For information **PWSCI(2007-08)18**

NOTE FOR PUBLIC WORKS SUBCOMMITTEE OF FINANCE COMMITTEE

Supplementary Information on
75KA – New Civil Aviation Department headquarters

INTRODUCTION

When considering the paper referenced PWSC(2007-08)63 on the above project at the Public Works Subcommittee meeting held on 21 December 2007, Members requested the Administration to provide the following supplementary information –

(a) a comparison between the net operational floor area (NOFA) of the functional divisions of the Civil Aviation Department (CAD) (including the Air Traffic Control (ATC) system) and that of the new CAD headquarters, with a breakdown by the type of facilities (such as offices, ATC facilities and other facilities) and information on the locations of existing facilities; and justifications for the additional areas required, including but not limited to information on the area required to cope with future expansion arising from the growth in air traffic;

(b) justifications for keeping the existing ATC system as a back-up system upon the commissioning of the new system;

(c) information on the existing manpower provision for the ATC division of CAD and the additional manpower required for the operation of the new ATC system;

(d) environmentally friendly and/or energy conservation measures to be implemented in the new CAD headquarters, estimated figures on the effectiveness of these measures in energy saving, as well as the financial implications of implementing these measures;

(e) the cost implications of the new facilities as set out in paragraph 6 of the paper referenced PWSC(2007-08)63; and

/(f) .....

(f) the functions/workshops organised by CAD in the past five years which required use of an auditorium and conference facilities similar to those to be provided in the new CAD headquarters as set out in paragraph 6(b) of the paper referenced PWSC(2007-08)63.

THE ADMINISTRATION'S RESPONSE

Background

2. The existing ATC system came into operation in 1996 before the commissioning of the Hong Kong International Airport (HKIA) in 1998 to allow sufficient time for training to ensure the provision of a safe and reliable service. The planning of the system even took place earlier in 1992/93 and the most advanced system at the time was selected. The existing ATC system is approaching the end of its usable life and cannot handle the forecast air traffic beyond 2012. Unless we replace the system, it would lag behind those used by other ATC authorities in the vicinity and would inhibit inter-operability with other ATC systems. By the time the system is replaced in 2012, it would have been in operation for almost 15 years.

3. It is not feasible to replace the existing system on site because the new ATC system requires space about three times the size of the existing ATC Centre (in the ATC Complex located on the Airport Island). The existing ATC Centre has been built with about 20% additional space for expansion, but such provision has been utilized due to unexpected traffic growth. Under the progressive liberalisation policy, Hong Kong's aviation sector has been growing rapidly. Since the opening of HKIA in 1998, annual aircraft movements at HKIA have grown by 72% to reach 280 000 movements in 2006, or a daily average of 768 movements, which exceed by 39% the 202 200 movements forecast for 2005 in the 1991 New Airport Master Plan. Over the same period, overflight traffic through the Hong Kong Flight Information Region has also grown by 95% to reach 140 000 movements in 2006. A major factor in such rapid growth is that the Pearl River Delta (PRD) region is one of the fastest growing areas for air traffic.

4. We are also concerned about possible disruption to the daily round-the-clock operation of the existing ATC Centre. We therefore need to construct a new building to house the new ATC system, which will be able to support 490 000 aircraft movements at HKIA in 2025 as forecast by the Airport Authority (AA). Additional space has been earmarked in the new ATC Centre to cater for the replacement of the new ATC system in the future and further expansion requirements arising from the growth in air traffic. The traffic situation will be continuously monitored and an assessment will be made in 2020 to determine the timing for an upgrade and/or the next replacement of the ATC system.

/***Paragraph*** .....

Paragraph 1(a) above

5. A comparison between the NOFA of CAD's functional divisions (including the ATC system) and that of the new CAD headquarters, with a breakdown by the type of facilities (such as offices, ATC facilities and other facilities), is set out in Enclosure 1. Information on the locations of existing facilities and justifications for the additional areas required are also given. Paragraph 12 of the paper referenced PWSC(2007-08)63 mentions that upon commissioning of the new CAD headquarters, office accommodation (the use of which is not restricted to offices for staff) and car parking spaces could be released. Their existing locations are as follows –

(a) about 1 730 m^2 of rented office accommodation and four rented car parking spaces are at the Air Freight Forwarding Centre;

(b) about 1 040 m^2 of rent-free office accommodation is at the HKIA Passenger Terminal Building;

(c) about 5 700 m^2 of government owned office accommodation and 38 government owned car parking spaces are at Queensway Government Offices (about 1 500 m^2), the ATC Complex (about 3 900 m^2) and the Backup ATC Complex (about 300 m^2).

