

**For Discussion  
on 12 June 2017**

**Legislative Council Subcommittee  
to Follow Up Issues Relating to the  
Three-Runway System at the Hong Kong International Airport**

**Hong Kong International Airport's Enhancement Plan**

**Introduction**

This paper sets out the measures Airport Authority Hong Kong (“AAHK”) has adopted and will adopt to enhance the existing two-runway system (“2RS”) at Hong Kong International Airport (“HKIA”) before the full commissioning of the three-runway system (“3RS”).

**Background**

2. HKIA’s throughput reached 70.5 million passengers and 4.52 million tonnes of cargo in 2016, and are expected to continue to grow and reach 102.3 million passengers and 8.9 million tonnes of cargo respectively by 2030. While the planned commissioning of the 3RS in 2024 will enable HKIA to meet the long-term demand, it would be necessary to enhance HKIA during the interim period to maintain service quality against a constrained airport operating environment. In this respect, AAHK adopts a three-pronged approach –

- (a) expanding facilities in a timely and cost-effective manner;
- (b) improving and streamlining processes to enhance operational efficiency; and
- (c) applying technology, where appropriate, to enhance passenger experience.

**HKIA’s Enhancement Measures**

**A. Expansion of Facilities**

3. At the meeting on 5 December 2016, Members noted, vide LC

Paper No. CB(4)197/16-17(01), that AAHK has been taking forward various initiatives, including the West Apron Expansion in January 2015, to enhance the handling capacity of HKIA. The timely expansion of existing facilities and provision of new ones are necessary to enable HKIA to cope with the growing traffic demand, particularly during peak periods, before the full commissioning of the 3RS. On this front, AAHK will continue to implement the following facilities improvement in the years ahead.

(a) Midfield Apron Development (“MAD”)

4. The Midfield Development Phase 1, commissioned in March 2016, includes a 105,000 square metre five-storey new Midfield Concourse (“MFC”), 20 parking stands and an extension of the automated people mover system (“APM”) from Terminal 1 (“T1”) to the MFC. It has a capacity to serve an additional 10 million passengers every year. AAHK is now proceeding with the remaining phase of the MAD which will provide additional parking stands, associated cross-field taxiways and taxilanes. Upon completion (in phases between 2017 and 2020), MAD will increase the total number of aircraft parking stands from 182 to 215, providing the necessary capacity to cope with the anticipated increase in air traffic of the 2RS.

(b) Terminal 1 (“T1”) Capacity Expansion

5. With the continuous growth in demand and in anticipation of the planned closure of Terminal 2 (“T2”) for expansion in 2019, the core processing facilities in T1 (e.g. check-in, security screening, baggage handling etc.) will be expanded to provide additional processing capacity. The key components of the T1 Capacity Expansion include (i) the construction of an Annex Building; (ii) the expansion of the East Hall; and (iii) an extension of Car Park 4.

(i) *T1 Annex Building*

6. The Annex Building, located to the north of T1, will accommodate the following new facilities –

- (a) one check-in island to accommodate over 40 additional check-in counters with self-service bag drop facilities (see paragraphs 13 and 14 below);
- (b) two additional baggage reclaim carousels;

- (c) an additional early bag storage<sup>1</sup> (“EBS”) facility; and
- (d) additional passenger facilities, including Lost and Found, food and beverage outlets, ticketing counters for cross-boundary land transport and seating etc.

(ii) *Expansion of East Hall*

7. With the increasing number of passengers in recent years, the facilities in East Hall have become congested, especially during peak periods. The expansion of the East Hall will provide for –

- (a) additional seating capacity in the food court, arrivals hall and the transfer area;
- (b) additional shops, a new caring corner for passengers with special needs and expansion of the two existing airline services desks; and
- (c) three additional departure security screening channels, eight additional departure immigration counters and five additional e-channels at the North Departure Immigration Hall, a new children’s play zone and a new roof garden.

