ATM Network Performance Report

October 2018

Table of contents

Summary

This report focusses on the performance of the Air Traffic Network in October 2018. The combined 75th percentile performance during October for airborne delay across the four major airports (Sydney, Melbourne, Brisbane and Perth) was **4.4** minutes, and the median was **1.1** minutes. These results are above the KPI targets and represent an increase compared to the same period last year.

The airborne delay outcomes for October were the highest observed since March 2017. This was a result of a high number (33) of notable events during October. Sydney was impacted by 14 notable events which related primarily to thunderstorm activity and worse-than-forecast weather leading to arrival rate reductions, and concentration of arrival demand in peak periods.

Details of the notable events for October are summarised under each of the airport sections below**.** Sixteen of these notable events resulted in a prolonged and moderately elevated airborne delay for the entire day (i.e. 75th percentile greater than seven minutes across the entire day). These events are labelled in **Figure** 1. Seventeen events resulted in a shorter and more intense period of elevated airborne delay (i.e. two or more consecutive hours where the 75th percentile was over 10 minutes). An additional event at Sydney on 7 October is included due to significant impacts relating to flight cancellations.

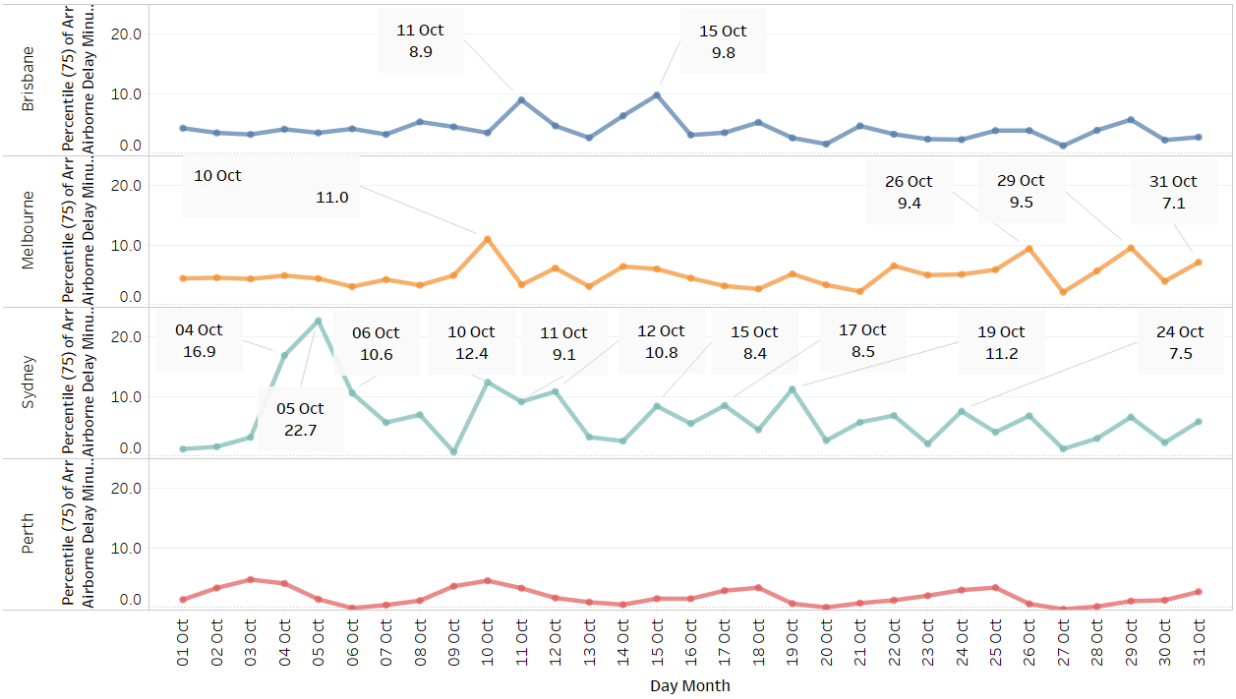

Figure 1: Notable prolonged delay impact events during October 2018

Numbers underneath the dates indicate the extent of the 75th percentile of airborne delay in minutes across the day.

Network Wide Performance

Airborne delay

The combined median and 75th percentile airborne delay at the four major airports is indicated in **Figure 2**. The 24-month trend is statistically flat and close to the target levels.

