ATM Network Performance Report

March 2020

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Summary

March Performance

Network Performance in March 2020 was mainly affected by COVID-19 related traffic reductions (from late March) and poor weather conditions (low visibility and wind). Due to the lower demand, particularly from March 21 onwards, March 2020 had the lowest airborne delay and least number of significant/notable events since May 2019. The combined 75th percentile performance during March for airborne delay across the four major airports (Sydney, Melbourne, Brisbane and Perth) was **3.5** minutes, and the median airborne delay across these airports was **0.5** minutes. The 75th percentile did not meet the 2019/2020 KPI target of 3.3 minutes, but the median performance met the target of 0.6 minutes. The median and 75th percentile decreased compared to the same period last year.

No significant or notable events were observed from March 21 onwards as the traffic started to significantly decrease. For the period March 1 to March 20, inclusive, the median and 75th percentile performance was 0.9 minutes and 4.3 minutes, respectively, which is similar to recent months. Perth is the only airport to increase in airborne delay from the same month in the previous year. Perth traffic remained relatively stable until the end of March, while the other airports began to lose substantial traffic about two-thirds through March. For line charts presented in this report, if a trend is present then it is displayed. Upward trends will not likely continue in future months as the lower traffic volumes are expected to continue.

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

- worse than (or different to) forecast conditions, and
- concentrated demand during peak, or low capacity, periods.

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 twenty four significant and/or notable events in March, seventeen less than in February (nine in Sydney, eleven in Melbourne, and four in Brisbane). Twelve of these events were 'significant', due to prolonged and moderately elevated airborne delay for the entire day; these events are labelled in **Figure** 1.

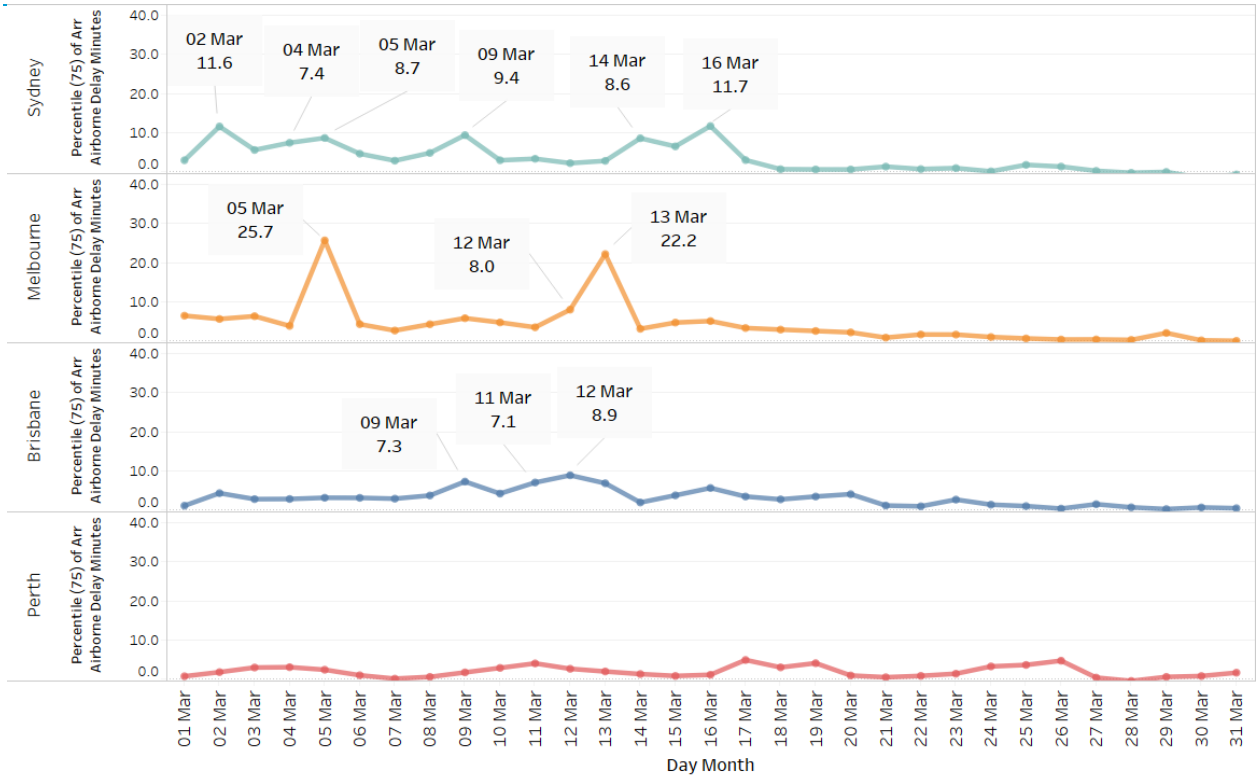

Figure 1: Significant events during March 2020. The marked events indicate the extent of the 75th percentile of airborne delay in minutes across each day.

Traffic levels and composition changes

Figure 2 shows traffic levels and composition changes since the beginning of 2018.

