



## Civil Aviation

The Hong Kong International Airport (HKIA) at north Lantau, which opened for commercial operations in 1998, is a vital component of Hong Kong's economy, serving both tourism and commerce. Its strategic position in Asia has made it an important regional trans-shipment centre, passenger hub and gateway to other Chinese cities.

The airport has two runways and operates around-the-clock. In 2013, the airport handled about 59.9 million passengers and 4.12 million tonnes of cargo. The airport has been further developed in stages to cater for increasing air traffic demand. The Apron Expansion which includes the construction of 28 parking stands has commenced and is targeted for completion by 2014. Construction works for Midfield Development was started in 2011 and the project is expected to be completed in end-2015. The development includes a new Midfield Concourse with 20 parking stands, a new cross-field taxiway and the extension of the existing automated people mover (APM) to the Midfield Concourse.

**Administration:** There are over 100 airlines operating about 1 100 passenger and cargo flights every day; 1 050 of which are scheduled passenger and all-cargo flights between Hong Kong and around 180 destinations worldwide, including about 45 mainland cities. There are also about 350 non-scheduled passenger and cargo flights each week. About 65 per cent of these flights are operated with wide-bodied jets.

The Civil Aviation Department (CAD) is responsible for the provision of air traffic control services, certification of Hong Kong registered aircraft, monitoring of airlines on their compliance with bilateral Air Services Agreements, the regulation of general civil aviation activities and overseeing the safety and security of airport operations. The Airport Authority Hong Kong (AAHK) is required to ensure the operations of the HKIA comply with the safety and security requirements of CAD in order to obtain an Aerodrome Licence from CAD for operating the Airport.

**Runways and Parking Aprons:** The south and the north runways are both 3 800 metres in length and 60 metres wide enabling them to cater to the new A380 aircraft. The south runway has been given a Category II Precision Approach, while the north runway has the higher Category IIIA rating, which allows pilots to land in only 200-metre visibility. It is planned the handling capacity of the two

runways will increase to 68 aircraft movements an hour by 2015.

At present there are 59 frontal stands, 27 remote stands and 43 cargo stands. Among them, six frontal stands are capable of accommodating the A380. With the phased completion of the HKIA West Apron Development in 2013/14, the aircraft handling capability of the HKIA would further increase.

**Passenger Facilities:** The HKIA is one of the most accessible in operation today. Despite its size, the passenger terminals are designed for maximum convenience. A simple layout and effective signage, moving walkways and the automated people mover allow quick and easy movement throughout the buildings. Facilities for the disabled are in keeping with international standards. The airport is also served by a complete transport system operational round-the-clock. The fully integrated ground transportation centre is conveniently located adjacent to the passenger terminals. It provides immediate access to and from the airport express train as well as other public transport services such as buses, coaches, hotel limousines and taxis.

**Baggage and Ramp Handling:** Quality ramp handling services are provided by Hong Kong Airport Services Limited, Jardine Air Terminal Services Limited, and SATS Hong Kong Limited. Their services include handling of mail and passenger baggage, transportation of cargo, aerobridge operations and the operation of passenger stairways. The airport has an advanced baggage handling system (BHS), the main section of which is located in the basement level of the passenger terminal, and a separate remote transfer facility at the western end of the main concourse for handling of tight connection transfer bags. The BHS processes departure, arrival and transfer bags and utilises a conveyor of more than 34 kilometres long. Bar coding and RFID scanners read the standard International Air Transport Association (IATA) baggage labels and route bags to their destinations. Majority of the arrival bags are conveyed to 12 reclaim carousels within 20 to 40 minutes from aircraft landing.

