

ATM Network Performance Report

July 2019

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Summary

July Performance

The combined 75th percentile performance during July for airborne delay across the four major airports (Sydney, Melbourne, Brisbane and Perth) was **4.2** minutes. The median airborne delay across these airports was **0.9** minutes. These results did not meet the KPI targets. The median and 75th percentile increased compared to the same period last year.

The number (39) of notable events in July was higher than any month in the previous FY. There were twelve notable events in Sydney, seventeen in Melbourne, six in Brisbane and four in Perth.

The 39 notable events in July are summarised under each of the airport sections below. Thirteen 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. Twenty-six 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). The contributing factors to significant delay increases experienced during July was due to the extended taxiway works on Rapid Exit Taxiway F at Melbourne airport and weather events at Sydney and Perth. As the taxiway works at Melbourne are planned to be complete in early 2020 close monitoring of the airborne delay is being undertaken to ensure appropriate controls are in place to regulate delay.



Figure 1: Notable prolonged delay impact events during July 2019

 $Numbers underneath \ the \ dates indicate \ the \ extent \ of \ the \ 75^{h} percentile \ of \ airborne \ delay \ in \ minutes \ across \ the \ day.$

Network Wide Performance

Airborne delay

The combined median and 75th percentile airborne delay at the four major airports is indicated in **Figure 2**. The trend is upward for the 75th percentile.



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.





Runway configuration

The runway configuration usage for each airport is shown in **Figure 5**. The availability of Land and Hold Short Operations (LAHSO) at Melbourne increased by around 17% compared to the same month last year (70 hours compared to 60 hours in July 2018). Single runway usage decreased by 33% (209 hours compared to 311 hours in July 2018). In Sydney the use of parallel 34 runway operations decreased by 8% compared to the same month last year (306 hours compared to 332 hours in July 2018). Additionally, the use of parallel 16 operations increased by 53% compared to the same month last year (180 hours compared to 118 hours in July 2018). Brisbane had single runway operations for 91% of the time for July in 2018 and 2019. Single runway 01 operations decreased by 37% compared to the same month last year (107 hours compared to 169 hours in July 2018). Single runway 19 operations increased by 20% (374 hours compared to 312 in July 2018). Perth was required to use single runway operations for 32% of the time. Single runway operations are slightly higher compared to the same month last year (158 hours compared to 148 hours in July 2018). Changes to reporting at Perth now captures weekend operating configurations which are creating artefact changes to year on year differences. Typically weekends at Perth have low traffic volumes which favour single runway configurations.



Figure 5: July 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.

Traffic levels and composition changes

Figure 6 shows traffic levels and composition changes since the beginning of 2017. The traffic decline seen at Sydney in the first three months of 2019 (and much of 2018) has not been observed in the April to July 2019 period. Traffic in Melbourne for 2019 is pretty steady compared to the previous year, with the 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, although international growth has slowed. Perth traffic levels were relatively stable in 2018, while 2019 has shown growth (with a drop in international traffic). Comparing traffic levels in July 2019 to July 2018, Sydney (-0.1%) and has decreased, while Melbourne (0.8%), Brisbane (4.2%) and Perth (5.3%) have increased. International traffic numbers decreased in Sydney (-3.1%), Melbourne (-2.0%) and Perth (-5.8%), while Brisbane (3.9%) showed an increase.

When comparing the first seven months of 2019 to the same period in 2018, Sydney (-0.2%) has decreased in traffic, while Melbourne (0.6%), Brisbane (1.5%) and Perth (3.5%) increased. For internationals Sydney (0.3%), Melbourne (0.9%) and Brisbane (0.9%) increased, while Perth (-5.1%) decreased.

The changes in total traffic from 2017 to 2018 were 0.0% at Sydney, 1.7% at Melbourne, -1.3% at Brisbane and 0.2% Perth.

However, there have been changes to the domestic-international flight mix during this time. Sydney, Melbourne and Brisbane have all seen an increase in the level of international traffic (orange bars). In 2018, international traffic increased by 4% in Sydney, 10% in Melbourne and 8% in Brisbane compared to 2017. This indicates that there are more flights potentially impacting on the effectiveness Ground Delay Program as ground delay is only applied to domestic flights. An increase in aircraft that are not required to comply to with a regulated arrival time may lead to increases in airborne delay.



Figure 6: 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 7 details estimates of the number of hours each month where 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 down in Brisbane.





Sydney

Airborne delay

The 75th percentile performance figures for airborne delay at Sydney are indicated in **Figure 8**. July performance for the median (0.4 minutes) and the 75th percentile (3.3 minutes) met the targets. Compared to the same month last year, there was an increase in the airborne delay performance for the median (from -0.2 minutes) and 75th percentile (from 2.2 minutes).





