ATM Network Performance Report

October 2019

Table of contents

Summary **3**

Network Wide Performance **5**

Airborne delay 5

Runway configuration 6

Sydney **9**

Airborne delay 9

Distinctive events 9

CTOT variations 10

Melbourne **11**

Airborne delay 11

Distinctive events 11

CTOT variations 13

Brisbane **14**

Airborne delay 14

Distinctive events 14

CTOT variations 15

Perth **16**

Airborne delay 16

Distinctive events 16

Appendix A **17**

Corporate Plan Key Performance Indicator Profile: Arrival airborne delay 17

Summary

October Performance

Network Performance in October 2019 was affected by instances of lower capacity operations at Melbourne and Sydney in response to meteorological conditions that resulted in elevated airborne delay. The combined 75th percentile performance during October for airborne delay across the four major airports (Sydney, Melbourne, Brisbane and Perth) was **5.0** minutes, and the median airborne delay across these airports was **1.2** minutes. These results did not meet the 2019/2020 KPI targets of 3.3 minutes and 0.6 minutes respectively. The median and 75th percentile have increased compared to the same period last year.

The main contributing factors to significant delay increases experienced during October include:

- continued taxiway works on Rapid Exit Taxiway F at Melbourne Airport,
- worse than (or different to) forecast conditions, and
- concentrated demand during peak, or low capacity, periods.

The taxiway works at Melbourne airport are planned to be complete in early 2020. During this time, close monitoring of the airborne delay is being undertaken to ensure appropriate controls are in place to regulate delay. This includes offering revisions to the Ground Delay Program (GDP) through a Collaborative Decision Making (CDM) process with our airline customers. The result of this CDM process can be a greater tolerance for airborne delay by airlines in favour of decreased gate holding, which explains some of the observed increase in airborne delay.

The following terms are used to categorise delay events in this report:

1. **Significant event**: prolonged and moderately elevated airborne delay for the entire day (i.e. 75th percentile greater than 7 minutes across the entire day). In contrast to previous months, not all of these events are included under each of the airport sections. Only those categorised under the new “distinctive event” terminology are included.
2. **Notable event**: shorter and more intense periods of elevated airborne delay (i.e. two or more consecutive hours where the 75th percentile was over 10 minutes). These are included so comparisons to previous months can be made, and counts are included in the Arrival Airborne Delay KPI commentary. In contrast to previous months, not all of these events are included under each of the airport sections. Only those categorised under the new “distinctive event” terminology are included.
3. **Distinctive event:** noteworthy disruption, generally that was not planned or forecast. Identification of distinct events is through a qualitative and quantitative assessment during the Daily Post Operational Review call. These events may include a subset of the significant and notable events.

There were 39 significant and/or notable events in October, which was 3 more than in September. Twenty-five of these events were significant due to prolonged and moderately elevated airborne delay for the entire day; these events are labelled in **Figure** 1. Fourteen of these events were notable due to shorter and more intense periods of elevated airborne delay.

This month there were eighteen significant and/or notable events in Sydney, fourteen in Melbourne, five in Brisbane, and two in Perth. There were nineteen distinctive events in October and these are summarised under each of the airport sections below.

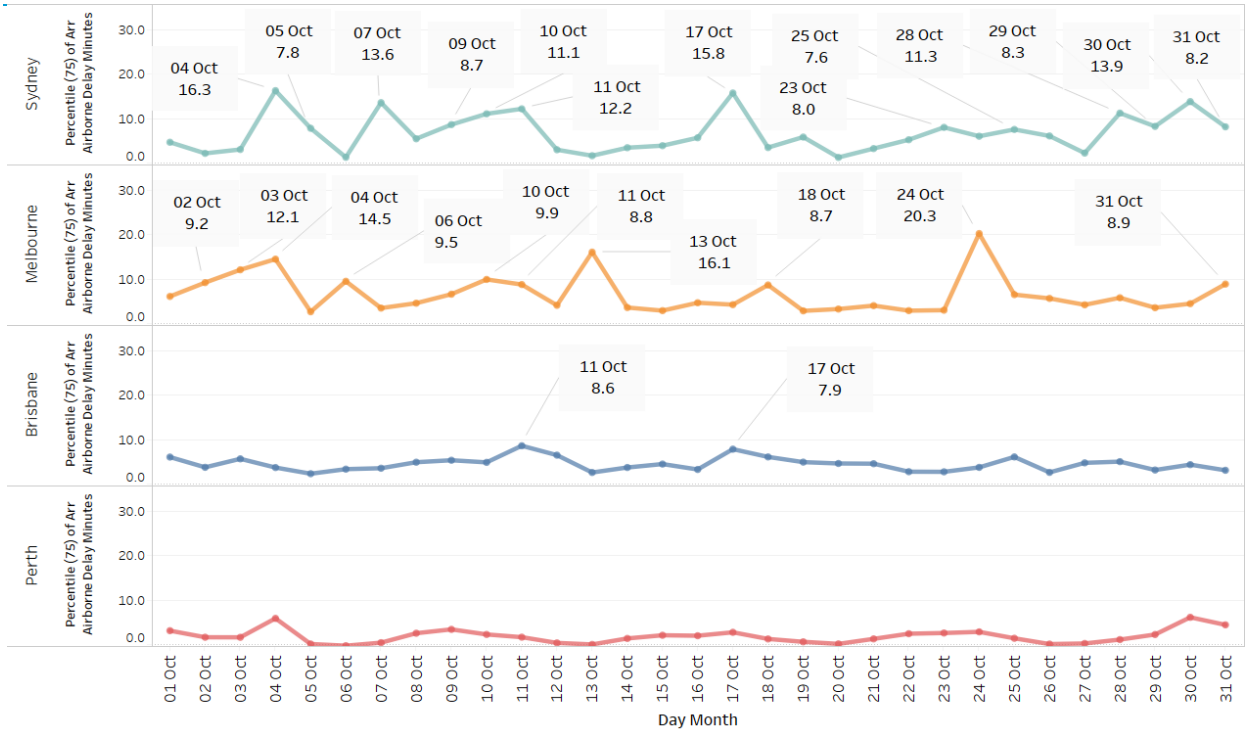

Figure 1: Significant events during October 2019. The marked events indicate the extent of the 75th percentile of airborne delay in minutes across each day.

