ATM Network Performance Report

February 2020

Table of contents

Summary

February Performance

Network Performance in February 2020 was mainly affected by thunderstorm activity across Sydney, Melbourne, Brisbane and Perth, which when combined with other days of poor weather conditions (low visibility and wind) resulted in the highest monthly airborne delay over the last 4 years. The combined 75th percentile performance during February for airborne delay across the four major airports (Sydney, Melbourne, Brisbane and Perth) was **5.3** minutes, and the median airborne delay across these airports was **1.4** 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 increased compared to the same period last year. The impact of the coronavirus on traffic saw a reduction in international traffic, but this had no noticeable impact on the delays experienced across the network.

The main contributing factors to elevated airborne delay in February include:

- thunderstorm activity (at least three instances at each airport),
- worse than (or different to) forecast conditions, and
- concentrated demand during peak, or low capacity, periods.

Major taxiway works impacting arrival rates at Melbourne airport were completed in early February 2020. Prior to completion of this work, close monitoring of the airborne delay was being undertaken to ensure appropriate controls are in place to regulate delays. This included 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 lead to 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 "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 considered 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 "distinctive event" terminology are included.
3. **Distinctive event:** noteworthy disruption, generally that was not planned or forecast. Identification of distinctive 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 forty one significant and/or notable events in February, nine more than in January (seventeen in Sydney, twelve in Melbourne, eight in Brisbane, and four in Perth). Twenty eight of these events were 'significant', due to prolonged and moderately elevated airborne delay for the entire day; these events are labelled in **Figure** 1.

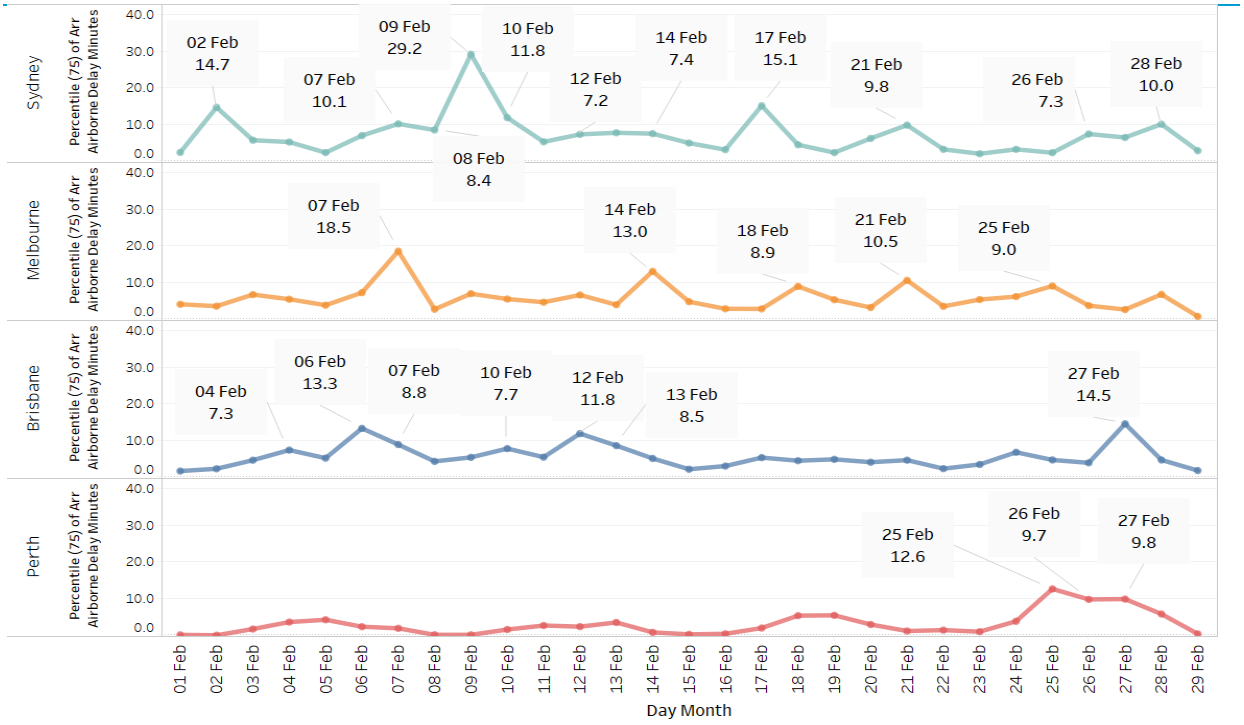

Figure 1: Significant events during February 2020. The marked events indicate the extent of the 75th percentile of airborne delay in minutes across each day.

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.