Comparing overall traffic levels in March 2020 to March 2019, Sydney (-26.5%), Melbourne (-25.1%), Brisbane (-19.6%), and Perth (-5.1%) have decreased. International traffic numbers have also significantly decreased in Sydney (-31.9%), Melbourne (-32.9%), Brisbane (-30.8%), and Perth (-34.9%). Additionally, domestic traffic decreased in Sydney (-24.8%), Melbourne (-23.1%), and Brisbane (-17.4%), but increased slightly in Perth (0.8%). The decrease continues from the initial downturn due to COVID-19 seen in February, with a much larger drop seen in both domestic and international traffic.

Comparing only the first 20 days of March 2020 (prior to the more significant drop in traffic) to the same period of March 2019, overall traffic levels decreased at Sydney (-8.3%), Melbourne (-6.8%), and Brisbane (-3.4%), but increased at Perth (2.3%). Comparing the last 11 days of March 2020 to the same period of March 2019, overall traffic decreases at Sydney (-59.6%), Melbourne (-59.0%), Brisbane (-48.9%), and Perth (-19.1%).

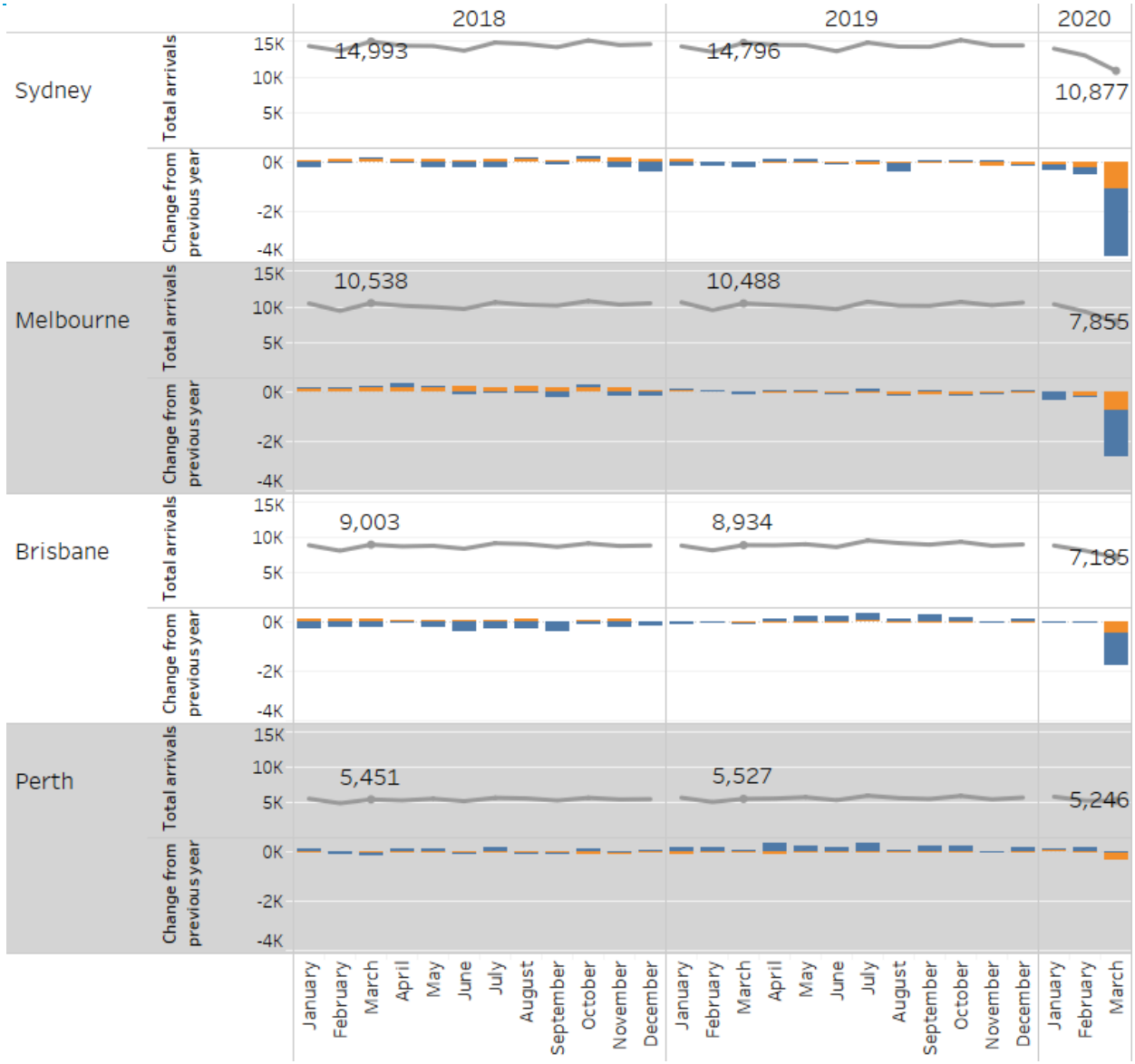

Figure 2: Traffic levels and composition change since January 2018. Grey lines show overall traffic numbers (annotated figures compare current month to same month one and two years earlier). Coloured bars show change in traffic compared to the same month the previous year for domestic (blue) and international (orange) flights.

Network Wide Performance

Airborne delay

The 24-month combined median and 75th percentile airborne delay at the four major airports is indicated in **Figure 3**. The trends are upward for both measures.