Paragraph 1(b) above

6. It is necessary to keep the existing ATC Centre (located in the ATC Complex) upon the commissioning of the new system because the existing ATC system will need to be retained as a hot standby facility for at least six months after the commissioning of the new system to cater for any unexpected problem with the new system. After that, the existing ATC Centre will be converted into a new Backup ATC Centre, with the upgrading of the existing ATC system for use as a backup system. This is in line with CAD's long-established practice to provide backup ATC facilities with contingency procedures to guard against a major system malfunction or natural disaster that necessitates evacuation of the ATC Centre. The space now occupied by the existing Backup ATC Centre (a small facility located underneath the Backup ATC Tower in the Backup ATC Complex), which can only handle about one third of the existing normal traffic capacity, could be released for use by other departments.

/***Paragraph*** .....

Paragraph 1(c) above

7. The existing manpower provision for air traffic controllers is 237 and the additional manpower required for the operation of the new ATC system upon commissioning is 39. In anticipation of the continuous growth in air traffic and to enhance safety and operational efficiency, new air traffic control positions will be introduced progressively from now until 2013/14 and 39 new air traffic controller posts at various ranks have been approved for this purpose. CAD will closely monitor the trend of growth in air traffic and review the manpower situation.

Paragraph 1(d) above

8. A summary of environmental friendly and energy conservation measures to be implemented in the new CAD headquarters is at Enclosure 2.

Paragraph 1(e) above

9. The cost implications of the facilities set out in paragraph 6 of the paper referenced PWSC(2007-08)63 (in September 2007 prices) are as follows –

		(A) ($m)	(B1) ($m)	(B2) ($m)	(C) ($m)	(D) ($m)
(a)	Construction costs	27.77	26.76	22.36	21.00	8.39
(b)	Furniture and equipment	17.50	12.00	10.56	1.30	3.00
	Total	45.27	38.76	32.92	22.30	11.39

Notes

(A) aircraft accident investigation facilities
(B1) a multi-purpose auditorium
(B2) conference facilities
(C) an ATC tour presentation room and an educational path
(D) a library cum resource centre

/***Paragraph*** *.....*

Paragraph 1(f) above

10. Statistics on the events organised by CAD in the past five years which required use of an auditorium similar to that to be provided in the new CAD headquarters are set out in Enclosure 3. (Conference facilities are for holding internal meetings and external meetings with the aviation industry.)

11. The multi-purpose auditorium will be primarily used to provide a venue for group briefings for industry partners and staff, and for international and regional aviation conferences and meetings. On the former, CAD regularly needs to brief industry partners and staff on new procedures, policies and regulatory changes. Without the auditorium, it would be necessary to organize a greater number of briefings in smaller meeting rooms. This is not conducive to operational efficiency. On the latter, with the auditorium, we would be able to assist ICAO in hosting conferences and meetings. Such assistance is welcomed by ICAO and will help to promote Hong Kong's status as an international and regional aviation centre. The auditorium will also be made available for use by other departments.

Transport and Housing Bureau
January 2008

Enclosure 1 to PWSCI(2007-08)18

Comparison between NOFA of CAD's Functional Divisions (including the ATC System) and NOFA of New CAD Headquarters