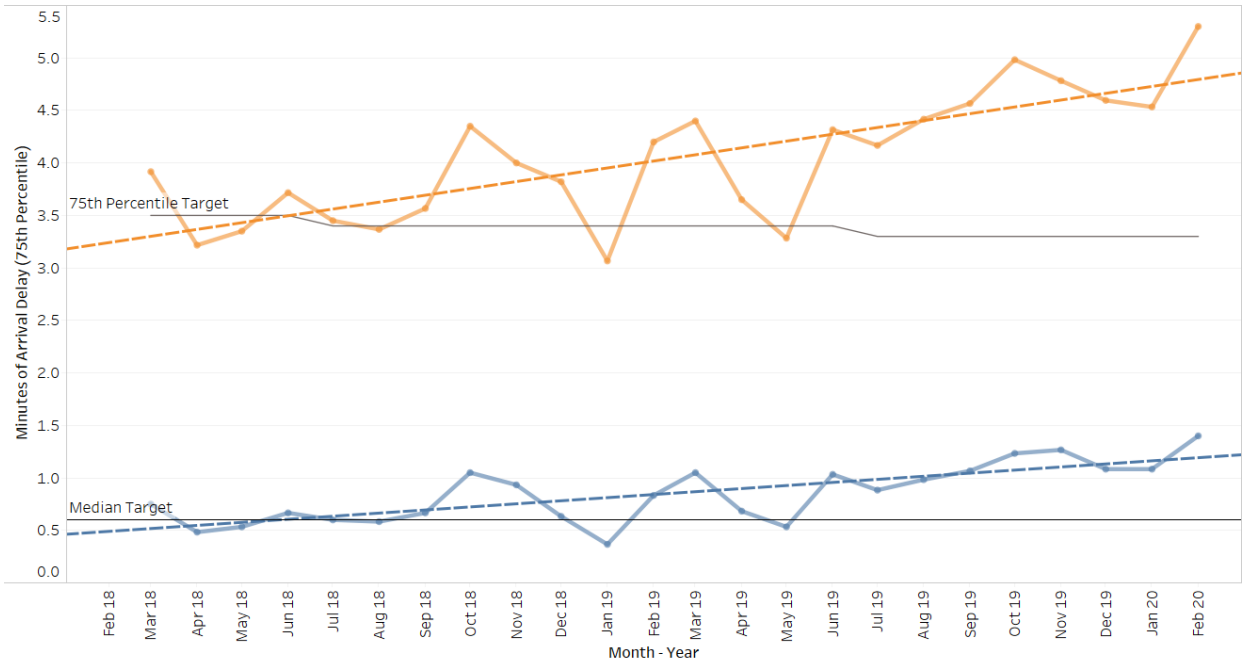

Figure 2: 24-month trend for airborne delay

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.

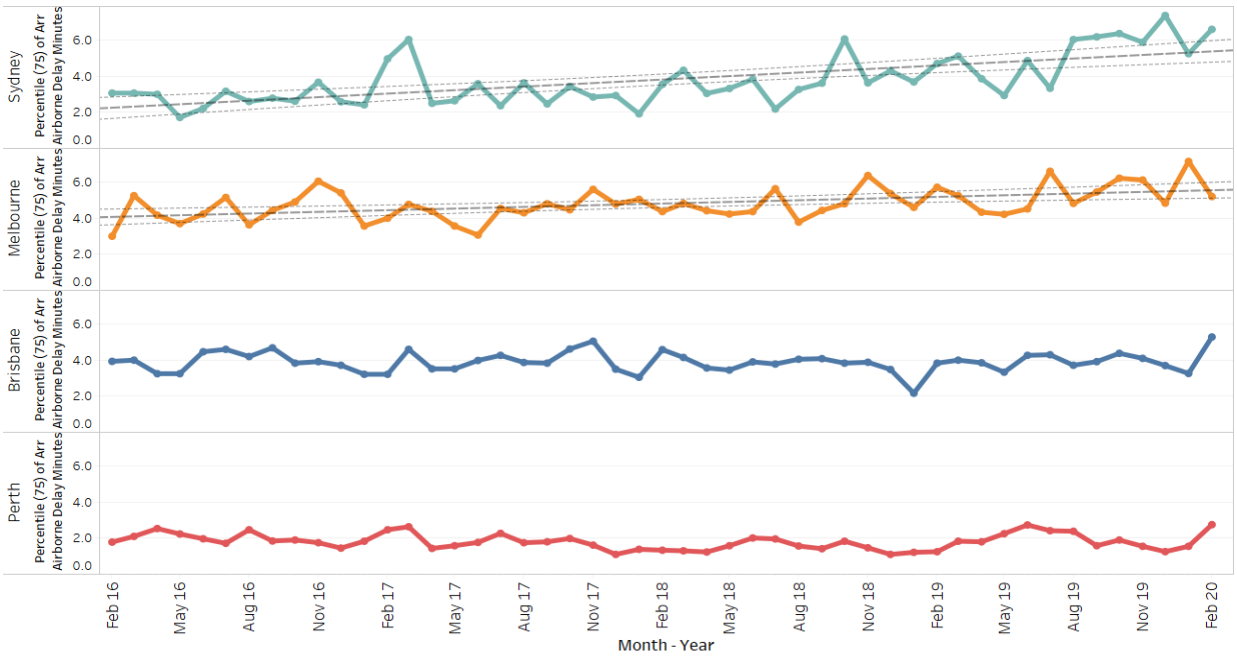

Figure 3: 48-month trend for airborne delay (75th percentile) by airport

Runway configuration

The runway configuration usage for each airport is shown in **Figure 4**. It shows the current month, the same month from the preceding year for comparison purposes, and the preceding 3 months. Most of the comparisons made in this section are between February 2019 (not a leap-year) and February 2020 (a leap year). When percentage change values are provided these are calculated after first adjusting the months to the same number of days, but the hour values provided are the actual hours observed for the month.