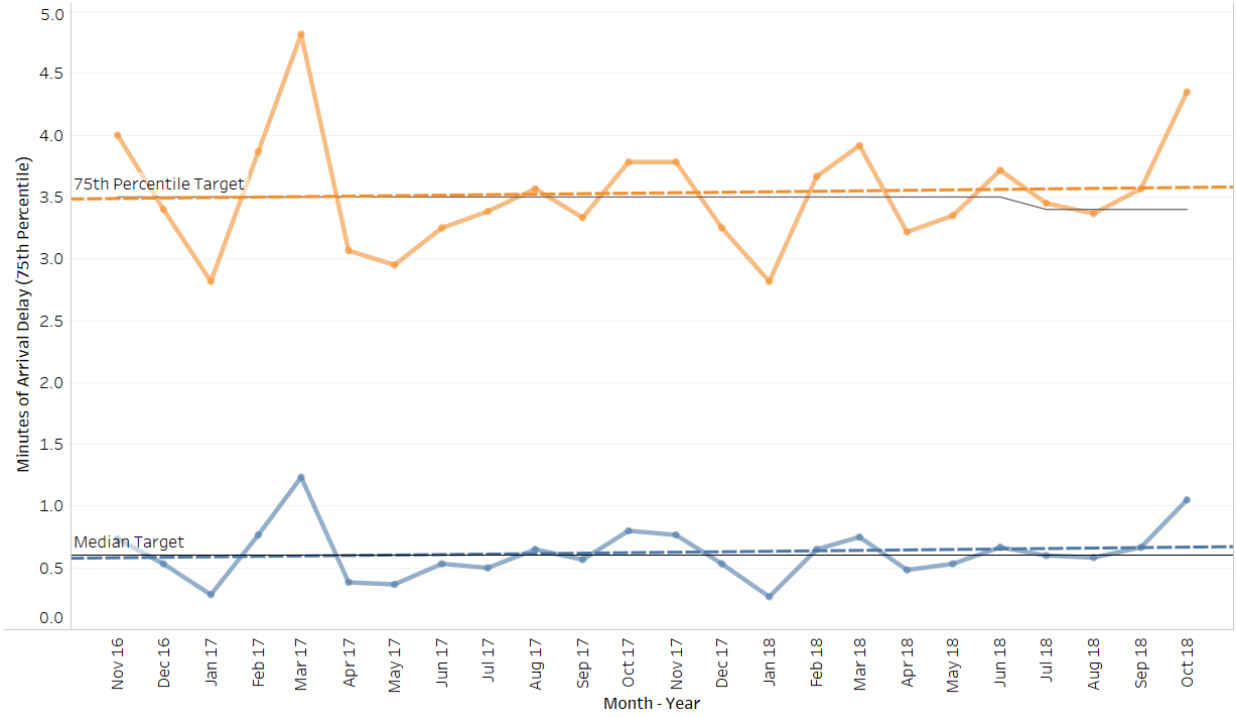

Figure 2: 24-month trend for airborne delay

The long term (48-month) trends of the 75th percentile airborne delay for each of the four major airports are depicted in **Figure 3**. The trends for Sydney and Melbourne are upwards. More detailed analysis for each airport is presented later in this report.

