of the mobilising system, incorporation of stability tests and addition of capabilities for relevant statistics reports. This, again, has extended the engagement of the trading fund services.

System Acceptance Tests (SATs)

From July 2005 to April 2007, the FSD paid a total of \$11.9 million to the EMSTF for providing professional advice and monitoring the completion of the System Acceptance Tests by the contractor. The upgrade of the Second Generation Mobilising System to the TGMS introduced a number of new functions, including the instant automatic identification and location of fire and ambulance resources, the Automatic Call-out System, and the newly-acquired Mobile Data Terminals for enhanced communication between frontline personnel and the FSCC. Some of the new functions came across unexpected situations when in application. For example, the performance of the Global Positioning System turned out to be unsatisfactory amidst the high-rise buildings of Hong Kong. Such unforeseen difficulties warranted an additional input of professional manpower to tackle.

Post-SATs

After the SATs for the TGMS were completed in April 2007, the FSD considered the major functions of the TGMS available at that stage were sufficient to cope with daily operational needs. However, the contractor had yet to complete 200 non-core contractual work items, e.g., sub-system status report function, documentation and training. Since May 2007, \$35.9 million has been spent on the extended engagement of the EMSTF to help supervise the contractor and to provide professional advice.

Drawing on the above experience, the FSD will step up its contract management to ensure that all projects will be completed within the specified timeframes in strict accordance with the contract terms in the development of the next generation of the mobilising system and other similar projects.

3(b) Since the contractor could no longer provide maintenance services due to the shortage of spare parts for maintenance of the outdated hardware of the Second Generation Mobilising System, the FSD found it difficult to mobilise fire and ambulance resources effectively and efficiently. On the other hand, the outstanding contractual work items were mainly non-core ones (e.g., sub-system status report function and documentation), the absence of which would not affect the major functions of the TGMS. Having conducted a comprehensive risk assessment and relevant tests, the FSD was of the view that the major functions available in the TGMS at that time should be sufficient to cope with daily operational needs and to provide the public with better emergency firefighting and rescue services. It therefore decided to commission the new system in March 2005 before following up on the outstanding contractual work items with the contractor.

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Reply to Q4

Q4. Regarding paragraph 2.10(c), has FSD taken measures to urge the contractor to complete the contractual work expeditiously in order to reduce the professional service fee payable to the Electrical and Mechanical Services Trading Fund ("EMSTF") for monitoring the contractor? Will FSD adopt measures to avoid the recurrence of similar contractual problems, i.e. the contractor's failure to complete the contractual work?

After the completion of the System Acceptance Tests for the Third Generation Mobilising System, the FSD has engaged in continuous negotiations with the contractor to formulate measures to deal with the outstanding contractual work items; and in the process the FSD has also maintained close liaison with some government departments including, among others, the Government Logistics Department and the Office of the Government Chief Information Officer, to seek their professional views. The FSD subsequently reached an agreement with the contractor. To minimise professional service fees due to the Electrical and Mechanical Services Trading Fund, the contractor has been urged to complete the work expeditiously. Among the 200 outstanding contractual work items, 101 were system function-related work items and 99 documentation/training-related work items. Since some documentation reports and training-related work items could be finalised and prepared only after the completion of system functions work, the contractor had to wait until the completion of the relevant functions before going about the documentation. Under the supervision and urging of the FSD, the contractor completed 90 per cent of the work items by 2013, i.e., two years after reaching the agreement with the FSD, and all the remaining work items in 2015.

The FSD will enhance its supervision of contractors' performance when it handles the contracts of the next generation of the mobilising system and similar projects in future. On top of conducting regular meetings with the contractors to monitor the work progress and ensure that the progress of the projects is in compliance with the contract requirements, the FSD will also appoint dedicated technical managers of individual systems to monitor closely

the progress of the projects in accordance with the timetables set, making sure that the systems will be put into operation only after the completion of all testing and acceptance tests. If necessary, the FSD will follow up with the contractors and claim damages in accordance with the terms of the contracts.