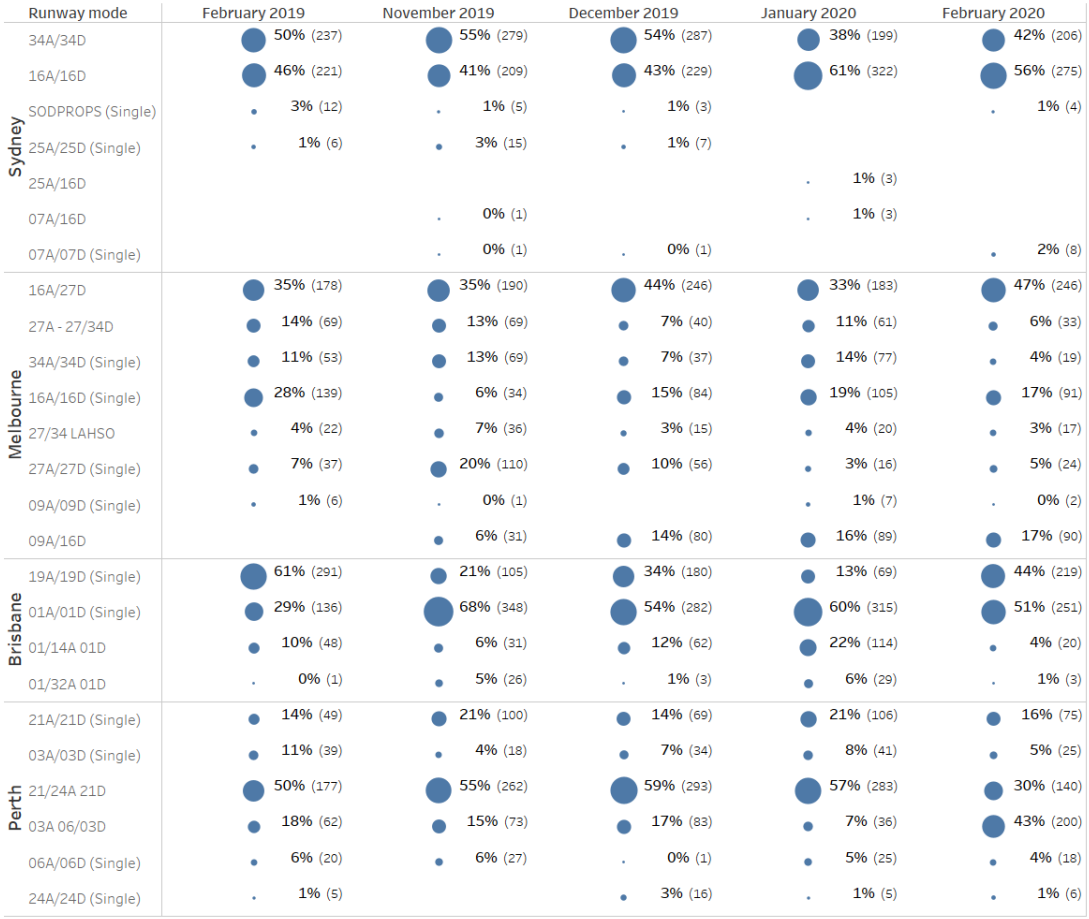

Figure 4: February runway configuration usage (percentage of total and hours in brackets) by airport (Sydney 06-22L, Melbourne 06-23L, Brisbane 06-22L and Perth 06-21L). Single runway configurations indicated in parentheses. Note: Sydney runway mode selection takes into account the Long Term Operating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

In Sydney the use of parallel 34 runway operations decreased by 16% compared to the same month last year (206 hours compared to 237 hours in February 2019). Additionally, the use of parallel 16 operations increased by 20% (275 hours compared to 221 hours in February 2019). The overall single runway usage (runway 07/25 and SODPROPS) decreased by 36% compared to the same month last year (12 hours compared to 18 hours in February 2019).

In Melbourne the availability of Land and Hold Short Operations (LAHSO) increased by 25% compared to the same month last year (17 hours compared to 22 hours in February 2019). Single runway usage decreased by 44% (136 hours compared to 235 hours in February 2019).

Brisbane had single runway operations for 90% of the time in February 2019 and 95% of the time in February 2020. Single runway 01 operations increased by 78% compared to the same month last year (251 hours compared to 136 hours in February 2019). Single runway 19

operations decreased by 27% (219 hours compared to 291 in February 2019). The use of two runways for arrivals in Brisbane decreased by 55% compared to the same month last year (23 hours compared to 49 hours in February 2019). In February 2019 and 2020 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 27% of the time in February 2020. Single runway operations are 6% higher compared to the same month last year (124 hours compared to 113 hours in February 2019). Changes to reporting at Perth now capture weekend operating configurations. This is creating an artefact change to year-on-year differences (February 2019 had 352 hours (or 364.6 hours when adjusted up to 29 days), compared to February 2020 having 464 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 2018.

Comparing overall traffic levels in February 2020 to February 2019, Sydney (-3.7%), Melbourne (-2.2%), and Brisbane (-0.5%) have decreased, and Perth (3.7%) has increased. International traffic numbers have decreased in Sydney (-7.6%), Melbourne (-8.6%), and Brisbane (-3.5%), but they are increasing at Perth (3.0%). Note that February 2020 has an extra day than February 2019, so the decrease at Sydney, Melbourne and Brisbane is larger than the figures suggest, and Perth probably remained about the same (rather than the increases shown). The decrease is likely the start of the downturn due to Coronavirus, particularly due to the higher drop in international traffic prior to the Australian outbreak.