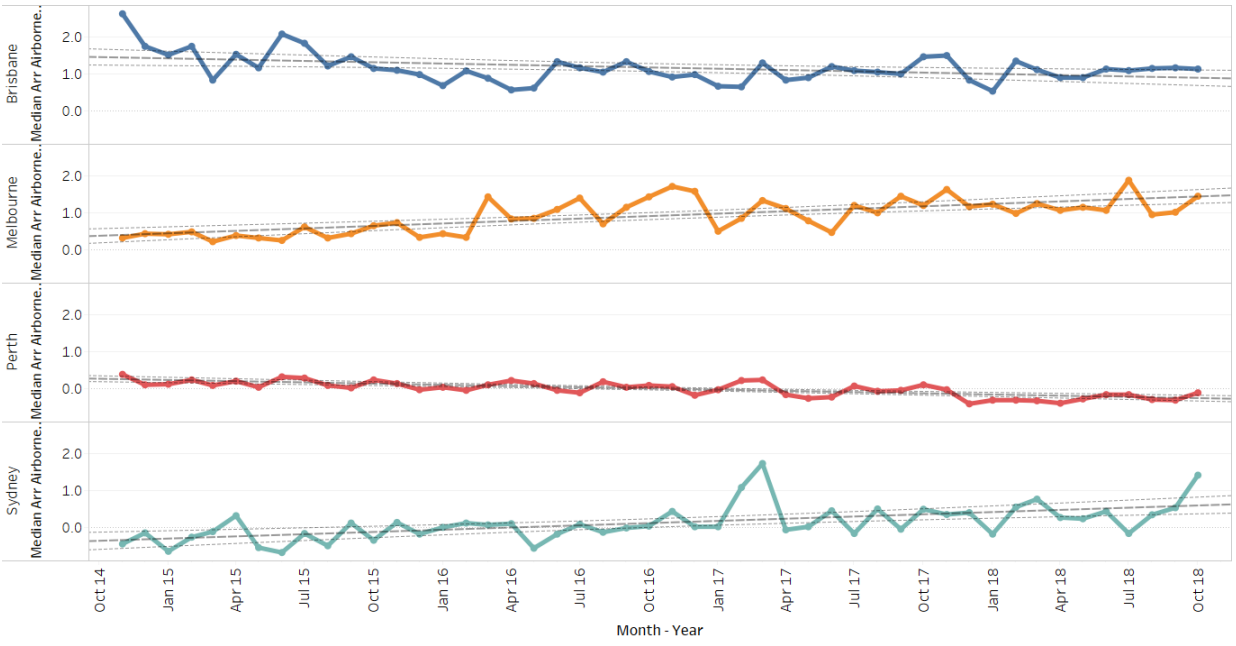

Figure 3: 48-month trend for airborne delay (75th percentile) by airport

The monthly total minutes of airborne delay for Sydney, Melbourne, Brisbane and Perth combined is depicted in **Figure 4**. Figures are adjusted for the number of days in the month. October was the highest month of adjusted total delay in the November 2017 to October 2018 period. There is no significant trend.

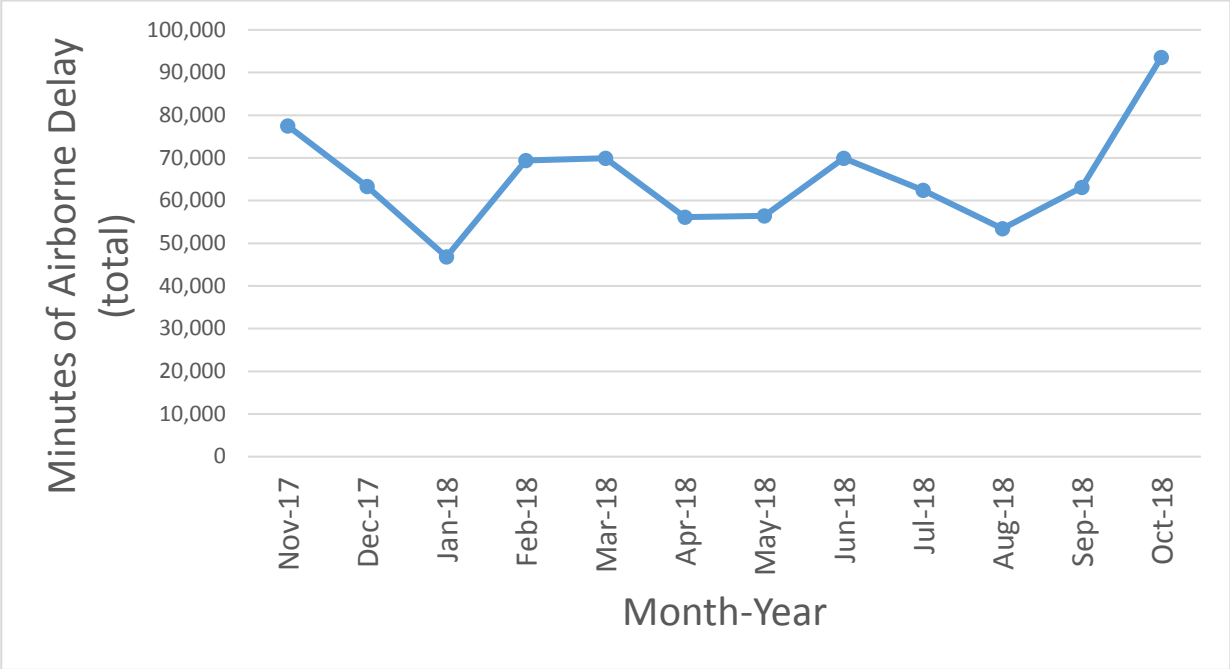

Figure 4: Total amount of airborne delay by month for Sydney, Melbourne, Brisbane and Perth Airports.

Sydney

Airborne delay

The 75th percentile performance figures for airborne delay at Sydney are indicated in **Figure 5.** October performance did not meet the target for the median (1.4 minutes) or the 75th percentile (6.1 minutes). Compared to the same month last year, there was an increase in the airborne delay median (from 0.5 minutes) and 75th percentile (from 3.4 minutes) performance.

These airborne delay outcomes were the highest experienced in Sydney for the last two years. The outcome was a result of a high number of notable events (14). These events related primarily to thunderstorm activity and worse-than-forecast weather leading to arrival rate reductions, and concentration of arrival demand in peak periods.

The long-term (48-month) trend for airborne delay at Sydney is upwards. However, the 24-month trend is flat.