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

Notable events

Table 2 describes the notable airborne delay and other events during July in Sydney.

Day	Local Time	Delay (minutes – 75 th percentile)	Event Descriptions (Contributing causes to increased delays)
3 July	07-09	5.8	Off-schedule internationals and non-compliant flights during morning peak.
4 July	17-19	7.0	Off-schedule internationals and non-compliant flights during and a go around during a period of low cloud.
6 July	06-07	5.4	Un-forecast fog at the aerodrome with low visibility procedures in place from 0530L. A Level 2 revision was conducted at 0550L with low arrival rates (15 planned and 22 achieved) for 06 and 07 hours. A majority of flights were already airborne at the time of the revision.
7 July	08-11	6.0	Un-forecast fog at the aerodrome with low visibility procedures in place from 0445L. An ad-hoc Level 2 was enacted at 0510 local. No approaches were made between 0810 and 0848 due to visibility below the minima. At 1005 an extension to the GDP was enacted to manage demand.

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13 July	08-10	9.9	Off-schedule internationals during extended period of single runway operations and wind gusts.	
14 July	15-18	6.7	Off-schedule internationals and non-compliant flights during extended period of single runway operations and strong winds. Level 1 revision conducted at 1600 local to extend period of single runway operations.	
15 July	06-09	6.8	Off-schedule internationals during extended period of single runway operations. Multiple go-arounds due to turbulence.	
23 July	05-06	2.3	International flights presenting prior to the end of curfew required delay.	
27 July	06-07	2.0	International flights presenting prior to the end of curfew required delay.	
28 July	08-10	5.8	SODPROPS was in effect for 6 hours with a rate of leading to an increase in delays. No GDP was in effe	
30 July	05-06	4.3	International flights presenting prior to the end of curfew required delay.	
31 July	05-06	6.7	International flights presenting prior to the end of curfew required delay.	

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 Table 2: Notable event descriptions for Sydney.

CTOT variations

Variations from CTOT at Sydney during the morning (0800-1000 local) and afternoon/evening hours (1500-1900 local) are the focus of this section due to regular concentration of demand leading to increases in delay. **Table 3** 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.

ACID	ADEP	Local - ALDT HOUR		
RXA311	YGFN	8		3
PE421	YMDG	9		2
QFA843	Darwin	19		2
QLK181	YMOR	10		2
RXA114	YMRY	10		2
VOZ1354	Darwin	19		2
	ACID RXA311 PE421 QFA843 QLK181 RXA114 VOZ1354	ACIDADEPRXA311YGFNPE421YMDGQFA843DarwinQLK181YMORRXA114YMRYVOZ1354Darwin	ACIDADEPLocal - ALDT HOURRXA311YGFN8PE421YMDG9QFA843Darwin19QLK181YMOR10RXA114YMRY10VOZ1354Darwin19	ACIDADEPLocal-ALDT HOURRXA311YGFN8PE421YMDG9QFA843Darwin19QLK181YMOR10RXA114YMRY10VOZ1354Darwin19

Table 3: CTOT variation for Sydney arrivals 0800-1000 and 1500-1900 local – July 2019.Number of occasions that each flight departed early or late with respect to its CTOTs
(-5 to +15 minutes).

Melbourne

Airborne delay

The 75th percentile performance figures for airborne delay at Melbourne are indicated in **Figure 9.** July performance for the median (1.8 minutes) and the 75th percentile (6.6 minutes) did not meet the targets. Compared to the same month last year, there was a decrease in the airborne delay median performance (from 1.9 minutes) and increase in the 75th percentile (from 5.6 minutes).



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

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

Notable events

Table 4 describes the notable airborne delay events during July in Melbourne. Any delay figures 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. Only one delay event did not have the taxiway works as a contributing factor. 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	Local Time	Delay (minutes – 75 th percentile)	Event Descriptions (Contributing causes to increased delays)
1 July	16-21	19.5*	Increased delays due to extended period of constrained single runway operations due to rapid exit taxiway F unavailability (long term works).

