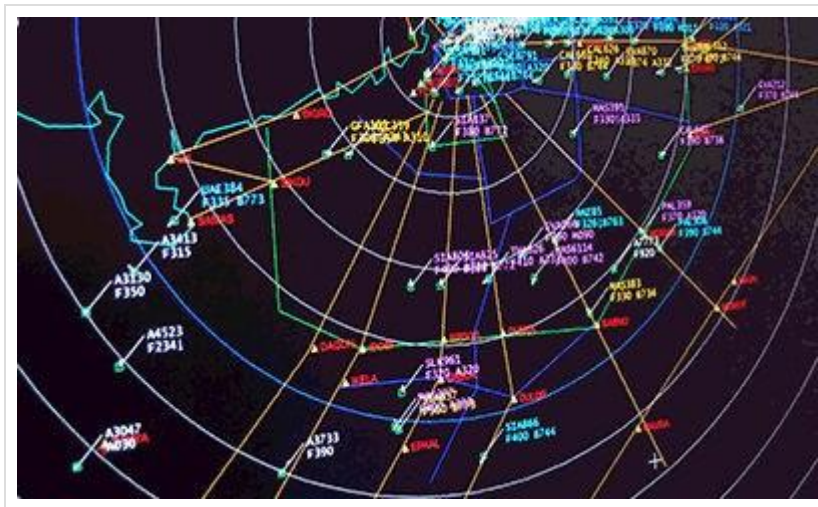


## ENHANCING AIR TRAFFIC CAPACITY FOR FUTURE GROWTH



Air traffic at Changi Airport is expected to increase in the ensuing years. In a bid to understand how this will impact the airport's air traffic operations, the Civil Aviation Authority of

Singapore (CAAS), commissioned a year-long holistic study that examined the airport's air traffic capacity potential and the measures to undertake to support the anticipated growth.

Working with the consultancy arm of NATS, the UK's main air navigation service provider, the study used Heathrow Airport as its benchmark given its many similarities with Changi Airport. Both employ two parallel runways, are between 1,200 and 1,300 hectares in size; cater for around 40% 'heavy' aircraft movement and have three and four passenger terminals respectively.

### Understanding Changi's Air Traffic Landscape

Changi Airport handled more than 300,000 aircraft movements in 2011. The NATS report took air traffic control processes, procedures, controller workload and performance into consideration in its scope of study. Based on a projected average air traffic growth of 5% per annum, Changi Airport, with its two-runway configuration and enhancement measures taken, will have sufficient capacity to meet anticipated growth until at least 2018. The study concluded that Changi Airport is capable of handling up to 430,000 aircraft movement annually, which is a 40% increase over aircraft movements in 2011.

## Measures to Grow Air Traffic Capacity

There are several determinants that play a part in growing air traffic capacity. These measures include enhancing efficiency in air traffic management, increasing runway availability and advancing stakeholder collaboration to harmonise processes and performance to ensure smooth and efficient traffic flows.

Some of the air traffic management enhancement measures such as the reduction of departure separation times, reconfiguring of flight routes and implementation of speed control for increased predictability, have already been implemented leading up to the time when the study commenced in 2011.

The reduction of the standard two-minute departure separation window is now set at 60 seconds for aircraft of the same wake category or 90 seconds with the refinement of processes. This means that if air traffic conditions do not allow departures at 60-second intervals, flights will be launched at 90-second intervals instead. Flight routes to and from Changi have also been reconfigured to increase predictability, making it easier for air traffic controllers to guide aircraft through the surrounding skies. Additionally, speed control systems have been introduced enabling tighter separation distances between departing flights.

On the ground, measures to maximise runway availability have also been implemented. Runways are closed periodically for various reasons. These include runway and airfield lighting inspections, runway maintenance works, as well as unscheduled closures to recover debris which could pose danger to flight operations.

In reducing the duration of closures, resources have been scaled up to ensure that the extent of inspections and maintenance are not reduced so safety will not be compromised. The runway maintenance team at Changi Airport Group (CAG) are increasing stand-by resources to reduce emergency response times and enhance wildlife management. They are also leveraging technology to optimise inspection processes to reduce runway downtime.



To maximise runway availability, a reduction in the runway occupancy time of each aircraft on the runway was also implemented. With aircraft exiting the runway as soon as possible, air traffic control can sequence traffic at closer intervals.

CAAS is also collaborating with CAG and other airport partners to enhance decision making and resource allocation through Airport Collaborative Decision Making (A-CDM). This is a system that allows dynamic and real-time sharing of information across airport stakeholders to facilitate decision making, especially in response to changes on

the ground. The initiative is also proceeding on track with CAG firming up the data required from stakeholders which they expect to complete some time next year.

### **Enhancing Efficiency with Safety in Mind**

These assorted enhancement measures have and will continue to be introduced in a measured and phased-in manner to allow for review and refinement of processes along the way to ensure that safety and service levels are not compromised. Mr Yap Ong Heng, Director-General of CAAS shared, “The measures that have been implemented by CAAS, CAG and other airport stakeholders over the past 12 months have proven beneficial and showed improvement in on-time performance by about 50%, despite continued air traffic growth during this period.”

### **Collaborating to Grow Capacity**

Singapore is not alone in dealing with escalating air traffic. The Asia Pacific region is experiencing one of the fastest rates of air traffic growth in the world and projections show that this is set to continue in the long term.

Tapping on NATS UK’s experience and expertise in managing high-intensity runway operations at the world’s busiest dual-runway airport, London Heathrow, the NATS study has affirmed that there is sufficient headroom to grow Changi Airport’s air traffic capacity for the near future and identified the measures to grow that capacity. The airport community will continue to collaborate closely to tackle this multi-faceted challenge of growing capacity in a safe and efficient manner to better position Changi Airport for its next phase of growth.