Network Wide Performance

Airborne delay

The 24-month combined median and 75th percentile airborne delay at the four major airports is indicated in **Figure 2**. The trends are upward for both measures.

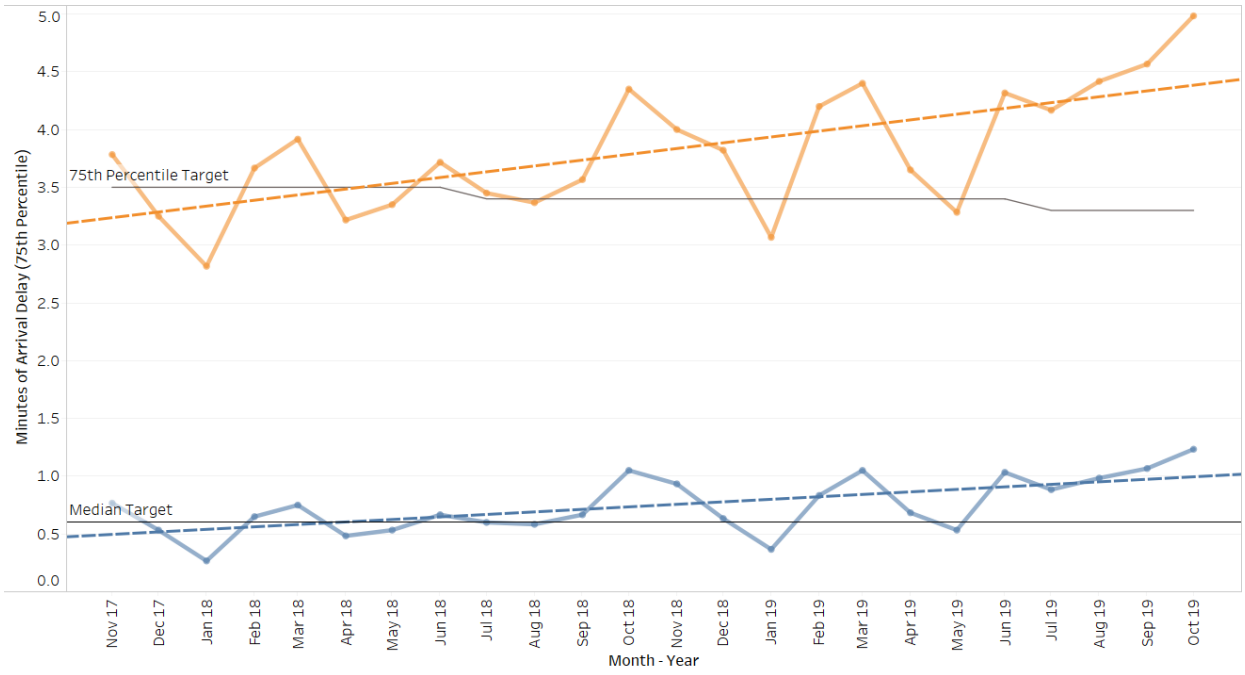

Figure 2: 24-month trend for airborne delay

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.

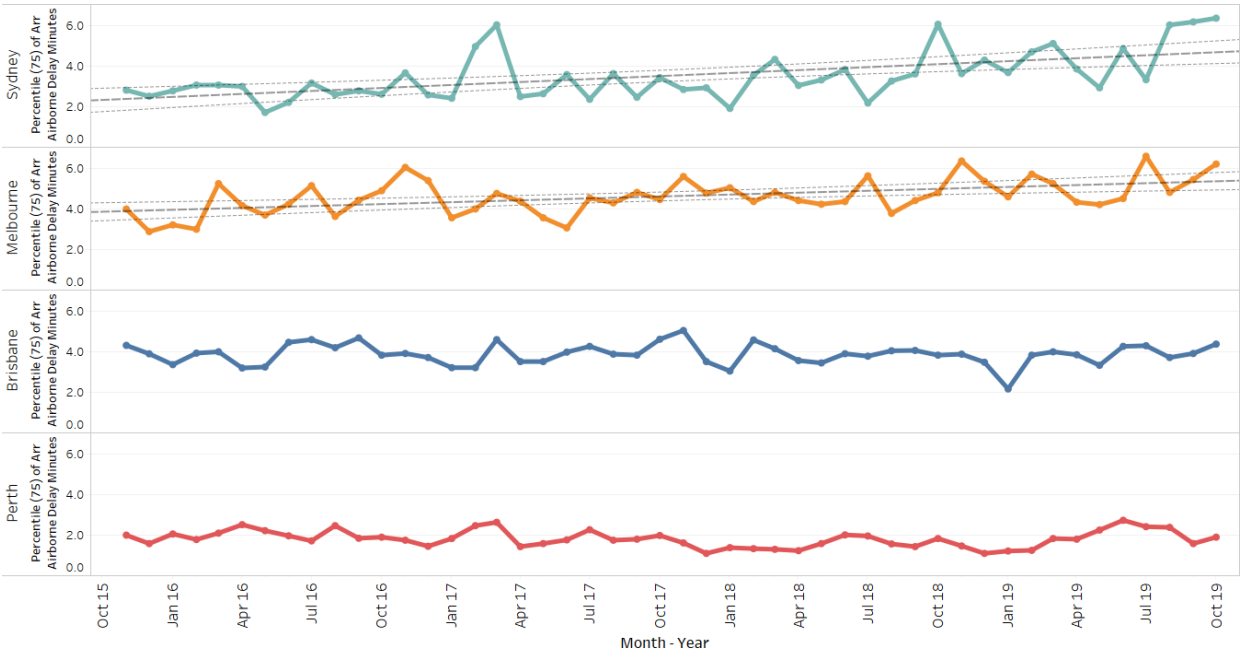

Figure 3: 48-month trend for airborne delay (75th percentile) by airport

Runway configuration

The runway configuration usage for each airport is shown in **Figure 4**.