	Existing	New CAD headquarters		
	Existing Area (m^2)	**Area Required (m^2)**	**Area provided for future expansion (m^2)**	**Total area (m^2)**
(A) Offices (for staff)	**3 068.1**	**3 428.1**	**0.0**	**3 428.1**
(B) ATC facilities				
(i) ATC Centre	545.0	900.0	540.0	
(ii) Supporting equipment, systems and facilities of the ATC Centre	2 162.0	7 207.5	1 200.0	
(iii) Aeronautical Information Centre	400.0	315.0	0.0	
(iv) Aircraft Search and Rescue Coordination Centre	200.0	300.0	100.0	
(v) Aeronautical Network Centre	115.0	200.0	160.0	
Sub-total	**3 422.0**	**8 922.5**	**2 000.0**	**10 922.5**
(C) Other facilities				
(i) Aircraft Accident Investigation Facilities	0.0	700.5	0.0	
(ii) Training and Examination Facilities	665.0	1,827.2	464.0	
(iii) Operational Evaluation, Research and Development Facilities	100.0	350.0	400.0	
(iv) Multi-purpose auditorium	0.0	675.0	0.0	
(v) Conference facilities	335.0	564.0	0.0	
(vi) Library cum resource centre	100.0	338.0	0.0	
(vii) ATC Tour Presentation Room and Educational Path	0.0	368.0	0.0	
(viii) Ancillary Facilities	1 501.5	2 361.8	375.3	
(xi) Staff canteen	85 seats	200 seats		
(x) Car parking spaces	209 nos	178 nos		
Sub-total	**2 701.5**	**7 184.5**	**1 239.3**	**8 423.8**
Total NOFA (m^2)	**9 191.6**	**19 535.1**	**3 239.3**	**22 774.4**

Explanatory Notes

Item (A) – Now located in the ATC Complex, Airport Freight Forwarding Centre, Passenger Terminal Building of HKIA and Queensway Government Offices. The increase in the area required is to cater for expansion in various divisions of CAD as a result of increased staff establishment and activities relating to regulatory functions.

Item (B)(i) – Now located in the ATC Complex. The increase in the area required is to cater for the increase in the number of control positions from the existing 22 to 56 within the next decade to cope with the growth in air traffic; to allow the corresponding expansion in the scale of the supporting equipment, systems and facilities; and to implement the new design concept of ATC control console and equipment accommodation, which focuses on human ergonomics, user comfort and industrial safety. Additional space has been reserved for future expansion.

Item (B)(ii) – Ditto

Item (B)(iii) – Now located in the ATC Complex, with a sub-office on the land side of HKIA. The decrease in the area required is due to the relocation and combination of the two offices into one in the new headquarters on the land side of the HKIA.

Item (B)(iv) – Now located in the ATC Complex. During search and rescue operations, participating units (mainly aircrew) are required to attend a briefing on the necessary technical information such as search datum, proposed search patterns and meteorological information with reference to computer data and the satellite-based distress signal tracking system. Experience from annual search and rescue exercises indicates that a larger area is required. Additional space has been reserved for future expansion and in-situ system replacement (as the centre must be available at all times).

Item (B)(v) – Now located in the ATC Complex. The increase in the area required is due to the need to accommodate new communication systems and provide a broadcast room. The number of operator positions will increase from 9 to 14 by 2012 to handle the growth in air traffic. The centre needs to be operational around the clock and cannot afford any disruption. Additional space has been reserved for future in-situ equipment replacement.

Item (C)(i) – New facilities. Aircraft accident investigation is one of CAD's major responsibilities. It is specialised and time-critical, requiring close coordination and extensive technical support among different professions in the collection and analysis of evidence. Reassembling the critical parts of recovered wreckage to its original shape can greatly facilitate the necessary examination, surveying and testing.

Item (C)(ii) – Now mainly located in the ATC Complex. The increase in the area required is due to the need to install larger simulators with more training positions, in response to the heavy commitments in ATC training. Some 120 controllers will need to be trained up locally in the next 10 years for meeting the new service demand and filling up anticipated vacant posts due to staff retirement. To promote safety standards, refresher training using the simulators is required for controllers so that they can handle exceptionally busy traffic and emergencies that may be encountered in daily operations.

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Item (C)(iii) – Now located in a small office in the ATC Complex. The increase in the area required is due to the need to strengthen the facilities to cope with the anticipated heavy workload in exploring the future procedures such as those in the Pearl River Delta operations and regional air traffic flow management. Such work will involve the use of specialized tools, such as the fast-time simulator, mock-up of new equipment and other visual aids.

Item (C)(iv) – A new facility. It will be primarily used to provide a venue for group briefings for industry partners and staff, and for international and regional aviation conferences and meetings.