**Air Cargo:** HKIA handled 4.12 million tonnes of cargo in 2013. The airport currently has five first-tier cargo operators. The Hong Kong Air Cargo Terminals Limited operates the SuperTerminal 1, one of the world's largest

air cargo handling facilities. Occupying a total floor area of about 395 000 square metres, the terminal's handling capacity is 3.5 million tonnes of freight a year. The second service provider is Asia Airfreight Terminal Company Limited, whose facilities have a combined handling capacity of about 1.5 million tonnes a year. DHL's 3.5-hectare Central Asia Hub at HKIA could handle more than 35 000 parcels and 40 000 documents per hour. AAHK awarded a franchise to Cathay Pacific Services Limited to operate a new cargo terminal at HKIA in 2008. The 11-hectre Cathay Pacific Cargo Terminal with a designed throughput of 2.6 million tonnes a year has been put into full operation in October 2013. In addition, with a total land area of about 2 hectares, Hongkong Post's Air Mail Centre handles 700 000 items of mail every day.

**Aircraft Maintenance Services:** Hong Kong Aircraft Engineering Company (HAECO) and China Aircraft Services Limited (CASL) provide both line and base-maintenance services and Pan Asia Pacific Aviation Services Limited (PAPAS) provides line maintenance services.

Line maintenance services include routine servicing of aircraft performed during normal turnaround periods and regularly scheduled layover periods. Base maintenance covers all airframe maintenance services and, for this, HAECO has three hangars with 18 maintenance positions capable of accommodating a wide range of commercial aircraft types, with adjoining support workshops. CASL has a hangar which could accommodate one wide-body and one narrow-body aircraft at the same time with adjoining support workshops.

**Air Traffic Control Services:** The Air Traffic Control Complex (ATCX), located at the centre of the airfield, is the nerve centre of the entire air traffic control system. Some 450 air traffic controllers and supporting staff work around-the-clock to provide air traffic control services for the safe and efficient flow of aircraft movements within the Hong Kong Flight Information Region (FIR). At the Air Traffic Control Tower, controllers provide 24-hour aerodrome control services to aircraft operating at the airport.

A Backup Air Traffic Control Centre/Tower constructed to the north of the ATCX is available for operational use in the event normal services provided in the ATCX are disrupted by unforeseen circumstances.

**Replacement of Air Traffic Control System:** As the existing air traffic control (ATC) systems have been used for more than 16 years, the capacities and functionalities of the systems will not be able to cope with the projected air traffic growth in Hong Kong. Replacement work for existing ATC systems, including simulators, is in good progress. The new ATC systems have been installed and are undergoing a series of thorough and stringent acceptance tests, as well as safety assessments in accordance with established international aviation safety management standards and procedures. Training for air traffic controllers will commence in early 2015, and the new ATC Centre will be ready for operation after

completion of comprehensive system testing and controller training.

### **Satellite-based Communications, Navigation, Surveillance/Air Traffic Management (CNS/ATM) Systems:**

To comply with the Global Implementation Plan, extensive studies and trials on certain CNS/ATM system elements have been conducted by CAD. Currently some CNS/ATM services have been implemented at HKIA to enhance ATC operational efficiency and flight safety. These include:

- Digital-Automatic Terminal Information Service (D-ATIS);
- Digital-Meteorological Information for Aircraft in Flight (D-VOLMET);
- delivery of Pre-Departure Clearance (PDC) over data links;
- Aeronautical Telecommunication Network (ATN) and Air Traffic Services Message Handling System (AMHS) operations with Macao and Bangkok;
- Air Traffic Services Inter-facility Data Communication (AIDC) with Sanya and Taipei Area Control Centres (ACCs);
- Advanced Surface Movement Guidance and Control System (A-SMGCS) for enhanced surveillance of aircraft and vehicle movements on the airfield; and
- Arrival Manager (AMAN) System which assist the air traffic controllers in the planning for an optimum landing sequence and more efficient use of airspace have been implemented at HKIA.

In order to derive the most benefit from the new aviation technologies, CAD has taken initiatives to publish a roadmap for the implementation of Automatic Dependent Surveillance – Broadcast (ADS-B) within the Hong Kong FIR. CAD commissioned eight ADS-B ground stations for the surveillance for both high-level and low-level flying aircraft and helicopters within the Hong Kong FIR. In addition, an ADS-B data analysis system was developed to monitor and analyse data from ADS-B equipped aircraft, for enhancing the aviation safety within the Hong Kong FIR.

