[Translation] **LC Paper No. PWSC293/17-18(01)**

政府總部
運輸及房屋局
運輸科
香港添馬添美道2號
政府總部東翼

**Transport and Housing Bureau**
**Government Secretariat**
Transport Branch
East Wing, Central Government Offices,
2 Tim Mei Avenue,
Tamar, Hong Kong

本局檔號 OUR REF.: THB(T)CR 8/952/12
來函檔號 YOUR REF.:

電話 Tel. No.: 3153 2917
傳真 Fax No.: 2522 2697

Clerk to Public Works Subcommittee
Legislative Council Secretariat
Legislative Council Complex
1 Legislative Council Road
Central, Hong Kong
(Attn: Ms Doris LO)

11 July 2018

Dear Ms LO,

**Legislative Council**
**Public Works Subcommittee**
**Meeting on 25 June 2018**

**Provision of Air Traffic Control Facilities,**
**Aviation Weather Services Facilities and Fire Services Facilities to support the Three-Runway System at the Hong Kong International Airport**

**Supplementary Information**

We consulted the Public Works Subcommittee (PWSC) of the Legislative Council (LegCo) on the proposed upgrading of projects 69GI, 70GI and 176BF to Category A on 25 June 2018. At the aforesaid meeting, some Members requested the Government to provide supplementary information. Having consulted the relevant government departments and the Airport Authority Hong Kong (AAHK), we would like to provide a consolidated reply as follows.

**Details about the entrustment agreement with AAHK and the on-cost payable to AAHK**

To achieve better coordination, we plan to entrust the design and construction of the aforesaid three proposed projects to AAHK to facilitate the

holistic planning and implementation of such works in conjunction with the Three-Runway System (3RS) project. Under the entrustment arrangement, the Government has to pay AAHK the on-cost for managing the entrusted works, including the costs of the design, project management, insurance, and construction support and airport on-costs. The proposed on-cost for managing the entrusted works is 16.5% of the construction cost, which is higher than the 12.5% of the on-cost for managing the entrusted works payable to other public organisations (such as the Hong Kong Housing Authority) under government building projects in general. Due to the unique nature of the construction works of the 3RS project, the on-cost for managing the entrusted works has to cover two additional special charges for the procurement of the "Owner Controlled Insurance Programme in Construction Contracts" (OCIP) for the project and the "Construction support and airport on-costs", which are about 1.3% and 2.7% of the construction cost of the project respectively. Details of the OCIP and the "Construction support and airport on-costs" are set out below –

*OCIP*

As the construction works of the 3RS project will be carried out at an operating airport, and having considered the scale, risks and complexity of the works involving multiple works contracts, AAHK has procured the OCIP for the construction works of the entire 3RS project, including the Employees' Compensation Insurance, Contractors All Risks Insurance and Third Party Liability (TPL) Insurance. As works are carried out at an operating airport, the TPL covers compensations for airport facilities, aircraft, airport buildings, the death of or injuries to and property damage to the third parties, etc. It would be very difficult and costly for individual contractors to procure TPL insurance on their own. With AAHK responsible for risk control, management and execution of the OCIP, all works contracts under the 3RS project can be adequately insured. Moreover, there is no need for the contractors to factor in the insurance cost and risks in the tender price. If AAHK does not provide the overall OCIP for all contractors under the 3RS project, the contractors of government facilities of the 3RS project will have to arrange insurance schemes on their own. Even if the contractors are able to procure individual insurance, the costs will also be reflected in the tender price. The actual expenditure of the Government will not decrease but may become even higher.

*"Construction support and airport on-costs"*

The new reclamation area under the 3RS project is connecting with the existing North Runway which is within the airport restricted area. In view of airport security and operational needs, the transportation of construction materials and

workers going into and out of the works sites of most of the 3RS works of AAHK and also the aforesaid government facilities will rely on marine transport. Therefore, AAHK will provide a range of ancillary transport facilities, including temporary piers and marine transport facilities. In addition, as the works sites of the 3RS project are remote and lack of land-based transport, AAHK will provide an array of supporting and welfare facilities for its contractors to facilitate the workers and to enhance construction efficiency, thereby attracting more local skilled workers to work for the 3RS project. AAHK will therefore provide facilities such as canteens and clinics, and temporary accommodation for workers under emergency situation such as typhoons.

The new reclamation area of the 3RS project lacks basic supporting infrastructures which are usually available at other works sites in general. Therefore, AAHK has to provide various facilities, including offices for resident site staff of the contractors, land-based transport infrastructures at the new reclamation area (e.g. temporary road network at the works site, and the associated drainage system), infrastructures for telecommunications system, security/emergency rescue facilities and a helipad for emergency rescue, material testing facilities, waste management facilities, sewage treatment facilities, concrete batching plants, and fuel storage and supply facilities to facilitate the construction works carried out by the contractors. The above supporting facilities are indispensable. Contractors of government facilities will be allowed to use these facilities. AAHK will incur additional expenditure and on-cost in the management and operation of the aforesaid supporting facilities.

The cost of the OCIP and the "Construction support and airport on-costs" included in the on-cost for managing the entrusted works in relation to government facilities are determined by reference to the same levels and standards in other works contracts of the 3RS project of AAHK. Hence, we consider it reasonable for the on-cost for managing the entrusted works to be pitched at 16.5%.

The financial requirements for the entrusted works are stipulated in the entrustment agreement. Pursuant to the entrustment agreement, AAHK must comply with all financial requirements stipulated in the entrustment agreement during the design and construction stages, and deliver the works within budget and fulfil the relevant performance pledges. Furthermore, various monitoring measures will be stipulated in the entrustment agreement to ensure that the government facility projects will be delivered within budget.

Regarding the expenditure arrangement of the projects, AAHK needs to submit information such as project estimates to the Architectural Services

Department (ArchSD) for approval upon the completion of the preliminary design and detailed design of the projects. During construction, apart from regularly updates on the progress of the works, AAHK has to submit project progress reports, summaries of variations to the project items, and relevant estimates and financial statements (including financial assessments stipulating the payments already made and all known and expected variations) for ArchSD's scrutiny and monitoring. If the works involve major variations, AAHK must obtain ArchSD's prior approval before such variations can be made. Monitoring work carried out at different stages can ensure the delivery of the projects within the budgets as agreed between the parties.

In accordance with the requirements of the International Civil Aviation Organization (ICAO), the three government facility projects are indispensable to support the 3RS operation. Therefore, AAHK must deliver the works on time to ensure that the Third Runway and the 3RS can come into operation as scheduled.

According to the note for the Public Works Subcommittee of the Finance Committee referenced PWSCI(2000-01)42, when the Hong Kong International Airport (HKIA) at Chek Lap Kok was built in the 1990's, the Government agreed with the then Provisional Airport Authority that if one party intended to entrust certain works to another party, the on-costs for such services should be charged on the basis of a pre-agreed percentage of the construction cost of the works, which was set at 16.5%.

**Implementation of the recommendations made by the Public Accounts Committee in Chapter 4 of its Report No. 63 on "Administration of the Air Traffic Control and Related Services" issued in February 2015**

Ensuring aviation safety and efficient air traffic management is the topmost priority of the Civil Aviation Department (CAD). The Government has already implemented all recommendations stated in Chapter 4 of the Public Accounts Committee (PAC) Report No. 63 on "Administration of the Air Traffic Control and Related Services", including:

(1) Before the full commissioning of the new Air Traffic Management System (ATMS), the CAD had conducted stringent acceptance tests and comprehensive safety assessment on the system in accordance with international aviation safety management standards and established government procedures, in order to ensure that the system operation was in

compliance with the safety management and contract conditions requirements.

(2) The CAD had updated the Departmental Project Procedures Handbook, making reference to the Audit Commission's and PAC's recommendations, including application for funding approval, formulation of tender documents, tender assessment, project appraisal, contract variation, engagement of consultant, etc. for improving the procurement management of major air traffic control (ATC) system projects in future. The CAD had reminded project officers to comply with the guidance specified in the Handbook.

(3) The Transport and Housing Bureau (THB) had engaged an overseas consultant to advise the Secretary for Transport and Housing directly and independently on the operation of the system and the readiness of the operational staff before the full commissioning of the new ATMS. The consultant had confirmed that the system engineering of the new ATMS was safe, stable and efficient and the CAD was ready for the full commissioning of the new system. Having considered the advice of the independent overseas consultant and obtained the CAD's confirmation of readiness in various aspects, the Secretary for Transport and Housing consented to the full implementation of the ATMS by the CAD on 14 November 2016.

(4) The THB has been closely monitoring the progress of the ATMS project and has received regular updates from the CAD. In June 2016, the Government created one supernumerary post of Administrative Officer Staff Grade B (D3), designated as Deputy Director-General of Civil Aviation (2), in the CAD, with a view to enhancing the capability of the CAD's senior management in pressing ahead with various major projects and improving the overall administrative management of the department. Deputy Director-General of Civil Aviation (2) has been working closely with the THB in taking forward major projects.

For details, please refer to the Government Minute in response to the PAC Report at **Annex 1**.

In fact, since the full commissioning of the ATMS, we have explained on various occasions (including via LegCo, issuing press releases, making replies to LegCo's letters, etc.) some teething problems experienced during the initial period of the new ATMS operation. Such problems did not affect aviation safety. Subsequently, the CAD has addressed the problems through the deployment of software fixes, briefings provided to staff, updates of relevant procedures and regular

housekeeping of procedures. The new ATMS has been operating smoothly in general. The CAD will continue to closely monitor the performance of the ATMS and optimise the system in a timely manner in order to cope with increasing air traffic in future.

Besides, the CAD had set up an expert panel comprising local and overseas experts. Based on their international and professional experience, the expert panel reviewed all of the occurrences that the ATMS experienced during the run-in period. Concerning the follow-up actions and remedial measures taken in response to each occurrence, the expert panel conducted multifaceted in-depth reviews and made a number of recommendations. It was of the view that safety was never compromised and all issues had been duly addressed. As a result, the expert panel stated in its final report published in end-2017 that the implementation of various recommendations was satisfactory.

The final report also stated that the overall performance of the new ATMS was satisfactory and smooth after a run-in period. It has effectively enhanced aviation safety and acquired international recognition. The frontline staff also became more conversant with the operation and maintenance of the system. Since its full commissioning, the new ATMS has been providing safe, reliable and generally smooth round-the-clock air traffic management services for more than one year. During the period, the actual performance of the system has testified that the new ATMS is capable of handling all inclement weather, traffic peaks and contingency situations. Furthermore, record-breaking figures of flights handled by the new ATMS have been registered. For example, the total number of aircraft movements handled by the ATMS in 2017 has increased by 7.6% as compared with 2016. In particular, a record high figure of 2 341 total movements was recorded over a 24-hour period on 24 August 2017 as the HKIA recovered from the impact of Super Typhoon HATO. The CAD was announced the recipient of the annual Global Safety Achievement Award 2017 by the Civil Air Navigation Services Organisation in recognition of the CAD's contribution to the improved safety level and increased efficiency in the provision of air traffic management services in the Hong Kong Flight Information Region by implementing the new ATMS.

**Tendering process in relation to the procurement of new ATC equipment**

In the acquisition/replacement of air navigation services equipment, the CAD, as the user department, will work out the tender documents in conjunction with the Government Logistics Department (GLD) and the Department of Justice (DOJ). The GLD conducts the tendering exercise on behalf of the Government. During the

process, the CAD will adhere strictly to the tendering procedures specified in the Stores and Procurement Regulations and the World Trade Organization Agreement on Government Procurement and the Departmental Project Procedures Handbook of the CAD, and consult the GLD and the DOJ in a timely manner as and when appropriate to ensure the integrity and fairness of the tendering process.

To strengthen the administration of the tendering and procurement process, the CAD will adopt the following measures at the pre-tendering and the tender assessment stages:

(1) To proactively conduct market research, meet up with potential suppliers of different systems, arrange briefings and demonstrations to be given by potential suppliers at the CAD. During the process, the CAD will invite representatives of frontline operational personnel, including representatives from the Hong Kong Air Traffic Control Association and electronic engineers, to participate in and attend the events as appropriate so that they get a picture of the performance of the new equipment and the human machine interface operation, and take the opportunity to make preliminary assessments and ask questions regarding the system demonstration from the perspective of daily operational needs.

(2) To nominate staff to attend major international air navigation services equipment exhibitions and conventions and conduct site visits in respect of relevant equipment operation. To meet up with ATC and engineering personnel who also use the same/similar new ATC equipment in order to get a picture of the actual operational performance of the equipment concerned and collect users' views. During the process, the CAD will invite representatives of frontline operational personnel, including representatives from the Hong Kong Air Traffic Control Association and electronic engineers, to participate in and attend the events as appropriate.

(3) An ad hoc working group has been set up in the CAD. It is tasked to collate and consolidate data collected through market research, exhibitions and conventions and site visits, which will then translated into system requirements, with a view to incorporating them in the tender specifications.

(4) To engage experienced independent experts and consultants to advise and make assessments on the procurement, design, safety management, transition and commissioning of the system and equipment.

(5) To conduct field investigations as far as possible during the tender assessment stage in order to make objective and comprehensive assessments on the performance of tenderers and the proposals submitted in the tender documents.

**Government departments responsible for the maintenance of the proposed government facilities under the three projects in future and the estimated costs**

The Government will be responsible for the maintenance of the proposed government facilities under the three projects (namely 69GI, 70GI and 176BF) and the estimated costs are as follows:

| Facility | Department responsible for maintenance | Estimated annual expenditure for maintenance ($'000) | | |
|---|---|---|---|---|
| | | Project - 69GI | Project - 70GI | Project - 176BF |
| Buildings | ArchSD | 463 | 15 | 730 |
| Building services/electrical and mechanical services/communication equipment | Maintenance contractors engaged by the government departments concerned (e.g. Electrical and Mechanical Services Trading Fund) | 16,700 | 4,478 | 32,400 |
| **Total annual expenditure** | | 17,163 | 4,493 | 33,130 |

**Details about the estimated construction unit cost of the new ATC tower and associated accommodation for the government departments concerned and the link bridge**

In accordance with the requirements of the ICAO, the new ATC tower has to be located at an appropriate location and at a certain height so that air traffic

controllers could have clear and unobstructed views to monitor all aircraft and vehicle movements at the HKIA and provide ATC services. In this connection, the control room of the ATC tower should be located at the upper level of the tower so that air traffic controllers could have clear views of the aprons, taxiways, runways and the airspace surrounding the airport, particularly approach and departure areas. Moreover, the associated accommodation and equipment rooms of various departments (including the Hong Kong Observatory (HKO), the Hong Kong Police Force (HKPF) and the Customs and Excise Department (C&ED)) should also be located at the upper level of the ATC tower to provide clear and unobstructed views, in order to meet the operational needs of the departments concerned.