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Consideration of Chapter 3 of the Director of Audit's Report No. 67
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Reply to Q5

Q5. Regarding paragraphs 2.12 and 2.20(d), please advise on:

- (a) the details of the follow-up actions taken by FSD in respect of its instruction to Contractor A to strengthen its maintenance services with a view to meeting the response time and turnaround time targets as stipulated in the contract;**
- (b) from 2009 to 2015, the compliance level with the maintenance response time target and the turnaround time target on the part of Contractor A; and the latest compliance level;**
- (c) whether the aforesaid cases of non-compliance had any direct or indirect impact on the response time to service calls;**
- (d) given that under the mechanism for claiming damages, Contractor A's failure in meeting the performance targets for the maintenance work was of a serious nature, whether FSD will claim damages against Contractor A;**
- (e) whether FSD will, when drawing up the pertinent contract in the future, consider introducing more stringent progressive penalty and evaluation mechanism, with a view to improving non-compliance with the performance targets for maintenance on the part of the contractor; and**
- (f) the measures in place to ensure that contract damages can be claimed and recovered in a timely manner in case of default by the contractor in the future.**

As one of the sub-systems of the Third Generation Mobilising System (TGMS), the Automatic Vehicle Location System (AVLS) is designed to provide accurate positioning for FSD vehicles and transmit the data to other sub-systems for mobilisation of fire and ambulance resources. In the past, the frontline personnel were made aware of faults in the AVLS mainly through fault notifications shown on the display screens installed on board the fire and ambulance vehicles. To enhance the accuracy of the AVLS, since 2012-13, the Information Technology Management Unit of the FSD has retrieved data through a computer program to monitor the positions of the vehicles and the positioning data they uploaded. Suspected fault cases, if identified, were verified by the technical staff before reported to the contractor at specific time

slots on a daily basis. Under the new mechanism, the total number of suspected fault cases rose from 496 in 2011-12 to 1 251 in 2015-16. Generally speaking, the number of suspected fault cases as reported by frontline personnel under the AVLS and those by the computer program account for about 20% and 80% of the total number of cases respectively.

According to the stipulated response time (RT) under the contract, the contractor must arrive at the relevant unit for follow-up action within two hours upon receipt of any fault report. Since suspected fault cases involving positioning data may be attributable to the problems triggered by the AVLS due to partial failure, such cases are classified as “serious incidents”, which necessitate the contractor’s rectification within six hours upon arrival at the scene. Failing of this will be deemed as non-compliance cases.

The FSD’s replies to the various parts of the question are as follows:

- (a) The FSD, in conjunction with the contractor, has conducted a review of the mechanism under which fault cases are identified by the computer program, and reiterated to the contractor the necessity to strengthen its maintenance service to meet the RT and turnaround time (TT) targets as stipulated in the contract. Since September 2016, the contractor has been required to submit daily maintenance records to the FSD as a means to monitor its compliance rate, coupled with a report of the progress of maintenance on a weekly basis. The FSD also supervises and urges the contractor at their monthly meetings to enhance maintenance efficiency through proper monitoring the work of its frontline maintenance staff.
- (b) From April 2009 to March 2015, as shown in the monthly maintenance reports from the contractor, where the AVLS is concerned, the average non-compliance rate as against the maintenance RT target (two hours) was 46% while that of TT target (six hours) was 57%. The situation has ameliorated since the introduction of improvement measures. From October to November 2016, the average compliance rate of the maintenance RT target increased to 72% while that of the TT target 82%.
- (c) Most of the non-compliance cases only involved the inaccurate positioning of vehicles or insufficient positioning data. When faults were identified in the positioning of vehicles, frontline personnel would manually enter the

location data or report the accurate positioning of the vehicles to the Fire Services Communications Centre. Besides, the problem of insufficient positioning data would not affect the availability status of the vehicles. Therefore, the AVLS could still manage to monitor the availability status and real-time positioning of the vehicles.

According to the records, among some 875 FSD vehicles in attendance on average per day, an average of around 12 vehicles (or 1.4%) were identified by the computer program as suspected cases involving the accuracy of the positioning units from September to November 2016; and of the 12 vehicles, eight vehicles immediately resumed normal operation after a reboot of the AVLS. On average, around four cases per day were those involving failure to identify vehicle location. The number of such cases was minimal when compared to the entire fleet (875 vehicles). Under the current mobilising mechanism, the computer system is still capable of identifying and mobilising the nearest fire appliances to the scene. Therefore, at present there are no data which show that the non-compliance cases have made any tangible impact on the FSD response time for emergency services. In fact, the FSD has maintained a response time performance above the target set in the performance pledge (i.e. 92.5%) for emergency services (including fire and emergency ambulance calls) since 2012.

- (d) The FSD will follow up on each non-compliance case and claim damages from the contractor in accordance with the terms of the contract. If no significant improvements are made in meeting the targets, the FSD will issue a warning letter to the contractor and keep a record of non-compliance cases for future reference when making evaluation of any other tenders submitted by the contractor.
- (e) When drawing up the tender for the next generation of the mobilising system, the FSD will consider putting in place more effective penalty clauses and evaluation specifications including a progressive penalty system and a more stringent evaluation mechanism, with a view to improving non-compliance with the performance targets for maintenance on the part of the contractor. Besides, the FSD will expressly provide in the contract that the contractor is required to enhance the manpower of maintenance staff according to the actual needs so as to meet the related maintenance targets.