(iii) *Car Park 4 Extension*

8. A new 12-storey mixed-use building will be built adjacent to the existing Car Park 4 site. Apart from the reprovisioning of the existing 1,400 public parking spaces<sup>2</sup> (from G/F to Level 8), the following new facilities will be provided –

- (a) **G/F** – the permanent site for the Airport Preschool<sup>3</sup>;
- (b) **Level 9** – the permanent site for the Hong Kong International Aviation Academy (see LC Paper No. CB(4)491/16-17(02))

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<sup>1</sup> HKIA facilitates early check-in (e.g. at in-town check-in services available at Hong Kong and Kowloon stations along the Airport Express Line) 48 hours prior to departures so EBS is required when luggage arrives at the airport before the opening of the designated baggage loading operation.

<sup>2</sup> The parking spaces in Car Park 4 extension will partially offset the loss of parking spaces during the T2 expansion period.

<sup>3</sup> The Airport Preschool has commenced operation on 21 March 2017. Located temporarily in the Airport World Trade Centre, the Preschool will be relocated to the permanent site at Car Park 4 extension to provide education and care services for about 100 children of airport staff below the age of three.

discussed at the meeting on 7 February 2017); the Permit Office that would need to be relocated from T2; and other office space;

- (c) **Level 10** – a Community Centre for airport staff to be equipped with an open food court with more than 500 seats; a multi-purpose sports hall; a gym; function rooms, etc.; and
- (d) **Level 11** – a roof garden and a restaurant for staff.

9. In addition to the above, the canopy covering the departure kerb of T1 will also be extended at both its north and south ends to provide additional drop off area for vehicles. Advance works for the construction of the Annex Building, East Hall expansion and Car Park 4 extension are in progress. Main construction works are expected to begin in mid-2017.

- (c) Passenger Corridor Linking T1 and the North Satellite Concourse (“NSC”)

10. Currently, passengers using the NSC have to travel between T1 and NSC by shuttle buses, which some passengers find inconvenient. To improve passengers experience, AAHK is planning to build an elevated passenger corridor, known as the Sky Bridge, linking T1 and the NSC. Apart from saving passengers’ travelling time between T1 and the NSC (by about 10 minutes in each direction), the overall efficiency of the apron will also be greatly improved with the removal of shuttle bus traffic. As a result, some 350,000 litres of diesel fuel is expected to be saved each year. The contract for the design and construction works is expected to be awarded in early 2018, and the opening of the Sky Bridge is targeted for 2020.

## **B. Process Improvement and Streamlining**

11. Process improvement and streamlining enhance operational efficiency through the collaborative efforts of relevant stakeholders. In HKIA, process re-engineering helps relieve pressure in the increasingly congested terminal and apron. The following paragraphs set out the major initiatives being pursued by AAHK.

(a) Implementation of Airport Collaborative Decision Making (“A-CDM”) Phase 2

12. The HKIA A-CDM<sup>4</sup> is a strategic tool to enhance real time information sharing among airport stakeholders, including Air Traffic Control (“ATC”), AAHK, the Hong Kong Observatory, airlines and other business partners operating at the airport, which would enhance common situation awareness of all parties. While the current Phase 1 of the A-CDM enhances flight punctuality, reduces waiting time at the runway holding point for departure, fuel consumption and carbon emission, and improves airport capacity utilization, it adopts the old EUROCONTROL<sup>5</sup> A-CDM model and is limited to the sharing of ATC information only. Phase 2 of the A-CDM adopts the new EUROCONTROL A-CDM model and will provide more functions including enhanced target off-block, target start-up approval and calculated take-off times; tracking of turnaround process; and aircraft pre-departures sequencing etc., thus improving the departure on-time-performance of airlines and utilization of parking stands. Phase 2 of the A-CDM is currently being developed for trial.

(b) Check-in and Baggage Processes

13. A major capacity constraint in the passenger terminal at HKIA is the limited number of check-in counters. AAHK has been working closely with airlines to encourage passengers to check-in online (e.g. using smartphone, tablet or computer) before they arrive at the airport. To allow more flexible use of counter space and improve the overall operational efficiency of the airport, self-service bag drop facilities are being installed at 120 check-in counters since March 2016 and will be completed by end 2017.

14. Passengers arriving at the airport are encouraged to perform self-service check-in. AAHK will be replacing the Common Use Self Service (“CUSS”) terminals<sup>6</sup> with the iCUSS which will allow passengers to perform automatic travel document checking (e.g. on its validity and whether a relevant visa is required) and tag his/her own check-in baggage. Deployment of iCUSS terminals is expected to begin in the third quarter of 2017.