As a result, only several floors at the upper level of the ATC tower, which is approximately 100 meters in height, will be used to accommodate offices or equipment rooms, while the middle floors of the ATC tower (approximately accounting for half of the height of the building), which are to support the tower, will only accommodate facilities such as staircases and lifts for access in the building. Owing to the uniqueness of the operational needs and architectural design, the construction floor area of the ATC tower is smaller than that of ordinary buildings. Therefore, the construction unit cost of the ATC tower is higher than that of ordinary buildings.

The estimated construction unit cost includes the costs of construction works (construction works of substructure and superstructure of the new ATC tower, the associated accommodation for CAD, HKO, HKPF and C&ED, and the link bridge) and building services works (electrical installations, ventilation and air-conditioning installations, fire services installations, lift installations and other specialist installations). The building services cost is higher than that of ordinary buildings because of the resilience requirement for electrical, ventilation and air-conditioning installation, and dual feed power supply, in order to meet the operational needs of the departments concerned. Besides, the construction costs are higher than that of ordinary buildings because they are constrained and affected by a host of special factors. For example, to avoid disturbance to the operation of the existing airport and runways, construction works are subject to the special restrictions of airport operation. Due to the remoteness of the works sites, materials, plant and equipment have to be transported for a long distance by marine transport. Additional costs are also incurred because the ATC tower has to be constructed at height and at exposed area with higher wind loads. In view of the above, the construction unit cost is $98,225 per square metre (in money-of-the-day prices (MOD)).

A breakdown of the construction costs (costs of construction works and building services works) is as follows –

| | **Breakdown** | **$ million (in MOD prices)** |
|---|---|---|
| 1 | ATC tower (including the control room and the accommodation and equipment rooms for different departments inside the tower) | 355.20 |
| 2 | Office accommodation located at the base of the ATC tower (including accommodation for various departments and other supporting equipment rooms) | 250.12 |
| 3 | Link bridge | 25.48 |
| | **Total construction cost (construction works and building services works)** | 630.80 |

Yours sincerely,

(W Y NG)
for Secretary for Transport and Housing

# THE GOVERNMENT MINUTE

## in response to the

# REPORT OF
# THE PUBLIC ACCOUNTS COMMITTEE
# No. 63A and No. 64

## of June and July 2015

**28 October 2015**

# THE GOVERNMENT MINUTE IN RESPONSE TO THE PUBLIC ACCOUNTS COMMITTEE REPORT NO. 63A DATED JUNE 2015

## REPORT ON THE RESULTS OF VALUE FOR MONEY AUDITS (Report No. 63A)

### Administration of the air traffic control and related services

The Government accepts the views and recommendations made by the Audit Commission (Audit) and the Public Accounts Committee (PAC) of the Legislative Council (LegCo) regarding the administration of the air traffic control (ATC) and related services. The relevant bureaux and departments have accordingly taken follow-up actions as appropriate. The progress made is reported below.

***Procurement and implementation of the new air traffic control system project***

2. Civil Aviation Department (CAD) has all along conducted procurement exercise and comprehensive safety assessment on the new Air Traffic Management System (ATMS) in accordance with international aviation safety management standards and established Government procedures. All the acceptance test events of the new ATMS have been conducted in accordance with the requirements specified in the contract (including the Site Acceptance Tests, Flight Check Acceptance Tests, Reliability Acceptance Tests and System Integration Tests), in order to ensure that the system operation complies with the contract conditions and CAD's safety requirements. Up to now, CAD was generally satisfied with the test results. For some follow-up items of the system to be addressed, CAD, together with the contractor, have come up with a timetable to address them gradually. CAD will continue to closely monitor the contractor to ensure that the matters are handled in compliance with CAD's requirements. Meanwhile, CAD has commenced training for the ATC operational staff and performing an overall safety assessment on the training of ATC operational staff, operational procedures, transition activities of new ATC systems, etc. to ensure compliance with the stringent aviation safety requirements set by the International Civil Aviation Organization (ICAO). In view of the current progress, the new ATC system would be ready for operation in the first half of 2016. CAD will ensure that the ATC system and operational staff are both ready before commissioning the new system.

3. Moreover, the ICAO has set out stringent safety requirements for the replacement/upgrading of various aviation systems. To ensure that the new ATC system complies with the relevant requirements, CAD has engaged an independent consultant from overseas since 2012 for conducting safety assessment for the new ATC system to ensure that the contractor keeps up with the international quality standards and the ICAO's safety requirements in the process of system development. Furthermore, the Secretary for Transport and Housing has decided to appoint another overseas consultant for the bureau to advise the Secretary directly and independently. The consultant will assess whether the operations of the new ATC system and the operational staff are both prepared, to ensure that both the system and the operational staff are completely ready before the new system could be commissioned. The recruitment procedure has commenced.

4. On the other hand, CAD has updated the Departmental Project Procedures Handbook, making reference to the Audit and PAC recommendations, including application for funding approval, formulation of tender documents, tender assessment, project appraisal, contract variation, engagement of consultant, etc. for improving the procurement management of major ATC system projects in future. CAD has reminded project officers to comply with the guidance specified in the Handbook.

***Management of the precision runway monitor project***

5. In order to ensure prudent and cost-effective use of public funds, CAD has set up mechanisms and updated the Departmental Project Procedures Handbook to incorporate the recommendations of the Audit on records keeping, funding application, and project appraisal. In future, sufficient information regarding the pros and cons of the proposed project, including any intrinsic potential risks, shall be provided in the funding applications to LegCo to facilitate the making of informed decisions on whether or not to support the project. In addition, CAD has issued an internal circular to remind project officers about the changes to the Departmental Project Procedures Handbook, in particular the requirement to keep records of major and significant procurement decisions for public accountability.

***Administration of air traffic control service related charges***

6. CAD has re-examined the level of the en-route navigation charge (ENC) rate. With the approval already given by the Transport and Housing Bureau and the Financial Services and the Treasury Bureau on the revised rate, CAD had consulted the industry. The revised rate has been implemented on 1 October 2015. CAD will continue to review the ENC rate in accordance with the Government's established policies and procedures. Having taken into account the recommendations of the Audit and the PAC, CAD shall conduct a review after implementing the ENC level recommended in each fees and charges review to ensure that the charge level is conducive to achieving full-cost recovery and adhering to the Government's "user pays" principle.

7. CAD has taken follow-up actions to prevent the loss of revenue, including demanding banker's guarantees from operators with unsatisfactory ENC payment records, reminding the airline operators of their contractual obligation to pay ENC and taking legal actions against defaulting airline operators as appropriate.

***Administration of the mandatory occurrence reporting scheme***

8. CAD has strengthened the management of the mandatory occurrence report (MOR) database and implemented measures to closely monitor the reporting of MOR, assignment of risk level to each MOR, implementation of follow-up actions and case closure, and timely updating of MOR. CAD will ensure that the MOR scheme can effectively enhance flight safety.

***Way forward***

9. CAD has followed up all the recommendations raised in the Audit Report and implemented improvement measures. The Government has taken appropriate follow-up actions regarding the observations and recommendations of the PAC. The Government fully agrees that the ATC system should operate safely, reliably, stably and in full compliance with the relevant ICAO requirements. This is also the topmost priority of CAD. The Department will continue to implement and enhance the maintenance measures for the existing ATC system to keep it in smooth and reliable operation and at the best international standard until the new ATC system is in operation in 2016.

10. As the Hong Kong International Airport is expanding and air traffic keeps growing rapidly, the demand for CAD's regulatory work and services will increase sharply. To ensure that the administrative management, resource planning, liaison and coordination work involved can be conducted effectively, the Government will consider allocating additional resources to strengthen the senior management of CAD.

***Progress made in implementing recommendations of Audit and PAC***

11. Follow-up actions have been taken in the past few months in response to the recommendations of Audit and PAC. A summary of progress made is at Enclosure 1.

Encl. 1

**Enclosure 1**

**Administration of the air traffic control and related services**
**Updated Progress of Implementing Audit's and PAC's Recommendations**
**(as at 14 October 2015)**

| Para. No. | Audit's/PAC's Recommendations | Progress to Date |
|---|---|---|
| **Part 2: Management of the new air traffic control system project** | | |
| Para 2.23(a) of the Audit Report<br><br>and<br><br>Page 73 of the PAC Report (point (b), (c) and (d)) | Audit has recommended that the Director-General of Civil Aviation (DGCA) should –<br><br>(a) in conjunction with the Air Traffic Management System (ATMS) contractor, expedite action in rectifying the outstanding deficiencies/observations in the ATMS and closely monitor the remaining contract work to minimise further project delay; and<br><br>PAC urges CAD to –<br><br>(b) ensure that all the deficiencies/observations identified during the Factory Acceptance Tests and Sites Acceptance Tests must be completely and satisfactorily resolved prior to putting the new ATMS into operation;<br><br>(c) request the Contractor to take all possible effective measures to expedite the implementation of the new ATMS contract; and<br><br>(d) closely monitor the performance of the Contractor and take pro-active effective measures to ensure that the Contractor settles the outstanding issues in a timely and satisfactory manner; | Civil Aviation Department (CAD) has urged the ATMS contractor to expedite action in rectifying the outstanding observations in the ATMS and to closely monitor the remaining work through enhanced communication and supervision to ensure minimum possibility of project delay. The enhanced measures include establishment of a steering committee on the new ATMS project chaired by Deputy Director-General of Civil Aviation to oversee the implementation of the project and provide steer and advice; submission of regular progress reports, staff resources plans, and rectification plans by the contractor; weekly teleconference between CAD and the contractor's senior management to closely monitor and supervise the work progress of the contractor.<br><br>After implementing the enhancement measures above, CAD is satisfied with the progress of the ATMS contract. All the acceptance test events of new ATMS have been conducted in accordance with the requirements specified in the contract (including the Site Acceptance Tests, Flight Check Acceptance Tests, Reliability Acceptance Tests and System Integration Tests), in order to ensure that the system operation complies with the contract conditions and CAD's safety requirements. Up to now, CAD was generally satisfied with the test results. For some follow-up |

| Para. No. | Audit's/PAC's Recommendations | Progress to Date |
|---|---|---|
| | | items of the system to be addressed, CAD, together with the contractor, have come up with a timetable to address them gradually. CAD will continue to closely monitor the contractor to ensure that the matters are handled in compliance with CAD's requirements.<br><br>CAD has commenced training for the Air Traffic Control (ATC) operational staff and performing an overall safety assessment on the training of ATC operational staff, operational procedures, transition activities of new ATC systems, etc. to ensure compliance with the International Civil Aviation Organization's (ICAO's) stringent aviation safety requirements. The new ATC system will be ready for operation in the first half of 2016. |
| Para 2.23(b) and (c) of the Audit Report<br><br>and<br><br>Page 73 of the PAC Report (point (e)) | Audit has recommended that DGCA should –<br><br>(b) step up maintenance efforts to address surveillance data display problems (frozen/hang-up) in the existing ATC system; and<br><br>(c) continue the efforts to deal with the issues of operating the existing ATC system until the new ATC system is available; and<br><br>PAC urges CAD to –<br><br>(e) closely monitor the existing ATC system and take pro-active effective measures to ensure the existing ATC system is timely maintained in good operational conditions | CAD has stepped up efforts to enhance maintenance measures to address surveillance data display (SDD) problems in the existing ATC system. In the last year, the availability of the existing ATMS had continuously exceeded the requirements of international standards. Through a one-off enhancement measure for the existing ATMS conducted in 2014, including upgrading the relevant SDD workstations and optimising radar signal inputs etc. to reduce the system loading, the number of SDD display problems has seen a prominent downward trend and continuously falls well within the margin of the safety performance indicator. |

| Para. No. | Audit's/PAC's Recommendations | Progress to Date |
|---|---|---|
| | until the new ATC system is commissioned; | |
| Page 74 of the PAC Report (point (f)) | PAC urges CAD to –<br><br>(f) consider formulating a contingency plan as soon as possible to deal with the termination of the ATMS contract in case that the Contractor has failed to provide a safe, reliable and stable system by the first half of 2016 or any other indicative date to be set by CAD/Transport and Housing Bureau (THB); | CAD has formulated a contingency plan to ensure the existing system can continuously provide a safe, reliable and stable ATC service.<br><br>In view of the above, after implementation of a series of measures, CAD is satisfied with the progress of new ATMS contract. The new ATC system will be ready for operation in the first half of 2016. |
| Page 74 of the PAC Report (point (g)) | PAC urges CAD to –<br><br>(g) consider engaging external experts to assist in the procurement of complex systems in the future; | CAD has engaged an independent consultant from overseas since 2012 for providing safety assessment for the new ATC system to ensure that the contractor keeps up with the international quality standards and the ICAO's safety requirements in the process of system development. CAD will suitably adopt the consultant's advice to complete the safety assessment of the new ATC system.<br><br>As the recommendation will be implemented on an on-going basis, we recommend deleting this part from the next progress report. |
| Page 74 of the PAC Report (point (h)) | PAC urges CAD to –<br><br>(h) ensure that for future tenders, all foreseeable requirements are included in the tender specifications in the first place and the conditions of the contracts are formulated appropriately and clearly in order to achieve the best | CAD has incorporated the relevant recommendations in the Departmental Project Procedures Handbook to remind project officers to include all foreseeable requirements in the tender specifications in the first place as far as practicable, and the conditions of the contracts are to be formulated appropriately and clearly in order to achieve the best-value-for-money |