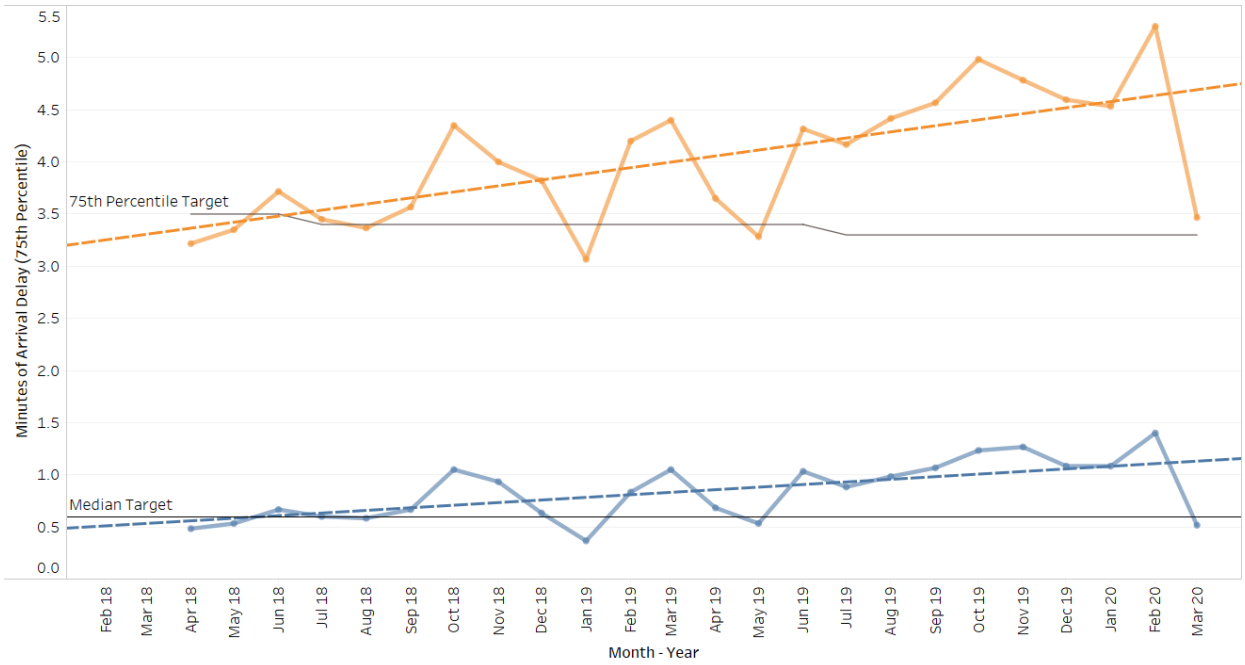

Figure 3: 24-month trend for airborne delay

The long term (48-month) trends of the 75th percentile airborne delay for each of the four major airports are depicted in **Figure 4.** The trends for Sydney and Melbourne are upwards. More detailed analysis for each airport is presented later in this report.

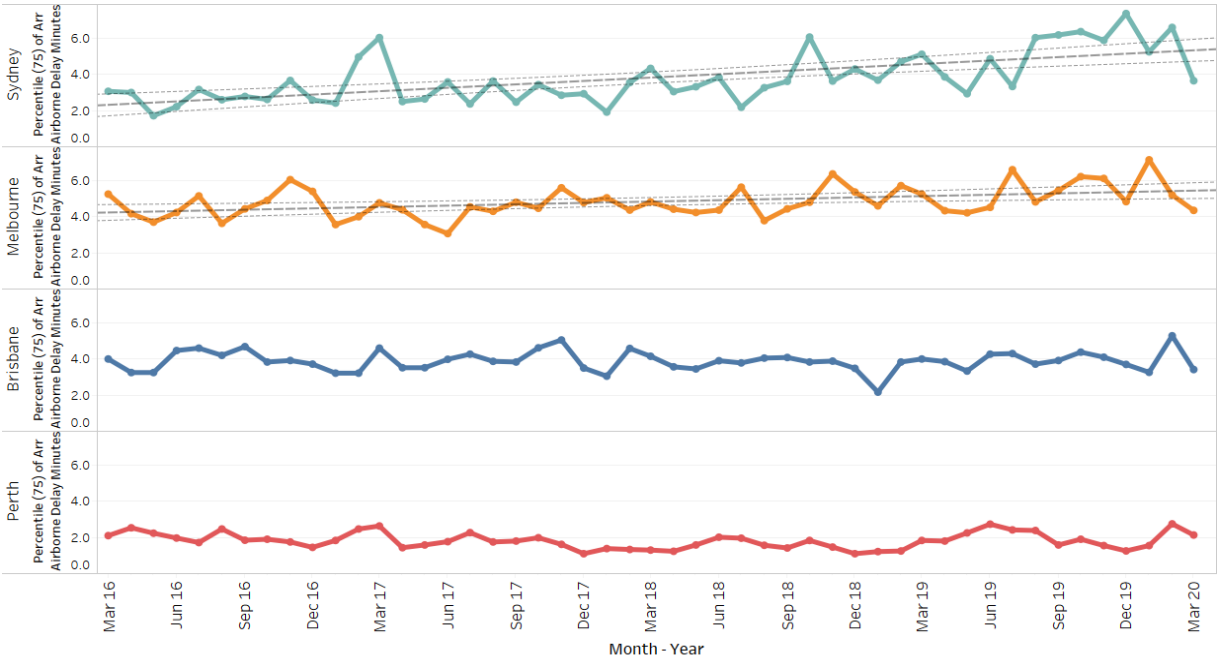

Figure 4: 48-month trend for airborne delay (75th percentile) by airport

Runway configuration

The runway configuration usage for each airport is shown in **Figure 5**. It shows the current month, the same month from the preceding year for comparison purposes, and the preceding 3 months.