- (f) The FSD has come to an agreement with the contractor of the TGMS over the arrangements that non-compliance cases will be counted on a monthly basis and damages will be claimed from the contractor every six months upon mutual confirmation by both parties.

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Procurement and maintenance of fire services equipment
Reply to Q6

Q6. Regarding paragraph 2.14, does FSD agree that the cost for an extension of the TGMS maintenance services contract for five years was considerably high, and there was a need to procure such services through competitive bidding? What measures will FSD take to avoid the recurrence of similar contract problems (there is no competitive bidding and the maintenance services period is extended simply by means of a contract variation)?

Since the Third Generation Mobilising System (TGMS) has been in operation without interruption for over 10 years, the contractor has to replace some of the aged components to ensure the proper operation and stability of the system. To this end, the contractor has to hire experienced professionals and purchase suitable spare parts for the maintenance of the TGMS. As such, the increase of 7.4% (after discounting the estimated inflation) in the fee for the extended maintenance services is still considered as reasonable.

On the other hand, the FSD does not consider it appropriate to acquire the extended maintenance services for the TGMS through competitive bidding. Given that the TGMS is used for the effective and efficient mobilisation of fire and ambulance resources, which is instrumental to the provision of effective fire-fighting, rescue and ambulance services, the FSD has to ensure the operational stability of the system. Furthermore, as the TGMS involved proprietary design, no other contractors in the market have the ability and expertise to undertake such maintenance services. Should the extended maintenance services be acquired through competitive bidding with the contract eventually awarded to another contractor, it will very likely bring about immense instability and uncertainty to the system and hence serious impact on the mobilisation service. In view of this, the FSD, having critically examined different options for acquiring the extended maintenance services, submitted the relevant proposal to the Government Logistics Department (GLD), Department of Justice and Financial Services and the Treasury Bureau (FSTB) for consideration. The FSTB subsequently approved an extension of the maintenance services contract for five years by means of a contract

variation.

In response to the audit recommendations, the FSD has commenced a study with the GLD to explore suitable options for handling the extendable parts of a contract when entering into the contract for the next generation of the mobilising system or other similar projects in future. By drawing on other government departments' experience in introducing contract terms for extended maintenance services, the FSD is also considering the feasibility of bringing in competitive bidding for acquiring the services whenever practicable. It should however be emphasised that any procurement proposal should be based on the premise that the stability and reliability of the mobilisation service will not be compromised.

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Reply to Q7

Q7. Regarding paragraph 2.17, please advise on:

- (a) it is noted from the meeting of the Panel on Security held in March 2016 that the fourth generation Command and Control Communications System to be introduced by the Police will extend the coverage of the current function of automatically identifying the location of 999 callers to all local fixed-line and mobile phone users; in this connection, what technical difficulties which FSD believes will arise in providing mobile phone location identification function in the next generation of the mobilising system; and**
- (b) the estimated cost for such provision.**

7(a) The Fire Services Department (FSD) has carried out a technical study on the replacement/upgrade of the Third Generation Mobilising System. The report of the study reveals that, technically, the next generation of the mobilising system should be able to identify the location of mobile phone callers. Further, major mobile network operators equipped with the relevant technology should have no technical difficulties in retrieving the information on the location of mobile phone callers from their networks as long as the necessary supporting devices are installed.

In considering the introduction of the mobile phone location identification function to the next generation of the mobilising system, apart from technical matters, compliance with relevant ordinances including the Personal Data (Privacy) Ordinance (Cap. 486) and the Telecommunications Ordinance (Cap. 106) should also be ensured. Some fixed telecommunications network services operators have managed to obtain, without violation of the above ordinances, the phone location of callers and disclosed the information to the FSD for the purpose of emergency services. The FSD will make reference to the above arrangements when developing the next generation of the mobilising system.

It is concluded that the recommendation on providing mobile phone location identification function in the next generation of the mobilising system should be feasible. The FSD will continue to proactively liaise with all the mobile network operators with a view to implementing the recommendation as scheduled.

- 7(b) By a rough estimate, the provision of mobile phone location identification function will cost about \$12 million, which includes the costs of hardware, software and maintenance as well as the service fees of mobile network operators.