| Para. No. | Audit's/PAC's Recommendations | Progress to Date |
|---|---|---|
| | value-for-money purchase for the Government; | purchase for the Government in future tenders.<br><br>As the recommendation will be implemented on an on-going basis, we recommend deleting this part from the next progress report. |
| Page 74 of the PAC Report (point (i)) | PAC urges CAD to –<br><br>(i) ensure that for future tenders, the terms and conditions of the tenders must be interpreted in a fair manner, and any terms with interpretation which may appear to depart from a literal and plain meaning should be made known to all potential tenderers during the tender invitation as far as practicable; | Having sought advice from Government Logistics Department (GLD), CAD has incorporated the relevant recommendations in the Departmental Project Procedures Handbook, to remind project officers to ensure that the terms and conditions of the tenders must be interpreted in a fair manner, and any terms with interpretation which may appear to depart from a literal and plain meaning should be made known to all potential tenderers during the tender invitation as far as practicable in future procurement.<br><br>As the recommendation will be implemented on an on-going basis, we recommend deleting this part from the next progress report. |
| Page 74 of the PAC Report (point (j)) | PAC urges CAD to –<br><br>(j) consider taking more effective measures as specified in the conditions of tenders (such as visit to reference sites in the case of procurement of the new ATMS) to assess the performance of the tenderers for future major procurement projects; | Having sought advice from GLD, CAD has incorporated the relevant recommendations in the Departmental Project Procedures Handbook to consider taking more effective measures as specified in the conditions of tenders (such as visit to reference sites in the case of procurement of the new ATMS) to assess the performance of the tenderers for future major procurement projects.<br><br>As the recommendation will be implemented on an on-going basis, we recommend deleting this part from the next progress report. |

| Para. No. | Audit's/PAC's Recommendations | Progress to Date |
|---|---|---|
| Page 74 of the PAC Report (point (k)) | PAC urges CAD to –<br><br>(k) update Legislative Council (LegCo) and/or obtain Finance Committee (FC)'s approval, where applicable, in the future for any subsequent substantial variations in its approved funding proposals, such as contract variations or delays in the implementation of major projects; | Having sought advice from GLD, CAD has incorporated the relevant recommendation in the Departmental Project Procedures Handbook. CAD will update LegCo and/or obtain FC's approval, where applicable, in future for any subsequent substantial variations in its approved funding proposals, in addition to strict compliance with the relevant requirements and procedures as specified in the Stores and Procurement Regulations and Agreement on Government Procurement of the World Trade Organization, as well as seeking timely advice from GLD and Department of Justice (DoJ) to ensure fairness and impartiality.<br><br>As the recommendation will be implemented on an on-going basis, we recommend deleting this part from the next progress report. |
| Page 74 of the PAC Report (point (l)) | PAC urges CAD to –<br><br>(l) develop a mechanism to determine whether and when an enhancement to ATMS should be made, in particular for enhancements arising from new requirements from the ICAO; | CAD has incorporated the relevant recommendations in the Departmental Project Procedures Handbook to consider factors such as international standards/requirements, aviation safety, operational needs and cost-effectiveness, etc. before determining whether and when an enhancement to ATMS should be made.<br><br>As the recommendation will be implemented on an on-going basis, we recommend deleting this part from the next progress report. |
| Para 2.23(d) of the Audit Report | Audit has recommended that DGCA should –<br><br>(d) include all user requirements. | CAD has incorporated the recommendations in the Departmental Project Procedures Handbook, and informed project officers through |

| Para. No. | Audit's/PAC's Recommendations | Progress to Date |
|---|---|---|
| | with time implication in a contract so that the contractor can factor in such requirements in his work programme, and for those requirements arising after the award of contract, make greater efforts to include them in the contract work at the earliest possible opportunity. | internal circular for strict compliance with all the guidelines specified in the Handbook for the procurement of major ATC system in future.<br><br>As the recommendation will be implemented on an on-going basis, we recommend deleting this part from the next progress report. |
| Para 2.24 of the Audit Report | Audit has recommended that the Secretary for Financial Services and the Treasury should consider imposing an expenditure ceiling on the unused project estimate of the ATC system. | The Secretary for Financial Services and the Treasury has started working out an expenditure ceiling on the unused project estimate of the ATC system. |
| Pages 74 and 75 of the PAC Report (Points (a), (b), (c) and (d)) | PAC urges THB to –<br><br>(a) consider engaging external and independent experts immediately to assess the safety and performance of the new ATMS as well as the likelihood of completing Phase 1 of the new ATMS contract by the ATMS Contractor in the first half of 2016, and then formulate a plan on the way forward for the ATC system replacement project accordingly based on the expert findings;<br><br>(b) closely monitor the performance of CAD to ensure that there will be no further delay in the implementation of the ATC system replacement project; | The Secretary for Transport and Housing has decided to appoint an overseas consultant to advise the Secretary directly and independently. The consultant will assess whether the operations of the new ATC system and the operational staff are both prepared, to ensure that both the system and the operational staff are completely ready before the new system could be commissioned. The recruitment procedure has commenced.<br><br>To ensure that the administrative management, resource planning, liaison and coordination work of CAD can be conducted effectively, the Government will consider allocating additional resources to strengthen the senior management of CAD.<br><br>The THB receives regular project update from CAD and provides policy advice to the Department. The |

| Para. No. | Audit's/PAC's Recommendations | Progress to Date |
|---|---|---|
| | (c) step up its supervisory role to ensure the effective implementation of major projects by CAD in the future; and<br><br>(d) update LegCo and/or obtain FC's approval, where applicable, in the future for any subsequent substantial variations in its approved funding proposals, such as contract variations or delays in the implementation of major projects. | Secretary for Transport and Housing has asked the DGCA to expedite actions to handle the remaining follow-up work with the ATMS contractor and arrange training and transition activities for the ATC operational staff, while ensuring the safe and stable operation of the system, such that the new ATC system can transit smoothly and is ready for operation in the first half of 2016.<br><br>THB has issued a notice to departments under its purview requiring them to remind subject officers regularly to provide the most updated information in preparing LegCo papers. |
| Page 75 of the PAC Report | PAC requests CAD and THB to update the LegCo Panel on Economic Development on the progress of the ATC project, in particular during the critical period in the coming months leading to the first half of 2016 when the new ATC system is expected to come into operation. | THB and CAD will provide timely updates to the LegCo Panel on Economic Development on the progress of new ATC system project. As the recommendation will be implemented on an on-going basis, we recommend deleting this part from the next progress report. |
| **Part 3: Management of the precision runway monitor project** | | |
| Para 3.16(a) of the Audit Report<br><br>and<br><br>Page 77 of the PAC Report (point (a)) | Audit has recommended that DGCA should –<br><br>(a) strengthening project appraisal to ensure that all uncertainties/risks impacting on project viability are fully evaluated in a cost-benefit analysis before making procurement decisions; and<br><br>PAC urges CAD to –<br><br>(a) develop a mechanism to vet and approve the procurement of major equipment in the | In order to ensure prudent and cost-effective use of public funds, CAD has implemented mechanisms and updated the Departmental Project Procedures Handbook to incorporate the recommendations of the Audit Commission (Audit) on project appraisal. |

| Para. No. | Audit's/PAC's Recommendations | Progress to Date |
|---|---|---|
| | future to ensure that the equipment purchased are cost effective and public money are used in a prudent manner; | |
| Para 3.16(b) of the Audit Report | Audit has recommended that DGCA should –<br><br>(b) strengthening the records management of major procurement decisions for public accountability; | CAD has devised mechanisms and updated the Departmental Project Procedures Handbook to incorporate the recommendations of the Audit Commission on record keeping. CAD has also issued internal circulars to remind project officers of the changes to the Departmental Project Procedures Handbook, in particular the requirement to keep records of major and significant procurement decisions for public accountability. |
| Para 3.16(c) of the Audit Report<br><br>and<br><br>Page 77 of the PAC Report (point (b)) | Audit has recommended that DGCA should –<br><br>(c) providing adequate information in the funding application for a capital project to enable the LegCo Public Works Subcommittee/FC to make an informed decision; and<br><br>PAC urges CAD to –<br><br>(b) ensure in the future that both the pros and cons of a proposed project, including the potential risks inherent in the project and all relevant contingent factors, are provided in the funding application to enable LegCo Members to make an informed decision on whether to support the project. | CAD has devised mechanisms and updated the Departmental Project Procedures Handbook to incorporate the recommendations of the Audit Commission on funding application. In future, sufficient information regarding the pros and cons of the proposed project, including any intrinsic potential risks and all relevant contingent factors, shall be provided in the funding applications to LegCo to facilitate LegCo Members in their making of informed decisions on whether or not to support the project.<br><br>As these recommendations will be implemented on an on-going basis, we recommend deleting this part from the next progress report. |

| Para. No. | Audit's/PAC's Recommendations | Progress to Date |
|---|---|---|
| **Part 4: Administration of air traffic control service related charges** | | |
| Para 4.17(a) of the Audit Report<br><br>and<br><br>Page 78 of the PAC Report (point (c)) | Audit has recommended that DGCA should –<br><br>(a) conduct a review after implementing the en-route navigation charge (ENC) level recommended in each fees and charges review to ensure that the charge level is conducive to achieving full-cost recovery; and<br><br>PAC urges CAD to –<br><br>(c) adhere to the Government's "user pays" principle in determining the ATC service charges and ENCs in the future; | In future, CAD will continue to review the ENC rate in accordance with the Government's established policies and procedures. Having taken into account the recommendations of the Audit and the PAC, CAD shall conduct a review after implementing the ENC level recommended in each fees and charges review to ensure that the charge level is conducive to achieving full-cost recovery and adhering to the Government's "user pays" principle. |
| Para 4.17(b) of the Audit Report | Audit has recommended that DGCA should –<br><br>(b) re-examine the proposed ENC rate for 2014-15 with due regard to the full-cost recovery principle; | CAD has re-examined the level of ENC rate. With the approval already given by THB and Financial Services and the Treasury Bureau, CAD has consulted the industry. The revised ENC rate has been implemented on 1 October 2015. |
| Para 4.17(c) of the Audit Report<br><br>and<br><br>Pages 77 - 78 of the PAC Report (point (a) and (b)) | Audit has recommended that DGCA should –<br><br>(c) take effective measures to prevent the loss of revenue in default ENC cases, including :<br><br>(i) demanding a security deposit or banker's guarantee from specific airline operators using the CAD's navigation services on a case-by-case basis having regard to their payment records; | CAD has taken follow-up actions to prevent the loss of revenue, including demanding banker's guarantees from operators with unsatisfactory ENC payment records, reminding the airline operators of their contractual obligation to pay ENC and taking legal actions against defaulting airline operators as appropriate. |

| Para. No. | Audit's/PAC's Recommendations | Progress to Date |
|---|---|---|
| | (ii) reminding the airline operators of their contractual obligation to pay ENCs when they first submit flight plans to the CAD for using the Hong Kong airspace and in all demand notes sent to them; and<br><br>(iii) taking legal actions against defaulting airline operators as appropriate; and<br><br>PAC urges CAD to –<br><br>(a) take effective follow-up actions to recover the overdue ENCs as soon as possible; and<br><br>(b) expedite the progress in exploring the feasibility of demanding a security deposit or banker's guarantee from all operators on a case-by-case basis having regard to the operator's payment records. | As these recommendations will be implemented on an on-going basis, we recommend deleting this part from the next progress report. |
| **Part 5: Administration of the mandatory occurrence reporting scheme** | | |
| Para 5.22 (a) of the Audit Report<br><br>and<br><br>Page 79 of the PAC Report (point (a) and (c)) | Audit has recommended that DGCA should –<br><br>(a) strengthen the management of the mandatory occurrence reporting (MOR) database to ensure that it can support the monitoring of follow-up actions on reported MOR cases; and | CAD has strengthened the management of the MOR database and implemented effective measures to closely monitor the reporting of MOR within the required timeframe, assignment of risk level to each MOR, implementation of follow-up actions and case closure, and timely updating of MOR. CAD will ensure that the MOR scheme could effectively enhance flight safety. |

| Para. No. | Audit's/PAC's Recommendations | Progress to Date |
|---|---|---|
| | PAC urges CAD to –<br><br>(a) take measures to ensure the accuracy of the MOR database at all times; and<br><br>(c) take effective measures to improve the collation of information for the MOR database, and the subsequent analysis and follow-up actions by making reference to the experience gained on the MOR Scheme since the relevant guidelines were issued in 1999, with a view to improving air traffic safety; | |
| Para 5.22 (b) of the Audit Report | Audit has recommended that DGCA should –<br><br>(b) closely monitor the timeliness of reporting MOR cases and take targeted action in warranted cases such as cases of frequent and long delay in reporting; | CAD will closely monitor the timeliness of reporting MOR cases. Flight Operation Notice has been issued to the industry reminding them the four-day reporting legal requirement in July 2014. |
| Para 5.22 (c) of the Audit Report | Audit has recommended that DGCA should –<br><br>(c) consider revising the MOR reporting form to facilitate reporting organisations/personnel to indicate the dates when the reportable occurrences come to their knowledge (if different from the dates of the occurrences); | The reporting forms have been revised and published on the CAD website. |

| Para. No. | Audit's/PAC's Recommendations | Progress to Date |
|---|---|---|
| Para 5.22 (d) of the Audit Report | Audit has recommended that DGCA should –<br><br>(d) remind case officers to strictly follow the laid-down procedures in assigning the risk levels for MOR cases and consider enhancing the MOR database to capture the risk information of the ATC related cases to facilitate management review; | The MOR cases will be assessed and assigned a risk level upon receipt and entered into the MOR database. The internal instruction has been issued in October 2014, reminding case officers of the need to strictly follow the laid-down procedures. Consideration has been given to upgrading the MOR database to capture the risk information of the ATC related cases to facilitate management review. |
| Para 5.22 (e) of the Audit Report | Audit has recommended that DGCA should –<br><br>(e) continue to monitor cases of obstruction of aircraft by airport vehicles through the MOR system and instigate regulatory action if the situation persists; | All the past cases relating to "airport vehicles not giving way to aircraft" were minor in nature and under control. CAD will continue to monitor cases of obstruction of aircraft by airport vehicles through the MOR system and instigate regulatory action if the situation persists. |
| Para 5.22 (f) of the Audit Report<br><br>and<br><br>Page 79 of the PAC Report (point (b)) | Audit has recommended that DGCA should –<br><br>(f) closely monitor the long outstanding MOR cases to ensure that timely follow-up actions have been taken and properly recorded; and<br><br>PAC urges CAD to –<br><br>(b) ensure that follow-up actions on long outstanding cases are taken in a timely manner. | CAD has strengthened the monitoring of the follow-up and closure of MOR cases. Cases requiring a longer period of investigation would require approval by the management and must be recorded in the MOR database.<br><br>As these recommendations will be implemented on an on-going basis, we recommend deleting this part from the next progress report. |

| Para. No. | Audit's/PAC's Recommendations | Progress to Date |
|---|---|---|
| **Part 6: Way forward** | | |
| Para 6.7 of the Audit Report | Audit has recommended that DGCA should conduct post-completion reviews of major procurement projects undertaken by the CAD (including the new ATC system project), taking into account the audit observations and recommendations in this Audit Report. | After completion of major procurement projects including new ATC system project, CAD will conduct a post-implementation review. CAD has incorporated the relevant recommendations in the Departmental Project Procedures Handbook, and informed project officers through internal circular to strictly comply with all the guidelines specified in the handbook.<br><br>As the recommendation will be implemented on an on-going basis, we recommend deleting this part from the next progress report. |

---

# THE GOVERNMENT MINUTE

**in response to the**

# REPORT OF
# THE PUBLIC ACCOUNTS COMMITTEE
# No. 65

**of February 2016**

**25 May 2016**

**Administration of the air traffic control and related services**
(Part 4 of PAC Report No. 63A)

30. The Government has been following up on the recommendations of the Audit Commission (Audit) and the PAC of the LegCo on administration of the air traffic control (ATC) and related services. The up-to-date progress is reported in the ensuing paragraphs.