	Runway mode	October 2018	July 2019	August 2019	September 2019	October 2019
Sydney	34A/34D	49% (257)	58% (306)	48% (255)	42% (215)	50% (265)
	16A/16D	50% (266)	34% (180)	38% (200)	51% (258)	43% (227)
	SODPROPS (Single)	1% (4)	4% (19)	1% (4)	3% (14)	2% (12)
	25A/25D (Single)		4% (22)	13% (68)	5% (23)	4% (23)
Melbourne	16A/27D	32% (181)	23% (129)	32% (181)	29% (158)	38% (210)
	27A - 27/34D	11% (62)	26% (147)	21% (118)	23% (125)	14% (79)
	34A/34D (Single)	23% (130)	27% (149)	20% (114)	20% (106)	16% (91)
	16A/16D (Single)	24% (133)		3% (18)	10% (54)	14% (76)
	27/34 LAHSO	8% (42)	13% (70)	10% (57)	10% (55)	5% (29)
	27A/27D (Single)	1% (7)	11% (60)	13% (70)	7% (39)	13% (71)
	09A/09D (Single)	1% (3)			1% (3)	0% (2)
	09A/16D		1% (3)			
Brisbane	19A/19D (Single)	44% (231)	71% (374)	58% (308)	33% (167)	35% (183)
	01A/01D (Single)	39% (205)	20% (107)	31% (166)	55% (282)	62% (325)
	01/14A 01D	13% (66)	9% (46)	8% (41)	8% (39)	3% (17)
	01/32A 01D	5% (25)		1% (4)	4% (22)	0% (2)
	19/14A 19D			2% (8)		
Perth	21A/21D (Single)	68% (252)	14% (71)	15% (75)	16% (77)	11% (56)
	03A/03D (Single)	18% (65)	15% (75)	34% (170)	18% (87)	11% (55)
	21/24A 21D	4% (15)	32% (158)	24% (120)	47% (225)	64% (317)
	03A 06/03D	6% (23)	36% (180)	24% (121)	11% (53)	10% (51)
	06A/06D (Single)	2% (8)	2% (11)	2% (9)	3% (15)	1% (3)
	24A/24D (Single)	1% (5)	0% (1)	0% (1)	5% (23)	3% (14)

Figure 4: October runway configuration usage (percentage of total and hours in brackets) by airport (Sydney 06-22L, Melbourne 06-23L, Brisbane 06-22L and Perth 06-21L). Single runway configurations indicated in parentheses. Note: Sydney runway mode selection takes into account the Long Term Operating Plan to manage aircraft noise.

In Melbourne the availability of Land and Hold Short Operations (LAHSO) decreased by 31% compared to the same month last year (29 hours compared to 42 hours in October 2018). Single runway usage decreased by 12% (240 hours compared to 273 hours in October 2018). The use of Runway 34 for arrivals (single runway 34 and LAHSO operations) decreased by 25% (to 120 hours) compared to September (161 hours).

In Sydney the use of parallel 34 runway operations increased by 3% (265 hours compared to 257 hours in October 2018). Additionally, the use of parallel 16 operations decreased by 15% compared to the same month last year (227 hours compared to 266 hours in October 2018). The overall single runway usage (runway 07/25 and SODPROPS) increased by 31 hours compared to the same month last year, with the use of single runway 25 increasing by 23 hours (compared to 0 hours in October 2018). Extended use of runway 25 only is dictated by weather conditions, as opposed to SODPROPS which is generally used in low demand periods for noise sharing purposes.

Brisbane had single runway operations for 83% of the time in October 2018 and 97% of the time in October 2019. Single runway 01 operations increased by 59% compared to the same month last year (325 hours compared to 205 hours in October 2018). Single runway 19 operations decreased by 21% (183 hours compared to 231 in October 2018). The use of two runways for arrivals in Brisbane decreased by 80% compared to the same month last year (19 hours compared to 91 hours in October 2018). In October 2018 and 2019 the more common configuration was runways 01 and 14 for arrival, with Runway 01 for departure.

Perth was required to use single runway operations for 26% of the time in October 2019. Single runway operations are 61% lower compared to the same month last year (128 hours compared

to 330 hours in October 2018). Changes to reporting at Perth now capture weekend operating configurations. This is creating an artefact change to year-on-year differences (October 2018 had 368 hours, compared to October 2019 having 496 hours of recorded runway usage). Typically weekends at Perth have low traffic volumes which favour single runway configurations.

Traffic levels and composition changes

Figure 5 shows traffic levels and composition changes since the beginning of 2017.

Comparing overall traffic levels in October 2019 to October 2018, Melbourne has decreased (-1.2%), while Sydney (0.4%), Brisbane (2.5%) and Perth (4.7%) have increased. International traffic numbers have decreased in Melbourne (-3.6%), Sydney (-0.9%) and Perth (-0.3%), while Brisbane shows an increase (1.6%).