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Procurement and maintenance of fire services equipment

Reply to Q8

Q8. According to paragraphs 2.25 to 2.27 and 2.29 to 2.32, FSD included provisions for claiming damages in contracts entered into with contractors, but such provisions were not contained in the contracts entered into with EMSTF. Please advise on:

- (a) the differences in the criteria adopted by FSD in entering into contracts with contractors and government departments;**
- (b) the reasons why provisions for claiming damages were not introduced in the Service Level Agreement made with EMSTF; how FSD will ensure that the level of service can be maintained in case any problem arises; and**
- (c) the directions in which FSD will consider when exploring the feasibility of introducing provisions for claiming damages.**

(a) Regarding the procurement of maintenance services, the contracts or service level agreements (SLAs) made between the Fire Services Department (FSD) and contractors or other government departments serve to ensure the proper maintenance and repair of systems and equipment to keep them in effective working order. Through the contracts or SLAs, the FSD can also monitor the maintenance and repair service level of the contractors or government departments concerned. There is no specific difference in substance between contracts and SLAs.

(b) The FSD and Electrical and Mechanical Services Trading Fund (EMSTF) signed their first SLA in April 2006 for the maintenance of the infrastructure and terminal equipment of the Digital Trunked Radio System for a period of 10 years. When drawing up the provisions of the SLA, the FSD considered that there was no need to introduce any provision for claiming damages due to the following considerations:

- (i) The EMSTF has been delivering a consistently good level of maintenance and repair services for the FSD equipment;
- (ii) Strong working relations between the FSD and the EMSTF have been established throughout the years;
- (iii) The FSD would include in the SLA various performance targets and a

monitoring mechanism, and review the EMSTF's service performance through regular meetings and regular maintenance records submitted by the EMSTF; and

(iv) The FSD had consulted similar SLAs between the EMSTF and other government departments and found no provisions for claiming damages in most of them.

- (c) The FSD and the EMSTF agreed on a performance monitoring mechanism when drawing up the SLA. Under the mechanism, the FSD reviews the service level with the Electrical and Mechanical Services Department through regular meetings; and the EMSTF is required to submit accurate maintenance records in a timely manner for the FSD to examine its service performance and ensure the service level. To take it a step further, the FSD will revisit the maintenance and service requirements for various items in order to set key performance indicators for all maintenance work. The FSD will also require the EMSTF to report monthly results of the key performance indicators for more effective monitoring of the performance of the EMSTF.

The FSD and the EMSTF met in December 2016 to discuss the above monitoring mechanism. They will further study the introduction of provisions for claiming damages in detail and decide whether to incorporate such provisions into future SLAs.

Public Accounts Committee**Consideration of Chapter 3 of the Director of Audit's Report No. 67****Procurement and maintenance of fire services equipment****Reply to Q9**

Q9. According to paragraphs 2.8, 2.10, 2.14, 2.25 to 2.32, 3.26 and 4.8 to 4.11, a number of circumstances show that the relevant departments have problems in respect of tender invitation and the drawing up, understanding and observance of the contracts and requirements concerned. Please advise whether the relevant government departments currently have sufficient resources to provide suitable training for the relevant staff in FSD, and whether FSD has adequate number of professional staff with the required expertise to carry out the relevant work. Does FSD have plans to discuss with the relevant departments ways to ameliorate the relevant problems, so as to avoid causing delays to the relevant work due to the aforesaid circumstances, or incurring unnecessary expenditure and affecting the efficiency of work due to mismanagement.

In the Fire Services Department (FSD), there are six Fire Officers, six Supplies Officers on secondment from the Government Logistics Department (GLD), three Electrical and Mechanical Engineers on secondment from the Electrical and Mechanical Services Department and eight professionals with wide information technology work experience responsible for the procurement, contract development and contract management of various kinds of equipment, systems and facilities. The FSD considers the current staffing level adequate.

On the training front, the FSD makes arrangements from time to time for procurement staff to attend courses offered by the GLD on procurement management, Stores and Procurement Regulations (the Regulations), laws of contract, etc., to enhance their knowledge of procurement and contract management. The Procurement and Logistics Group also arranges seminars every year for staff of various FSD units to deepen their understanding of the Regulations, especially of the requirements on tendering, drawing up technical specifications and contract management. The FSD considers the present training resources adequate to meet the daily operational needs of the procurement staff. It will closely monitor the situation and remind its staff to strictly observe the requirements and guidelines on procurement and contract

management. Necessary training will be provided in a timely manner.

To enhance the procurement work of major projects, the FSD has set up a Fire Appliances and Equipment Procurement Monitoring Committee chaired by a directorate officer to monitor regularly the progress of major procurement projects to ensure compliance with the Regulations and completion as scheduled.