31. Ensuring aviation safety and efficient air traffic management is the topmost priority of the Civil Aviation Department (CAD). CAD has conducted stringent acceptance tests and comprehensive safety assessment on the new Air Traffic Management System (ATMS) in accordance with international aviation safety management standards and established Government procedures, in order to ensure that the system operation complies with the safety management and contract conditions requirements. All acceptance tests of the new ATMS have been completed. CAD is generally satisfied with the test results. All outstanding priority items identified during the test events have been fully addressed by the contractor to ensure safe commissioning of the new ATMS.

32. Meanwhile, CAD has formulated a comprehensive training plan which consists of a series of intensive training sessions for air traffic controllers and relevant staff, to help them acquire the necessary competency and build up confidence to master the new ATMS.

33. With air traffic safety being the paramount concern, both CAD and Transport and Housing Bureau (THB) have appointed independent consultants to assess and ascertain the system readiness and human factor effectiveness of the project, to ensure the safety, reliability and stability of the new ATMS. CAD has made reference to its consultant's advice when formulating the safety case report. According to the assessment of the consultant appointed by THB, the system engineering of the new ATMS is safe, stable and reliable.

34. Having considered the recommendation of THB's consultant on phased functional implementation for transition to the new ATC system, CAD currently plans to launch the new ATMS incrementally from June 2016 onwards. The use of the new ATMS will be progressively expanded in terms of operating time and the scope of service coverage over a period of about five months. Subject to actual experience and progress, and upon the final consent of the Secretary for Transport and Housing based on independent consultant's advice, the new ATMS will be fully commissioned and operated by October/November 2016.

Encl. 9

35. A summary of the progress made is at Enclosure 9.

**Enclosure 9**

**Administration of the air traffic control and related services**
**Updated Progress of Implementing Audit's and PAC's Recommendations**
**(as at 25 May 2016)**

| Para. No. | Audit's/PAC's Recommendations | Progress to date |
|---|---|---|
| Para 2.23(a) of the Audit Report<br><br>and<br><br>Page 73 of the PAC Report (points (b), (c) and (d)) | Audit has recommended that the Director-General of Civil Aviation (DGCA) should –<br><br>(a) in conjunction with the Air Traffic Management System (ATMS) contractor, expedite action in rectifying the outstanding deficiencies/observations in the ATMS and closely monitor the remaining contract work to minimise further project delay.<br><br>PAC urges CAD to –<br><br>(b) ensure that all the deficiencies/observations identified during the Factory Acceptance Tests and Sites Acceptance Tests must be completely and satisfactorily resolved prior to putting the new ATMS into operation;<br><br>(c) request the Contractor to take all possible effective measures to expedite the implementation of the new ATMS contract; and<br><br>(d) closely monitor the performance of the Contractor and take pro-active effective measures to ensure that the Contractor settles the outstanding issues in a timely and satisfactory manner. | CAD has continued to closely monitor the remaining work of the ATMS contractor through enhanced communication and supervision to expedite the implementation progress.<br><br>All the acceptance tests of the new ATMS have been completed in accordance with the requirements specified in the contract. CAD is generally satisfied with the test results. All the priority items have been fully addressed. As for non-priority items, they are minor in nature and do not affect the safe commissioning of the new ATMS. CAD is working with the contractor to address these items in a timely manner.<br><br>CAD has been delivering training sessions to Air Traffic Control (ATC) operational staff, to help them acquire the necessary competency and build up confidence to master the new ATMS. CAD's current plan is to launch the new ATMS incrementally from June 2016 onwards. |

| Para. No. | Audit's/PAC's Recommendations | Progress to date |
|---|---|---|
| Para 2.23(b) and (c) of the Audit Report<br><br>and<br><br>Page 73 of the PAC Report (point (e)) | Audit has recommended that DGCA should –<br><br>(b) step up maintenance efforts to address surveillance data display (SDD) problems (frozen/hang-up) in the existing ATC system; and<br><br>(c) continue the efforts to deal with the issues of operating the existing ATC system until the new ATC system is available.<br><br>PAC urges CAD to –<br><br>(e) closely monitor the existing ATC system and take pro-active effective measures to ensure the existing ATC system is timely maintained in good operational conditions until the new ATC system is commissioned. | CAD has stepped up efforts to enhance maintenance measures to address SDD problems of the existing ATC system. Through a one-off enhancement measure for the existing ATMS conducted in 2014, including upgrading the relevant SDD workstations and optimising radar signal inputs, etc., the system loading continues to stay well within the margin of the safety performance indicator. CAD also continues to work closely with the system contractor and maintenance service provider to maintain the existing ATC system to ensure its reliable and efficient operation until after the new ATC system is fully commissioned. |
| Page 74 of the PAC Report (point (f)) | PAC urges CAD to –<br><br>(f) consider formulating a contingency plan as soon as possible to deal with the termination of the ATMS contract in case that the Contractor has failed to provide a safe, reliable and stable system by the first half of 2016 or any other indicative date to be set by CAD/THB. | CAD plans to launch the new ATMS incrementally from June 2016 onwards and has formulated a contingency plan to ensure the existing system can continuously provide a safe, reliable and stable ATC service. The contingency plan has reviewed the system maintainability, availability, supply of spare parts, and provision of software maintenance support services from the system supplier for the existing ATMS, among others. |
| Para 2.24 of the Audit Report | Audit has recommended that the Secretary for Financial Services and the Treasury should consider imposing an expenditure ceiling on the unused project estimate of the ATC system. | Based on CAD's latest estimate on the expenditure and cash flow requirements, the Financial Services and the Treasury Bureau (FSTB) has imposed an expenditure ceiling on the ATC system replacement project. |

| Para. No. | Audit's/PAC's Recommendations | Progress to date |
|---|---|---|
| | | As the recommendation has been implemented, we recommend deleting this part from the next progress report. |
| Pages 74 and 75 of the PAC Report (points (a), (b), (c) and (d)) | PAC urges THB to –<br><br>(a) consider engaging external and independent experts immediately to assess the safety and performance of the new ATMS as well as the likelihood of completing Phase 1 of the new ATMS contract by the ATMS Contractor in the first half of 2016, and then formulate a plan on the way forward for the ATC system replacement project accordingly based on the expert findings;<br><br>(b) closely monitor the performance of CAD to ensure that there will be no further delay in the implementation of the ATC system replacement project;<br><br>(c) step up its supervisory role to ensure the effective implementation of major projects by CAD in the future; and<br><br>(d) update the LegCo and/or obtain the FC's approval, where applicable, in the future for any subsequent substantial variations in its approved funding proposals, such as contract variations or delays in the implementation of major projects. | (a) CAD engaged a consultant in 2012 to provide expert advice and conduct safety assessment workshops for colleagues involved in formulating the safety case report on the design, implementation and transition of the new ATC system. THB appointed another consultant in November 2015 to advise the Secretary for Transport and Housing of the system and staff readiness for the new ATMS. According to the assessment of THB's consultant, the ATMS is safe, stable and reliable and in line with the good practice in other ATC centres. THB's consultant has also made recommendations to cater for user preference and operational effectiveness. CAD has developed an action plan to ensure the recommendations will be adequately addressed prior to commissioning the new system.<br><br>(b) THB has been monitoring the progress of the ATMS project closely and receives regular update reports from CAD. THB is represented at the Steering Committee on ATMS Project chaired by the Deputy Director-General of Civil Aviation.<br><br>(c) The Government plans to create a supernumerary Administrative Officer Staff Grade B (D3) post |

| Para. No. | Audit's/PAC's Recommendations | Progress to date |
|---|---|---|
| | | in CAD, to be designated as Deputy Director-General of Civil Aviation (2) (DDGCA(2)), to strengthen the capacity of CAD's senior management in taking forward various key projects as well as enhancing the overall administrative control and management of the department. The proposed DDGCA(2) will work closely with THB on implementation of major projects by CAD.<br><br>(d) THB will update the LegCo and/or obtain the FC's approval in the future for any subsequent substantial variations in its approved funding proposals where appropriate.<br><br>As this recommendation will be implemented on an on-going basis, we recommend deleting this part from the next progress report. |

---

# THE GOVERNMENT MINUTE

**in response to the**

# REPORT OF
# THE PUBLIC ACCOUNTS COMMITTEE
# No. 67 and No. 67A

**of February 2017 and April 2017**

**24 May 2017**

**Administration of the air traffic control and related services**
(Paragraphs 3 to 5 of Part 5 of PAC Report No. 65)

37. The Government has been following up on the recommendations of the Audit and the PAC of the LegCo on administration of the air traffic control (ATC) and related services.

38. The Civil Aviation Department (CAD) fully commissioned the last system contract of the new ATC System – Air Traffic Management System (ATMS) on 14 November 2016. In the past six months since the full commissioning of the new ATMS, covering peak traffic seasons during Christmas, New Year, Lunar New Year and Easter, although teething issues were occasionally encountered by the system, CAD was able to work promptly with the contractor to address the issues without compromising aviation safety. The overall ATC operations have been smooth and feedback from frontline ATC staff is positive, which showcase that the new ATMS is capable of coping with increasing air traffic movements.

Encl. 6

39. A summary of the progress made is at Enclosure 6. As all the recommendations have been implemented or will be implemented on an on-going basis, we recommend deleting this part from the next progress report.

**Government's efforts in managing municipal solid waste; and**
(Chapter 1 of Part 8 of PAC Report No. 65)

**Reduction and recycling of food waste**
(Chapter 2 of Part 8 of PAC Report No. 65)

40. Secretary for the Environment and Director of Environmental Protection have taken actions to follow up on the outstanding recommendations made by the Audit and the PAC of the LegCo regarding the Government's efforts in managing municipal solid waste and promoting reduction and recycling of food waste. Details of the progress made are set out in Enclosures 7 and 8.

Encl. 7 & 8

41. As the outstanding recommendations will be implemented on an ongoing basis, we recommend deleting these two subjects from the next progress report.

**Enclosure 6**

**Administration of the air traffic control and related services**
**Updated Progress of Implementing Audit's and PAC's Recommendations**
**(as at 24 May 2017)**

| Para. No. | Audit's/PAC's Recommendations | Progress to date |
|---|---|---|
| Para 2.23(a) of the Audit Report<br><br>and<br><br>Page 73 of the PAC Report (points (b), (c) and (d)) | Audit has recommended that the Director-General of Civil Aviation should –<br><br>(a) in conjunction with the Air Traffic Management System (ATMS) contractor, expedite action in rectifying the outstanding deficiencies/ observations in the ATMS and closely monitor the remaining contract work to minimise further project delay.<br><br>PAC urges Civil Aviation Department (CAD) to –<br><br>(b) ensure that all the deficiencies/observations identified during the Factory Acceptance Tests and Sites Acceptance Tests must be completely and satisfactorily resolved prior to putting the new ATMS into operation;<br><br>(c) request the Contractor to take all possible effective measures to expedite the implementation of the new ATMS contract; and<br><br>(d) closely monitor the performance of the Contractor and take pro-active effective measures to ensure that the Contractor settles the outstanding issues in a timely and satisfactory manner. | Prior to the full commissioning of the new ATMS, CAD had ensured that all outstanding priority items had been fully addressed by the system contractor. The overseas independent consultant engaged by the Transport and Housing Bureau (THB) also confirmed that the new ATMS engineering was safe, stable and reliable, and that CAD was ready for the full transition. Based on the independent advice of THB's overseas consultant, and the confirmation of CAD on its readiness in all respects, the Secretary for Transport and Housing endorsed the recommendation of CAD to fully commission the new ATMS on 14 November 2016.<br><br>Since its full commissioning, the new ATMS has been providing safe, reliable and generally smooth air traffic services within the Hong Kong Flight Information Region in compliance with the international safety standard. Although the new ATMS has experienced some teething issues during the initial commissioning, CAD's staff members had properly handled those occurrences with professional expertise and experience, as per established procedures, without compromising aviation safety. The ATMS Expert Panel set up by CAD also confirmed the above views in its interim report. By benchmarking international best practices and the International Civil Aviation Organization's safety management |