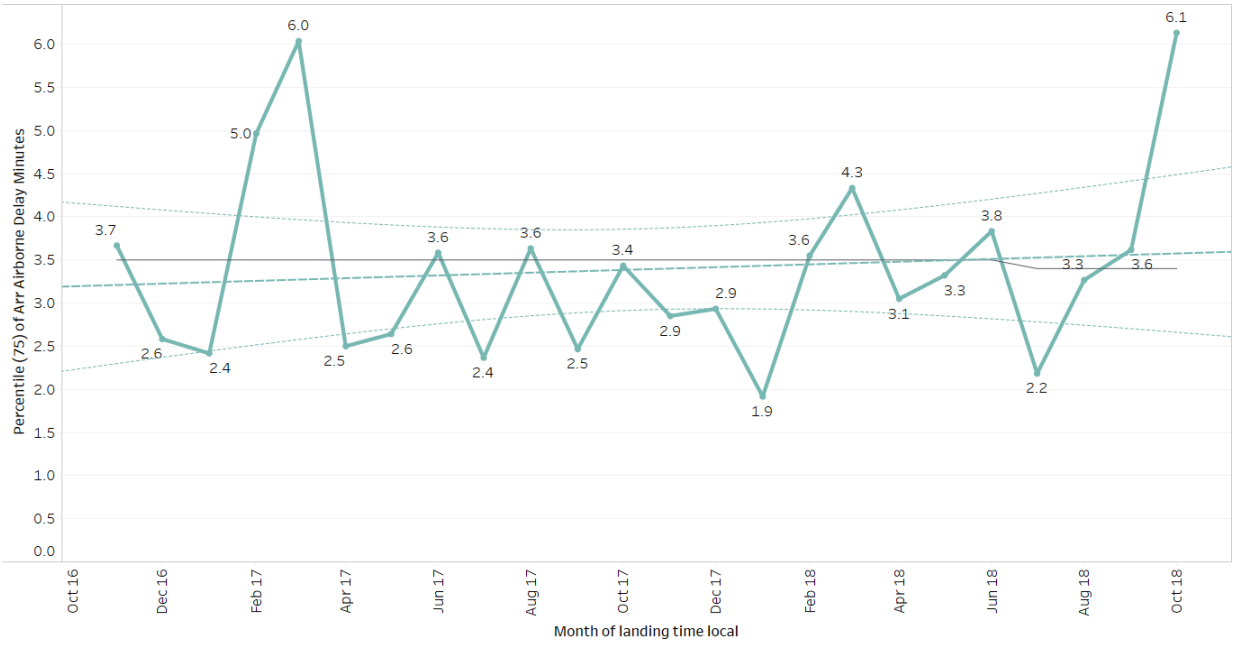

Figure 5: Sydney airborne delay 75th percentile (last 24 months)

Notable events

Table 1 describes the notable airborne delay and other events during October in Sydney.

Day	Local Time	Delay (minutes – 75th percentile)	Event Descriptions (*Contributing causes to increased delays*)
04 October	06-12 & 16-20	16.9	Flight made a MAYDAY call due to low fuel in the early morning. Recovery following the event was slow due to low rates for low cloud. Concentration of demand in late afternoon and early evening due to late non-compliant flights during a low capacity period (low rates due to strong winds).
05 October	06-12 & 16-21	22.7	Concentration of demand due to off-schedule internationals in the morning, and late non-compliant aircraft in the afternoon and evening. This occurred during a full day of reduced capacity (tactical rates lowered due to strong winds).

06 October	06-09	10.6	Concentration of demand due to off-schedule internationals during a period of reduced capacity (tactical rates lowered due to low cloud and showers).
07 October	14-22	5.6	Short-notice staffing unavailability resulted in a Level 2 GDP Revision with reduced rates from 1400 until the end of the day. Additional staff were later able to be sourced and a second Level 2 GDP Revision was undertaken to increase rates to the previous level. Due to the lower rates from the first GDP Revision 28 flights were cancelled which were not able to be reinstated following the second GDP Revision.
10 October	07-12 & 18-19	12.4	Thunderstorms over the airport and surrounding area during the morning resulted in Level 3 GDP Revision. Concentration of demand due to off-schedule aircraft and enroute diversions in early evening resulted in Level 2 GDP Revision.
11 October	07-09 & 18-19	9.1	Concentration of demand due to off-schedule internationals during the peak morning period. Decreased capacity due to low cloud in the afternoon and evening (tactical rates lowered).
12 October	08-09 & 18-20	10.8	Concentration of demand due to off-schedule internationals during the peak morning period. Concentration of demand due to late non-compliant flights during an evening period with reduced capacity (tactical rates lowered due to showers).
15 October	07-09	8.4	Concentration of demand due to off-schedule internationals during a period of reduced capacity (tactical rates lowered due to diversions).
17 October	18-22	8.5	Concentration of demand due to late and early non-compliant flights, off-schedule internationals and a medical flight during a period of reduced capacity (tactical rates lowered due to thunderstorms).
19 October	07-11	11.2	Reduced capacity due to fog. Level 2 Revision with rates reduced.
20 October	18-19	2.6	Reduced capacity due to thunderstorms including no arrivals for 26 minutes.
24 October	06-09	7.5	Concentration of demand due to off-schedule internationals during the peak morning period.
26 October	08-09	6.7	Concentrated demand due to off-schedule internationals and late non-compliant flights during peak morning period.