The FSD met with the GLD in December 2016 to explore feasible improvement measures on tendering, contract development and enforcement, and compliance with requirements. Both parties agreed to start discussions and draw up working schedules for major procurement projects as early as possible in the future.

Public Accounts Committee

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Procurement and maintenance of fire services equipment

Reply to Q10

Q10. According to paragraph 3.4, as at 1 May 2016, of FSD's 620 vehicles, 246 (40%) vehicles had exceeded their expected serviceable lives (by four years on average). Does FSD agree that the vehicle age profile of those vehicles was unsatisfactory? Has FSD assessed the risk of the operation of FSD being possibly affected by this circumstance? According to paragraph 3.3, FSD had prepared its annual Departmental Procurement Strategy, including, among others, a 10-year procurement plan for its fire services equipment. Will the vehicle age profile of fire appliances and support vehicles be improved under the 10-year procurement plan? If so, when will the improvement take place?

The Fire Services Department (FSD) has all along attached great importance to the safety and reliability of its vehicles with a view to maintaining a high standard of operational efficiency. To ensure their proper functioning, all fire appliances undergo routine checks by frontline fire personnel on a daily basis. Our Workshops and Transport Division and the Electrical and Mechanical Services Trading Fund (EMSTF) have also engaged in the assessment of the overall condition of the fire appliances and support vehicles through regular inspections and maintenance to ensure that all of them are fit for use.

In fact, the working order of a vehicle is affected by a spectrum of factors, such as its working environment, operation mode, mileage, fault rate and bodywork state. The expected serviceable life is just one of the parameters to be considered in determining whether a vehicle is in need of replacement, not the sole indicator.

Regarding the 264 fire appliances and support vehicles identified in the Director of Audit's Report as having exceeded their expected serviceable lives, our Workshops and Transport Division and the EMSTF have conducted regular assessments of their operational performance. The results show that all of them meet safety standards and are fit for continued use without compromising our operational efficiency.

The FSD takes into consideration a number of factors when drawing up the 10-year procurement plan for fire appliances and support vehicles, such as the types, functions and serviceable lives of the appliances; maintenance and replacement costs; technical advice given by the Workshops and Transport Division and the EMSTF; breakdown and fault rates of fire appliances; and availability of spare parts. The replacement programme is subject to an annual review in light of actual circumstances to ensure that the entire fleet is reliable. According to the procurement plan, it is anticipated that in the year 2021-22 the average age of our fleet will drop roughly from the current eight years to five years, with the age of about 90% of the fire appliances and support vehicles being within their expected serviceable lives.

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Procurement and maintenance of fire services equipment
Reply to Q11

Q11. According to paragraph 3.11, 37 newly procured fire appliances were put into operation some four years later than the original target commissioning dates. What had FSD learnt from this and what measures has it taken to avoid recurrence of similar incidents?

As mentioned in paragraph 3.12 of the Director of Audit’s Report, there are existing or potential legal proceedings under the five contracts. In order not to prejudice the legal proceedings, the Fire Services Department refrains from making any comments on related matters at this stage.

Public Accounts Committee**Consideration of Chapter 3 of the Director of Audit's Report No. 67****Procurement and maintenance of fire services equipment****Reply to Q12**

Q12. Regarding paragraphs 3.22 and 3.24, what were FSD's justifications for failing to release the vehicles concerned for maintenance? Has FSD assessed the risk of the reliability of such vehicles being possibly affected, and what measures will it take to address the relevant risk? What is the latest situation with respect to such vehicles' compliance with the scheduled maintenance requirements?

When fire appliances and support vehicles have to undergo scheduled preventive maintenance, arrangements will be made for them to be substituted by backup vehicles so that operational efficiency will not be compromised. However, the Fire Services Department (FSD) has to mobilise these backup vehicles from time to time to meet operational needs, and in that case they cannot be released for substitution, making it impossible for individual vehicles to be delivered timely to the Workshops and Transport Division for maintenance. Under existing arrangements, if the Workshops and Transport Division finds that a vehicle is overdue for preventive maintenance for over two months, the maintenance staff of the Division will immediately visit the fire station concerned to conduct an on-site inspection to ensure the vehicle's safety and operational efficiency. Furthermore, our frontline fire personnel conduct daily routine checking of fire appliances to ensure that they are in operational condition. If any anomaly is detected in the course of the daily checking, the frontline personnel will inform the Workshops and Transport Division immediately for check and repair to ensure roadworthiness.

