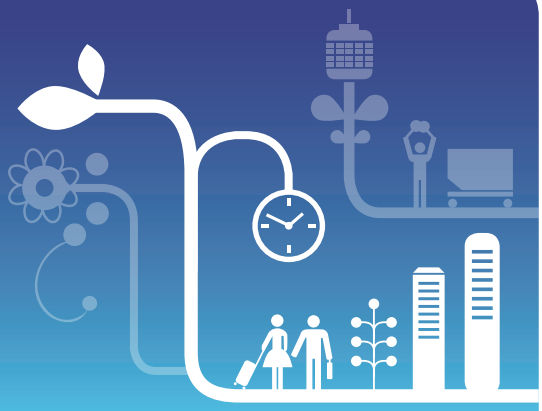
6 OPTION 2: THREE-RUNWAY SYSTEM

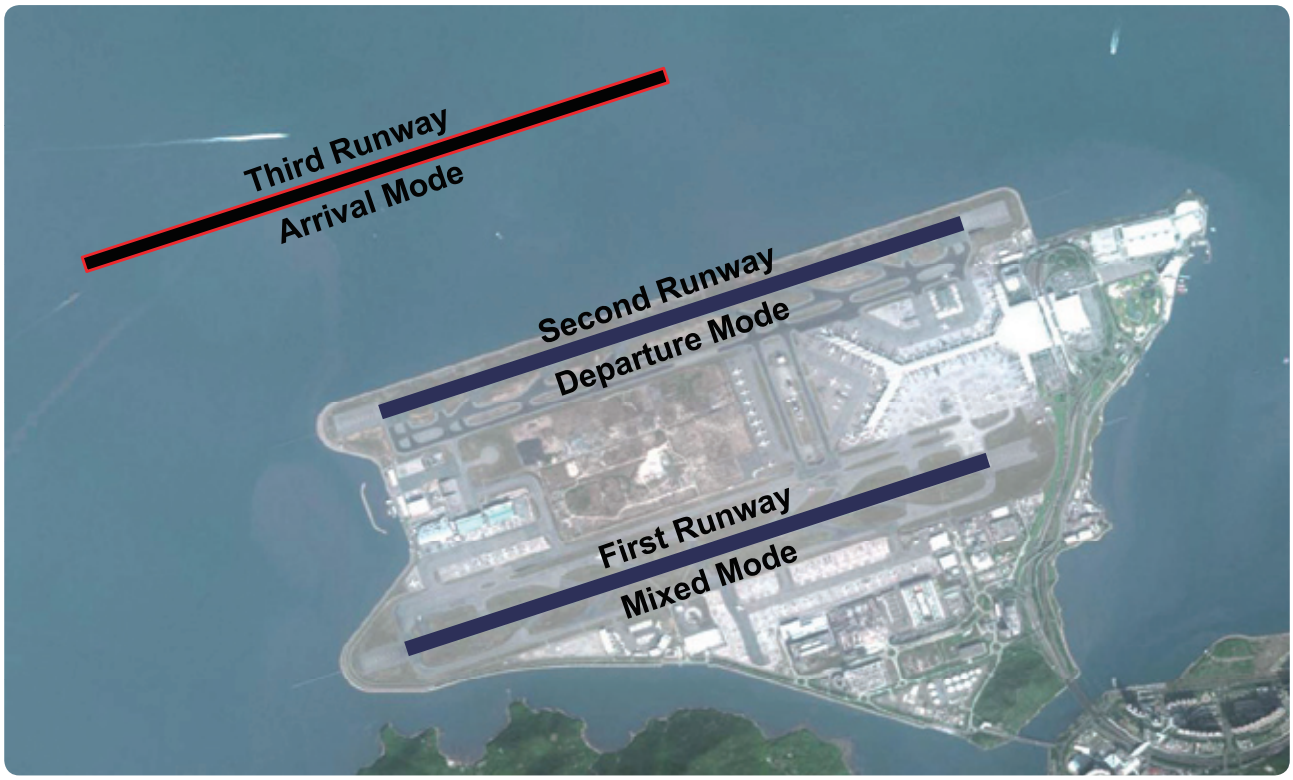


THE NEED FOR A THIRD RUNWAY

The fundamental basis of airport capacity is air traffic movements (ATMs, also known as flight movements). While we could continue to invest in and expand Hong Kong International Airport's (HKIA's) terminals and their ancillary support facilities, the runway capacity puts a cap on the ultimate throughput of the airport.