29 October	07-08	6.5	Concentrated demand due to off-schedule internationals during a period of reduced capacity (Simultaneous Opposite Direction Parallel Runway Operations (SODPROPS) and tactical rates reduced for low cloud).
31 October	18-20	5.8	Concentrated demand due to off-schedule internationals during a period of reduced capacity (tactical rates reduced for low cloud).

Table 1: Notable event descriptions for Sydney.

Melbourne

Airborne delay

The 75th percentile performance figures for airborne delay at Melbourne are indicated in **Figure 6.** October performance (1.5 minute median and 4.9 minutes 75th percentile) did not meet the targets. Compared to the same month last year, there was an increase in the airborne delay median (from 1.2 minutes) and 75th percentile performance (from 4.5 minutes). The long-term (48-month) trend for airborne delay at Melbourne is upwards. However, the 24-month trend is flat.

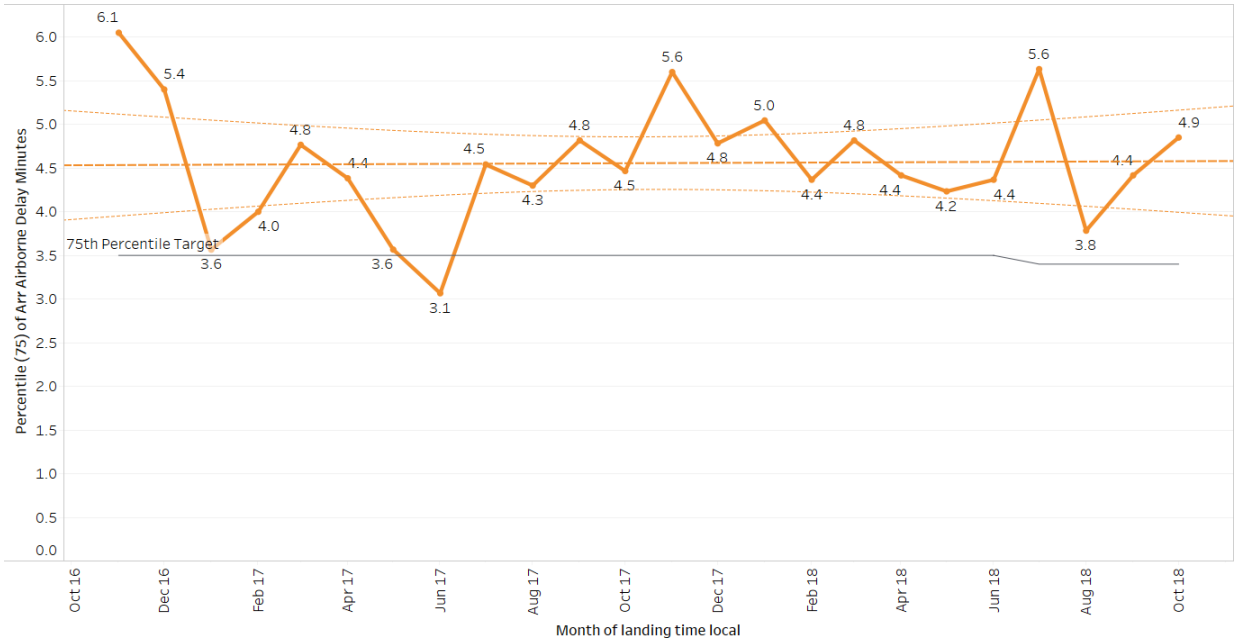

Figure 6: Melbourne airborne delay 75th percentile (last 24 months)

Notable events

Table 2 describes the notable airborne delay events during October in Melbourne.

Day	Local Time	Delay (minutes – 75th percentile)	Event Descriptions (*Contributing causes to increased delays*)
06 October	15-16	3.0	Reduced capacity due to wind (tactical rates lowered) and a missed approach due to bird strike.
10 October	08-09 & 16-19	11.0	Concentration of demand due to late arrival of compliant aircraft during the peak morning period. Concentration of demand in the afternoon and early evening due to late non-compliant flights during an extended period of low capacity (single runway operations).
14 October	18-19	6.4	Concentration of demand in the early evening due to late non-compliant flights during an extended period of low capacity (single runway operations).