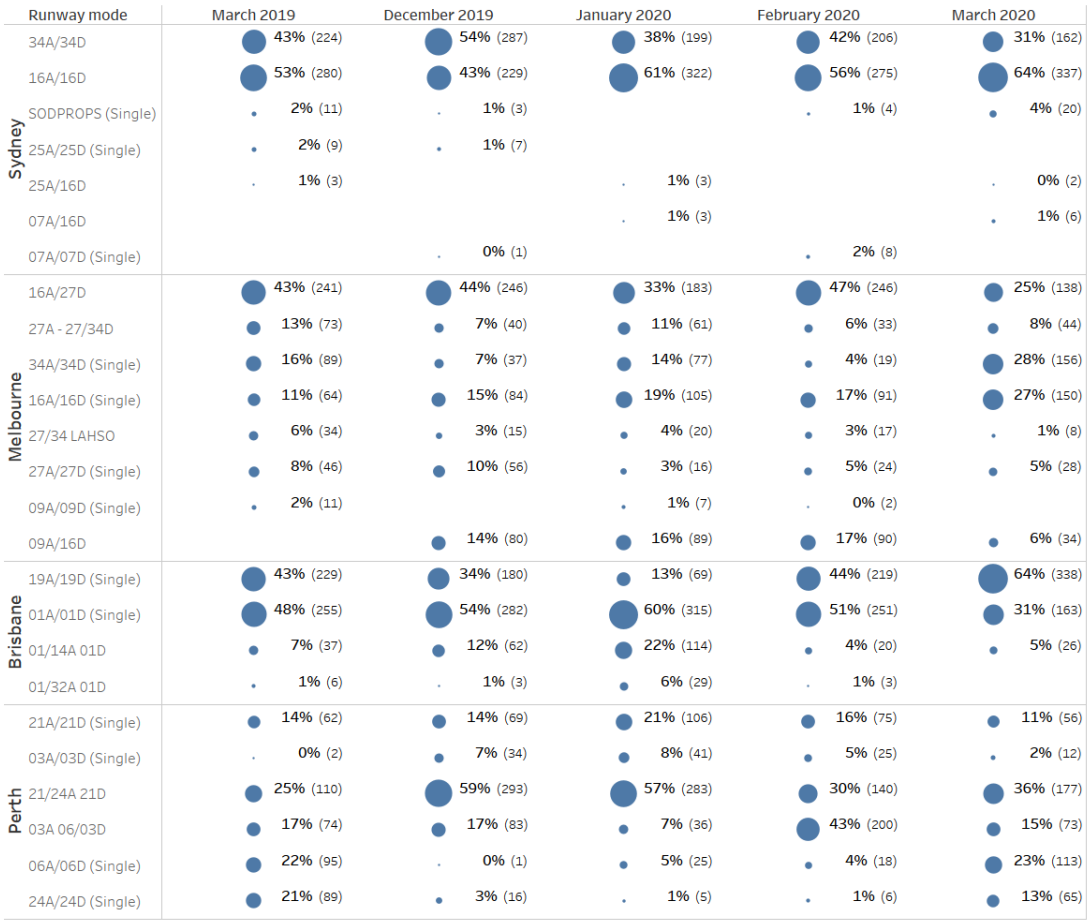

Figure 5: March runway configuration usage (percentage of total and hours in brackets) by airport (Sydney 06-22L, Melbourne 06-23L, Brisbane 06-22L and Perth 06-21L). Single runway configurations indicated in parentheses. Note: Sydney runway mode selection takes into account the Long Term Operating Plan to manage aircraft noise.

In Sydney the use of parallel 34 runway operations decreased by 28% compared to the same month last year (162 hours compared to 224 hours in March 2019). Additionally, the use of parallel 16 operations increased by 20% (337 hours compared to 280 hours in March 2019). The overall single runway usage (runway 07/25 and SODPROPS) remained unchanged compared to the same month last year (20 hours), but March 2020 was all SODPROPS while March 2019 was 11 hours SODPROPS and 9 hours runway 25.

In Melbourne the availability of Land and Hold Short Operations (LAHSO) decreased by 76% compared to the same month last year (8 hours compared to 34 hours in March 2019). Single runway usage increased by 59% (334 hours compared to 210 hours in March 2019).

Brisbane had single runway operations for 92% of the time in March 2019 and 95% of the time in March 2020. Single runway 01 operations decreased by 36% compared to the same month last year (163 hours compared to 255 hours in March 2019). Single runway 19 operations increased by 48% (338 hours compared to 229 in March 2019). The use of two runways for arrivals in Brisbane decreased by 40% compared to the same month last year (26 hours

compared to 43 hours in March 2019). In March 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 50% of the time in March 2020. Single runway operations are 1% lower compared to the same month last year (246 hours compared to 248 hours in March 2019). Changes to reporting at Perth now capture weekend operating configurations. This is creating an artefact change to year-on-year differences (March 2019 had 432 hours, compared to March 2020 having 496 hours of recorded runway usage). Typically weekends at Perth have low traffic volumes which favour single runway configurations.