Ground-Based Augmentation System (GBAS) supports an extensive implementation of Performance Based Navigation on more efficient use of airspace. CAD has been working closely with Lands Department in establishing a territory-wide satellite positioning database since 2012 and collaborating with neighbouring States in the Asia and Pacific Regions to assess ionospheric effect on GBAS performance as well as its optimal installation locations.

**Collaborative Decision Making (CDM):** Collaborative Decision Making (CDM) is a joint government/industry project aiming to enhance efficiency in air traffic operations through real-time information exchange among aviation community stakeholders. CAD has rolled out an Internet CDM service in both desktop PC and mobile versions in July 2013, which was well received by the industry. The platform provide basis for further development and implementation of a local and regional CDM, while AAHK

will leverage on this success and follow up by taking the lead in the ongoing development of CDM in HKIA.

**Weather Services for Aviation:** The Airport Meteorological Office (AMO) of the Hong Kong Observatory (HKO) provides weather services for the aviation community in accordance with the standards and recommended practices of the International Civil Aviation Organization (ICAO) and World Meteorological Organization (WMO). The AMO makes routine and special weather observations and provides aerodrome forecasts and landing forecasts for the HKIA. It issues aerodrome warnings on thunderstorms, strong surface winds, tsunami, and other hazardous weather and events for protection of personnel, aerodrome facilities and aircraft on the ground. It also issues significant weather information on thunderstorms, tropical cyclones, turbulence, icing, volcanic ash and other hazardous weather which may affect aviation safety within Hong Kong FIR. To enhance the safety of aircraft landing and taking off from HKIA, the AMO issues alerts of low-level windshear and turbulence. It also provides tailored weather information over and near the airport to support ATM operation and operates the Airport Thunderstorm and Lightning Alerting System (ATLAS) to support the Red Lightning Warning at the airport. For service delivery, the HKO operates a web-based information service through which airlines and pilots can retrieve the latest meteorological information and flight documentation including weather forecasts for departure, destination and alternate aerodromes, forecast charts of en-route significant weather, wind and temperature data, lightning location information, weather radar and satellite images, as well as information on strong convective weather near the airport. HKO is taking forward a project to replace and upgrade the meteorological facilities for HKIA to meet the demand by the aviation community for higher quality aviation weather services, including the use of mobile platform to deliver aviation weather information. The project is being completed in phases.

**Rescue and Fire Fighting Services:** Such services within the airport are provided by the Airport Fire Contingent of the Fire Services Department. The contingent has a strength of about 260 uniformed members, operating two airside fire stations and two sea rescue berths for 24-hour emergency services. It is equipped with 14 fire appliances which can respond to incidents occurred at any point of operational runways within two minutes in optimum conditions of visibility and surface conditions, satisfying the relevant recommendation of the International Civil Aviation Organization. Two high capacity Command Boats, supported by eight speed boats, form the core of sea rescue operations.

**Developments at the Airport:** Airport business is the management of flows: the flows of passengers, cargo and information. To sustain the growth of flows, HKIA continues to expand its connections to new sources of passengers and cargo.

This means improving the network to the rapidly-growing markets in Mainland China, in particular the Pearl

River Delta region (PRD). The coach station in Terminal 2 as well as the SkyPier ferry terminal established a close connection to the PRD region. The coach station features 36 bays and an all-weather waiting lounge, which provides a comfortable environment for passengers waiting to depart HKIA for different cities in PRD.

About 550 round trips by coaches are made every day to link HKIA with over 110 PRD cities and towns. Passengers expecting point-to-point transport services could use cross-boundary limousine for their PRD destinations. The cross-boundary coaches and limousines carried around 2 million passengers in 2013.