| Para. No. | Audit's/PAC's Recommendations | Progress to date |
|---|---|---|
| | | system process, the Expert Panel pointed out that CAD has in place an effective and established mechanism for responding to different situations occurring after the full transition.<br><br>For the teething issues encountered during the initial commissioning of the new ATMS, THB and CAD reported to the PAC in writing on 10 January, 3 April and 21 April 2017 on the occurrences and the follow-up actions, and will continue to keep the LegCo informed of the progress.<br><br>In coming months, CAD will continue to work closely with the contractor with a view to completing the optimisation of the new ATMS as soon as possible. During the process, CAD will duly seek independent professional advice from the Expert Panel. With the continuous air traffic growth in the future, the Government would spare no effort in maintaining the highest standard of aviation safety, and uphold the status and reputation of Hong Kong as a regional aviation hub.<br><br>As follow-up actions of these recommendations have been completed or will be implemented on an on-going basis, we recommend deleting this part from the next progress report. |

| Para. No. | Audit's/PAC's Recommendations | Progress to date |
|---|---|---|
| Para 2.23(b) and (c) of the Audit Report<br><br>and<br><br>Page 73 of the PAC Report (point (e)) | Audit has recommended that Director-General of Civil Aviation should –<br><br>(b) step up maintenance efforts to address surveillance data display problems (frozen/hang-up) in the existing air traffic control (ATC) system; and<br><br>(c) continue the efforts to deal with the issues of operating the existing ATC system until the new ATC system is available.<br><br>PAC urges CAD to –<br><br>(e) closely monitor the existing ATC system and take pro-active effective measures to ensure the existing ATC system is timely maintained in good operational conditions until the new ATC system is commissioned. | CAD has proceeded with the full commissioning of the new ATMS on 14 November 2016.<br><br>As this recommendation has been implemented, we recommend deleting this part from the next progress report. |
| Pages 74 and 75 of the PAC Report (points (a) and (b)) | PAC urges THB to –<br><br>(a) consider engaging external and independent experts immediately to assess the safety and performance of the new ATMS as well as the likelihood of completing Phase 1 of the new ATMS contract by the ATMS Contractor in the first half of 2016, and then formulate a plan on the way forward for the ATC system replacement project accordingly based on the expert findings; and<br><br>(b) closely monitor the performance of CAD to ensure that there will be no further delay in the implementation of the ATC | (a) THB appointed an independent consultant from overseas in November 2015 to provide independent advice to Secretary for Transport and Housing on both the readiness of the new ATMS and CAD's staff. According to the assessment of THB's consultant, the ATMS engineering was safe, stable and reliable, and CAD was ready for the full transition. CAD has implemented all recommendations made by THB's consultant in regard to the full commissioning of the new ATMS. Based on the independent advice of THB's overseas consultant, and the confirmation of CAD on its |

| Para. No. | Audit's/PAC's Recommendations | Progress to date |
|---|---|---|
| | system replacement project. | readiness in all respects, Secretary for Transport and Housing endorsed the recommendation of CAD to fully commission the new ATMS on 14 November 2016.<br><br>(b) THB has been monitoring closely the progress of the new ATMS project, the performance of the new ATMS after its full commissioning, and the follow-up actions taken by CAD. THB receives regular updates from CAD and provides policy advice to CAD.<br><br>As this recommendation has been implemented, we recommend deleting this part from the next progress report. |

---

# REPORT OF THE

# PUBLIC ACCOUNTS COMMITTEE

# ON

# THE REPORTS OF THE DIRECTOR OF AUDIT

# ON

# THE ACCOUNTS OF THE GOVERNMENT OF

# THE HONG KONG SPECIAL ADMINISTRATIVE REGION

# FOR THE YEAR ENDED

# 31 MARCH 2017

# AND THE RESULTS OF

# VALUE FOR MONEY AUDITS (Report No. 69)

*February 2018*

*P.A.C. Report No. 69*

38. The Committee wishes to be kept informed of further development on the subject.

**Administration of the air traffic control and related services**
*(Paragraphs 28 to 31 of Part 4 of P.A.C. Report No. 67)*

39. Hon Steven HO Chun-yin declared that he was a non-executive director of the Airport Authority Hong Kong.

40. The Committee was informed that:

Commissioning of the new Air Traffic Management System ("ATMS")

- the Transport and Housing Bureau ("THB") had been monitoring closely the progress of the new ATMS project, the performance of the new ATMS after its full commissioning, and the follow-up actions taken by the Civil Aviation Department ("CAD"). THB received regular updates from CAD and provided policy advice to CAD;

- although the new ATMS had experienced some teething issues during the initial commissioning, CAD's staff members had handled those occurrences with professional expertise and experience, as per established procedures, without compromising aviation safety. By benchmarking international best practices and the International Civil Aviation Organization's safety management system process, the ATMS Expert Panel set up by CAD pointed out that CAD had in place an effective and established mechanism for responding to different situations occurring after the full transition;

- for the teething issues encountered during the initial commissioning of the new ATMS, CAD and THB reported to the Committee in writing on 3 and 21 April 2017 (*Appendices 11* and *12* respectively) on the occurrences and the follow-up actions, and would continue to keep LegCo informed of the progress;

- CAD would continue to work closely with the contractor with a view to completing the optimization of the new ATMS as soon as possible.

During the process, CAD would duly seek independent professional advice from the ATMS Expert Panel; and

- in November 2017, the ATMS Expert Panel issued the final report to sum up its findings and recommendations after a year-long review of the various aspects of ATMS since its full commissioning on 14 November 2016, as follows:

  (a) the ATMS Expert Panel was of the view that safety was never compromised in all of the occurrences that ATMS experienced during the run-in period and all issues had been duly addressed. It was satisfied with the implementation progress of the recommendations;

  (b) the performance of ATMS exceeded international requirements, and was also within expectations and in line with experiences of the air navigation service provider overseas;

  (c) the overall performance of the new ATMS was satisfactory and smooth after a run-in period. It had effectively enhanced aviation safety and acquired international recognition. CAD's front-line staff also became more conversant with the operation and maintenance of ATMS. The system performance had testified that the new ATMS was capable of handling all weather, traffic peaks and contingent situations; and

  (d) ATMS and other air traffic control systems would have to be optimized and enhanced when circumstances warranted to enhance efficiency by introducing new features progressively according to operational necessity, to review and formulate a long-term air traffic control manpower plan, and to keep up CAD's internal and external communication with relevant parties in a timely manner. The ATMS Expert Panel encouraged CAD to make use of the international users group of AutoTrac III in further optimizing the new ATMS system in Hong Kong.

41. The Committee conducted a visit on 15 March 2017 to CAD to observe the operation of the new ATMS. On 5 January 2018, the Committee wrote to Director-General of Civil Aviation to enquire the implementation details of the

international users group of AutoTrac III and whether the Administration had implemented all the recommendations in the final report of the ATMS Expert Panel. The replies from **Director-General of Civil Aviation** are in *Appendix 13*.

42. The Committee wishes to be kept informed of further development on the subject.

**Government's efforts in managing municipal solid waste**
*(Paragraphs 32 to 35 of Part 4 of P.A.C. Report No. 67)*

43. Hon Steven HO Chun-yin declared that the business he and his family members engaged in might involve recycling.

44. The Committee was informed in the Government Minute which was laid before LegCo in May 2017 that:

Reduction in municipal solid waste ("MSW")

- the Organic Waste Treatment Facilities Phase 1 was under construction and scheduled for commissioning by end 2017. The Administration expected that subject to funding approval by LegCo Finance Committee, the Organic Waste Treatment Facilities Phase 2 would be commissioned in 2021. Regarding the Design-Build-Operate tender contract of the Integrated Waste Management Facilities Phase 1, the Administration expected that the tender evaluation would be completed and the contract be awarded in early 2018 with a view to commissioning the facility in 2024;

- the Administration had been reviewing the implementation progress of the "Hong Kong Blueprint for Sustainable Use of Resources (2013-2022)" from time to time and keeping LegCo informed. The Administration also published the waste disposal and recovery data on EPD's website annually for public information;

- following the enactment of the enabling legislation for the producer responsibility schemes on waste electrical and electronic equipment and glass beverage containers in 2016, the Administration aimed to

民航處
CIVIL AVIATION DEPARTMENT
香港特別行政區政府
The Government of the Hong Kong Special Administrative Region

香港大嶼山香港國際機場
東輝路1號民航處總部
Civil Aviation Department Headquarters
1 Tung Fai Road, Hong Kong International Airport,
Lantau, Hong Kong

電話 Tel: 2910 6328
圖文傳真 Fax: 2501 0640
檔案編號 Our ref:
來函編號 Your ref:

3 April 2017

Clerk to the Public Accounts Committee
Legislative Council
Legislative Council Complex
1 Legislative Council Road
Central, Hong Kong

(Attn: Mr Anthony CHU)

Dear Mr CHU,

**Follow-up to Public Accounts Committee Report No. 63A**
**Administration of the Air Traffic Control and Related Services**
**Visit to CAD on 15 March 2017**

Thank you for your letters dated 10 and 14 March 2017 enclosing lists of questions on "Administration of the air traffic control (ATC) and related services". Our replies in response to your questions are provided at *Annex 1* to this letter.

I would also like to take this opportunity to thank the Chairman and the Honorable Members of the Public Accounts Committee (PAC) for spending their valuable time to visit our ATC facilities and exchange views with us on the ATC system on 15 March 2017. We trust that the visit has provided the PAC with a better understanding of our ATC operations and the proven capability of the new ATC system in handling increasing air traffic movements as shown in the recent peak travel periods.

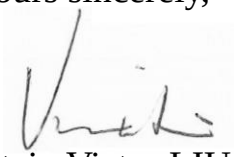
As you are aware, we have established an Expert Panel, comprising local and overseas experts in the fields of air traffic management, engineering and aviation safety management, in December 2016 to offer expert advice to the Department on teething issues encountered since the full commissioning of the new Air Traffic Management System (ATMS), which is part of the ATC system, and to share international experience and best practices. The Expert Panel has since held four meetings and paid visits to our ATC operational and training facilities. Expert Panel members have also met with frontline air traffic

controller representatives, air traffic system engineer representatives and management pilots of the Government Flying Service and major local air operators to listen to their views regarding the operations of the new ATMS.

Having reviewed the performance of the ATMS and consulted the said stakeholders in the past few months, the Expert Panel has come up with an Interim Report, which was issued on 3 April (*Annex 2*). The Expert Panel is of the view that as the new ATMS is a large-scale and complicated, comprehensive computer system, minor teething issues would occur intermittently for different reasons (including human factors). These issues did not affect the operations of the ATMS, nor did they affect ATC operations or aviation safety. After evaluating the relevant occurrences, the Expert Panel considered that safety performance of the new ATMS, so far, exceeded international requirements. The Expert Panel urged the CAD to continue to stay vigilant and to further optimise the system taking into account, among others, views of frontline staff.

Please rest assured that the CAD will spare no efforts in the optimisation work of the new ATMS in consultation with the Expert Panel and with the engagement of frontline staff. A Final Report will be prepared and published by the Expert Panel upon the expiry of its term in end November 2017. We will be pleased to share a copy of the Final Report with the PAC when it is ready.

Yours sincerely,



( Captain Victor LIU )
for Director-General of Civil Aviation

Encl.

c.c. Secretary for Transport and Housing
Secretary for Financial Services and the Treasury
Director of Government Logistics
Director of Audit

***Note by Clerk, PAC:* Annex 2 not attached.**

Annex 1

**Response to Questions raised by the PAC**
**in the letter dated 14 March 2017 to the CAD**

## Parts A & B: Warranty & Maintenance

1. At what date did the warranty of the Air Traffic Management System ("ATMS") begin to run?
2. How long is the warranty for?
3. What is the maintenance fee payable after the warranty period has expired?
4. We understand that in some countries the warranty arrangement for air traffic control systems is based on a "ticket" system rather than a time basis, does this ticket system apply to ATMS?
5. Is maintenance of the system carried out by Raytheon?
6. If not, why not and who carries out the ATMS maintenance?
7. Do you have separate maintenance for the software and hardware of ATMS?
8. How many Raytheon staff are stationing in Hong Kong to perform the maintenance service?

CAD's reply:
The hardware and software maintenance of the new air traffic management system (ATMS) consists of two levels, i.e. day-to-day/frontline maintenance, and faults/deficiencies identification and rectification. These two levels of maintenance work are provided by the maintenance service provider of the air traffic control (ATC) system (i.e. PCCW) and the ATMS contractor (i.e. Raytheon) respectively. Both parties are responsible for different contractual work scopes and provisions in areas of hardware and software maintenance, which are specified under the respective contracts.

As far as the ATMS (which is part of the ATC system) is concerned, the Hong Kong-based contractor, PCCW, undertakes regular frontline on-site maintenance on the ATMS to ensure that the equipment is kept operating smoothly. This includes 24-hour watch-keeping, regular preventive maintenance, corrective maintenance and procurement/management of consumable and spare items.

On the other hand, Raytheon is required to provide assistance to the maintenance personnel from the CAD and PCCW in the areas of:

a) dealing with and rectifying all faults or deficiencies, or with faults or deficiencies not previously encountered by the Government and which are not dealt with in the maintenance documentation (i.e. written

maintenance procedures for maintenance staff's reference) within the response time specified in the ATMS contract;

b) finding the cause(s) of those faults that occur repeatedly and preventing further occurrences within the response time specified in the ATMS contract; and

c) carrying out corrective action (including changing the source code of the software) for any fault, deficiency, unacceptable or undesirable behaviour and/or side-effect found in the software, and updating the corresponding documentation.

The aforesaid maintenance arrangements are basically in line with those for the old ATMS.

Depending on the circumstances and service needs, Raytheon has been providing on-site technical support, ranging from one to four staff, as well as remote expert support from the Raytheon factory in the United States, on the transition, operations and maintenance of the ATMS. With the permission of the CAD, Raytheon may gain remote access to traffic data and replay traffic scenario for post-occurrence analysis in their facilities. For example, during transition from the old ATMS to the new ATMS in November 2016, Raytheon provided on-site and remote expert support to the transition. After the new ATMS was put into operational use, Raytheon has been providing post-transition expert support to follow up on teething issues and to ensure that the ATMS is operating smoothly, especially during the high traffic periods from December 2016 to February 2017.