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. Melbourne and Brisbane have a more apparent seasonal pattern than Sydney and Perth, with April to September showing less excess demand than October to March. The 24-month trend for excess demand is upward in Brisbane and Perth. All airports' values dropped from February, but notably Brisbane and Perth values for March are still relatively high compared to other recent months (Brisbane had a significant drop in traffic levels for about the last third of March). **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, 16, 17, 18 and 19. Sydney shows excess demand in 07, 08, 10 and 17 (predominately 07, 08 and 17), Melbourne is noticeable in 07, 09, 16, 17 and 18 (predominately 07 and 17), Brisbane in 07, 16, 18 and 19 (predominately 07 and 18), and Perth in 09, 10, 17 and 18.

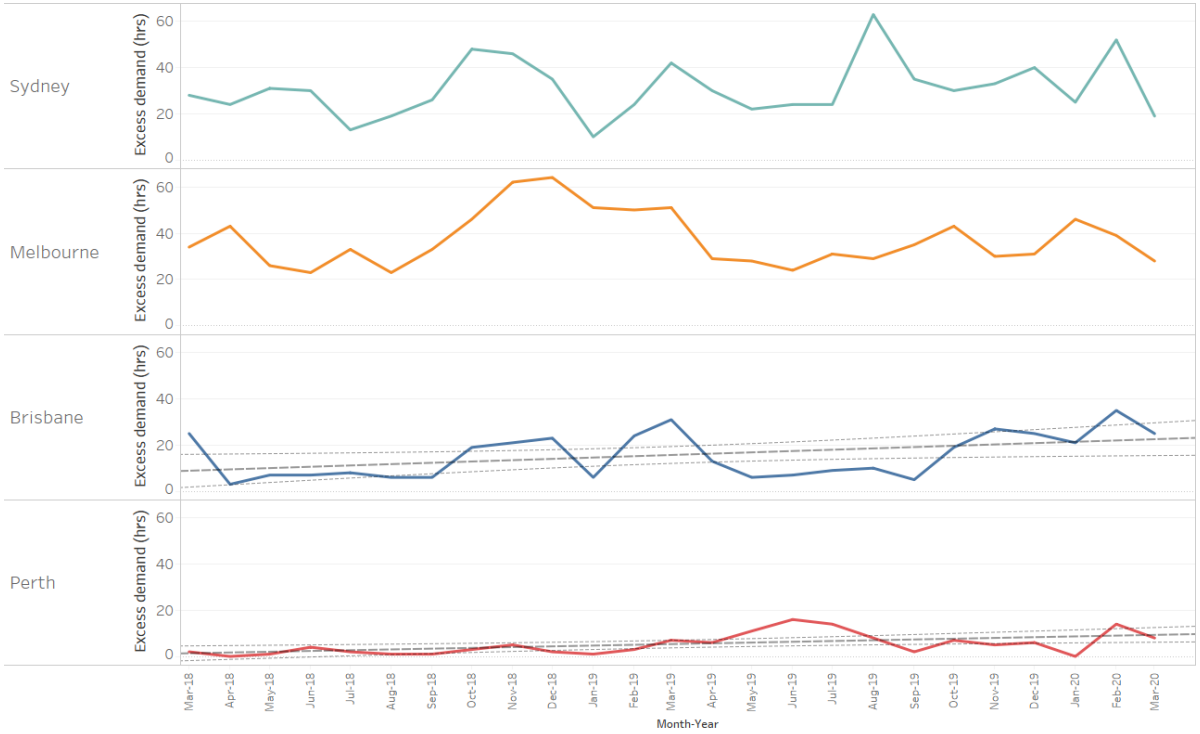

Figure 6: Excess demand estimates. Solid lines indicate the number of hours where estimated demand exceeds the METCDM rate for that hour by three or more flights. Dashed and dotted lines for Brisbane and Perth indicate upward trends. Demand is estimated using Harmony Base Estimated Landing Time.

