BARA
Board of Airline Representatives of Australia Inc

Airline Views

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1 Understanding airfield wind conditions

Safe aircraft operations are made more efficient through accurate information on airfield wind conditions.

Growing traffic volumes and continued developments on and off airports, which can alter airfield wind conditions, increase the complexity of operations.

BARA supports the deployment of proven wind sensing technology at Australia's major international airports to support better air traffic controller and pilot decisions.

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2 2018–19 international passenger statistics

There were some 42.5 million international passengers in 2018−19 (ABS).

Short-term visitors to Australia and Australians travelling overseas increased by 3% and 3.5%, respectively. On any one day, there are some 100,000 people in the sky travelling on over 500 flights provided by over 50 international airlines to and from Australia.

BARA's member airlines provide some 90% of international passenger flights to and from Australia.

3 2018–19 international baggage statistics

The estimated rate of mishandled bags averaged 4.5 per thousand across Sydney, Melbourne Brisbane and Perth airports.

Mishandled bags result in poor travel experiences for affected passengers. BARA estimates that airlines also spent over $32 million in reconnecting mishandled bags with their passengers in 2018–19.

While transfer bags from arriving domestic and international flights to departing international flights only account for about 5% of total international bags, they represent some 40% of all mishandled bags.

4 Measuring baggage outcome accountabilities

Airlines, ground handlers and airport operators need to know how well they are delivering on their part of baggage delivery.

At Australia's international airports, multiple parties are responsible for different parts of the baggage delivery. This creates the need for more information based on matching service definitions.

IATA Resolution 753 on bag tracking and ongoing upgrades to baggage systems should be used to improve on baggage outcomes for international passengers and lower costs for airlines.

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Understanding airfield wind conditions

An airport's operational performance and the ability of airlines to maintain schedule very much depends on the prevailing weather conditions – with wind the main disruptive element. Accurate real time wind information helps get the most out of available runway capacity and supports safe aircraft operations.

Reductions in runway capacity during the busy morning peak periods at Australia's major international airports are well publicised events that disrupt the travel plans of passengers.

A simplified explanation follows of some of the airfield wind conditions and runway capacity issues at Sydney and Melbourne Airports, wake and mechanical turbulence, and the potential of evolving wind sensing technology.

Runway(s) nomination conditions

Air traffic controllers (ATCs) nominate the duty runway(s) for use by aircraft based on a set of rules. The current wind conditions affecting the nomination or availability of runways are:

1. Dry runway: Max 20kts crosswind, Max 5kts Downwind (including gusts).
2. Wet runway: Max 20kts crosswind, No Downwind (including gusts).

If conditions exceed these thresholds, ATCs nominate the most into-wind runway for use, known as single runway operations. The final decision on what is acceptable always rests with the pilot in command of the aircraft.

When the wind thresholds are exceeded during busy peak times, ATCs suspend parallel runway operations at Sydney Airport, or the Land and Hold Short Operations (LAHASO) procedures at Melbourne Airport, which are necessary to support the high number of scheduled aircraft.

While single runway operations can be unavoidable in strong wind conditions, runway nomination can be better informed through more accurate real time wind data.

Wake and mechanical turbulence

Wake and mechanical turbulence also add to the complexity of safe airfield operations. Wake turbulence cannot be avoided but mechanical turbulence, caused by developments on and off airport, needs to be carefully evaluated.

All aircraft generate wake vortices, also known as wake turbulence. It occurs because in flight the air pressure below the aircraft's wing increases and pressure on the top of the aerofoil decreases. Heavy and slow aircraft generally produce more wake turbulence.

Increased separation standards between landing and departing aircraft are applied to manage wake turbulence. At Sydney Airport, for parallel runway operations in crosswind conditions, one further issue is the potential drift of wake turbulence from one runway across to another.[1] This occurs because of the narrow spacing (1,037 m) of the runways and also their thresholds are not aligned.

Mechanical turbulence is induced by buildings or other large objects near runways. The potential for low level flight turbulence is a critical aviation safety issue. All planned developments, on and off airports, should be reviewed for mechanical turbulence if the potential for it exists.