Regarding the hardware and software warranty of the new ATMS, we assume that the question refers to the warranty provided by the system contractor, i.e. Raytheon. As mentioned in CAD's reply dated 15 January 2015 to the PAC, the hardware warranty and software warranty periods of the new ATMS provided by Raytheon last for 2 years and 5 years respectively. In accordance with the contract, the hardware warranty and software warranty periods of the new ATMS Phase 1[1] project have commenced on the date of acceptance of the new ATMS (Phase 1) on 11 November 2015, and will expire on 10 November 2017 and 10 November 2020 respectively. In other words, the new ATMS is

---

Note1 As mentioned in CAD's reply dated 25 March 2015 to the PAC, Phase 1 of the ATMS project refers to the new ATMS being installed and commissioned at the new Air Traffic Control (ATC) Centre in the CAD Headquarters building, while the Phase 2 project refers to the new ATMS to be installed and commissioned at the old ATC centre as a back-up of the new ATC system.

still within the warranty periods at the moment and no additional maintenance charges are payable to Raytheon.

After the expiry of the respective warranty periods, the CAD has an option to subscribe for maintenance services offered by Raytheon. Beyond the respective warranty periods, the annual hardware and software maintenance costs for the new ATMS (Phase 1) are US$21,401 and US$506,078 respectively. The CAD will consider whether or not to procure the maintenance services after further assessment and subject to operational needs.

If the CAD considers it necessary to procure maintenance services for the new ATMS from Raytheon beyond warranty period, such services would be procured on a time basis. A time-based maintenance service contract would cover all the follow-up work needed for addressing abnormal issues originated from the system design.

**Part C: System Safety**

1. Are all safety systems/functions[2] of ATMS fully activated?
2. If not, can you give an explanation why some of the safety systems/functions have not been activated?
3. Has the frequency of system stalling increased after the Electronic Flight Strip ("EFS") system is migrated from Autotrac I to Autotrac III? If yes, please provide details.
4. Whether it was necessary for the Civil Aviation Department ("CAD") to manually restart the EFS system after migration? If yes, the number of manual restart after migration?

CAD's reply:

All air traffic control officers (ATCOs) have been trained to rely on information provided in the ATMS and operational procedures to maintain safe separation among aircraft. Safety net features aim to provide additional levels of assurance in alerting ATCOs to any potential infringement of pre-defined safety margins. The new ATMS is equipped with a total of 10 safety net features as tabulated below, which have successfully passed the acceptance tests:

| Safety Net Feature | Description |
|---|---|
| Special Use Airspace Intrusion Warning | The SUAIW is to indicate any infringement of an aircraft flying into a special airspace defined by the user. |

[2] Safety functions include i) Short Term Conflict Alert; ii) Similar Callsign Warning; iii) Special Use Airspace Infringement Warning; iv) Minimum Safe Altitude Warning; v) Cleared Level Adherence Monitor; vi) Route Adherence Monitor; and vii) Medium Term Conflict Detection.

| Safety Net Feature | Description |
|---|---|
| (SUAIW) | |
| Similar Callsign Advisory (SCA) | The SCA provides visual alerts in a list display on detection of similar aircraft identification operating under a controller. |
| Short Term Conflict Alert (STCA) | The STCA generates alerts on the infringement and potential infringement of user-adaptable separation standards (area of conflict) between 2 or more aircraft at any time. |
| Cleared Level Adherence Monitoring (CLAM) | The CLAM generates visual alert when the level of an associated track exceeds the defined tolerances of its cleared level |
| Route Adherence Monitoring (RAM) | The RAM generates visual alert when an associated track leaves the defined track keeping tolerances of its cleared route. |
| Minimum Safe Altitude Warning (MSAW) | The MSAW provides alerts controllers on aircraft proximity to terrain with reference to the minimum safe altitude for each MSAW Defined Area. |
| Departure Path Monitoring (DPM) | The DPM monitors the flight trajectory of departing aircraft from each runway and generates visual and audio warning when a departing associated track leaves the required track keeping tolerances. |
| Position Report Monitoring (PMON) | The PMON alerts the controller when the ATO and/or ETO next point stated in the position report differ from that calculated by the flight trajectory by more than a user-adaptable time interval. |
| Approach Path Monitoring (APM) | The APM monitors the defined 3-dimensional approach paths for each approach of the North and South runways at HKIA. |
| Medium Term Conflict Detection (MTCD) | The MTCD allows the user to adapt the separation standards required between aircraft in each of the MTCD defined volume of airspace. |

Note: The three shaded safety net features in the table have been implemented and put into operational use since the full commissioning of the new ATMS in November 2016.

In accordance with the requirement of the International Civil Aviation Organisation (ICAO) Safety Management System that changes involved in transition of ATC systems need to be managed in order to reduce the associated risks, the CAD, like other civil aviation authorities or air navigation service providers, will implement appropriate safety net features incrementally based on local operational environment and needs. In the old ATMS, only two safety net features, namely STCA and SUAIW, were implemented for operational use, and both have been implemented in the new ATMS. The CLAM, a newly developed feature with the advancement of aviation technologies, has also been implemented since the full commissioning of the new ATMS on 14 November

2016, providing ATCOs with an additional tool to improve their situational awareness.

As mentioned above, the CAD has been adopting an incremental approach in the implementation of safety net features in the ATMS to minimise the risk involved in transition to the new ATMS, and to best suit the operational needs of ATCOs. It is the Department's plan to gradually prepare and implement the remaining safety net features in the ATMS in accordance with the requirements and procedures of the ICAO's Safety Management System, so as to provide the ATCOs with additional tools in enhancing safety. Such approach is supported by the relevant staff members involved in the ATMS development and operation, such as ATCOs and Electronic Engineers.

The implementation of safety net features is required to go through a series of processes covering functional evaluation, database creation, adaptation of parameters, testing, operational trials, optimisation, flight check (if applicable) and safety assessment. These processes will be conducted in line with the ICAO requirements and international best practice to ensure the activated safety net will not generate excessive false alerts causing nuisance to ATCOs.

All along, aviation safety has been maintained through ATCOs' professional knowledge, competence, and operating procedures with the aid of safety net features. The remaining safety net features are being reviewed regularly according to operational environment and needs to determine their priorities and implementation plan. This is also in line with one of the recommendations made by the ATMS Expert Panel in its Interim Report that "on deployment of software fixes/enhancements, CAD should prioritise the items and implement those changes prudently in order to minimise unnecessary risks while introducing any changes".

On the Electronic Flight Strip (EFS) System, the function of the system is to display flight information to ATCOs in flight strip format electronically, with automated/manual updating and posting features, replacing the conventional paper flight strips. It is supplied by an Austrian company, and was a standalone system in operational use at the ATC Tower since 2012 when the old ATMS was in operation. The new ATMS has incorporated the EFS System at the ATC Tower as one of its sub-systems, and adopted a similar application to cover also the ATC Centre.

The EFS System at both the ATC Tower and ATC Centre has been running smoothly in general since the full commissioning of the new ATMS in November 2016. ATCOs are generally satisfied with the performance of the EFS System.

So far, there has been one incident with the EFS System after the full commissioning of the ATMS. On 18 December 2016, there was an intermittent flight plan data exchange problem between the EFS System at the ATC Tower and the operational ATMS at the ATC Centre, affecting departure flights. The tower workstations could not process the flight plan data of some departure flights and relevant information had to be provided by the ATC Centre temporarily. However, the operations of the ATMS and the ATC Centre were not affected. It resumed normal operation after it had been fixed and re-booted, i.e. manually restarted by air traffic engineers/maintenance staff. Aviation safety was not undermined. After investigation by the ATMS contractor (i.e. Raytheon), the issue was identified to be caused by a software glitch in the EFS System leading to memory utilisation problem. The EFS System resumed normal operation after the servers were re-booted.

The CAD has already put in place regular housekeeping measures by maintenance staff since the above occurrence. It has also recently implemented a software fix (developed by the Austrian supplier of the Tower EFSS in collaboration with Raytheon) in March 2017 to address the issue. Since the implementation of regular housekeeping measures by maintenance staff, there has been no recurrence of stalling of the EFS System/manual-restarting of the EFS System. The Transport and Housing Bureau (THB) has invited its independent consultant, the National Air Traffic Services (NATS) from the United Kingdom, to review the occurrence. NATS noted the identified cause of the occurrence and that a permanent software fix has been implemented. Overall speaking, NATS found CAD's engineering and ATC responses effective and proportionate in responding to and resolving the issue. NATS' detailed report is being reviewed by THB. The ATMS Expert Panel has looked into this matter, as well as NATS' assessment, and considered the remedial measures taken have addressed the issue satisfactorily.

**Part D: ATMS Expert Panel**

1. Has the ATMS Expert Panel suggested forming an Autotrac III user group? If yes, please provide details of this user group, such as the organizer, purposes, when and where it will meet, and the costs borne by CAD, if any.

CAD's reply:
Forming an AutoTrac III user group is not among the recommendations made by the ATMS Expert Panel. That said, user groups or other exchange platforms of similar nature are useful and beneficial for all existing and potential users of various computer systems in relation to ATC services to share operational and technical experience, and to enhance users' operations and map

out future system implementation, particularly at the early stage of development of new system. As a matter of fact, a user group for the old ATMS was formed back in late 1990s.

Regarding the new ATMS, CAD is enquiring if other users of the AutoTrac III and Raytheon products (e.g. Dubai, the United States, India, etc.) are interested in organising a user group.

* * * * *

[Translation]

APPENDIX 12

政府總部
運輸及房屋局
運輸科
香港添馬添美道 2 號
政府總部東翼

**Transport and Housing Bureau**
**Government Secretariat**
**Transport Branch**
East Wing, Central Government Offices,
2 Tim Mei Avenue,
Tamar, Hong Kong

本局檔號 Our Ref.: THB(T)CR 2/16/951/91
來函檔號 Your Ref.: CB4/PL/EDEV

電話 Tel : (852) 3509 8195
傳真 Fax : (852) 2524 9397

Mr Anthony CHU
Clerk to the Public Accounts Committee
Legislative Council
Legislative Council Complex
1 Legislative Council Road
Central
Hong Kong

21 April 2017

Dear Mr CHU,

**New Air Traffic Control System**

Thank you for your letter dated 11 April 2017 to the Secretary for Transport and Housing. I am authorised to reply on the Secretary's behalf.

The Transport and Housing Bureau (THB) and the Civil Aviation Department (CAD) have all along been stressing that our commitment to ensuring aviation safety will not be compromised. Since the full commissioning of the new Air Traffic Management System (ATMS) last November, the CAD has been closely monitoring the system's performance and proactively looking for optimisation measures to address the teething issues during the initial operation period. As stated in the interim report of the ATMS Expert Panel (Expert Panel), set up by the CAD, given the complexity of the new ATMS, it was inevitable and understandable to encounter some special or unforeseen situations during the initial stage of the new ATMS operation. Of utmost importance was that the CAD had in place an effective and established mechanism for responding to different situations and these issues did not compromise aviation safety. Nevertheless, the CAD would seriously look into the root cause(s) and identify solution(s) whenever there was an occurrence, so as to further optimise the system.

With regard to the momentary hitch experienced by the new ATMS on 8 April, the CAD had proactively issued a press release on the same day to explain the cause of the occurrence identified by the initial assessment and relevant follow-up actions taken. Upon the request of the CAD, the contractor of the new ATMS, the Raytheon Company, submitted a report on 15 April and committed to provide a software fix for testing by end April to resolve the problem in the long run. On the cause of the issue, the report was consistent with the preliminary analysis made by the contractor's staff on-site on that day. The occurrence was caused by an accumulation of users' preferences settings exceeding the preset system limit, i.e. 5,500. As a result, the Flight Data Processors could not function properly. During the occurrence, all flight targets were continuously displayed on the radar screens and the new ATMS displayed the full information of most of the flights, except for a few (eight flights) which could only show their position and altitude information. Air traffic control officers (ATCOs) were able to keep direct voice communications with the pilots at all times and obtain all the flight information through Automatic Dependent Surveillance–Broadcast technology to provide air traffic control (ATC) services. For the sake of prudence, the ATCOs deferred giving clearance to departure flights for about 15 minutes. All arrivals and flights flying through the Hong Kong Flight Information Region (HKFIR), which were also handled by the new ATMS, were not affected. Aviation safety was in no way undermined by the incident.

To address the issue above, the Raytheon Company is preparing a new software fix which will enhance the system's alert messages to technical staff when the accumulation of users' preferences settings has reached the preset system thresholds before reaching the limit. Upon receiving the alert, appropriate follow-up action will be taken by the technical staff, such as requesting the users to remove obsolete or unwanted preferences. The software fix will also give alert to the users rejecting the creation of new preferences settings once their accumulation reaches the preset system limit, without affecting the normal operation of the system. Furthermore, the new software fix will increase the maximum number of users' preferences allowed. The software fix will be tested by the Raytheon Company at its factory, followed by on-site testing in Hong Kong. Upon completion of the relevant safety assessments by the CAD, the software fix is expected to be implemented in the new ATMS by May. Before the new software fix is implemented, the CAD will continue to request the users to stop creating new preferences settings and to remove obsolete or unwanted preferences settings. Furthermore, the technical staff have been tasked to enhance the preventive maintenance of the new ATMS, which includes monitoring the accumulation of users' preferences settings round-the-clock and taking necessary actions to prevent the recurrence of similar incident. The CAD has also informed the Expert Panel immediately

and will update them closely on the follow-up actions. The CAD has also made public the report of the Raytheon Company. For details, please refer to relevant press release (www.cad.gov.hk).

As a matter of fact, the new ATMS has overcome the challenges arising from peak air traffic flow of the festive periods at the end of 2016 and in early 2017 since its commissioning. The average daily flight movements handled by the new ATMS since its full commissioning increased by 3.75 per cent when compared with the corresponding period a year earlier. Besides, during the peak air traffic flow in the last Easter holidays, the new ATMS effectively handled a daily average of 1,171 flight movements and 860 overflights, representing an increase of some 7 per cent when compared with the flights handled by the old ATMS over the corresponding period last year. This affirms the performances of the new ATMS and frontline ATCOs.