The FSD has recently introduced an array of measures to fine tune the arrangements for releasing vehicles for scheduled maintenance. Since 2015, the FSD has stepped up its supervision of the implementation of the maintenance schedule of fire appliances and support vehicles with the aid of the monthly reports of the Asset Management and Maintenance System. In October 2016, the Workshops and Transport Division also introduced a new mechanism to strengthen communication with fire stations. Our data show that following the introduction of the new mechanism, no fire appliances were overdue for preventive maintenance for over two months, indicative that the new

mechanism helps ensure that fire appliances and support vehicles are maintained on schedule.

In addition, the FSD met with the Electrical and Mechanical Services Trading Fund in December 2016 to explore the feasibility of deploying maintenance staff for on-site inspections of vehicles that have missed their scheduled maintenance at the workshops.

To further enhance roadworthiness and operational efficiency, the FSD is conducting a review of the fleet size of backup vehicles with the objective of allowing the release of vehicles for maintenance in a more flexible manner.

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Procurement and maintenance of fire services equipment

Reply to Q13

Q13. According to paragraphs 3.26, the cases of non-compliance with the scheduled maintenance requirements as stipulated by the Workshops and Transport Division and EMSTF's work instruction were not brought to the attention of the senior management of FSD. Please advise on:

- (a) the reasons for not bringing the cases to the attention of the senior management of FSD;**
- (b) whether FSD will review the codes and guidelines on reporting to senior management by frontline staff, and how it will enhance inter-departmental communication in order to avoid maintenance delays which might speed up vehicle depreciation and incur additional expenses; and**
- (c) how FSD will enhance maintenance efficiency.**

The management of the Fire Services Department (FSD) has long attached great importance to the safety and reliability of its vehicles, and has kept tabs on the vehicles' operational condition through regular meetings with the Workshops and Transport Division in order to maintain a high standard of operational efficiency.

A number of factors come into play with regard to making arrangements for the vehicles to receive scheduled maintenance at the Workshops and Transport Division and the Electrical and Mechanical Services Trading Fund (EMSTF). For example, the vehicles may be engaged due to operational needs, or there are no other suitable vehicles for substitution. Generally speaking, if and when a vehicle is unable to meet regular maintenance requirement as scheduled, the operational unit concerned will work out alternative arrangements with the Workshops and Transport Division and the EMSTF. Furthermore, our fire personnel conduct daily routine checking of fire appliances to ensure that they are in operational condition. If any anomaly is detected in the course of the daily checking, the fire personnel will inform the Workshops and Transport Division immediately for check and repair to ensure roadworthiness and operational efficiency.

Since the safety and operational efficiency of the fleet will not be undermined by the failure of individual vehicles to be delivered for scheduled preventive maintenance, the Workshops and Transport Division has not reported to the senior management on every case of missing the scheduled maintenance. That said, the FSD agrees that there is room for improvement in the reporting mechanism. From November 2016 onwards, the Workshops and Transport Division will submit maintenance reports on the fleet to the senior management so that any cases of failure in receiving scheduled maintenance are promptly noticed and resolved.

On the other hand, while no extra expenses are found to be incurred as a result of delayed preventive maintenance, the FSD is exploring a number of measures to enhance maintenance efficiency, such as strengthening the fleet of backup vehicles to meet operational needs, and streamlining procurement procedures for vehicle parts to minimise maintenance delays due to shortage of spare parts. To address the manpower shortage of the Workshops and Transport Division, the FSD will put in place mitigation measures, such as employing temporary fitters, to ensure that the vehicles can receive preventive maintenance as scheduled.

In response to the audit recommendations, the FSD has set up a steering committee chaired by a directorate officer to oversee the repair and maintenance work in the department, which include monitoring and enhancing the vehicle maintenance services.

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Reply to Q14

Q14. Regarding paragraphs 1.3, 1.9 to 1.10 and 4.2 to 4.3, please advise on:

- (a) the numbers of fire and rescue incidents on land handled by FSD over the past three years; and**
(b) the fire services staff deployed for frontline operations at sea and on land over the past three years.