2 July	08-10	4.5*	Reduced rates due to taxiway F closure impacting operations.	
3 July	18-20	4.6	Non-compliant flights causing concentration of demand.	
4 July	11-12	4.4*	Off-schedule internationals and non-compliant flights causing concentration of demand compounded by reduced rates due to taxiway F closure.	
5 July	11-13 & 15-16	4.0*	 11-13L: Late non-compliant flights during extended period of constrained single runway operations. 15-16L: Late non-compliant flights during extended period of constrained single runway operations. LAHSO commenced at 1521 which reduced the accumulated delay. 	
7 July	17-21	9.3*	Level 1 revision at 1600L revised down the planned LAHSO rates from 30 to 20 during the evening peak. Non-compliant flights during extended period of constrained single runway operations.	
10 July	07-12 & 17-23	30.2*	Morning and Evening: Off-schedule internationals and late non-compliant flights during extended period of constrained single runway operations due to taxiway unavailability. Evening: earlier than forecast weather front (strong winds), multiple go-arounds due to windshear. Some flights did not land until after midnight.	
11 July	08-10 & 15-18	17.5*	Morning: off-schedule internationals during extended period of single runway operations with different than forecast wind direction, strong wind gusts and taxiway unavailability. Afternoon: Off-schedule internationals and non-compliant flights during extended period of single runway operations with runway change, passing showers delayed start of LAHSO operations. Level 2 GDP with 30 minute ground stop conducted at 1810.	
12 July	08-12 & 18-21	19.3*	Morning: Off-schedule internationals and non-compliant flights during extended period of constrained single runway operations. Evening: Off-schedule internationals and non-compliant flights during extended period of single runway operations.	
14 July	16-21	12.0*	Non-compliant flights during extended period of constrained single runway operations with periods of reduced visibility during the evening peak.	
16 July	08-09	4.2*	Level 1 revision at 0630 local due to low cloud and change in weather conditions with slight lowering of rates for single runway operations. Off-schedule internationals and non-compliant flights during extended period of single runway operations.	

18 July	18-19	6.7*	 Level 2 revision at 1745 local. Off-schedule internationals and non-compliant flights during extended period of single runway operations. 	
20 July	08-09, 11-12 & 16-17	10.4*	Close to full program for most of the day. Off-schedule internationals and non-compliant flights during extended period of single runway operations with strong and gusty winds and taxiway closure.	
22 July	07-12 & 16-22	21.7*	Close to full program for most of the day. Strong winds with multiple go-arounds. Off-schedule internationals and non-compliant flights during extended period of single runway operations.	
23 July	18-20	5.7* Runway change with strong winds. Extended single runway operations.		
25 July	07-08 & 11-12	5.0*	Morning: Low cloud stopped LAHSO operations. Late morning: Off-schedule internationals and non- compliant flights during extended period of single runway operations.	
26 July	07-10 & 16-21	18.7*	Morning: Off-schedule internationals and non-compliant flights during extended period of single runway operations with forecast low cloud. Evening: Returned emergency flight and taxiway unavailable.	

 Table 4: Notable event descriptions for Melbourne.

CTOT variations

The morning peak (0700-1100 local) is in general the most constrained period of the day in Melbourne. However, variations from CTOT during both the morning hours (0700 to 1300) and afternoon/evening period (1500-2200) are the focus of this section due to regular concentration of demand leading to increases in delay during July. **Table 5** 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	JST441	Gold Coast	19	3
	QLK280D	Launceston	7	3
	QLK286D	Launceston	18	3
	RXA3653	Mildura	8	3
	RXA3685	Mildura	20	3
	JST531	Sydney	8	2
	JST700	Hobart	9	2
	JST740	Launceston	19	2
	QLK50D	Devonport	9	2
	QLK52D	Devonport	10	2
	QLK58D	Devonport	18	2
	QLK77D	Mildura	7	2
	QLK286D	Launceston	17	2
	RXA3554	YWYY	7	2
	RXA3574	YWYY	17	2
	RXA3685	Mildura	19	2
	RXA3772	Mount	18	2
		Gambier	19	2
	TGG213	Sydney	8	2
	TGG553	Gold Coast	15	2
	VOZ868	Sydney	19	2
Late	VOZ318	Brisbane	11	11
	JST523	Sydney	20	9
	V0Z228	Adelaide	17	8
	QFA447	Sydney	17	7
	TGG517	Brisbane	12	7
	VOZ1508	YBSU	15	7
	JST702	Hobart	17	6
	JST712	Hobart	16	6
	QFA401	Sydney	7	6
	QFA421	Sydney	11	6
	QFA449	Sydney	18	6
	QFA463	Sydney	20	6
	QFA621	Brisbane	15	6
	QFA839	Darwin	17	6
	V0Z328	Brisbane	15	6
	V0Z834	Sydney	12	6
	JST437	Gold Coast	15	5
	JST439	Gold Coast	17	5
	JST443	Gold Coast	16	5
	JST477	Williamtown	16	5
	QFA415	Sydney	9	5
	QFA441	Sydney	16	5
	QFA445	Sydney	17	5
	QFA703	Cairns	17	5
	VOZ740	Gold Coast	15	5
	V0Z878	Sydney	20	5

Table 5: CTOT variation for Melbourne arrivals 0700-1300 and 1500-2200 local – July 2019.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 10**. July performance did not meet the target for the median (1.4 minutes) or the 75th percentile (4.3 minutes). Compared to the same month last year, there was an increase in the airborne delay median performance (from 1.1 minutes) and 75th percentile (from 3.8 minutes).