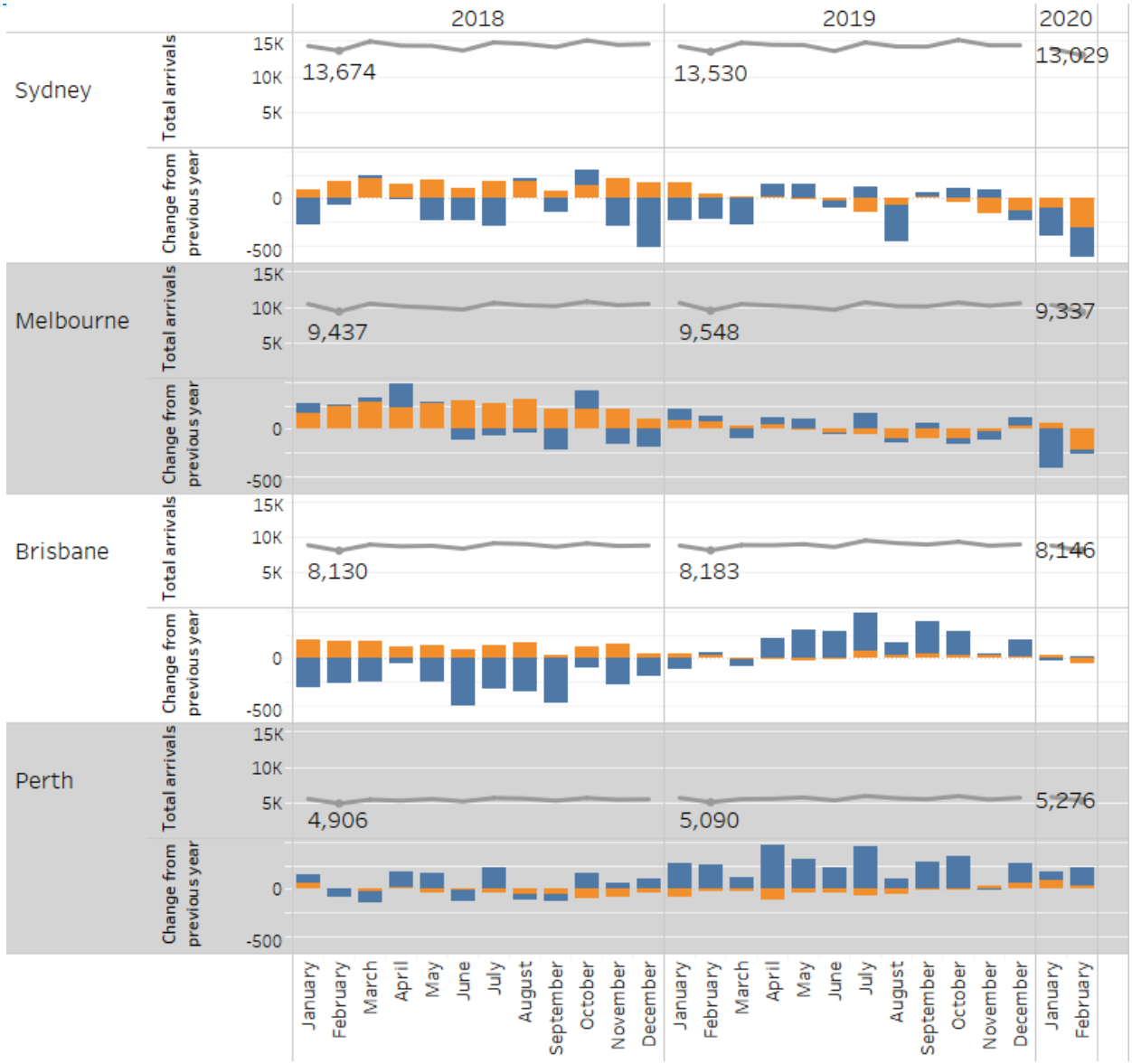

Figure 5: Traffic levels and composition change since January 2018. Grey lines show overall traffic numbers (annotated figures compare current month to same month one and two years earlier). Coloured bars show change in traffic compared to the same month the previous year for domestic (blue) and international (orange) flights.

Demand and capacity

Figure 6 shows 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) for each of the four major airports. The 24-month trend for excess demand is upward in Perth. Notably Sydney, Brisbane and Perth values for February are higher than other recent months. **Figure 7** shows the day of week and local hour of day when demand exceeded capacity most often. The displayed hours are 07, 08, 09, 10, 11, 16, 17 and 18. Sydney shows excess demand in all these hours (except 11, and predominately in 07, 08 and 17), Melbourne is noticeable in 07, 09, 10, 11, 17 and 18 (predominately 07 and 17), Brisbane in 07, 16 and 18 (predominately 07 and 18), and Perth in 09, 10 (predominately), 17 and 18.

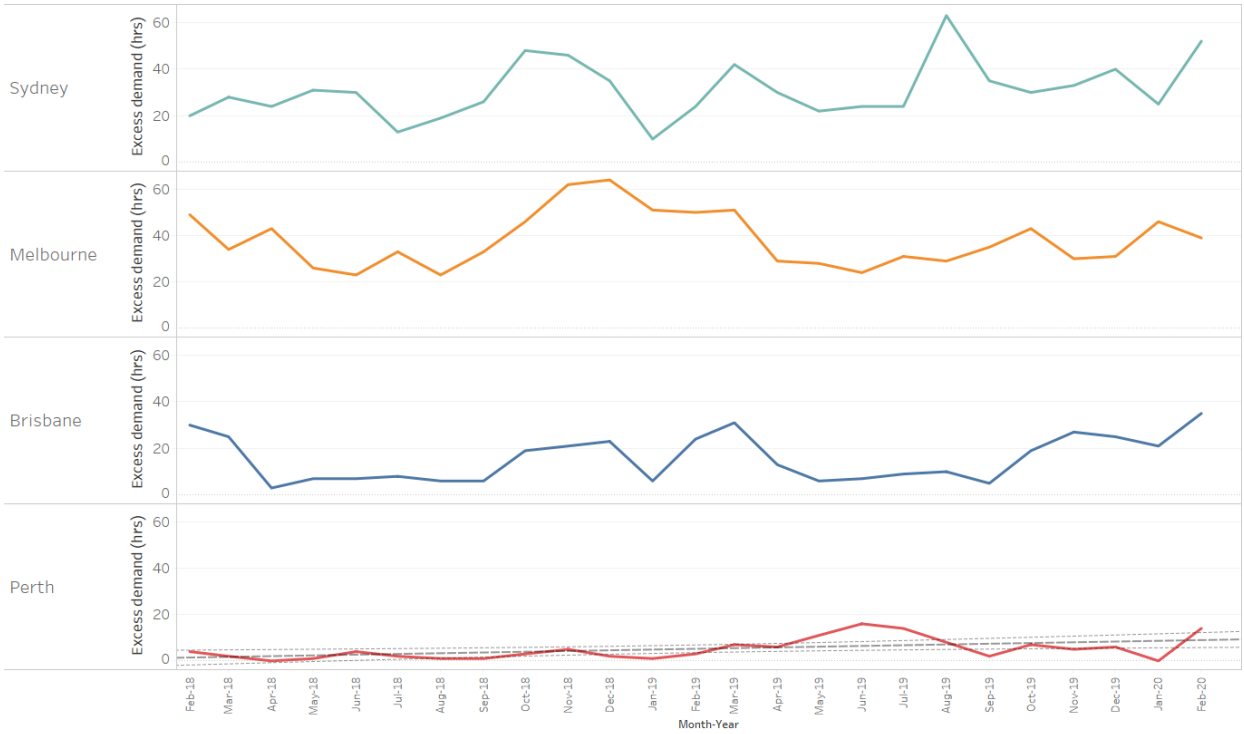

Figure 6: Excess demand estimates. Solid lines indicate the number of hours where estimated demand exceeds the METCDM rate for that hour by three or more flights. Dashed and dotted lines for Sydney and Perth indicate upward trends. Demand is estimated using Harmony Base Estimated Landing Time.