In Sydney the domestic traffic comparison between months in 2018 and 2019 fluctuates (October 2019 is slightly up on October 2018). The general increase of international traffic in 2018 has levelled off in 2019. Traffic in Melbourne for 2019 is fairly steady compared to the previous year, with the strong growth of international traffic in 2018 no longer seen. In 2018 Brisbane traffic generally showed a decrease compared to the same month in the previous year, but with growth in international traffic. For 2019 traffic is increasing, driven by domestic traffic, as international growth has slowed. Perth traffic levels were relatively stable in 2018, while 2019 has shown overall growth driven by domestic traffic (with a drop in the international component).

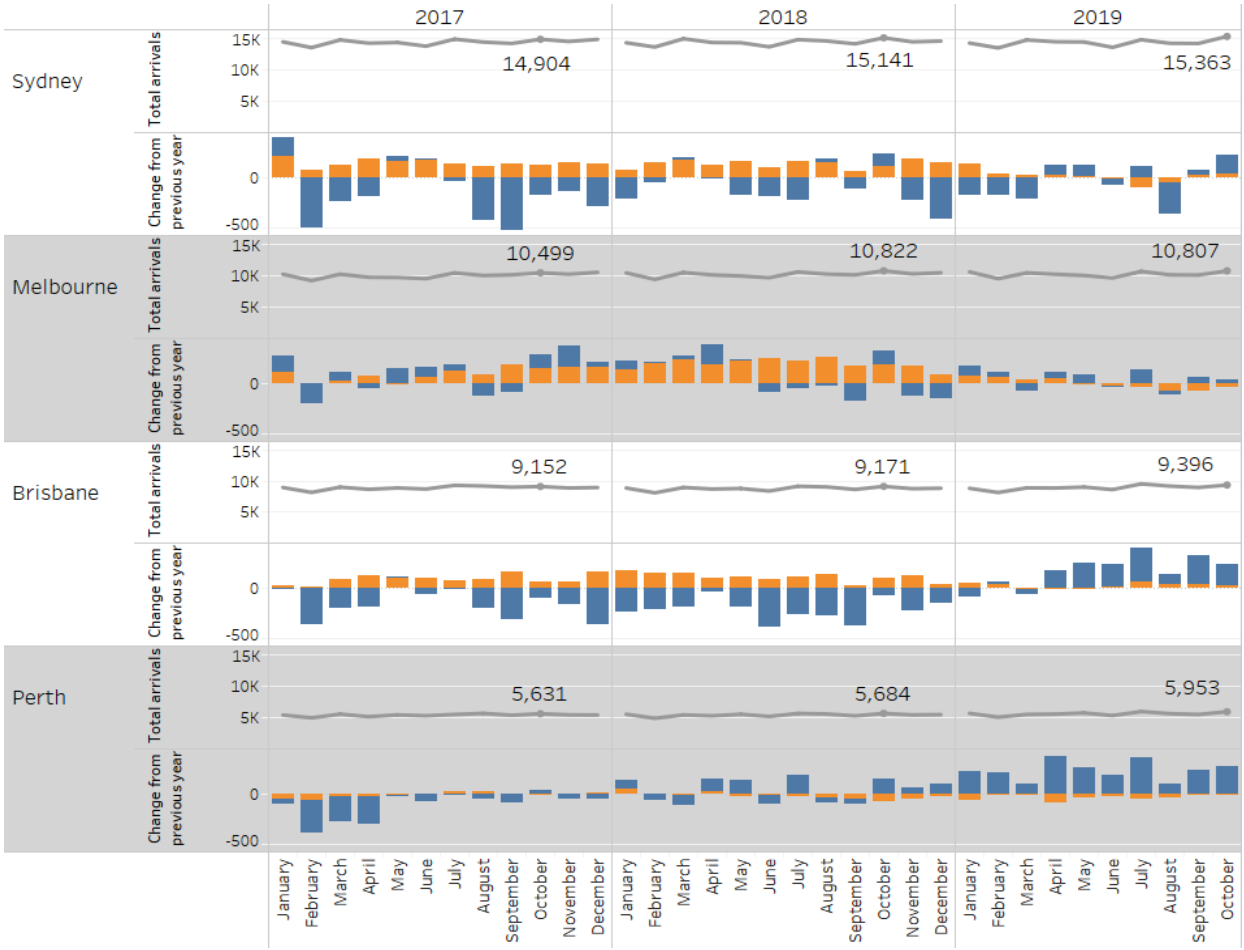

Figure 5: Traffic levels and composition change since January 2017. Grey lines show overall traffic numbers (annotated figures compare current month to same month one and two years earlier). Coloured bars show change in traffic compared to the same month the previous year for domestic (blue) and international (orange) flights.

Demand and capacity

Figure 6 details estimates of the number of hours each month where scheduled demand is significantly above capacity (hours where demand is three or more flights higher than the METCDM rate). The 24-month trend for excess demand is upward in Perth.