Under Option 1, we have explored the practical maximum handling capacity of HKIA under its existing two-runway system. Without a third runway, HKIA can only accommodate an annual maximum of 420,000 ATMs and will reach its runway capacity sometime between 2019 and 2022. To truly handle unconstrained demand up to 2030 (which is forecast to be 97 million passengers and 8.9 million tonnes of cargo) and possibly beyond, HKIA needs to build a third runway.

Figure 6.1 Proposed Three-Runway Alignment and Operating Mode



PRACTICAL MAXIMUM RUNWAY CAPACITY

Further to the practical maximum runway capacity assessed for the two-runway system as explained in Chapter 4, National Air Traffic Services (NATS) has also evaluated the practical maximum capacity increase that could be achieved with a third runway. NATS concluded that the three-runway system could support a practical maximum runway capacity of 102 ATMs per hour with the following arrangements –

(a) The Third (new) runway dedicated for "arrivals" only;

(b) The Second (existing North) runway dedicated for "departures" only; and

(c) The First (existing South) runway for both "arrivals" and "departures".

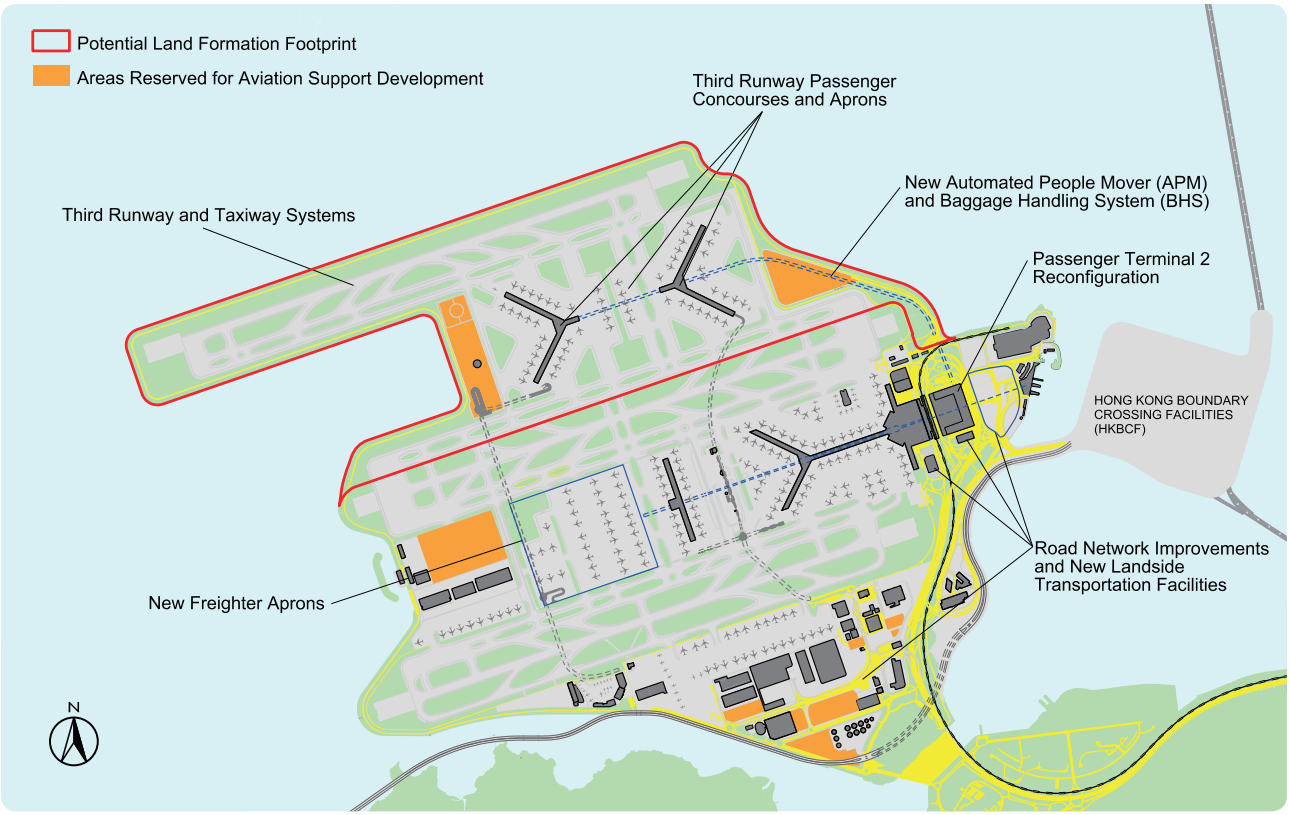
Following the same considerations as explained in Chapter 4, the practical maximum runway capacity of 102 ATMs per hour could be translated into practical maximum daily movements of about 1,800 ATMs per day and practical maximum annual capacity of about 620,000 ATMs per year. There could be potential to further increase the runway capacity in future with enhancements in aircraft and air traffic control technology and management of the Pearl River Delta (PRD) airspace.