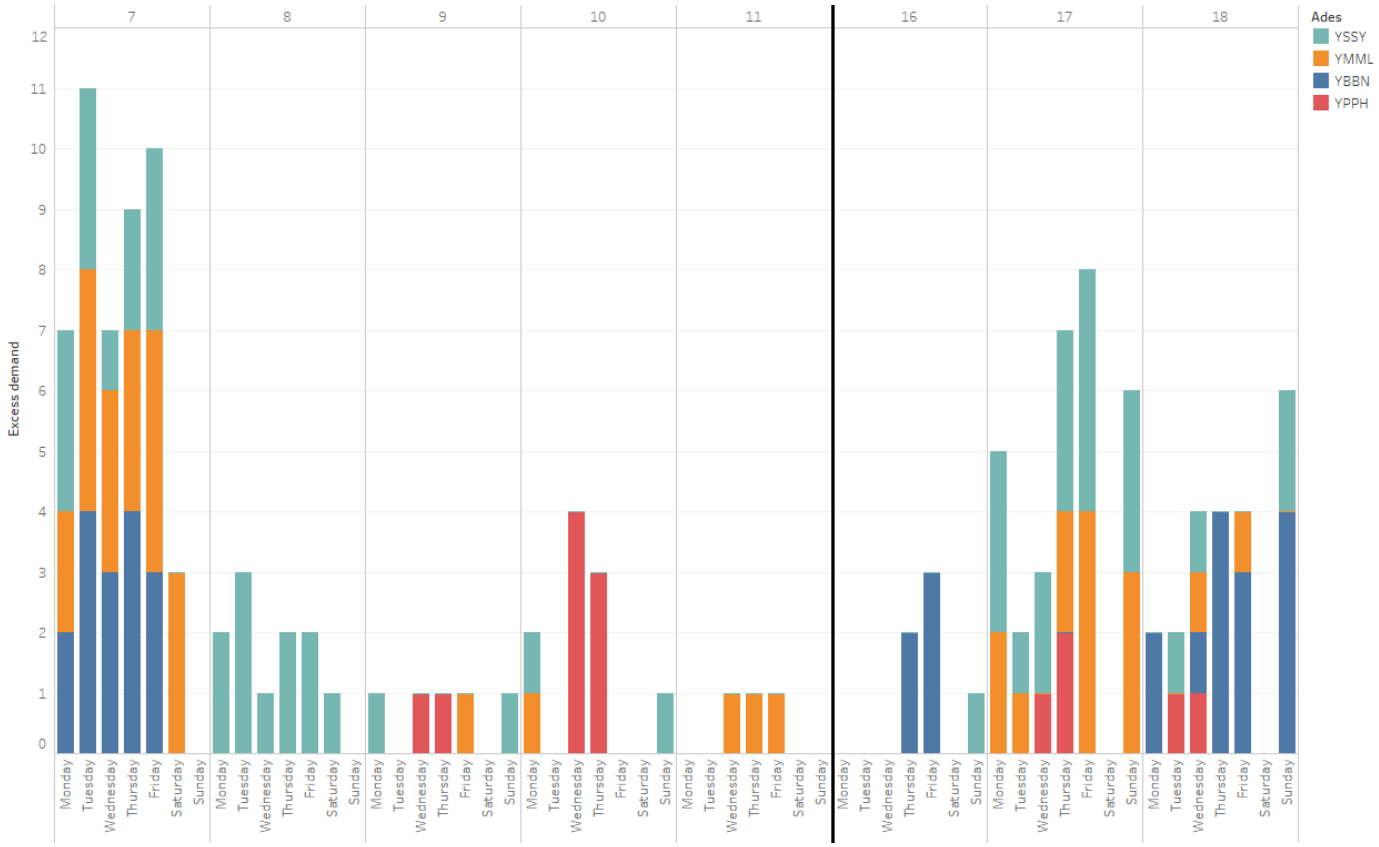

Figure 7: Excess demand estimates by day of the week (bottom axis) and local hour of day (top axis) when scheduled demand is most likely to exceed capacity in February. The count is incremented for a bar when the estimated demand exceeds the METCDM rate for that hour and day of week by three or more flights. Demand is estimated using Harmony Base Estimated Landing Time. Colours on the stacked bars are indicated by airport in the legend (ICAO airport codes – YSSY: Sydney, YMML: Melbourne, YBBN: Brisbane, YPPH: Perth).
Note: There are five Saturdays during the month, with all other days of the week occurring four times.

Sydney

Airborne delay

The 75th percentile performance figures for airborne delay at Sydney are indicated in **Figure 8.** February performance for the median (1.8 minutes) and the 75th percentile (6.6 minutes) did not meet the targets (0.6 minutes and 3.3 minutes respectively). Compared to the same month last year, there was an increase in the airborne delay median performance (from 0.9 minutes) and in the 75th percentile performance (from 4.7 minutes).

There were seventeen periods of significant delay as a result of reduced capacity due to worse or different to forecast weather conditions (thunderstorms, winds, low cloud and showers), some unusual flight operations (medical, rescue and disabled aircraft on runway), and concentration of demand in busy periods.