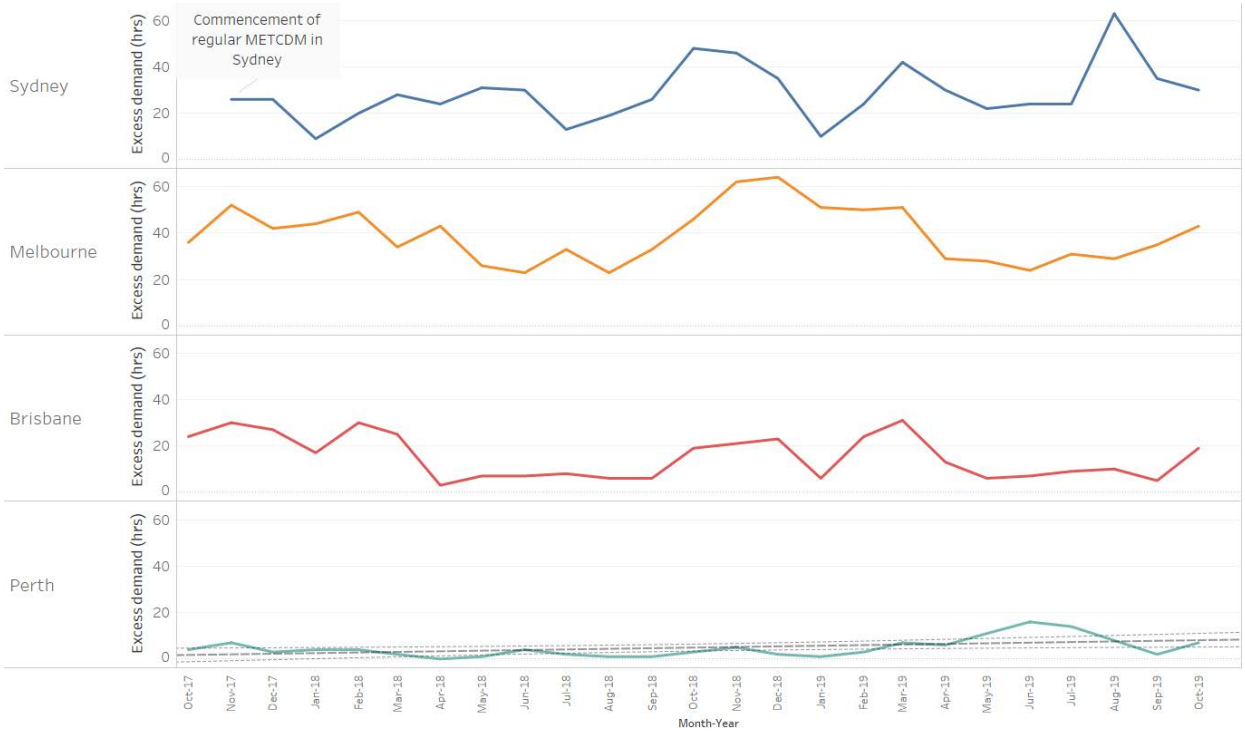

Figure 6: Excess demand estimates. Line indicates number of hours where estimated demand exceeds the METCDM rate for that hour by three or more flights. Demand is estimated using Harmony Base Estimated Landing Time.

Sydney

Airborne delay

The 75th percentile performance figures for airborne delay at Sydney are indicated in **Figure 7.** October performance for the median (1.4 minutes) and the 75th percentile (6.4 minutes) did not meet the targets (0.6 minutes and 3.3 minutes respectively). Compared to the same month last year, there was no change in the airborne delay median performance (from 1.4 minutes) and an increase in 75th percentile performance (from 6.1 minutes).

The long-term (48-month) and 24-month trends for airborne delay at Sydney are upwards.

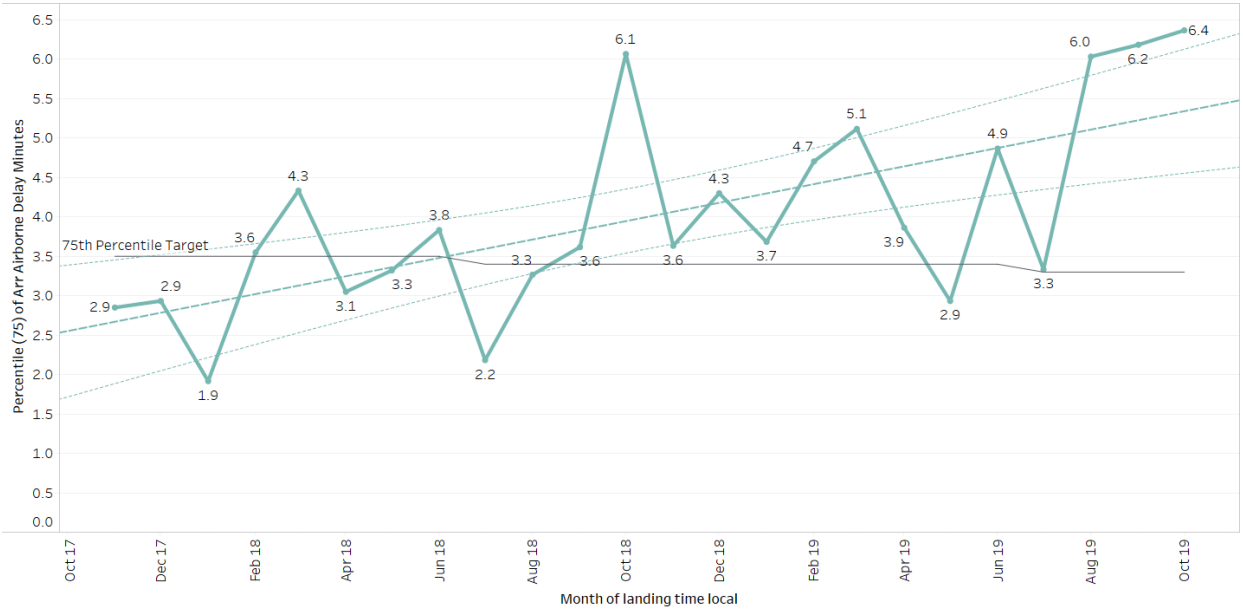

Figure 7: Sydney airborne delay 75th percentile (last 24 months)

Distinctive events

Table 1 describes the distinctive events during October in Sydney.