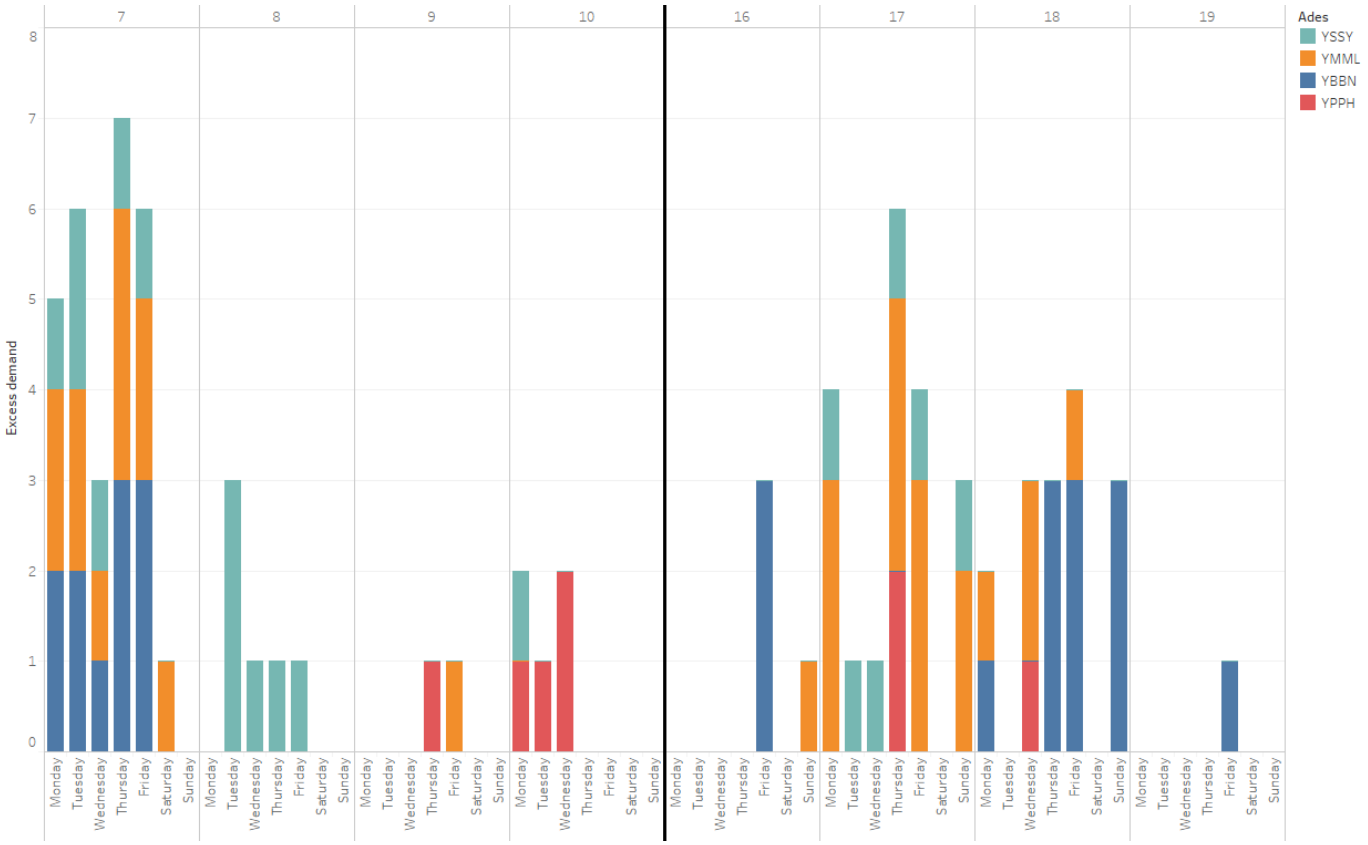

Figure 7: Excess demand estimates by day of the week (bottom axis) and local hour of day (top axis) when scheduled demand is most likely to exceed capacity in March 2020. The count is incremented for a bar when the estimated demand exceeds the METCDM rate for that hour and day of week by three or more 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 of each Sundays, Mondays and Tuesdays 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.** March performance for the median (0.3 minutes) did meet the target (0.6 minutes), but did not meet the 75th percentile target (3.3 minutes). Compared to the same month last year, there was a decrease in the airborne delay median performance (from 1.3 minutes) and in the 75th percentile performance (from 5.1 minutes).

There were nine periods of elevated delay as a result of reduced capacity due to worse or different to forecast weather conditions (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 Sydney are upwards.

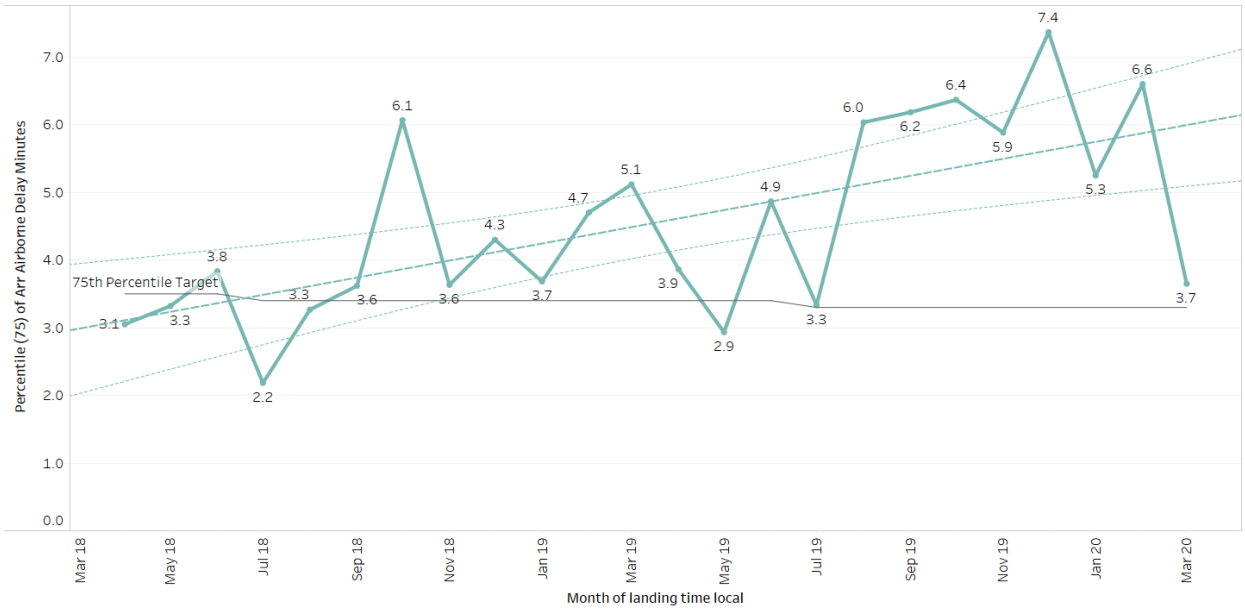

Figure 8: Sydney airborne delay 75th percentile (last 24 months)