Item (C)(v) – Now located in various divisions of CAD. The increase in the area required is due to the anticipated increase in work related activities as a result of traffic growth and the expansion of the aviation industry, which will require more internal meetings and external meetings with the aviation industry.

Item (C)(vi) – A new facility. At present, small library facilities are provided at individual divisions of CAD at various locations. Because of a lack of space, a large volume of books, reports and other aviation related documents are kept in stores. We intend to group them into a library cum resource centre, which will enable CAD to better use such information and resources. Part of the reading materials will be made available to the industry and, where warranted, individual members of the public.

Item (C)(vii) – A new facility. To promote understanding and cultivate interest in aviation among the general public, CAD organises tours of its ATC facilities from time to time. The new facilities will allow the display of interesting elements such as aircraft models, photos and small antique aircraft/engines parts to enhance the attractiveness and effect of these tours.

Item (C)(viii) – Now located at various divisions of CAD. These include storerooms, confidential registries, computer rooms, rest rooms, locker areas for shift duty staff etc. The increase in the area required is due to the increase in staff numbers and work commitments both on the operational and regulatory fronts as a result of the expansion of the aviation industry. Additional space has been reserved for future expansion.

Item (C)(ix) – Now located in the Backup ATC Complex. More seats are required to cater for more staff to be accommodated in the new CAD headquarters.

Item (C)(x) – Now located at various office locations. Site constraints limit the number of car parking spaces to be provided.

Enclosure 2 to PWSCI(2007-08)18

Summary of Environmental Friendly and Energy Conservation Measures

This project will be carried out under a Design and Build contract. The following environmental friendly and energy conservation measures have been incorporated into the employer's requirements of the contract for the designer to carry out an environmental friendly building design.

For proposed energy efficient features, T5 energy efficient fluorescent tubes with electronic ballast and lighting control by occupancy sensor and daylight sensor will be adopted in all office lighting with a design target of maximum allowable lighting power density of 15 W/m^2. Fresh water evaporative cooling air-conditioning system with heat recovery function and variable speed drive will be adopted in air-conditioning installation. For lift and escalator installation, automatic on/off switching of lighting and ventilation fan will be adopted inside all lifts and service-on-demand for starting of escalators will be adopted.

For renewable energy technologies, photovoltaic panels will be adopted for conversion of solar power to electricity for operation of some building services installation.

For occupants' health, the design of this building will aim to achieve Excellent Class of Indoor Air Quality under Environmental Protection Department's Indoor Air Quality Certification Scheme.

For greening features, the main roof will be landscaped for environmental and amenity benefits. Landscaped terraces will be provided. Solar powered lighting will be installed along with the traditional energy efficient landscape lighting system.

For recycled features, recycling of rain water for flushing and irrigation purposes will also be adopted.

The total estimated additional cost of around HK$30M will be incurred by the above-mentioned environmental friendly features. The energy efficient and renewable energy features will contribute to about 15% energy savings in the building's energy consumption.

Enclosure 3 to PWSCI(2007-08)18

Statistics on Events organised by CAD in the Past Five Years which required use of an Auditorium similar to that to be provided in the New CAD headquarters

Year	No. of staff group briefings / industry-wide briefings		No. of additional staff group briefings / industry-wide briefings CAD would have organised if an auditorium had been available[1]		No. of conferences / seminars / workshops / meetings hosted by CAD		No. of additional conferences / seminars / workshops / meetings CAD would have offered to host if an auditorium had been available		
	No. of events	No. of days[2]	No. of events	No. of days	No. of events	No. of days[3]	No. of events	No. of days	Total no. of days
2003	3	11	7	7	5	27	0	0	**45**
2004	6	26	7	7	5	26	2	10	**69**
2005	1	5	11	11	6	27	7	41	**84**
2006	5	13	7	7	8	38	2	10	**68**
2007	10	27	8	8	11	51	8	42	**128**

[1] Due to the lack of a proper venue, information on regulatory changes and important policies were on these occasions disseminated by circulars to the industry. A hotline was set up to answer enquiries.

[2] Staff briefings on any changes or new procedures have to be conducted in 4 - 5 different sessions presently due to the limitation of the existing conference rooms. The number of sessions is expected to reduce with a larger venue.

[3] Some events lasted for more than one day. The number of days also includes the days on which preparations were made for the events.