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

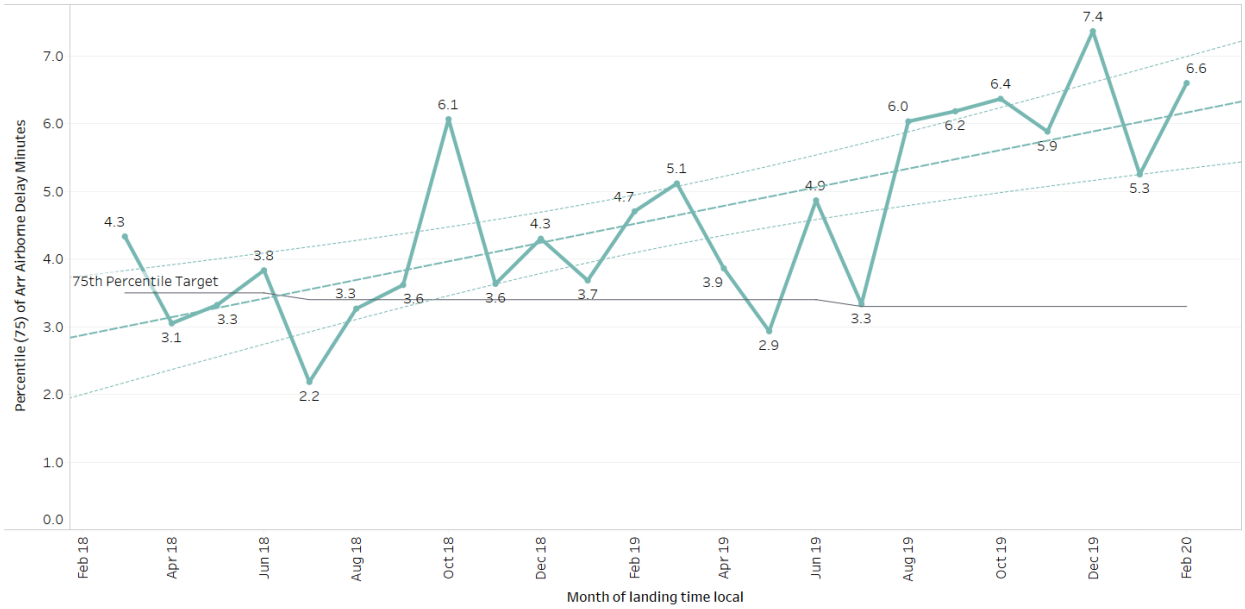

Figure 8: Sydney airborne delay 75th percentile (last 24 months)

CTOT variations

This section of the report focusses on variations from CTOT at Sydney from 0600-2300 local, as non-compliance is 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	QLK455D	Moranbah	14	3
	SKP738	YCCA	17	3
	TFX5	YBTL	20	3
	TFX161	Mackay	21	3
	VEB	YBSU	15	3
	HT722	Moranbah	17	2
	QLK319	Bundaberg	7	2
	QLK349D	Rockhampton	8	2
	QLK355D	Rockhampton	8	2
	QLK367D	Rockhampton	12	2
	QLK420D	Williamtown	8	2
	QLK451D	Moranbah	11	2
	RXA5661	Toowoomba	16	2
	SKP754	YMLS	17	2
	SKP758	YMLS	15	2
	TFR51	Darwin	16	2
	VEB	YORG	15	2
	VEM	Dubbo	12	2
	VEP	YORG	13	2
	VJN	YEML	19	2
	VOZ1260	YEML	13	2
	VOZ2900	Gladstone	8	2
Late	QFA628	Melbourne	18	8
	JST820	Sydney	19	6
	VOZ333	Melbourne	16	5
	VOZ353	Melbourne	21	5

Table 2: CTOT variation for Sydney arrivals 0600-2300 local – February 2020. Number of occasions that each flight departed early or late with respect to its CTOT (-5 to +15 minutes). Flights that appear at least twice early or five times late have been included.

Melbourne

Airborne delay

The 75th percentile performance figures for airborne delay at Melbourne are indicated in **Figure 9.** February performance for the median (1.4 minutes) and the 75th percentile (5.2 minutes) did not meet the targets. Compared to the same month last year, there was a decrease in the airborne delay median performance (1.6 minutes), and in the 75th percentile performance (from 5.7 minutes).

There were twelve periods of significant delay as a result of reduced capacity due to worse or different to forecast weather conditions (thunderstorms, winds, low cloud and showers), and concentration of demand in busy periods.