Day	Event Category	Delay (minutes – 75th percentile)	Event Descriptions (*Contributing causes to increased delays*)
4 October	Significant	16.3	Morning: Tactical rates were reduced from plan due to strong winds generating moderate turbulence. Afternoon: Concentration of demand due to non-compliant flights.
7 October	Significant	13.6	Afternoon: Tactical rates were reduced from plan due to low cloud and windshear.
8 October	-	5.5	Afternoon: Tactical rates were reduced from plan due to thunderstorm activity closer within the TMA than planned. In addition, there was a concentration of demand due to off-schedule internationals.
10 October	Significant	11.1	Morning: Concentration of demand due to off-schedule internationals.
11 October	Significant	12.2	Morning: Tactical rates were reduced from plan due to storms and weather diversions. Single runway operations were used for a short time due to weather on approach to RWY16.

			Afternoon: Level 1 revision was conducted due to worse than forecast thunderstorm activity and tower staffing constraints.
25 October	Significant	7.6	Afternoon: Tactical rates were reduced from plan due to convective weather and wind gusts causing go-arounds and track diversions. In addition, there was a concentration of demand due to non-compliant flights.
26 October	-	6.1	Afternoon: Winds forcing single runway operations earlier than forecast.
28 October	Significant	11.3	Morning: Level 2 revision was conducted due to short notice tower staffing, and concentrated demand.
29 October	Significant	8.3	Afternoon: Tactical rates were reduced from planned due to smoke haze that reduced visibility. In addition, there was a tower operational issue at short notice.
30 October	Significant	13.9	Tactical rates were reduced from planned due to smoke haze that reduced visibility.
31 October	Significant	8.2	Morning: Tactical rates were reduced from planned due to smoke haze and low cloud that reduced visibility.

Table 1: Distinctive event descriptions for Sydney.

CTOT variations

Variations from CTOT at Sydney from 0600-2300 local are the focus of this section due to non-compliance being evident at almost any time of day at some point during the month. **Table 2** provides the flights within this period that departed either early or late with respect to their CTOTs (-5 to +15 minutes). Flights that appear at least twice early or five times late have been included. 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	Local - ALDT HOUR	
Early	RXA311	YGFN	8	4
	PE721	YTRE	6	3
	QLK37	Dubbo	7	3
	JST401	Gold Coast	8	2
	JST459	YBNA	21	2
	QLK181	YMOR	10	2
	RXA323	YGFN	12	2
	RXA456	YNAR	8	2
	RXA853	YBHI	9	2
	VEK	YNBR	11	2
Late	QFA414	Melbourne	9	6
	VOZ811	Melbourne	8	5
	VOZ827	Melbourne	10	5

Table 2: CTOT variation for Sydney arrivals 0600-2300 local – October 2019. Number of occasions that each flight departed early or late with respect to its CTOT (-5 to +15 minutes).

Melbourne

Airborne delay

The 75th percentile performance figures for airborne delay at Melbourne are indicated in **Figure 8.** October performance for the median (1.9 minutes) and the 75th percentile (6.2 minutes) did not meet the targets. Compared to the same month last year, there was an increase in the airborne delay performance for the median (from 1.5 minutes) and 75th percentile (from 4.8 minutes)

The long-term (48-month) trend for airborne delay at Melbourne is upwards.

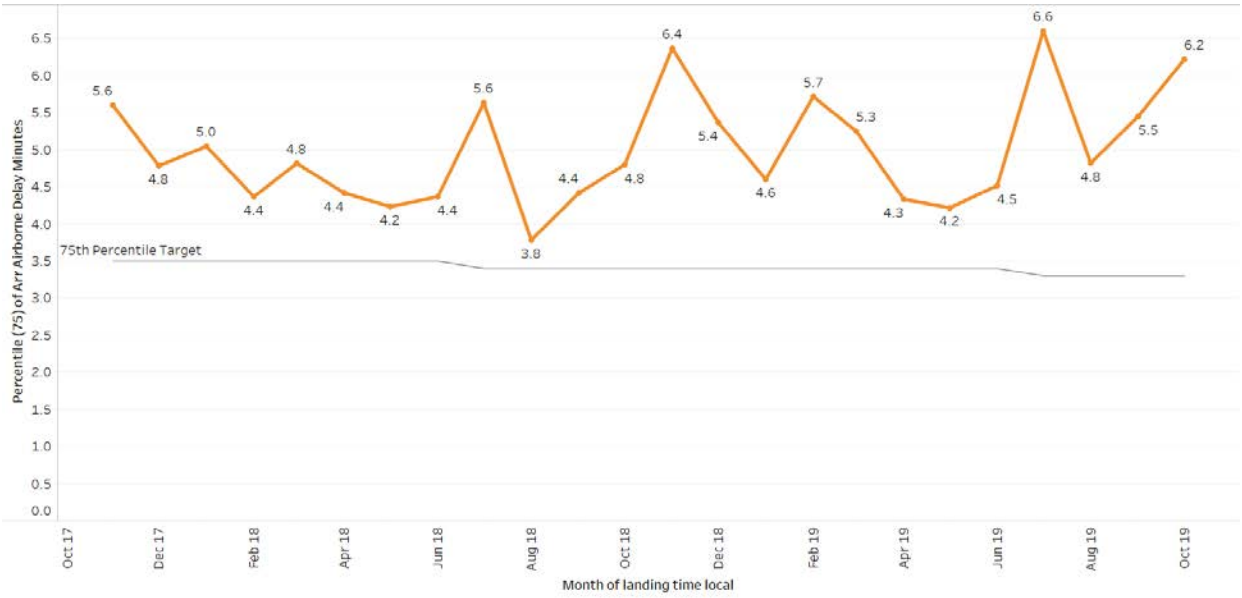

Figure 8: Melbourne airborne delay 75th percentile (last 24 months)

Distinctive events

Table 3 describes the distinctive events during October in Melbourne.