15 October	18-19	6.0	Concentration of demand in the early evening due to late and early non-compliant flights during an extended period of low capacity (single runway operations).
16 October	08-09	4.4	Concentration of demand due to late arrival of compliant aircraft during peak period with low capacity (single runway operations).
23 October	07-09	5.0	Concentration of demand due to late arrival of compliant aircraft during peak period with low capacity due to low cloud.
25 October	18-20	5.9	Concentration of demand due to late non-compliant flights during peak period with low capacity (single runway operations).
26 October	18-21	9.4	Concentration of demand due to late non-compliant flights during peak period with low capacity (single runway operations).
28 October	18-20	5.7	Reduced capacity due to wind (tactical rates reduced) during the peak evening period.
29 October	08-09 & 16-19	9.5	Concentrated demand due to off-schedule internationals and late non-compliant flights during morning peak period. Concentrated demand due to late non-compliant flights during an afternoon and evening period with reduced capacity (tactical rates reduced due to wind).
30 October	18-19	3.9	Concentration of demand due to late non-compliant flights during peak period with low capacity (single runway operations).
31 October	17-18	7.1	Concentration of demand due to off-schedule internationals and late non-compliant flights during the afternoon peak period.

Table 2: Notable event descriptions for Melbourne.

CTOT (Calculated take off time) variations

The morning peak (0700-1100 local) is in general the most constrained period of the day in Melbourne. Variations from CTOT during the early morning hours are the focus of this section due to regular concentration of demand leading to increases in delay.

Table 1 provides the flights within this period that departed either early or late with respect to their CTOTs (-5 to +15 minutes) on more than one occasion. This facilitates collaboration to identify patterns and causes of delay.

The CTOT against the ATOT (actual take off time) measure is used as a proxy until the COBT (calculated off blocks time) against AOBT (actual off blocks time) can be routinely reported on.

CTOT Variation	ACID	ADEP	ADES	Local - ALDT HOUR	# Flights
Early	QLK77D	YMIA	Melbourne Arrivals	7	6
	QLK280D	YMLT	Melbourne Arrivals	7	2
	RXA3257	YSWG	Melbourne Arrivals	7	2
	RXA3469	YMER	Melbourne Arrivals	10	2
	RXA3752	YMTG	Melbourne Arrivals	8	2
Late	QFA419	Sydney Departures	Melbourne Arrivals	10	12
	VOZ824	Sydney Departures	Melbourne Arrivals	10	10
	JST503	Sydney Departures	Melbourne Arrivals	8	6
	QFA415	Sydney Departures	Melbourne Arrivals	9	5
	QFA417	Sydney Departures	Melbourne Arrivals	10	5
	QFA461	Sydney Departures	Melbourne Arrivals	10	5
	QFA407	Sydney Departures	Melbourne Arrivals	9	4
	QFA411	Sydney Departures	Melbourne Arrivals	9	4
	TGG213	Sydney Departures	Melbourne Arrivals	8	4
	JST501	Sydney Departures	Melbourne Arrivals	7	3
	JST561	Brisbane Departures	Melbourne Arrivals	10	3
	QFA407	Sydney Departures	Melbourne Arrivals	8	3
	QFA409	Sydney Departures	Melbourne Arrivals	8	3
	QFA1010	YMHB	Melbourne Arrivals	7	3
	VOZ252	YSCB	Melbourne Arrivals	7	3
	VOZ800	Sydney Departures	Melbourne Arrivals	7	3
	VOZ808	Sydney Departures	Melbourne Arrivals	8	3
	VOZ810	Sydney Departures	Melbourne Arrivals	8	3
	VOZ812	Sydney Departures	Melbourne Arrivals	9	3
	VOZ816	Sydney Departures	Melbourne Arrivals	9	3
	JST531	Sydney Departures	Melbourne Arrivals	8	2
	JST981	Perth Departures	Melbourne Arrivals	8	2
	QFA405	Sydney Departures	Melbourne Arrivals	8	2
	QFA411	Sydney Departures	Melbourne Arrivals	8	2
	QFA413	Sydney Departures	Melbourne Arrivals	9	2
	QFA471	Sydney Departures	Melbourne Arrivals	10	2
	TGG513	Brisbane Departures	Melbourne Arrivals	10	2
	VOZ256	YSCB	Melbourne Arrivals	10	2
	VOZ308	Brisbane Departures	Melbourne Arrivals	10	2
	VOZ1313	YMHB	Melbourne Arrivals	7	2

Table 3: CTOT variation for Melbourne arrivals 0700-1100 local –October 2018. Number of occasions that each flight departed early or late with respect to its CTOTs (-5 to +15 minutes).

Brisbane

Airborne delay

The 75th percentile performance figures for airborne delay at Brisbane are indicated in **Figure 7**. October performance (1.1 minutes median and 3.8 minutes 75th percentile) did not meet the targets. Compared to the same month last year there was a decrease in the median (from 1.5 minutes) and the 75th percentile (from 4.6 minutes) of airborne delay. The long-term (48-month) trend for airborne delay at Brisbane is downwards. However, the 24-month trend is flat.