The Expert Panel's interim report also confirmed that, up till the end of February this year, the new ATMS had been providing safe, reliable and generally smooth air traffic services within the HKFIR and in compliance with the international safety standard since its full commissioning on 14 November 2016. Although the new ATMS has experienced some teething issues, the CAD's staff had handled those occurrences professionally, per standing practices, and acted prudently to minimise potential safety risk. The interim report also noted that the CAD had in place an effective and established mechanism for responding to different situations occurring after the full commissioning of the new ATMS judging from and comparing against the international best practices and the International Civil Aviation Organization (ICAO)'s safety management system process. Despite this, the CAD will continue to stay alert.

Although the occurrence on 8 April did not undermine aviation safety, THB has tasked the CAD to work closely with the Raytheon Company and keep the Expert Panel and THB informed of the development. Apart from expediting the preparation of the new software fix to resolve the occurrence on 8 April in the long run, the CAD will also:

a) drawing on the experience from the occurrence on 8 April, urge the Raytheon Company to conduct a health check on the ATMS for other potential glitch(es) arising from the system setting. The CAD will seek independent and professional advice from the Expect Panel throughout the process and will brief the experts on the initial findings at the next Expert Panel meeting (tentatively scheduled for early June);

b) extend the cold standby mode of the old ATMS until after the next Expert Panel meeting and consult the Expert Panel on whether the cold standby mode needs to be further extended. During the process, the CAD has to strike a balance among different considerations. For example, the extension will impose extra burden and pressure on the ATCOs if they are requested to maintain the necessary competence to handle both the new and old ATMS simultaneously for a prolonged period. It will also introduce additional and unnecessary operational risks as the ATCOs have to familiarise themselves with the operation of the old ATMS which is different from the new ATMS again. Furthermore, the replacement programme of the ATC System consists of two phases. Phase 1 refers to having the new ATC system installed and commissioned at the new ATC Centre in CAD Headquarters building (completed), while Phase 2 refers to the new ATC equipment to be extended to the old ATC centre as a back-up of the new ATC system. Extending the cold standby mode of the old ATMS for a prolonged period will unavoidably hinder the progress of the Phase 2 project. CAD will uphold the "safety first" principle and consult the Expert Panel regarding the above considerations before deciding on the way forward;

c) spearhead to form an international user group for the AutoTrac III users and invite ATC experts from Dubai and India and also experts from the United States where the Raytheon's ATC systems are used extensively, to share operational and technical experiences, and to enhance users' operations and map out the development roadmap of the system in future. It will help expedite the completion of optimisation work of the new ATMS system in Hong Kong; and

d) continue to exchange views on ATC matters through different channels, including the two overseas members of the Expert Panel (i.e. President of National School of Civil Aviation in France, Mr Marc Houalla and Chairman of ICAO Regional Air Traffic Management Sub-Group, Mr Kuah Kong Beng), with overseas civil aviation regulatory authorities and international air traffic management service providers.

We fully understand the concerns of the community and Legislative Council Members over aviation safety. Should there be any issues concerning aviation safety, we will continue to take the initiative to promulgate the issues through the established mechanism in an open and transparent manner. In the face of growing air traffic volume in future, the Government will spare no effort in upholding the highest level of aviation safety in a bid to maintain Hong Kong's status and reputation as a regional aviation hub.

Yours sincerely,

( Ms Joyce Chan )
for Secretary for Transport and Housing

c.c. Director-General of Civil Aviation

民航處
CIVIL AVIATION DEPARTMENT
香港特別行政區政府
The Government of the Hong Kong Special Administrative Region

香港大嶼山香港國際機場
東輝路1號民航處總部
Civil Aviation Department Headquarters
1 Tung Fai Road, Hong Kong International Airport,
Lantau, Hong Kong

電話 Tel: (852) 2910 6196
圖文傳真 Fax: (852) 2845 7160
檔案編號 Our ref: T/TELS/1810/9C
來函編號 Your ref:

Fax 2543 9197
(Total 12 pages)

24 January 2018

Mr Anthony Chu
Clerk to the Public Accounts Committee
Legislative Council
Legislative Council Complex
1 Legislative Council Road
Central
Hong Kong

Dear Mr Chu,

**Follow-up to Public Accounts Committee Report No. 63A**
**Administration of the air traffic control and related services**

Thank you for your letter ref CB4/PAC/CS(66,67&67A) dated 5 January 2018. We would like to provide the following response to your enquiries:

*(a) Has the Administration implemented all the recommendations in the final report of the ATMS Expert Panel; if not, please provide a timeline for the implementation of outstanding recommendations.*

2. In December 2016, the Civil Aviation Department (CAD) set up an Expert Panel comprising local and overseas experts and academia in the fields of air traffic management, engineering and aviation safety management to offer independent advice to CAD on the teething issues identified since the full commissioning of the new Air Traffic Management System (ATMS). The final report of the Expert Panel published in November 2017 (English only) and the executive summary in Chinese are available at:

*Full report:* http://www.cad.gov.hk/reports/Final%20Report%20by%20the%20Air%20Traffic%20Management%20System%20Expert%20Panel%20dated%20November%202017.pdf

*Executive summary:* http://gia.info.gov.hk/general/201711/21/P2017112100575_272401_1_1511262331248.pdf

3. Pursuant to a total of seven meetings, the Expert Panel made a number of recommendations to CAD in addressing the teething issues of the ATMS and in the continuous monitoring of system performance. CAD had taken various actions to implement all these recommendations, including optimisation of the ATMS, enhancement of relevant system operating and maintenance procedures, strengthening the communication with and training of the frontline staff, etc.. Details are set out at **Annex**. The Expert Panel reviewed the follow-up actions then already in place by CAD and was satisfied with the implementation of the recommendations. The Expert Panel also noted that the total number of movements handled by the new ATMS between November 2016[1] and October 2017 increased by 6.7% as compared with the same period in the previous year. A record high figure of 2,341 total movements was recorded over a 24-hour period on 24 August 2017 recovering from the impact of Super Typhoon HATO. The ATMS had successfully coped with the peak air traffic flow and overcome the challenges brought by adverse weather.

4. In line with the best international practice, CAD will continue to further enhance the ATMS and refine the related operations and procedures, in order to cope with the growing air traffic as well as to meet the latest and forthcoming international requirements.

*(b) Membership of the users group and for how long each member has been using AutoTrac III.*

5. The purpose of setting up the AutoTrac III Users Group (AUG) is to establish a platform for the AutoTrac III international users to share operational and technical experiences in their ATMS implementation, and to enhance users' operations and map out the future system development roadmap. The AUG comprises CAD, Airports Authority of India (AAI), Dubai Air Navigation Services (DANS), Federal Aviation Administration of

[1] The ATMS was fully commissioned on 14 November 2016.

the United States (US FAA), and Raytheon Company (RTN).

6. According to information available to the AUG, AutoTrac III has been used by AAI and DANS since 2011 and 2013 respectively. Various airports in the United States have been using the core components of AutoTrac III, namely the Surveillance Data Processing system and Flight Data Processing system, provided by RTN.

*(c) Exchanges and communications, if any, between group members on the irregularities found in the deployment of AutoTrac III, whether the irregularities identified were common among the members and measures they have undertaken to tackle the irregularities; and*

*(d) Details of the meetings that have been held/will be held by the group, including the dates, participants, issues raised at the meetings and papers and minutes of the meetings.*

7. The first meeting of the AUG was held at the CAD Headquarters from 19 to 20 September 2017 with attendance by 20 participants from all of the participating organisations. At the meeting, the participating organisations shared their respective experiences in the implementation, operation and maintenance of AutoTrac III and systems supplied by RTN, handling of teething issues, system optimisation and post commissioning enhancements. Regarding the deliberations at and report of the meeting, it was agreed among the participating organisations of the AUG that the views expressed should be taken as those of the AUG as a whole and that the report of the meeting shall be limited to the internal use of the participating organisations. It is under this agreed principle of confidentiality that the discussion of the AUG was taken forward in a frank and open manner. We seek the Public Accounts Committee (PAC)'s understanding of the arrangement. For the reference of PAC, we set out a summary of the key issues and observations shared by the participating organisations at the meeting in the ensuing paragraphs.

8. The participating organisations of the AUG considered that their AutoTrac III systems were in general operating satisfactorily. Some common teething issues, including surveillance related issues and human factor related issues, were also discussed at the meeting with a view to further enhancing system performance.

9. For surveillance related issues, the participating organisations considered that there was general commonality of limitations of conventional radar systems and external factors affecting the conventional radar systems (such as terrain and aircraft avionics), which were extraneous to the ATMS'

robustness but could impact on its operation. To tackle the surveillance related issues caused by the limitations of conventional radar surveillance technology, CAD has implemented Automatic Dependent Surveillance – Broadcast (ADS-B). The participating organisations expressed interest in ADS-B's contribution to reduction in surveillance related issues in Hong Kong, CAD's experience in the progressive deployment of ADS-B and the associated safety management processes, as well as the subsequent continuous monitoring of the performance in accordance with the International Civil Aviation Organisation (ICAO) guidance document. The participating organisations found this experience valuable which could serve as a useful reference in their implementation or continuous monitoring of ADS-B. With the progressive implementation of ADS-B in Hong Kong, the weekly averages of split tracks, false targets and instances of an aircraft's position being temporarily not displayed had decreased from 3.4, 8.6 and 1.9 cases respectively in the period between November 2016 and March 2017 to 0, 1.3 and 0.3 cases respectively in the period between August and mid November 2017.

10. On human factor related issues, the participating organisations shared their respective experiences, such as maintenance activities carried out inadvertently at time of high traffic or inadvertent inputting of command to initiate unregistered configuration, which affected the operation of the ATMS. All the participating organisations agreed that occurrences of such human factor related issues had declined with progressive staff familiarisation with the new system and the related procedures.

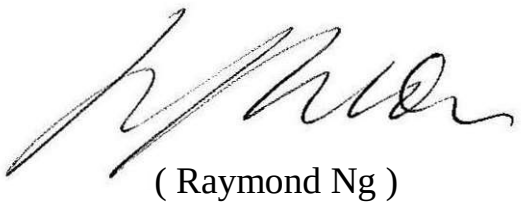
11. Given the highly complicated and sophisticated nature of ATMS, the participating organisations considered the above teething issues not uncommon, and the most important thing was the availability of robust and established procedures to manage them. According to the participating organisations, all teething issues of their respective systems mentioned had been handled by all respective users in accordance with their established procedures in a satisfactory manner.

12. Other than the above teething issues, the participating organisations also shared respective system operation and maintenance experiences and practices for the upkeep of the ATMS. For optimisation and enhancement of the ATMS (including the launch of new system features), the participating organisations shared a common view that a prudent and gradual approach should be adopted by the relevant stakeholders in the optimisation and enhancement process to minimise risks. During the discussion on the ATMS post commissioning enhancements, the participating organisations discussed various new initiatives and noted that with a view to enhancing air traffic

control operation efficiency and capacity, it would be worthwhile to pursue new initiatives, such as implementation of re-categorisation of wake turbulence categories, which might necessitate further enhancement to the ATMS. The participating organisations indicated that since the local operational environment and work culture varied in different places, different users might implement new initiatives according to their own priorities and situations.

13. As detailed in the Expert Panel's final report, the Panel was appreciative of CAD's efforts in championing the AUG, and opined that CAD could further optimise the new ATMS in Hong Kong through experience sharing with international users. Indeed, after the first meeting of the AUG, the participating organisations continued to keep an open dialogue and exchange experiences in operating and optimising the ATMS. The AUG also agreed to continue with holding AUG meetings in future and sharing experience with industry players through various platforms as opportune. CAD will liaise with other AUG members on hosting future AUG meetings.

Yours sincerely,



( Raymond Ng )
for Director-General of Civil Aviation

c.c. Secretary for Transport and Housing
Secretary for Financial Services and the Treasury
Director of Audit

