

#### LCQ4: Hong Kong International Airport Master Plan 2030

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Following is a question by the Hon Alan Leong Kah-kit and a reply by the Acting Secretary for Transport and Housing, Mr Yau Shing-mu, at the Legislative Council meeting today (July 6):

Question:

It is projected in the "Hong Kong International Airport Master Plan 2030" (the Master Plan) that if a third runway is constructed, the practical maximum annual runway capacity will be about 620 000 air traffic movements (ATMs). It has been reported that if the Mainland does not relax its prevailing constraints on airspace for civil aviation, which include the restrictions on access to the airspace within the Pearl River Delta region, coupled with the full implementation of the policy on cross-straits direct flights ("direct flight policy") hopefully in the near future, the runway capacity of the Hong Kong International Airport (HKIA) will be affected and it may not be able to reach the level as projected in the Master Plan. In this connection, will the Government inform this Council:

(a) on what basis the aforesaid runway capacity has been estimated, and if it includes the impact of whether the airspace of the Mainland is fully open; whether the authorities have reached consensus with the relevant mainland authorities with regard to the opening up of the airspace; if not, of the measures the authorities will take to ensure that the runway capacity will reach the projected level;

(b) whether the authorities have studied the impact of the full implementation of the direct flight policy on HKIA's passenger and cargo throughput; if they have, of the details; if not, the reasons for that; and

(c) given that in the planning outline for HKIA in 1992, it was originally expected that its runway capacity would reach 75 ATMs per hour, but according to the report of the experts from the United Kingdom quoted in the Master Plan, the practical maximum runway capacity of the existing runways in HKIA can at most be increased to 68 ATMs per hour, which falls short of the original projection by seven ATMs, and in reply to a question raised by a Member of this Council in 2010, the authorities also indicated that "the operating environment of HKIA is unique, with high terrains together with a complicated and restrictive airspace surrounding the airport", whether

the authorities have considered such factors in estimating the runway capacity of HKIA after constructing the third runway; if they have, of the details; if not, the reasons for that?

Reply:

President,

(a) During the Hong Kong International Airport Master Plan 2030 (Master Plan 2030) Study, the Airport Authority Hong Kong (AAHK) commissioned National Air Traffic Services (NATS) in the UK as professional expert consultant to carry out airspace and runway capacity analysis. NATS is an experienced provider of air traffic management services, providing air traffic control services to aircraft flying in UK airspace and over the eastern part of the North Atlantic.

At present, the Hong Kong International Airport (HKIA) adopts an independent segregated mode of operations, i.e. one runway exclusively for departures and the other exclusively for arrivals. The maximum capacity of each runway is not limited by the other runway. The practical maximum capacity that can be achieved with two runways will be 68 movements per hour.

Even if the existing segregated mode of operations is changed to a mixed mode of operations (i.e. both departures and approaches can take place on each of the two runways), the practical maximum capacity of the two runways will not be increased. It is because, in accordance with the standards of the International Civil Aviation Organisation (ICAO) and having regard to the terrain constraints surrounding the airport, a consistent approach spacing of eight nautical miles has to be applied to both runways, if the mixed mode of operations is adopted, resulting in an hourly capacity of 34 movements for each runway or a total of 68 hourly movements for both.

According to the Technical Report of AAHK's Master Plan 2030, the projected practical maximum capacity of the three-runway system is about 620 000 movements per annum. The basis of this projection is as follows:

(i) in accordance with the ICAO standards and having regard to other relevant factors (including the terrain, airspace, traffic mix, weather, etc.), AAHK's consultant recommends that the best arrangement and handling capacity of a three-runway system is as follows: the third runway recommended for arrivals, with a the capacity

at 33 movements per hour; the second runway recommended for departures (i.e. the existing north runway) at 35 movements per hour; and the first runway recommended for mixed mode (i.e. the existing south runway) at 34 movements per hour, totalling 102 movements per hour;

(ii) on the basis of 102 movements per hour, AAHK's consultant estimates the practical maximum movements to be about 1 800 per day. This is based on the historical flight movement pattern of a typical busy day, having regard to a number of factors, including the runway closure at night for routine maintenance; the matching of slot availability at the Hong Kong International Airport and destination airports; typical hourly fluctuations of a busy day; and the provision for recovery periods to cater for operational delays;

(iii) the practical maximum movements of about 620 000 per annum can be derived on the basis of the daily practical maximum movements of 1 800 and having regard to the historical seasonal adjustments in flight movements (with reference to the flight schedules published by airlines twice a year for the summer and winter seasons).