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

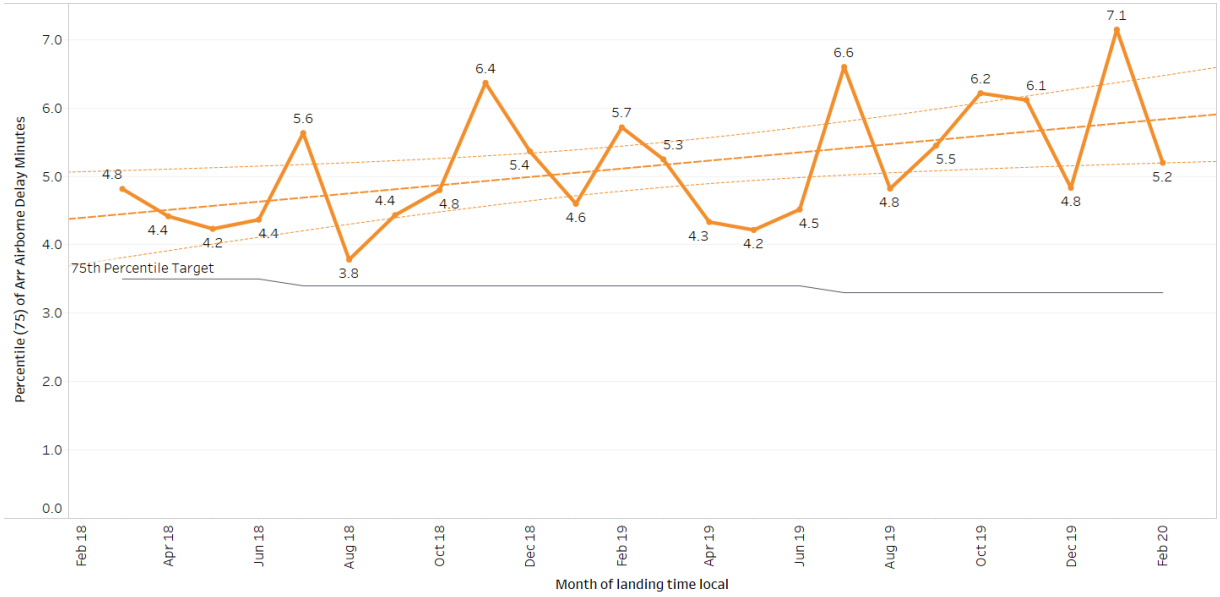

Figure 9: Melbourne airborne delay 75th percentile (last 24 months)

CTOT variations

This section of the report focusses on variations from CTOT at Melbourne from 0600-2300 local, as non-compliance is 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	QLK286D	Launceston	18	6
	RXA3653	Mildura	8	5
	RXA3772	Mount Gambier	18	5
	QLK58D	Devonport	17	4
	RXA3653	Mildura	7	4
	RXA3752	Mount Gambier	8	4
	QFA688	Adelaide	19	3
	QLK52D	Devonport	10	3
	QLK280D	Launceston	7	3
	QLK284D	Launceston	14	3
	RXA3554	YWYY	7	3
	JST665	Ayers Rock	14	2
	JST740	Launceston	19	2
	QFA694	Adelaide	19	2
	QLK54D	Devonport	14	2
	QLK77D	Mildura	7	2
	RXA3554	YWYY	8	2
	RXA3558	YWYY	11	2
	RXA3657	Mildura	11	2
	RXA3772	Mount Gambier	19	2
	TGG565	Gold Coast	18	2
	VOZ206	Adelaide	8	2
Late	TGG565	Gold Coast	17	13
	JST563	Brisbane	12	10
	JST471	Williamtown	20	9
	VOZ846	Sydney	15	9
	JST509	Sydney	12	7
	JST523	Sydney	20	7
	JST531	Sydney	18	7
	JST677	Darwin	6	7
	QFA421	Sydney	11	7
	QFA455	Sydney	19	7
	QFA637	Brisbane	23	7
	QFA839	Darwin	17	7
	VOZ318	Brisbane	12	7
	VOZ742	Gold Coast	17	7
	VOZ878	Sydney	20	7

JST515	Sydney	15	■	6
JST567	Brisbane	23	■	6
QFA419	Sydney	10	■	6
QFA439	Sydney	15	■	6
QFA443	Sydney	16	■	6
QFA449	Sydney	18	■	6
QFA465	Sydney	20	■	6
		21	■	6
TGG229	Sydney	11	■	6
TGG517	Brisbane	12	■	6
VOZ354	Brisbane	23	■	6
VOZ736	Gold Coast	14	■	6
VOZ862	Sydney	18	■	6
VOZ1034	YBSU	15	■	6
QFA425	Sydney	12	■	5
QFA437	Sydney	15	■	5
QFA441	Sydney	16	■	5
QFA453	Sydney	18	■	5
QFA473	Sydney	17	■	5
QFA479	Sydney	21	■	5
TGG239	Sydney	13	■	5
TGG243	Sydney	14	■	5
TGG535	Brisbane	23	■	5
VOZ332	Brisbane	17	■	5
VOZ800	Sydney	7	■	5
VOZ834	Sydney	12	■	5
VOZ858	Sydney	17	■	5
VOZ866	Sydney	18	■	5
VOZ870	Sydney	19	■	5

Table 4: CTOT variation for Melbourne arrivals 0600-2300 local – February 2020. Number of occasions that each flight departed early or late with respect to its CTOT (-5 to +15 minutes). Flights that appear at least twice early or five times late have been included.

Brisbane

Airborne delay

The 75th percentile performance figures for airborne delay at Brisbane are indicated in **Figure 10**. February performance for the median (1.8 minutes) and the 75th percentile (5.3 minutes) did not meet the targets. Compared to the same month last year, there was an increase in the airborne delay median performance (from 1.0 minutes) and the 75th percentile (from 3.8 minutes).

There were eight periods of significant delay as a result of reduced capacity due to worse or different to forecast weather conditions (thunderstorms, winds, low cloud and showers), and concentration of demand in busy periods.