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	PE421	YMDG	9	4
	PE721	YTRE	6	3
	PE425	YMDG	19	2
	QLK101D	YCFS	7	2
	QLK220D	Wagga	7	2
	RXA377	Williamtown	18	2
	RXA472	Griffith	18	2
	RXA517	YPKS	7	2
	VEK	YNBR	12	2
	VOZ1175	Albury	11	2
Late	VOZ811	Melbourne	8	5
	VOZ871	Melbourne	19	5

Table 2: CTOT variation for Sydney arrivals 0600-2300 local – March 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.** March performance for the median (0.9 minutes) and the 75th percentile (4.4 minutes) did not meet the targets. Compared to the same month last year, there was a decrease in the airborne delay median performance (1.5 minutes), and in the 75th percentile performance (from 5.3 minutes).

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

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

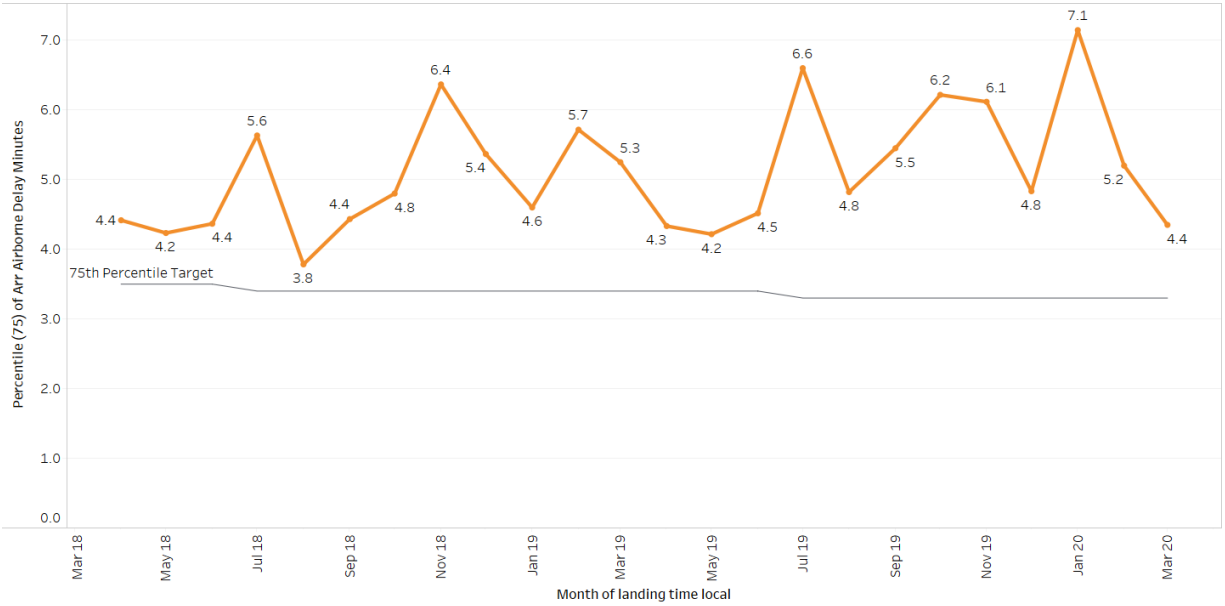

Figure 9: Melbourne airborne delay 75th percentile (last 24 months)

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	JST742	Launceston	18	3
	QLK50D	Devonport	7	2
	RXA3562	YWYY	14	2
	RXA3653	Mildura	8	2
	RXA3657	Mildura	11	2
	RXA3772	Mount Gambier	18	2
Late	TGG565	Gold Coast	17	7
	QFA839	Darwin	17	5
	TGG517	Brisbane	12	5
	VOZ318	Brisbane	12	5

Table 4: CTOT variation for Melbourne arrivals 0600-2300 local – March 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**. March performance for the median (0.8 minutes) and the 75th percentile (3.4 minutes) did not meet the targets. Compared to the same month last year, there was a decrease in the airborne delay median performance (from 1.2 minutes) and the 75th percentile (from 4.0 minutes).