The Civil Aviation Department has been discussing with the Civil Aviation Administration of China and the Macao Civil Aviation Authority to enhance the Pearl River Delta (PRD) airspace. The tripartite working group has reached consensus on the target and measures relating to the planning of the optimisation of the PRD airspace structure by 2020. The three sides have agreed to adopt the principles of joint airspace planning, use of common standards and harmonised flight procedure design. To enhance airspace planning and air traffic management in the region, the three sides have agreed to jointly pursue comprehensive airspace regime interface procedures and standards, which cover measures to rationalise airspace design, enhance flight levels allocation, standardise interface and protocols of air traffic control systems, and establish additional civil aviation routes for flights to and from the northern part of the Mainland. To achieve the targets, the three sides have begun to progressively enhance the air traffic management operations and rationalise the PRD airspace management, air traffic control and flight procedures.

Through the concerted efforts of the three sides, an additional handover point and a corresponding air route have been established between the Guangzhou and Hong Kong Flight Information Regions since end 2006 to cater for flights overflying Hong Kong and landing in Guangzhou. The assessment relating to the airspace adjustment proposals of the Zhuhai Terminal Area was completed in 2010 and the

proposals were implemented in April this year. Apart from addressing the forecast air traffic movements in the PRD, the relevant enhancement measures have adequately taken into account the three-runway operating mode at HKIA and provided sufficient airspace for the practical maximum capacity of about 620 000 movements per annum, as envisaged in the three-runway system in the Master Plan 2030.

(b) The Mainland and Taiwan signed the Cross-Strait Air Transport Agreement in November 2008, formally establishing weekday charter flights. The Agreement has since been expanded several times, establishing scheduled flights and gradually increasing frequencies and the number of points served. The Government has been paying attention to the development of Three Direct Links between the Mainland and Taiwan, in order to assess its impact on Hong Kong and to seize opportunities arising from the new circumstances. Our assessment at the time was that the number of passengers transferring via HKIA between the Mainland and Taiwan would be affected to a larger extent. The cargo that originally went via Hong Kong between the Mainland and Taiwan would also be affected to a larger extent because such cargo was only transshipment at HKIA without involving other logistics processes in Hong Kong.

At present, cross-strait direct flights cover most of the major points on the Mainland. Before the commencement of the cross-strait direct flights, the passengers and cargo between Hong Kong and Taiwan in 2007 represented 18% and 13% of HKIA's total throughput respectively. In 2010 (last year), the passengers and cargo between Hong Kong and Taiwan increased by 4.1% and 14.2% respectively, compared with 2009, while last year the Hong Kong-Taiwan passenger and cargo traffic represented 15% and 11% of HKIA's total throughput respectively.

The air traffic demand forecast of the Master Plan 2030 adopts a GDP regression based forecasting model. After assessing various market change factors (including the cross-strait direct flights), AAHK's consultant has adjusted the regression-based traffic forecast for 2030.

The increasingly frequent economic activities between the Mainland and Taiwan help to stimulate new demand for air travel, and the above-mentioned short term negative impact on the passenger and cargo volume has been mitigated. The Mainland's relaxation on individuals' travel to Taiwan and the increase in cross-strait tourism and trade activities are expected to stimulate further growth in the passenger and cargo market between Hong Kong and Taiwan.

(c) The claim about some 70 movements per hour is an ideal number assuming no terrain constraints on operations. In the 1992 New Airport Master Plan, the practical maximum capacity of the two runways in the independent segregated mode was 52 movements per hour while the practical maximum capacity of the two runways in the dependent mixed mode was 69 movements per hour. However, as HKIA is subject to the actual nearby terrain constraints, the hourly 68 movements per hour at HKIA is the practical maximum capacity of the existing two runways.

AAHK's consultant also confirms that in both the independent segregated mode and dependent mixed mode of operation, the practical maximum capacity of the two runways is 68 movements per hour.

When assessing the practical maximum runway capacity of the three-runway system, AAHK's consultant has, in accordance with the ICAO standards, comprehensively analysed the terrain surrounding HKIA, navigation equipment and airspace.

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