(a) The numbers of fire and rescue incidents on land handled by the Fire Services Department over the past three years are tabulated below:-

	<u>2013</u>	<u>2014</u>	<u>2015</u>
Fire incidents on land	6 183	6 347	6 306
Rescue incidents	14 803	16 526	16 196

(b) The fire services staffing responsible for frontline operations at sea and on land over the past three years are tabulated below:-

	<u>2013</u>	<u>2014</u>	<u>2015</u>
Frontline operational fire staff (at sea)	343	346	365
Frontline operational fire staff (on land)	5 681	5 707	5 741

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Q15. According to paragraph 1.3, FSD's graded response times for building fire calls are six minutes for built-up areas and 9 to 23 minutes for areas of more dispersed risk/isolated developments. As regards emergency ambulance services, the target on-scene response time is 12 minutes. Nonetheless, according to a question raised by a Member of the Legislative Council at the Council meeting held on 28 October 2015, it actually took FSD's fire vessels 20 to 46 minutes to arrive at the scenes in some of the typhoon shelters. Has FSD assessed whether its team responsible for marine fire services has adequate equipment to cope with the current fire or rescue incidents? Does it have a need to procure additional marine fire-fighting equipment?

The Fire Services Department (FSD) reviews its overall marine firefighting and rescue strategies in Hong Kong and related equipment from time to time. It conducts risk assessments of different waters, taking into account such factors as the distribution of vessels, traffic on shipping channels, and existence of high risk facilities at sea and along coastal areas, in deciding the location of fireboat stations and deployment of fire vessels. The need for additional rescue equipment is also reviewed in a timely manner.

The FSD has a total of 21 fire vessels including two major fireboats, four medium fireboats, one rescue launch, two support vessels, two diving support speedboats, two command boats and eight speedboats. These vessels are respectively berthed at six fireboat stations, Ngong Shuen Chau Diving Base and the Hong Kong International Airport to provide marine firefighting, rescue and ambulance services throughout Hong Kong waters. In addition, the FSD obtained funding in 2015-16 for procuring a new fireboat and a new fast rescue vessel to enhance its marine rescue service in the eastern waters.

Upon receiving a report of a marine fire or rescue incident in Hong Kong waters, the FSD will, having regard to the prevailing circumstances, dispatch the fireboats and speedboats nearest to the scene to handle the incident. At the same time, fire appliances will also be dispatched from nearby onshore fire

stations to provide speedy support. Land crews, when necessary, may board a police launch to set off immediately for firefighting and rescue operations. Fire personnel may combat the fire using the firefighting equipment available on certain police launches or the portable firefighting equipment on hand should circumstances require. As an effective means to address maritime incidents, the FSD may also request support from vessels of other departments, if the need arises, through the Maritime Rescue Co-ordination Centre under the inter-departmental “Contingency Plan for Maritime and Aeronautical Search and Rescue” laid down by the Security Bureau.

To get prepared for different types of emergency rescue incidents at sea, the FSD keeps optimising the performance of firefighting vessels and various types of rescue and firefighting equipment as well as enhancing the rescue capabilities and professional knowledge of the fire and rescue personnel. For example in 2016, the FSD put a new model of light portable pumps into use on the major pumps deployed at the fire stations in the vicinity of major typhoon shelters to increase the operational efficiency of land crews in dealing with fires in typhoon shelters. Two mini fire vans deployed at Sai Kung and Ap Lei Chau Fire Stations respectively have also been converted and equipped with the new light portable pumps to enhance the firefighting capabilities in nearby coastal areas. Moreover, to enhance ambulance equipment on existing fire vessels and to better plan for the design of ambulance equipment on new fire vessels to be procured in the future, the FSD has formed a task force to examine and analyse different enhancement proposals including the installation of a multi-functional treatment room with professional ambulance equipment on new fireboats to comprehensively complement the ambulance service.

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Consideration of Chapter 3 of the Director of Audit's Report No. 67

Procurement and maintenance of fire services equipment

Reply to Q16 & 17

Q16. Regarding paragraphs 4.3(b), 4.4 and Table 11, has FSD assessed the risk of the services of the 10 aged vessels in question being possibly affected, and what measures will it take to address the relevant risk?

Q17. Regarding paragraphs 4.9 and 4.13, would FSD please advise on the overall performance of fire-fighting vessels in meeting the target on-scene response time since 2011? Does the deteriorated performance of two diving support speedboats have any impact on the response time to service calls?

There is no standard response time or performance pledge for marine fire calls in Hong Kong, nor is there any relevant standard for reference around the world. The berthing of vessels at sea differs from the distribution of buildings on land in that marine areas are larger in size, and the vessels are more widely spread and of higher mobility. Unlike the land areas, there is no risk category for the marine areas for regular specific risk assessments. Moreover, different firefighting vessels have different capabilities and maximum speeds. Their actual speeds also depend on external environmental factors such as sea conditions, wind direction, wind speed, visibility and inshore traffic conditions. Thus, the FSD considers it difficult to set a specific response time for individual waters. That said, the FSD assesses potential fire risks from time to time and flexibly deploys existing resources to strategic positions in light of the overall risk of different waters and inshore facilities. Appropriate operational arrangements are also put in place to cater for the needs of individual areas or during special periods so as to handle any emergencies that may occur.