AIRPORT DEVELOPMENT LAYOUT CONFIGURATION

In terms of the alignment of the third runway, NATS has investigated a total of 15 alignment options with regard to operational safety, obstacle clearances, environmental issues, PRD airspace issues, air traffic control procedures, runway usability and capacity. NATS concluded that the best alignment for a third runway would be parallel to and north of the existing two runways.

Based on the recommended parallel alignment of a third runway, 18 different airport layout options

Figure 6.2 Option 2 – Airport Layout Plan in 2030



have been developed by AECOM for airport facilities planning. This is to ensure that the different permutations of the location of the passenger processing terminal, passenger concourses, and aircraft parking aprons required to support the third runway have been fully evaluated before recommending the most suitable airport layout.

The 18 airport layout options have been evaluated against the following five major criteria –

(a) Airfield efficiency;

(b) Passenger convenience;

(c) Cargo operations efficiency;

(d) Surface access; and

(e) Environmental impact.

The final recommended airport layout features a northward expansion as illustrated in Figure 6.2.

CAPITAL INVESTMENT

On the basis of the final recommended airport layout, our consultants have worked out the necessary airport infrastructure that fully utilises the maximum runway capacity (620,000 ATMs/year) and its costing. They have recommended an estimated capital investment of approximately HK$86.2 billion (in 2010 dollars) or HK$136.2 billion (at money-of-the-day [MOD] prices)[11], including provisions for design, project management and contingency, and phased over 15 years between 2016 and 2030[12] as follows –

(a) Land formation (HK$38.9 billion)

- reclaim about 650 hectares of land north of the existing airport island

(b) Third runway, related taxiway systems and airfield facilities (HK$7.5 billion)

- construct the third runway
- construct a dual parallel taxiway and connect taxiways to the passenger concourses and apron areas

[11] The final construction cost of the capital projects will be increased from the current estimate based on 2010 dollars to the MOD amounts, in line with the Tender Price Index (TPI) which is estimated to increase at the rate of 5% per annum from 2011 to 2014, 5.5% per annum from 2015 to 2020 and 3% per annum thereafter.

[12] The cost breakdown is in 2010 dollars.

(c) Third runway aprons and passenger concourses (HK$14.0 billion)

- construct 58 new passenger aircraft parking stands
- construct new passenger concourses for the third runway

(d) Midfield Concourse and Freighter Apron expansion (HK$4.5 billion)

- construct 36 new remote stands at the Midfield, extend both the Eastern and Western Vehicular Tunnels to the third runway aprons and extend the Concourse

(e) Reconfiguration of Passenger Terminal 2 (T2) (HK$8.6 billion)

- reconfigure T2 to accommodate both arrival and departure processing facilities

(f) Automated People Mover (APM) extension (HK$4.2 billion)

- extend the APM to connect the third runway passenger concourses with T2
- construct a new APM depot to accommodate maintenance, storage and other future needs, preferably underground and to the immediate east of the reconfigured T2 for convenient access by all APM lines

(g) Baggage Handling System (BHS) enhancement (HK$4.3 billion)

- install a new high-speed baggage system servicing the third runway passenger concourses along with the new baggage facilities under T2 catering for departures and arrivals

(h) Road network and landside transportation facilities expansion (HK$4.2 billion)

- implement road network improvement works in the passenger and cargo areas (approximately 21km of road improvement works and 4km of viaducts and ramps)
- construct four new multi-storey car parks near Terminals 1 and 2 providing a total of 6,500 car parking spaces
- construct a multi-modal transport facility providing remote additional coach parking (110 spaces), taxis and limousines staging areas, pre-booked taxis pick-up area (200 spaces), etc.

As for the future expansion of aviation support functions, sufficient land (about 40 hectares) has been reserved on the proposed reclamation in addition to the areas reserved under Option 1 (see page 29). This is for potential operational requirements to locate aviation support functions near the new apron in future, for example, aircraft maintenance, ground support equipment maintenance, navigation and meteorological installations, airport rescue and fire-fighting and a second operational air traffic control tower. Franchisees and government departments concerned will be responsible for the capital investment involved.