Annex

**ATMS Expert Panel's Recommendations and CAD's Follow-up Actions**

| Para. No. in Final Report | Expert Panel's Recommendation | CAD Follow-up Actions |
|---|---|---|
| 44 | A few reported occurrences shared a common thread of human factor element of the frontline staff at the time of occurrences such as maintenance activities not conducted at time of low traffic, and inputting command to initiate an unregistered system configuration. The Expert Panel advocated continuous vigilance against similar inadvertent activities through the standardisation of and adherence to the relevant procedures, where applicable. | With briefings provided to staff and updates of relevant procedures against such inadvertent activities, during the latter part of the term of the Expert Panel there had been no further reported occurrences attributable to human factor issues in the conduct of maintenance activities. CAD will continue to stay vigilance against similar inadvertent activities through the standardisation of and adherence to the relevant procedures, where applicable. |
| 45 | The Expert Panel noted that it was important for the engineering staff to maintain good communication with operational controllers. It recommended that timely advice on the temporary arrangement, including fallback arrangement, and any possible impact from conduct of maintenance activities should be provided to frontline controllers to minimise risk and disruption to operation and improve response and recovery time should issues occur. | With experience gained from these teething issues and increasing familiarity with the system, CAD has implemented various measures, in the form of Operational Instructions, team briefings, handover notes, lessons learnt and maintenance instructions, to promulgate relevant information to frontline operational and maintenance staff in a timely manner. |
| 46 | The Expert Panel recommended CAD continuing its efforts to closely monitor the overall ADS-B performance with regular reviews on the operational, technical and system aspects to assess the need for further fine-tuning. | CAD has established a mechanism to closely monitor the performance of ADS-B avionics of aircraft flying within the HKFIR and follow up with relevant airlines/civil aviation authorities for aircraft with suspected degraded ADS-B avionics performance in accordance with the International Civil Aviation Organisation (ICAO) guidance document. |

| Para. No. in Final Report | Expert Panel's Recommendation | CAD Follow-up Actions |
|---|---|---|
| 47 | The Expert Panel recommended that CAD should continue to optimise the operating procedures and system operations in order to enable the system to continue to perform to the highest standard possible as a safe and reliable tool for uninterrupted air traffic control (ATC) operations. | CAD has optimised relevant operating and maintenance procedures of the new ATMS and would continue to review them on a regular basis to ensure its highest performance standard. From maintenance and operational perspectives, necessary updates to reflect lessons learnt and day-to-day operational experience and knowledge have been incorporated into the respective maintenance procedures and operational instructions/practices, thereby contributing to overall improvement to system performance and stability. For example, maintenance procedures have been enhanced to avoid maintenance activities being carried out during high air traffic periods, and Operational Instruction has been issued to frontline staff to avoid inadvertent manual initiation of system configuration not relevant to the prevailing operating environment. |
| 48 | On deployment of software fixes/enhancements, the Expert Panel suggested that CAD should prioritise the items and implement those changes prudently in order to minimise risks when introducing any changes. | CAD has established a mechanism to assess and review the priority of enhancement items among ATC and engineering staff. For instance, uploading of new software builds to rectify the ATMS sub-systems related issues in June and September 2017 was prioritised and implemented under the established Safety Management System (SMS) with risks adequately mitigated. All immediately needed software builds have been successfully deployed to the new ATMS for operational use without any issues. |

| Para. No. in Final Report | Expert Panel's Recommendation | CAD Follow-up Actions |
|---|---|---|
| 53 | The Expert Panel recommended CAD to uphold its long established and effective SMS and safety culture in safeguarding the smooth and safe provision of ATC services. | CAD has put in place a robust SMS, with controls and mitigation measures, contingency plan and the associated procedures, resilience in system design, along with a team of experienced and professional staff, in managing the risks induced by the teething issues. CAD will continue to uphold its long established and effective SMS and safety culture in safeguarding the smooth and safe provision of ATC services. |
| 55 | The Expert Panel recommended that CAD should address the staff's concerns and enhance staff's confidence in the ATMS through a series of measures including further reducing nuisance conflict alert caused by false targets, and in particular, through the on-going efforts with monitoring of ADS-B performance; fine-tuning the predictive conflict alert settings in order to best suit operational needs; and continuing to monitor and address controllers' concerns on workload through measures such as reviewing the break/relief arrangements to keep pace with growing air traffic in the longer term. | CAD has successfully integrated ADS-B technology into the ATMS to reduce false targets, optimised the predictive conflict alert settings; and progressively strengthened the ATC operational manpower to better support the air traffic growth. CAD will continue to monitor and address controllers' concerns on workload through measures such as reviewing the break/relief arrangements to keep pace with growing air traffic in the longer term. |
| 56 | On occasional occurrences of keyboards/mice not being responsive to commands for individual workstation, the Expert Panel opined that the issue was not unique to the ATMS at CAD but also other brands of ATMS in other Air Navigation Service Providers (ANSPs), and proactive housekeeping measures in accordance with international best practices were carried out to keep the number of reports relatively low. The Expert Panel recommended CAD strengthening the communication with the frontline staff in this particular aspect. The Expert Panel | CAD has strengthened communication with frontline staff through regular meetings and communication with the frontline ATC and engineering staff, including representatives from the Hong Kong ATC Association and the Electronics Engineer Branch of the Hong Kong Chinese Civil Servants' Association, in order to solicit frontline views in formulating both short term and long term plans in enhancing the ATMS with the Contractor for continuous improvement. |

| Para. No. in Final Report | Expert Panel's Recommendation | CAD Follow-up Actions |
|---|---|---|
| | recommended CAD following up with the Contractor to strive for continuous improvement in this aspect through system enhancement in view of growing air traffic. | |
| 57 | The Expert Panel recommended CAD to be proactive in sharing information with staff on management's considerations in the implementation of enhancement and optimisation measures, including practicality, priorities and timelines of implementation. CAD should continue with its good practice of gathering views and facilitating feedbacks from both the operational and engineering teams. | CAD's management has put in continuous efforts to improve the ATMS and the working environment of ATC frontline staff. CAD's management has also arranged regular informal gatherings with the frontline controllers and engineering staff and posted lessons learnt as a result of occurrence investigations on notice boards, conducted briefing sessions on system behaviours and disseminated information via intranet to enhance mutual communications and address staff's concerns. |
| 58 | The Expert Panel recommended CAD exploring ways to promote the ATC profession and knowledge to the community at large. | With the establishment of the Hong Kong International Aviation Academy (the Academy) by the Airport Authority Hong Kong (AAHK) and delivery of training programmes since May 2017, introductory courses on ATC had been available to the public as an initial step in promoting the ATC profession and knowledge to the community at large. CAD is also working with the Academy in incorporating ATC engineering training into its curriculum. |
| 63 | The Expert Panel encouraged CAD to continue to share its positive ATC transition experience, handling of teething issues, established SMS process along with the challenges it had faced at local and overseas settings. | CAD has spearheaded the forming of the AutoTrac III Users Group (AUG), which serves as an excellent forum for sharing of knowledge and operational experiences, system enhancements, future development plans and roadmaps with other AutoTrac III users. With the AUG members being supportive of |

| Para. No. in Final Report | Expert Panel's Recommendation | CAD Follow-up Actions |
|---|---|---|
| | | sharing information and experience on a regular basis among AutoTrac III users, CAD is following up with other AUG members on hosting future AUG meetings. |
| 65 | The Expert Panel considers that on-going effort is required to sustain the long term development of the ATMS to meet the challenges of future traffic demand, particularly with the on-going three-runway system (3RS) Project at the Hong Kong International Airport (HKIA). | CAD's Project Team, consisting of professional ATC staff and engineers, has been considering the long term development needs of the ATMS in order to meet all these challenges.<br><br>A Steering Committee, chaired by a Deputy Director-General of Civil Aviation, with representation of the Transport and Housing Bureau, oversees matters relating to the continued implementation and optimisation of the ATMS. |
| 66 | The Expert Panel considers that continuous enhancement and refinement of any ATMS is necessary and should be an on-going process. In addition, CAD should continue to keep the operating and maintenance procedures of the ATMS as living documents that need to be reviewed and updated on a regular basis. | CAD has established regular meetings with the frontline maintenance staff to review and upkeep the maintenance procedures. CAD has also established regular communication with the frontline ATC and engineering staff, including representatives from the Hong Kong ATC Association and the Electronics Engineer Branch of the Hong Kong Chinese Civil Servants' Association, in order to solicit frontline views in formulating both short term and long term plans in enhancing the ATMS for meeting the new ICAO initiatives and addressing on-going operational needs. |
| 68 | CAD should continue to upkeep its internal and external communication with relevant parties in a timely manner, collect feedbacks from staff, and thus pool wisdom to improve ATMS operations in future. | CAD has established regular communication with the frontline ATC and engineering staff, including representatives from the Hong Kong ATC Association and the Electronics Engineer Branch of the Hong Kong Chinese Civil |

| Para. No. in Final Report | Expert Panel's Recommendation | CAD Follow-up Actions |
|---|---|---|
| | | Servants' Association. CAD has also spearheaded the establishment of the AUG, which serves as an excellent forum for sharing of knowledge and operational experiences, system enhancements, future development plans and roadmaps with other AutoTrac III users. CAD will continue to maintain its internal and external communication with relevant parties in a timely manner, collect feedbacks from staff, and thus pool wisdom to improve ATMS operations in future. |
| 69 | CAD should continue to upkeep its relevant mechanisms, channels and practices to regularly monitor the performance of ATMS and its enhancement needs through:<br>(i) collecting comments from frontline staff via formal and informal channels;<br>(ii) enhancing communication between engineering and operation subject matter experts via formal and informal channels;<br>(iii) reviewing with ATMS supplier and maintenance staff via standing senior management level meetings/teleconferences and system performance review meetings; and<br>(iv) conducting safety performance assessments under the established SMS framework such as the review of safety performance targets, review of the effectiveness of risk mitigating measures, safety audits and inspections, refresher training and fallback drills to ensure competency and continuous improvement in system maintenance and procedures. | Items (i) to (iv) are established mechanism and processes within CAD, which CAD will continuously maintain for regularly monitoring performance of ATMS and its enhancement needs:-<br>(i) CAD's management has established regular gatherings with the frontline controllers and engineering staff, posted lessons learnt as a result of occurrence investigations on notice boards, and conducted briefing sessions on system behaviours with information disseminated via intranet to enhance mutual communications and address staff's concerns.<br>(ii) CAD has implemented various measures, in the form of Operational Instructions, team briefings, handover notes, lessons learnt and maintenance instructions, to promulgate relevant information to frontline operational and maintenance staff in a timely manner.<br>(iii) CAD has regular communication/coordination |

| Para. No. in Final Report | Expert Panel's Recommendation | CAD Follow-up Actions |
|---|---|---|
| | | with ATMS supplier and maintenance staff via standing senior management level meetings/teleconferences and system performance review meetings.<br>(iv) CAD has conducted safety performance assessments under its established SMS framework including review of safety performance targets and the effectiveness of risk mitigating measures, conduct of safety audits and inspections, refresher training and fallback drills to ensure competency and continuous improvement in system maintenance and procedures. |
| 70 | A long term ATC manpower plan should be formulated to provide adequate level of competent staff to cope with the foreseeable expanded operation of the ATMS. | CAD has formulated a long term ATC manpower plan. Apart from bidding for additional manpower resources through the established procedure, CAD will also liaise with AAHK to engage experienced expatriate air traffic controllers on a time-limited basis to supplement and train local ATC manpower to meet long-term development need of the HKIA. |
| 71 | The Expert Panel believed it prudent for CAD to closely monitor developments and fine-tune and/or upgrade the ATMS on an on-going basis in maintaining the capability and resilience of the ATMS on a sustained basis, especially during contingency. | CAD will continue its on-going effort in upgrading the ATMS and refining the related operations and procedures. A Steering Committee, chaired by a Deputy Director-General of Civil Aviation, with representation of the Transport and Housing Bureau, oversees matters relating to the continued implementation and optimisation of the ATMS. |

# THE GOVERNMENT MINUTE

**in response to the**

# REPORT OF
# THE PUBLIC ACCOUNTS COMMITTEE
# No. 69

**of February 2018**

**16 May 2018**

***2018-19 Budget***

36. The 2018-19 Budget proposed allocating additional resources to implement various initiatives on elderly services put forth in the 2017 Policy Address, involving a total recurrent provision of about $1,263 million and non-recurrent expenditure of about $2,229 million. Further, the 2018-19 Budget proposed making an additional recurrent provision of about $63 million and non-recurrent provision of about $343 million to provide speech therapy services for elderly service units to assist elderly persons with swallowing difficulties or speech impairment.

***Looking ahead***

37. The Government will continue to follow up on the recommendations of ESPP and explore suitable measures to strengthen elderly services. The Labour and Welfare Bureau will also continue to brief the LegCo Panel on Welfare Services on matters related to elderly services.

**Administration of the air traffic control and related services**
(Paragraphs 28 to 31 of Part 4 of PAC Report No. 67)

38. The Civil Aviation Department (CAD) fully commissioned the new Air Traffic Management System (ATMS) on 14 November 2016. Since the full commissioning of the system, with the proper handling of the teething issues identified by the CAD, the ATMS has been operating smoothly for over 16 months up to now. It has been providing round-the-clock air traffic services in a safe, reliable and smooth manner during the period.

39. In 2017, the ATMS ran the gamut of practically all inclement weather conditions and multiple traffic peaks, overcoming the challenges brought by the adverse weather of five severe storms to severe/super typhoons during the period. A record high figure of 2 341 total aircraft movements was recorded over a 24-hour period on 24 August 2017 recovering from the impact of Super Typhoon HATO promptly. In addition, the total number of aircraft movements handled by the ATMS in 2017 increased by 7.6% as compared with 2016. These objective figures affirm the efficient performance of the ATMS and front-line air traffic control officers. In recognition of the significant contribution made by the CAD in upgrading the reliability of the CAD's air traffic management services, the Civil Air

Navigation Services Organisation[3] presented the CAD with the 2017 Global Safety Achievement Award.

40. The Transport and Housing Bureau (THB) and the CAD will continue to closely monitor the performance of the ATMS and optimise the system and enhance system functionality in order to cope with continued growth in air traffic in the future.

41. As all the recommendations from the Audit and the LegCo PAC on ATMS have been implemented, we recommend deleting this part from the next progress report.

**Government's efforts in managing municipal solid waste**
(Paragraphs 32 to 35 of Part 4 of PAC Report No. 67)

42. Secretary for the Environment and Director of Environmental Protection have taken actions to follow up on the outstanding recommendations made by the Audit and the PAC of the LegCo regarding the Government's efforts in managing municipal solid waste. Details of the progress made are set out in Enclosure 10.

Encl. 10

43. As the outstanding recommendations will be implemented on an ongoing basis, we recommend deleting this subject from the next progress report.

**Use and disposal of vacant school premises**
(Paragraphs 38 to 40 of Part 4 of PAC Report No. 67)

***Identifying vacant school premises***

44. Of the remaining 108 addresses identified from the stocktaking exercise conducted earlier by the Education Bureau (EDB), 14 have already been handled by the Planning Department (PlanD) under the central clearing house mechanism. The short-term use (under Short Term Tenancy with the LandsD) of one vacant school premises (VSP) that ended in 2017 has been retained for

[3] The Civil Air Navigation Services Organisation (CANSO) was set up in 1996 to provide support for the world's air navigation service providers and to hold regular meetings to promote knowledge sharing among the stakeholders, in order to enhance efficiency and safety in air traffic management. At present, CANSO has about 170 regulators, air navigation service providers and related service providers as its members. The Safety Standing Committee of CANSO is responsible for choosing the winner of the 2017 Global Safety Achievement Award from among five nominations in recognition of the significant safety contribution it has made in enhancing aviation safety. The other nominees this year were the United States' Federal Aviation Administration, the United Kingdom's National Air Traffic Services, Switzerland's air navigation service provider Skyguide, and the European Commission's Functional Airspace Block Europe Central.