The two diving support speedboats and eight Airport Fire Contingent speedboats of the FSD were put into service in 1999 and 1998 respectively. Though beyond their designed serviceable lives of 15 years, the speedboats are maintained and overhauled on a regular basis just like other firefighting vessels. The Marine Department (MD) also assesses their conditions from time to time. Recent assessment reports indicated that the speedboats can remain in service

with adequate repair and maintenance. The FSD has worked with the MD to draw up measures to mitigate the impact of aging speedboats. One of the measures is the replacement of hulls and propulsion engines of the speedboats to maintain their operational capabilities so that the provision of rescue services will not be affected. In March 2015, the MD replaced the hull and engine of one diving support speedboat to ensure that it would continue to function properly. In June 2016, the FSD awarded another contract for similar upgrading works for the other diving support speedboat. The upgrade is expected to complete in March 2017.

Public Accounts Committee**Consideration of Chapter 3 of the Director of Audit's Report No. 67****Procurement and maintenance of fire services equipment****Reply to Q18**

Q18. Regarding paragraph 5.9 and note 56, does FSD agree that the total expenses for the provision of a comprehensive managed care and maintenance services ("CMCMS") to the fire-fighting protective suits with a shelf life of 10 years is comparable to the value (\$81 million) of Contract E, a contract for the supply of fire-fighting protective suits? In view of the considerable costs involved for making contract variations, does FSD agree that it is equally important to bring in competitive tendering in the procurement of CMCMS?

The Fire Services Department (FSD) attaches great importance to the safety of fire personnel in firefighting and rescue operations; frontline personnel are provided with adequate and professional personal protective gear. To protect fire personnel against the extreme heat and flashovers that often occur at structural fire scenes, the FSD introduced in 2010 the structural firefighting protective suits currently in use by frontline fire personnel. In compliance with the international standard of "Performance requirements for protective clothing for firefighting", the protective suits can withstand a temperature of up to 1 000 °C at fire scenes and are one of the models that can offer the best protection in the market. As the complicated design and structure of the protective suits warrant laundry and repair services of an extra high standard, the FSD has to ensure that their protective performance will not be undermined by improper laundry or repairs, otherwise it may result in casualties of fire personnel. Besides, fire personnel in action may be inevitably exposed to various hazardous substances, such as combustion products or chemicals produced from a fire, which may contaminate the protective suits and weaken their fire resistance. Physical contacts with contaminated protective suits may also pose a risk to fire personnel, while contaminated protective suits without proper laundry care may cause cross contamination and put other people at risk. Therefore, the protective suits must be provided with a comprehensive managed care and maintenance service (CMCMS), comprising laundry, inspection, repairs, elimination of hazardous substances and regular inspection, by trained personnel with specialised equipment according to the

manufacturer's requirements to ensure that they can meet the stringent performance requirements set out in the international standard at all times for the protection of fire personnel in action. As such, the service has to be provided by a contractor with professional knowledge of the structure of the protective suits and professional competence to maintain their protective performance in compliance with the international standard after laundry and repairs. It is no job for an ordinary laundry company.

According to the information provided by the manufacturer, there is no specific length of shelf life for a set of firefighting protective suit. Its serviceable life mainly depends on the frequency of use, laundry and repairs, accidental damage or contamination, normal wear and tear, etc. The FSD considers that a suitable CMCMS can help maintain the protective performance of the protective suits to meet the stringent performance requirements set out in the international standard. Depending on the usage, a set of firefighting protective suit may have a serviceable life of not less than 10 years.

As a professional and proper CMCMS is instrumental to ensuring the protective performance of the protective suits, the FSD has procured the CMCMS through contract variations totalling \$50.1 million for a total of six years from April 2011 to March 2017. Since the procurement of protective suits and that of the CMCMS are two items of different natures made in different years, it is not appropriate to draw a direct comparison between the total expenses of these two items.

For the provision of the CMCMS from April 2017 onwards, the FSD considers that, even if open tendering is adopted, it is necessary to include in the tender a specific clause requiring the tenderer to obtain a confirmation from the supplier of the protective suits indicating that it possesses the professional qualifications to provide the CMCMS that meets the stringent requirements set out in the international standard so as to ensure that the protective performance of the protective suits will not be compromised by improper laundry and repairs. On this premise, the FSD adopted open tendering in August 2016 for the provision of the CMCMS from 1 April 2017 to 31 March 2022.