HKIA's network to the Mainland is also further strengthened by the formal opening of the new SkyPier in January 2010. The new SkyPier replaces the old facility to offer millions in the PRD direct access to the airport and its extensive international air network. Designed with the provision of eight berths (four at present) and an annual capacity for eight million passengers, the 16 500 m<sup>2</sup> SkyPier is eight times the size of the old facility. It is conveniently connected to Terminal 1 through the Automated People Mover system, shortening the travelling time between SkyPier and Terminal 1 to about four minutes – half the time previously required. In 2013, the SkyPier served about 2.7 million passengers. Passengers of both directions can bypass customs and immigration formalities at HKIA and save transit time. To further streamline the travelling process at the border, HKIA has launched an upstream check-in service at Shekou, Fuyong, Humen, Zhongshan and Maritime Ferry Terminal and Taipa of Macau for sea-air passengers.

Passengers can obtain their boarding passes and check-in their baggage before arriving at HKIA. SkyPier is currently connected to eight PRD ports, namely: Shekou and Fuyong of Shenzhen, Maritime Ferry Terminal and Taipa of Macau, Humen of Dongguan, Zhongshan, Zhuhai and Nansha of Guangzhou.

The provision of cross-boundary coach, limousine and ferry services has transformed HKIA into a truly multi-modal transportation hub combining air, sea and land transport. It is also a significant step forward in HKIA's integration with the Mainland Chinese market.

**Air Services:** The operation of scheduled air services to and from Hong Kong are facilitated by Air Services Agreements between Hong Kong and its aviation partners. Since the opening of HKIA, the Hong Kong Special Administrative Region Government has firmly and proactively implemented a policy of progressive liberalisation of air services to promote consumer choice and competition and to provide airlines of Hong Kong and its aviation partners with opportunities for service expansion.

**Commercial Aviation, Recreational Flying and the Government Flying Service:** Cathay Pacific Airways Limited operates 13 B747, 55B777 (including 38 B777-300ER), 35 A330, 11 A340 aircraft and 26 B747 freighters providing scheduled services throughout Asia, Australia, Europe, the Middle East, New Zealand, North and South America and South Africa. Hong Kong Dragon Airlines

Limited operates 20 A330, 15 A320 and six A321 aircraft to provide scheduled passenger services in the region. Air Hong Kong Limited operates scheduled all-cargo services with eight A300-600 and three B747 freighters between Hong Kong and Japan, the Mainland, Malaysia, the Philippines, Singapore, South Korea, Taiwan, Thailand and Vietnam. Hong Kong Express Airways Limited operates five A320 aircraft for scheduled passenger services to Japan, the Mainland, Malaysia, South Korea and Thailand. Hong Kong Airlines operates 12 A330, five A320 aircraft, and four A330 freighters to provide scheduled passenger and cargo services to Bangladesh, India, Indonesia, Japan, Kazakhstan, the Mainland, Malaysia, Singapore, Taiwan, Thailand, Turkey and Vietnam. Metrojet Limited operates one GV, one CL605, one Cessna 680 and one B737BBJ aircraft for non-scheduled passenger services to cities around the world. TAG Aviation Asia Limited operates three BD700-1A11, one BD700-1A10, two G450 and one CL605 aircraft for non-scheduled passenger services to destinations worldwide. Hong Kong Airlines Corporate Jet Management Limited operates one G550 for non-scheduled passenger services to various countries.

Skyshuttle (formerly Heli Express) Limited operates two AW139 helicopters for passenger charters between Hong Kong and Macau. Heliservices (Hong Kong) Limited operates three SA315B, one AS355N and one MD500E helicopters for local passenger charters and aerial works.

The Hong Kong Business Aviation Centre (BAC) is located within the confines of the airport and has its own terminal and facilities. It provides a full range of services for executive aircraft, including ground handling, baggage handling, fuelling, security and flight planning. Designated spaces are also provided at the BAC for private aircraft. Hangar 3 was commissioned in May 2012 to meet growing business needs.

The Hong Kong Aviation Club conducts recreational flying in Hong Kong, undertakes flying training for private pilots and provides facilities for private owners.

The Government Flying Service provides short and long range search and rescue services, police support, medical evacuation as well as flights for other Government purposes. The fleet comprises three AS332, four EC155 helicopters one Z-242L, one Diamond DA 42 NG and two BAe 4100 aircraft.