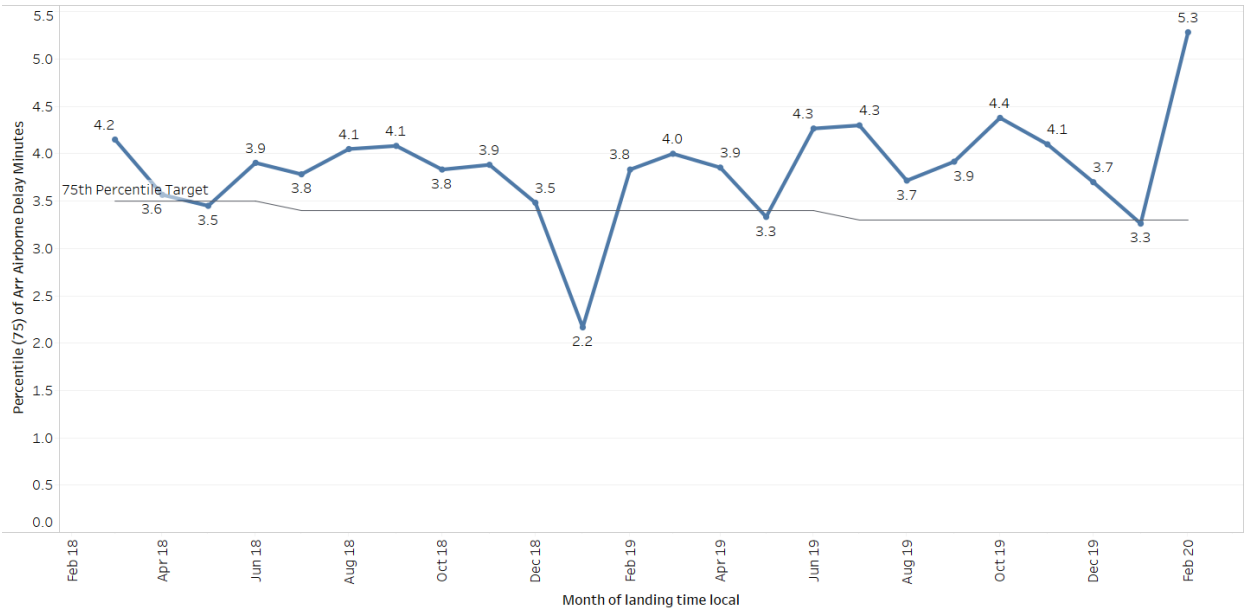

Figure 10: Brisbane airborne delay 75th percentile (last 24 months)

CTOT variations

This section of the report focusses on variations from CTOT at Brisbane from 0600-2300 local, as non-compliance is 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	QLK455D	Moranbah	14	3
	SKP738	YCCA	17	3
	TFX5	YBTL	20	3
	TFX161	Mackay	21	3
	VEB	YBSU	15	3
	HT722	Moranbah	17	2
	QLK319	Bundaberg	7	2
	QLK349D	Rockhampton	8	2
	QLK355D	Rockhampton	8	2
	QLK367D	Rockhampton	12	2
	QLK420D	Williamtown	8	2
	QLK451D	Moranbah	11	2
	RXA5661	Toowoomba	16	2
	SKP754	YMLS	17	2
	SKP758	YMLS	15	2
	TFR51	Darwin	16	2
	VEB	YORG	15	2
	VEM	Dubbo	12	2
	VEP	YORG	13	2
	VJN	YEML	19	2
	VOZ1260	YEML	13	2
	VOZ2900	Gladstone	8	2
Late	QFA628	Melbourne	18	8
	JST820	Sydney	19	6
	VOZ333	Melbourne	16	5
	VOZ353	Melbourne	21	5

Table 6: CTOT variation for Brisbane arrivals 0600-2300 local – February 2020. Number of occasions that each flight departed early or late with respect to its CTOT (-5 to +15 minutes) Flights that appear at least twice early or five times late have been included.

Perth

Airborne delay

The 75th percentile performance figures for airborne delay at Perth are indicated in **Figure 11**. February performance for the median (0.1 minutes) and the 75th percentile (2.8 minutes) met the targets. Compared to the same month last year, there was an increase in the airborne delay median performance (from -0.5 minutes) and an increase in 75th percentile performance (from 1.3 minutes).

There were four periods of elevated delay due to thunderstorms), and concentration of demand in busy periods.

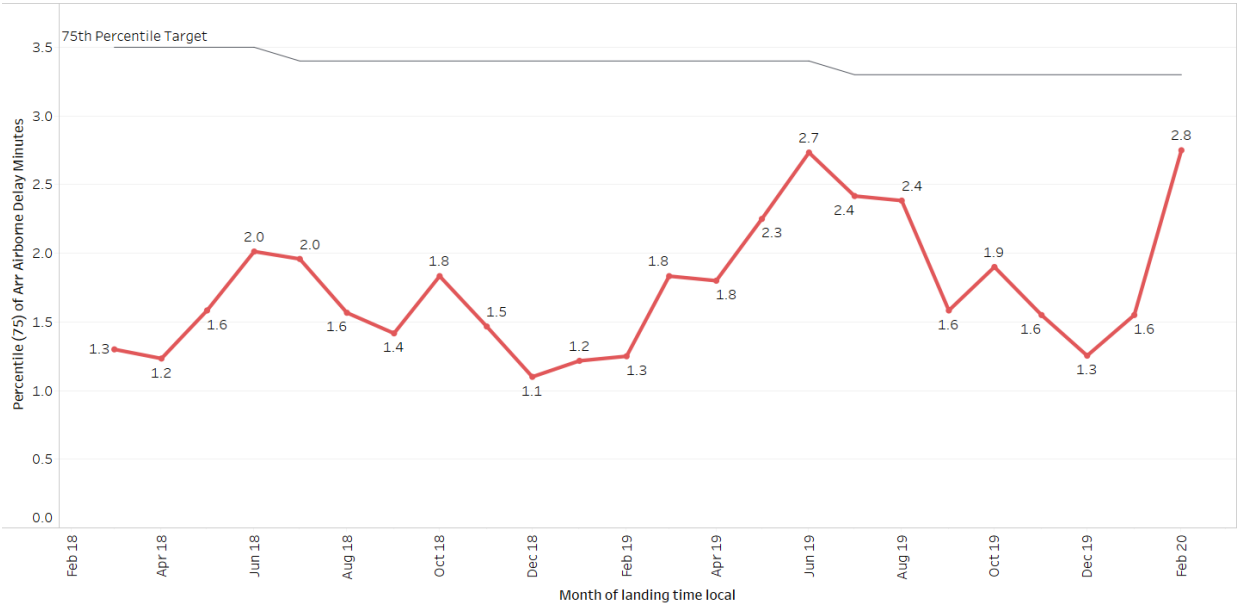

Figure 11: Perth airborne delay 75th percentile (last 24 months)

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).