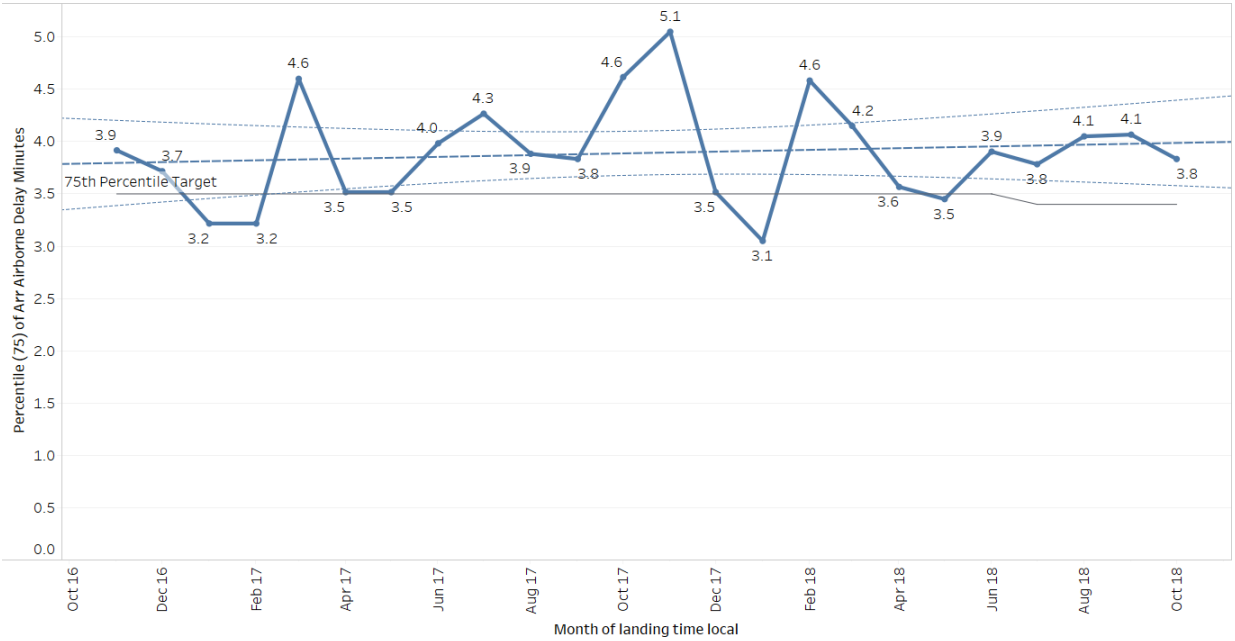

Figure 7: Brisbane airborne delay 75th percentile (last 24 months)

Notable events

Table 3 describes the notable airborne delay events during October in Brisbane.

Day	Local Time	Delay (minutes – 75th percentile)	Event Descriptions (*Contributing causes to increased delays*)
08 October	19-20	5.3	Reduced capacity due to thunderstorm (tactical rates lowered).
11 October	19-21	8.9	Concentration of demand due to late non-compliant flights during the evening peak period.
14 October	16-19	6.3	Concentration of demand due to three MEDEVAC flights and late non-compliant flights during the peak afternoon period.

15 October	17-20	9.8	Concentration of demand due to late and early non-compliant flights during the afternoon peak period.
21 October	15-16	4.6	Reduced capacity due to thunderstorms. No arrivals for one hour. Level 3 GDP revision undertaken.

Table 3: Notable event descriptions for Brisbane.

CTOT variations

Variations from CTOT at Brisbane during the afternoon hours (1800-1900 local) are the focus of this section due to regular concentration of demand leading to increases in delay. Flights that appear at least twice have been included in the table below.

Table 1 provides the flights within this period that departed either early or late with respect to their CTOTs (-5 to +15 minutes) on more than one occasion. This facilitates collaboration to identify patterns and causes of delay.

The CTOT against the ATOT (actual take off time) measure is used as a proxy until the COBT (calculated off blocks time) against AOBT (actual off blocks time) can be routinely reported on.