[1] See for example, the Australian Transport Safety Bureau (ATSB), *Analysis of Wake Turbulence Occurrences at Sydney Airport 2012–2016*, Feb. 2019.

Wind sensing technologies

Adverse wind conditions can significantly reduce airport runway capacities, airline performance, and disrupt the travel journey of passengers. Wake and mechanical turbulence are also important safety issues that can interact with crosswind conditions.

Technological solutions to increase the quality of real time wind and turbulence data continue to improve in cost-effectiveness. For example, to provide better wind and turbulence data, instruments using light detection and ranging (LIDAR) technology is now deployed at Heathrow, Frankfurt and Paris Charles De Gaulle airports.

'Wake Watch' is another potential opportunity. It closely monitors the turbulence of arriving and departing aircraft, which can support aviation safety and increase the capacity of existing runways. It uses sonar rather than light-based technology to deliver real-time wind data and is in advanced development at Melbourne Airport. It is also enabling historic data for low level wind modeling in support of runway design (see https://wakewatch.com.au/).

As well as the technology, ongoing investment in people is also necessary to make best use of the new data. This includes analysing and verifying the data and then incorporating it into decision-making at Australian airfields for daily flight operations.

Together with improved air navigation services, such as time-based separation (TBS) − a European system that reduced headwind-related delays by 62% at Heathrow Airport − there are opportunities to better support both the capacity and safety of airfields at Australia's major international airports.

Measuring baggage outcome accountabilities

The number of international mishandled bags continues to grow, and member airlines report ongoing problems with transfer bag processes. A first step to improving outcomes is a better understanding of the performance of each party in the baggage delivery.

The uncoordinated approach in Australia to international baggage was highlighted in recent submissions BARA and some airport operators made to the Productivity Commission.[2] Problems in baggage can also affect on time performance if aircraft remain at gates waiting for final bags to arrive and load, often due to late transfer bags.

While airlines and airport operators can make various claims about the quality of outcomes, there is no requirement for any party to accurately demonstrate how well it is delivering on its part of the service chain. This is a problem given multiple parties, including outsourced providers, are involved in baggage delivery.

Multiple parties

The various components to baggage are described in IATA's diagram on the following page, which includes the mandatory bag tracking points under IATA Resolution 753 (see *Airline Views* January 2018).

Many parties are involved in the baggage process, including:

1. Check-in: airlines/ground handlers/ passengers using airport operator equipment.
2. Security and sorting: Airport operator baggage system (including transfer bag injection).

[2] See for example, BARA sub (160), Sydney Airport sub (181) and Brisbane Airport sub (179).

3. Loading: ground handlers using airport operator and airline equipment.

Transfer bags require extra steps to take bags from arriving flights (international and domestic) to the baggage system and through to loading on aircraft. Members often report to BARA poor outcomes in transfer bags at Australia's major international airports. This reflects the need for increased coordination, procedures and processes for transfer bags.

Measuring performance is a useful first step

Improving baggage outcomes needs to be based on a sound performance dataset across the main elements of the baggage process. Without this, airlines, ground handlers and the airport operators will often not know the underlying reason(s) for mishandled bags, and the current problems will persist.

Useful measurements could include:

1. Check-in: the number/proportion of bags checked-in before the aircraft's scheduled departure (say 45 minutes).
2. Security and sorting: the ability of the airport operator's baggage system to deliver bags to the correct position (lateral) with enough time for loading by ground handlers.
3. Loading: the proportion of mishandled bags, perhaps measured by the number of 'rush tags' issued for follow-up flights.

Data exists for check-in processes and is available by airline and by flight. For their part, international airlines have also invested in data to better understand the final baggage outcomes for passengers via required security requirements.

BARA is unaware of consistent information from the airport operators as to the ability of their baggage system to deliver bags to the correct area for loading by ground handlers. They did provide some snippets of information to the Productivity Commission, indicating that some data probably does exist.

The current level of industry engagement under the existing economic regulatory arrangements have not generated the necessary performance data. Opportunities for improvement are there, but it is difficult to see useful improvement when the costs of poor performance in baggage services are only borne by international passengers and airlines.