Any events marked with an asterisk (*) in the table indicates that the arrival rate reduction required for the Rapid Exit Taxiway F works was a contributing factor to the delay event. Collaborative decision making with our airline customers about the impact of these works on network performance has resulted in an increased tolerance for Airborne Delay for arrivals into Melbourne rather taking higher levels of ground holding. The works are anticipated to be completed in early 2020 with a break over the Christmas period to avoid disruption during the busy holiday period. Co-ordination group meetings with airlines and airports decided to monitor the situation each month to determine if any further controlling actions are required to manage delay.

Day	**Event Category**	**Delay** (minutes – 75th percentile)	**Event Descriptions** (*Contributing causes to increased delays*)
1 October *	-	6.1	Morning: Planned LAHSO was unavailable due to winds. In addition, there was oversubscription due to taxiway works reducing capacity.
3 October *	Significant	12.1	Afternoon: Tactical rates were reduced from planned due to strong winds. In addition, the capacity was reduced due to taxiway works.

4 October	Significant	14.5	Afternoon: Extended period of unplanned single runway operations.
13 October *	Significant	16.1	Afternoon: Concentration of demand due to off-schedule internationals and non-compliant flights. In addition, there was an extended period of unplanned single runway operations and reduced capacity due to taxiway works.
25 October	Notable	6.5	Afternoon: Concentration of demand due to non-compliant flights.
31 October *	Significant	8.9	Afternoon: Planned LAHSO was unavailable due to winds. In addition, there was concentration of demand due to non-compliant flights and reduced capacity due to taxiway works.

Table 3: Distinctive event descriptions for Melbourne.

CTOT variations

Variations from CTOT at Melbourne from 0600-2300 local are the focus of this section due to non-compliance being evident at almost any time of day at some point during the month. **Table 4** provides the flights within this period that departed either early or late with respect to their CTOTs (-5 to +15 minutes). Flights that appear at least twice early or five times late have been included. 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	Local - ALDT HOUR	
Early	RXA3772	Mount Gambier	18	8
	QLK286D	Launceston	18	6
	RXA3657	Mildura	11	4
	RXA3685	Mildura	19	4
	QLK77D	Mildura	7	3
	QLK280D	Launceston	7	3
	VOZ1361	Launceston	7	3
	JST513	Sydney	19	2
	QFA688	Adelaide	19	2
	QLK50D	Devonport	7	2
	QLK58D	Devonport	18	2
	RXA3653	Mildura	7	2
	RXA3752	Mount Gambier	7	2
			8	2
	VOZ238	Adelaide	20	2
Late	QFA419	Sydney	10	8
	QFA415	Sydney	9	7
	QFA421	Sydney	11	7
	QFA425	Sydney	12	7
	QFA455	Sydney	19	7
	QFA467	Sydney	21	7
	JST523	Sydney	20	6
	QFA423	Sydney	11	6
	QFA427	Sydney	12	6
	QFA463	Sydney	20	6
	QFA479	Sydney	20	6
	QFA1012	Hobart	11	6
	TGG517	Brisbane	12	6
	VOZ882	Sydney	20	6
	QFA449	Sydney	18	5
	QFA453	Sydney	18	5
	QFA457	Sydney	19	5
	QFA465	Sydney	20	5
	QFA477	Sydney	19	5
	TGG269	Sydney	20	5
	VOZ830	Sydney	11	5
	VOZ834	Sydney	12	5
	VOZ874	Sydney	19	5
	VOZ878	Sydney	20	5

Table 4: CTOT variation for Melbourne arrivals 0600-2300 local – October 2019. Number of occasions that each flight departed early or late with respect to its CTOT (-5 to +15 minutes).

Brisbane

Airborne delay

The 75th percentile performance figures for airborne delay at Brisbane are indicated in **Figure 9**. October performance did not meet the target for the median (1.5 minutes) or the 75th percentile (4.4 minutes). Compared to the same month last year, there was an increase in the airborne delay median performance (from 1.1 minutes) and the 75th percentile (from 3.8 minutes).