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

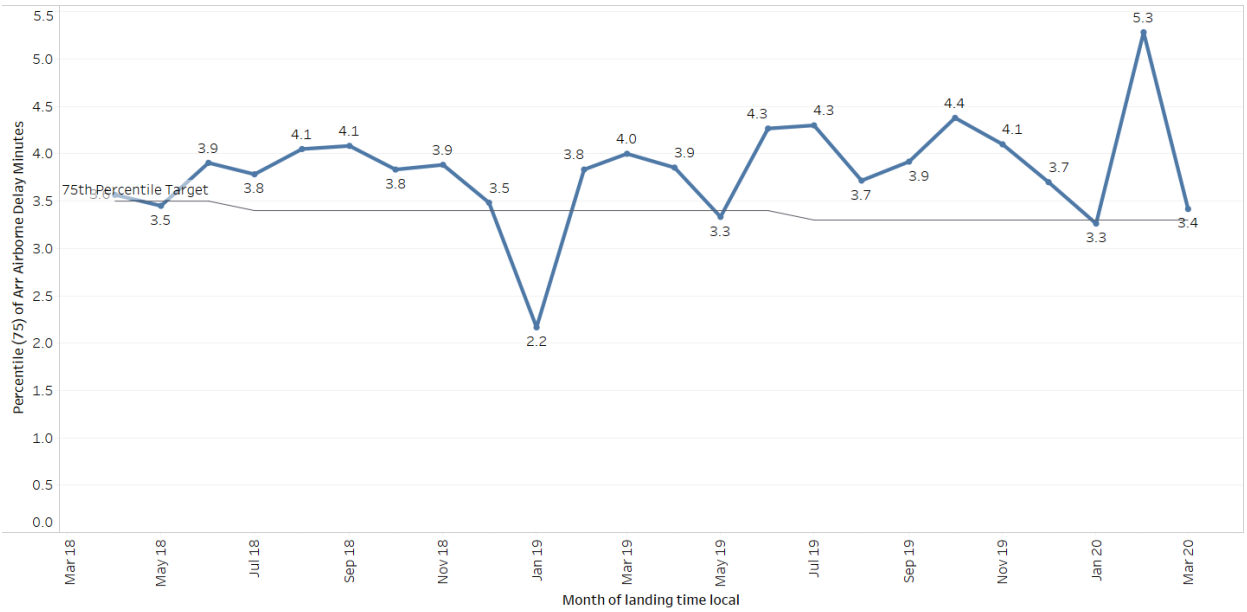

Figure 10: Brisbane airborne delay 75th percentile (last 24 months)

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	HT724	Moranbah	18	2
	JST833	Proserpine	19	2
	PFY7417	Rockhampton	21	2
	QLK467D	Moranbah	18	2
	TFX133	Rockhampton	21	2
	UJU	Maryborough	19	2
	VOZ2972	Bundaberg	15	2

Table 6: CTOT variation for Brisbane arrivals 0600-2300 local – March 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**. March performance for the median (-0.1 minutes) and the 75th percentile (2.1 minutes) met the targets. Compared to the same month last year, there was an increase in the airborne delay median performance (from -0.3 minutes) and an increase in 75th percentile performance (from 1.8 minutes). Perth is the only airport to increase in airborne delay from the same month in the previous year. Perth traffic remained relatively stable until the end of March, while the other airports began to lose substantial traffic about two-thirds through March.

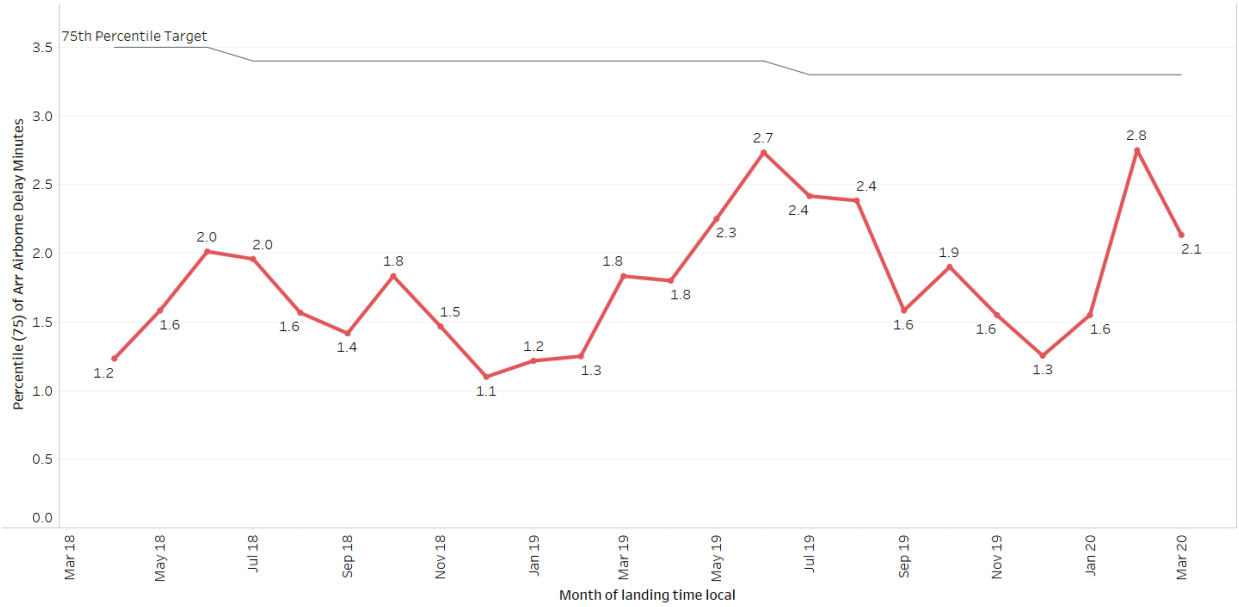

Figure 11: Perth airborne delay 75th percentile (last 24 months)

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).