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

Notable events

Table 6 describes the notable airborne delay events during July in Brisbane. ExerciseTalisman Sabre was on during July and several days were impacted by pop up military flights.

Day	Local Time	Delay (minutes – 75 th percentile)	Event Descriptions (Contributing causes to increased delays)
5 July	16-18	7.6	Off-schedule internationals and non-compliant flights during busy period with 5 medical flights and 2 military flights.
12 July	18-19	6.1	Off-schedule internationals and non-compliant flights during busy period.
17 July	08-09 & 18-19	7.4	Morning: medical flights and military activity. Morning and Evening: Off-schedule internationals and non- compliant flights during busy period.

18 July	19-20	4.5	Off-schedule internationals and non-compliant flights during busy period.
21 July	18-19	2.9	Off-schedule internationals and non-compliant flights during busy period.
31 July	12-13	5.8	Burst tyre on runway caused closure for 30 minutes with debris on runway.

 Table 6: Notable event descriptions for Brisbane.

CTOT variations

Variations from CTOT at Brisbane during the afternoon hours (1600-2000 local) are the focus of this section due to regular concentration of demand leading to increases in delay. However, variations from CTOT during both the morning hours (0800 to 0900) and afternoon/evening period (1600-2000) are the focus of this section due to regular concentration of demand leading to increases in delay during July. **Table 7** 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 in the table below. 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	SKP738	YCCA	17	8
	MEH	Toowoomba	19	5
	MLY	Maryborough	19	4
	MEH	Maryborough	19	3
	RXA5632	Toowoomba	16	3
	RXA5661	Toowoomba	16	3
	QLK355D	Rockhampton	8	2
	QLK465D	Moranbah	18	2
	UJS	Maryborough	19	2
	VOZ1101	Williamtown	8	2
	VOZ1109	Williamtown	18	2
	YJC	Maryborough	19	2
Late	QFA825	Darwin	17	12
	QFA632	Melbourne	20	11
	V0Z337	Melbourne	18	11
	QFA626	Melbourne	18	10
	QFA628	Melbourne	19	10
	JST576	Melbourne	20	9
	TGG514	Melbourne	9	9
	VOZ331	Melbourne	16	9
	VOZ347	Melbourne	20	9
	JST818	Sydney	20	7
	QFA506	Sydney	9	6
	QFA604	Melbourne	9	6
	QFA620	Melbourne	16	6
	QFA624	Melbourne	17	6
	VOZ341	Melbourne	19	6
	VOZ917	Sydney	9	6
	QFA536	Sydney	17	5
	QFA544	Sydney	19	5
	QFA548	Sydney	20	5
	QFA562	Sydney	18	5
	VOZ454	Darwin	19	5
	VOZ705	Hobart	16	5

Table 7: CTOT variation for Brisbane arrivals 0800-0900 and 1600-2000 local – July 2019.Number of occasions (minimum two early; minimum five late) 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 11**. July performance for the median (0.0 minutes) and the 75th percentile (2.4 minutes) met the targets. Compared to the same month last year, there was an increase in the airborne delay median performance (from -0.2 minutes) and 75th percentile performance (from 2.0 minutes).



Figure 11: Perth airborne delay 75th percentile (last 24 months)

Notable events

 Table 8 describes the notable airborne delay events during July in Perth.

Day	Local Time	Delay (minutes – 75 th percentile)	Event Descriptions (Contributing causes to increased delays)
3 July	18-19	6.0	Off-schedule internationals and non-compliant flights during busy period plus one flight that returned back to Perth.
4 July	10-11 & 18-20	14.4	Morning: Thunderstorm at airport resulting in ground staff off ramp areas and arrival delays. Evening: non-compliant flights, medical flight and two emergency flights during period of low visibility (reduction from planned rates).
17 July	10-11	4.3	Compression of compliant flights during a busy period led to an increase in delay.

18 July	10-11	5.0	Cloud lower than forecast (reducing rates below plan). Compression of compliant flights during this busy period also contributed to an increase in delay.
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 Table 8: 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	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).