CTOT Variation	ACID	ADEP	ADES	Local - ALDT HOUR	# Flights
Early	JST833	YBPN	Brisbane Arrivals	19	2
	MEH	YMYB	Brisbane Arrivals	19	2
	VEK	YNBR	Brisbane Arrivals	19	2
	VJE	YEML	Brisbane Arrivals	19	2
	VOZ1266	YEML	Brisbane Arrivals	19	2
Late	VOZ341	Melbourne Departures	Brisbane Arrivals	18	9
	JST818	Sydney Departures	Brisbane Arrivals	19	6
	VOZ347	Melbourne Departures	Brisbane Arrivals	19	6
	QFA542	Sydney Departures	Brisbane Arrivals	18	5
	QFA628	Melbourne Departures	Brisbane Arrivals	18	5
	VOZ1225	YSCB	Brisbane Arrivals	18	5
	QFA544	Sydney Departures	Brisbane Arrivals	18	4
	QFA626	Melbourne Departures	Brisbane Arrivals	18	4
	VOZ454	YPDN	Brisbane Arrivals	19	4
	QFA548	Sydney Departures	Brisbane Arrivals	19	3
	QFA632	Melbourne Departures	Brisbane Arrivals	19	3
	VOZ337	Melbourne Departures	Brisbane Arrivals	18	3
	VOZ965	Sydney Departures	Brisbane Arrivals	18	3
	VOZ973	Sydney Departures	Brisbane Arrivals	18	3
	VOZ981	Sydney Departures	Brisbane Arrivals	19	3
	VOZ1109	YWLM	Brisbane Arrivals	18	3
	QFA540	Sydney Departures	Brisbane Arrivals	18	2
	QFA628	Melbourne Departures	Brisbane Arrivals	19	2
	QLK341D	YGLA	Brisbane Arrivals	18	2
	TGG532	Melbourne Departures	Brisbane Arrivals	18	2
	UJS	YBWW	Brisbane Arrivals	19	2
	VOZ341	Melbourne Departures	Brisbane Arrivals	19	2
	VOZ616	YBMK	Brisbane Arrivals	18	2
				19	2
	VOZ973	Sydney Departures	Brisbane Arrivals	19	2
	VOZ977	Sydney Departures	Brisbane Arrivals	19	2
	VOZ1248	YBRK	Brisbane Arrivals	19	2

Table 4: CTOT variation for Brisbane arrivals 1800-2000 local October 2018. Number of occasions (minimum two) that each flight departed early or late with respect to its CTOT (-5 to +15 minutes)

Perth

Airborne delay

The 75th percentile performance figures for airborne delay at Perth are indicated in **Figure 8**. October performance (-0.1 minutes median and 1.8 minutes 75th percentile) met the targets. Compared to the same month last year there was a decrease in the median (from 0.1 minutes) and 75th percentile (from 2.0 minutes) of airborne delay. The long-term (48-month) and 24-month trends for airborne delay at Perth are downwards.

Figure 8: Perth airborne delay 75th percentile (last 24 months)

Notable events

Table 4 describes the notable airborne delay events during October in Perth.

Day	Local Time	Delay (minutes – 75th percentile)	Event Descriptions (*Contributing causes to increased delays*)
09 October	17-19	3.6	Reduced capacity due to thunderstorms. No arrivals for 24 minutes.
10 October	10-11	4.5	Concentration of demand due to late non-compliant flights during peak period.

Table 4: Notable event descriptions for Perth.

Appendix A

Corporate Plan Key Performance Indicator Profile: Arrival airborne delay

Corporate Plan Description:

The median (and 75th percentile) excess time incurred during the arrival airborne phase of flight in reference to the estimated time of arrival for high-volume operations. (High volume operating environments defined as Brisbane, Melbourne, Perth and Sydney).

Corporate Plan Targets:

Year	17/18	18/19	19/20	20/21	21/22
75%	3.5	3.4	3.3	3.2	3.1
Median	0.6	0.6	0.6	0.6	0.6

What is it: Excess time incurred during the arrival phase of flight.

What is measured: It is measured by comparing the estimated flight time and actual flight time for the portion of the flight within 250 NM of the destination aerodrome.

Why 250NM: The 250NM threshold has been identified as the distance from the aerodrome at which tactical arrival demand/capacity balancing measures start taking effect. It is a true reflection of the tactical arrival management of the flight, and is not skewed by other non-related issues such as congestion at the departure aerodrome.

Why measure Median rather than Average/Mean: In some cases, the actual flight time within 250NM of the destination aerodrome will be less than the estimated flight time (e.g.: ATC has provide track shortening). In the dataset, this translates into a 'negative' value for that particular flight.

The Median shows the mid-point of the data set and allows us to demonstrate our impact on all flights, not just the ones that were delayed. Additionally, over short timeframes and small datasets (such as a daily report), Median measurement is more resilient to data errors and small groups of outliers which may skew the average.

Why measure the 75th percentile: This supplements the Median and is valuable to demonstrate how effectively we have managed the arrival of most of the fleet.

The last 25th percentile can typically contain arrival data from flights that were impacted by non-routine events, such as Medical priority traffic or aircraft in an emergency or diversion.

How do we measure:

Uses the high-fidelity Dalí trajectory-based model. For Sydney, some assumptions are built in to calculations as the actual flight path is unique for each flight (open STARs).