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<sup>4</sup> The A-CDM was first launched by the Civil Aviation Department (“CAD”) in 2012 as a trial which was subsequently taken over by AAHK in April 2015.

<sup>5</sup> EUROCONTROL, which stands for the European Organization for Safety in Air Navigation, is the international intergovernmental organization of the European States. EUROCONTROL is responsible for conceptualizing the idea of A-CDM in the 1990s to improve the cooperation among airport stakeholders.

<sup>6</sup> Currently, 82 CUSS terminals are installed at T1.

15. In addition, AAHK is introducing mobile check-in desks that will enable airlines to provide check-in services anywhere in the passenger terminals. Four mobile check-in desks are being tried out by two airlines and the initiative will be gradually rolled out to more airlines. AAHK is also exploring the feasibility of more “off-airport” check-in services (e.g. at convention centres, hotels, high-speed rail stations and cruise terminals), similar to those currently provided at in-town check-in facilities at Hong Kong and Kowloon stations along the Airport Express Line.

### **C. Application of Technologies**

16. At the meeting on 7 February 2017, Members were briefed on some of the technologies and automation that are being applied at HKIA. AAHK has been proactively exploring technology applications to bring in operational improvements. Major new or expanded technology applications to be implemented in the years ahead are set out below.

#### **(a) Automation of Baggage Delivery**

17. As part of the MAD, the baggage handling system (“BHS”) linking T1 and MFC will be enhanced. AAHK will be building a high-speed baggage transport system to automate the delivery of arrival baggage from the MFC and other relatively remote parking stands in that area to the Baggage Hall<sup>7</sup> at T1. Apart from speeding up the delivery of arrival baggage, this initiative will also help alleviate vehicular congestion on the apron caused partly by the current “tug-and-dolly” system. The system is expected to be in operation by the second quarter of 2019.

18. At the same time, AAHK is studying the feasibility of automating the delivery of departure baggage from the Baggage Hall to the MFC by making use of the same high-speed baggage transport system mentioned above.

#### **(b) Automated Foreign Object Debris Detection**

19. AAHK has introduced an Automated Foreign Object Debris (“FOD”) Detection System that can automatically detect FOD on the two runways in a real-time, round-the-clock manner. Not only will this system enhance the safety of runway operations but it will also cut down the time

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<sup>7</sup> The distance from the more remote parking stands, (e.g. those at the Northwest and Southwest Concourses) to the Baggage Hall is over 1 km, while the distance from the MFC to the Baggage Hall is around 2.5 km.

required to close a runway for inspection, thereby improving the efficiency of runway operations. The system is at the final stage of user acceptance testing and is targeted for full operation by the third quarter of 2017.

(c) Vehicle Tracking on the Airside

20. In November 2015, AAHK introduced a Vehicle Tracking System (“VTS”) that makes use of the Global Positioning System technology to provide real-time tracking of the locations and movements of all vehicles and motorized equipment on the airside, including the aprons and the Baggage Hall. The system provides vital information that allows operators on the airside to deploy their vehicles more efficiently, which also helps improve the overall safety and efficiency of airside operations. Currently, nearly all airfield vehicles and motorized equipment<sup>8</sup> (over 3,000 in total) have been equipped with VTS. AAHK also plans to extend the VTS to the tracking of non-motorized equipment, (e.g. baggage dollies and passenger steps, etc.). The second phase of development is targeted for completion by the first quarter of 2020.

## **The Way Forward**

21. It is envisaged that HKIA’s enhancement measures set out in this paper will help accommodate the airport’s growing traffic demand before the full commissioning of the 3RS. In the years ahead, AAHK will remain vigilant in conducting regular reviews of the capacities of existing facilities, and address constraints through the timely and cost-effective expansion of facilities, continual improvement and streamlining of processes, as well as the application of appropriate technologies.

## **Advice Sought**

22. Members are invited to note and comment on the issues presented in this paper.

**Airport Authority Hong Kong  
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<sup>8</sup> The only exceptions are government vehicles which are exempted from the VTS.