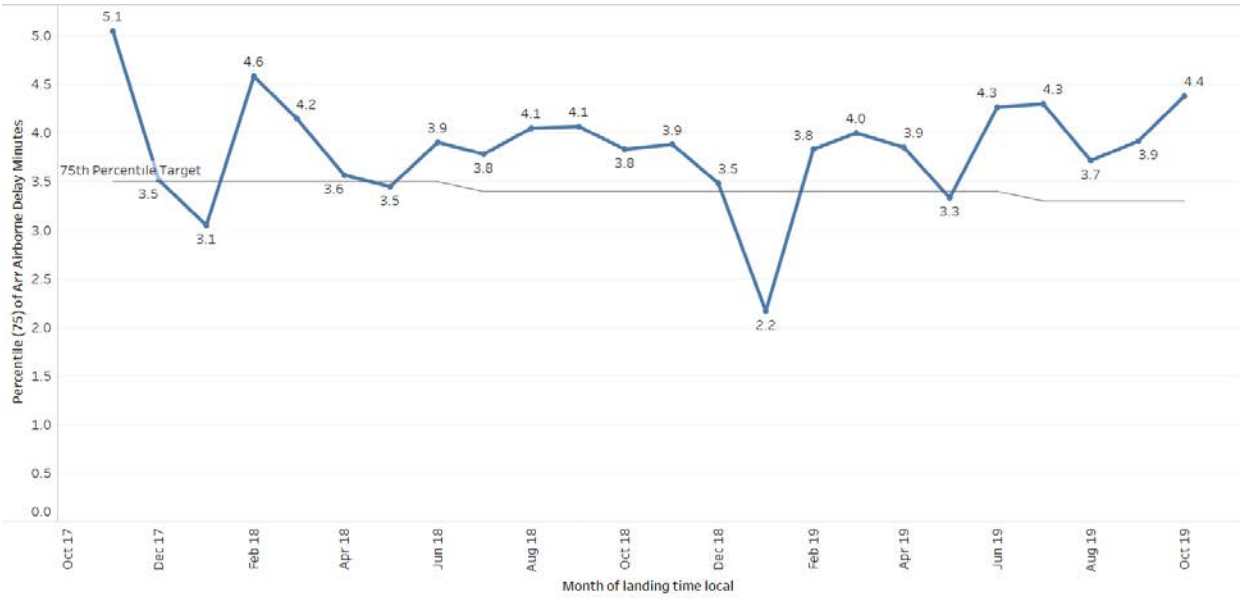

Figure 9: Brisbane airborne delay 75th percentile (last 24 months)

Distinctive events

Table 5 describes the distinctive events during October in Brisbane.

Day	**Event Category**	**Delay** (minutes – 75th percentile)	**Event Descriptions** (*Contributing causes to increased delays*)
20 October	-	4.6	AUSCAL flight testing

Table 5: Distinctive event descriptions for Brisbane.

CTOT variations

Variations from CTOT at Brisbane from 0600-2300 local are the focus of this section due to non-compliance being evident at almost any time of day at some point during the month. **Table 6** provides the flights within this period that departed either early or late with respect to their CTOTs (-5 to +15 minutes). Flights that appear at least twice early or five times late have been included. 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	Local - ALDT HOUR	
Early	KAK	Maryborough	19	4
	JST833	Proserpine	19	2
	QLK465D	Moranbah	18	2
	TFX133	Rockhampton	20	2
	VEF	YSTW	19	2
	VHILJ	Sydney	12	2
	VJE	YEML	19	2
	YJM	Toowoomba	19	2
Late	VOZ341	Melbourne	18	9
	QFA628	Melbourne	18	8
	QFA542	Sydney	18	6
	QFA634	Melbourne	20	6

Table 6: CTOT variation for Brisbane arrivals 0600-2300 local – October 2019. Number of occasions 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 10**. October performance for the median (-0.2 minutes) and the 75th percentile (1.9 minutes) met the targets. Compared to the same month last year, there was a decrease in the airborne delay median performance (from -0.1 minutes) and an increase in 75th percentile performance (from 1.8 minutes).

The 24-month trend for airborne delay at Perth is upwards.

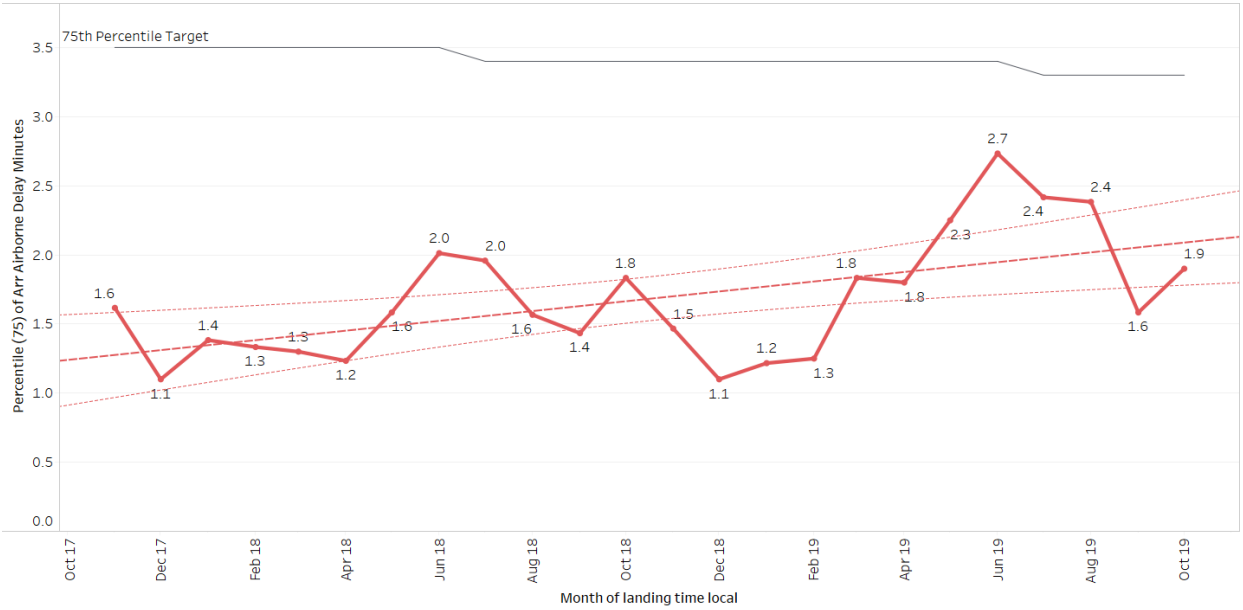

Figure 10: Perth airborne delay 75th percentile (last 24 months)

Distinctive events

Table 7 describes the distinctive events during October in Perth.

Day	Event Category	Delay (minutes – 75th percentile)	Event Descriptions (*Contributing causes to increased delays*)
4 October	Notable	5.9	Afternoon: Tactical rates were reduced from planned due to strong winds, and go-arounds.

Table 7: Distinctive 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	18/19	19/20	20/21	21/22
75%	3.4	3.3	3.2	3.1
Median	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 aircraft trajectory model. For Sydney, some assumptions are built in to calculations as the actual flight path is unique for each flight (open STARs).