ATM Network Performance Report

January 2020

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Summary

January Performance

Network Performance in January 2020 was affected by instances (fourteen days) of lower capacity operations at Melbourne in response to meteorological conditions, which resulted in Melbourne's highest monthly airborne delay over the last 4 years (2nd highest across all airports, after Sydney from the previous month). Smoke haze from bushfires regularly impacted operations in Melbourne early this month. With other meteorological conditions including thunderstorms, cloud and wind impacting operations later in the month. The combined 75th percentile performance during January for airborne delay across the four major airports (Sydney, Melbourne, Brisbane and Perth) was **4.5** minutes, and the median airborne delay across these airports was **1.1** 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 elevated airborne delay in January include:
- worse than (or different to) forecast conditions,
- thunderstorm activity (particularly in Sydney and Brisbane),
- smoke haze in Melbourne, 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 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. Taxiway F was opened and works were suspended from 21st December 2019 to 13th January 2020 to accommodate increased demand and reduce disruption during the holiday period.

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 thirty two significant and/or notable events in January, four less than in December (eleven in Sydney, fifteen in Melbourne, four in Brisbane, and two in Perth). Twenty one of these events were 'significant', due to prolonged and moderately elevated airborne delay for the entire day; these events are labelled in **Figure** 1.

There were also twenty six distinctive events in January and these are summarised under each of the airport sections below. There were eight distinctive events in Sydney, fourteen in Melbourne, two in Brisbane, and two in Perth.
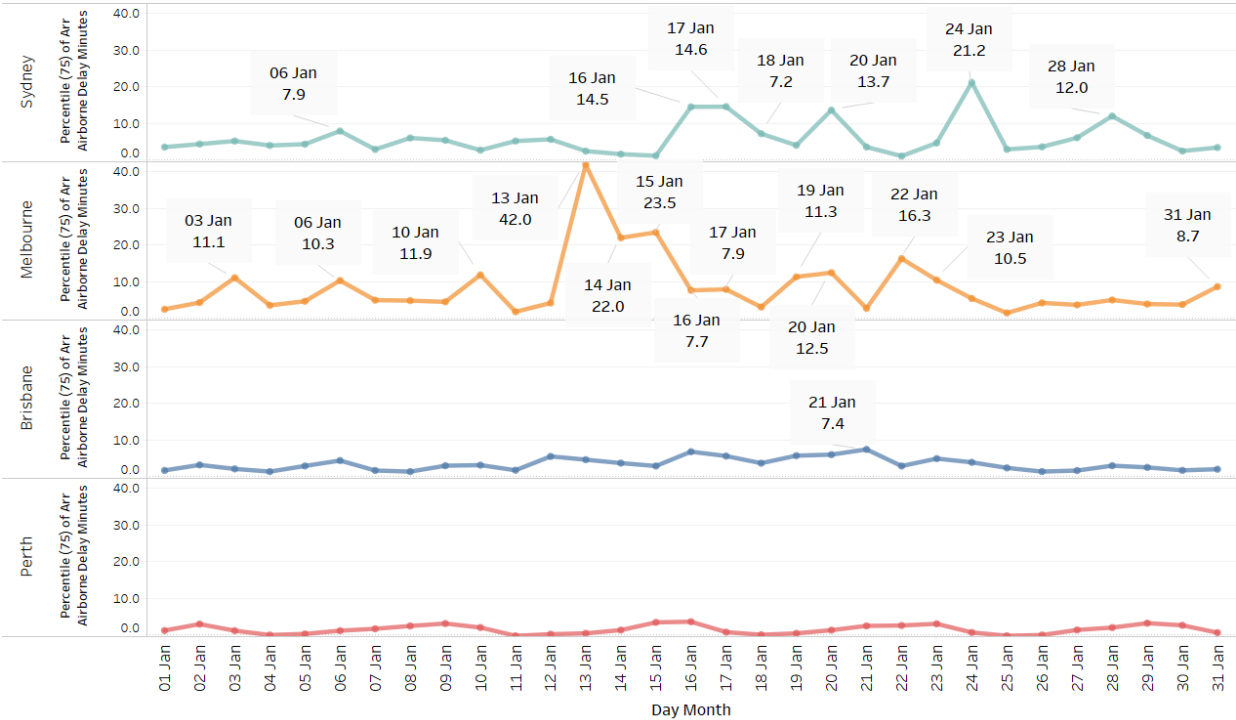
Figure 1: Significant events during January 2020. The marked events indicate the extent of the 75th percentile of airborne delay in minutes across each day.

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.
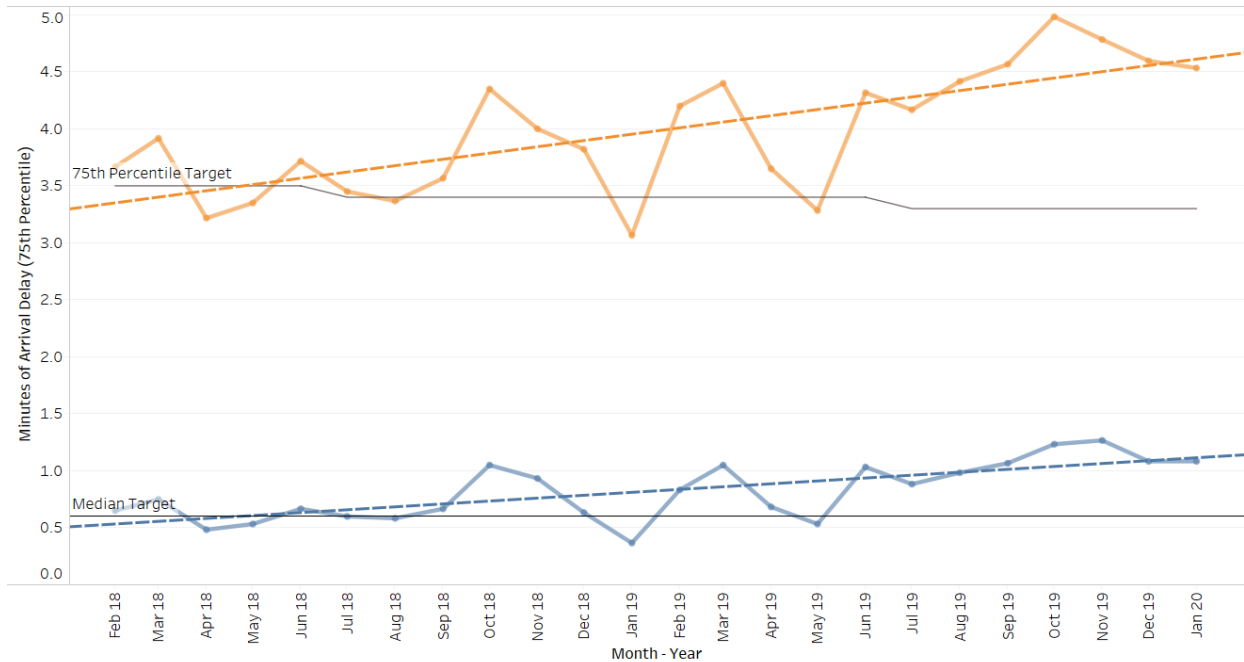

Figure 2: 24-month trend for airborne delay

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.
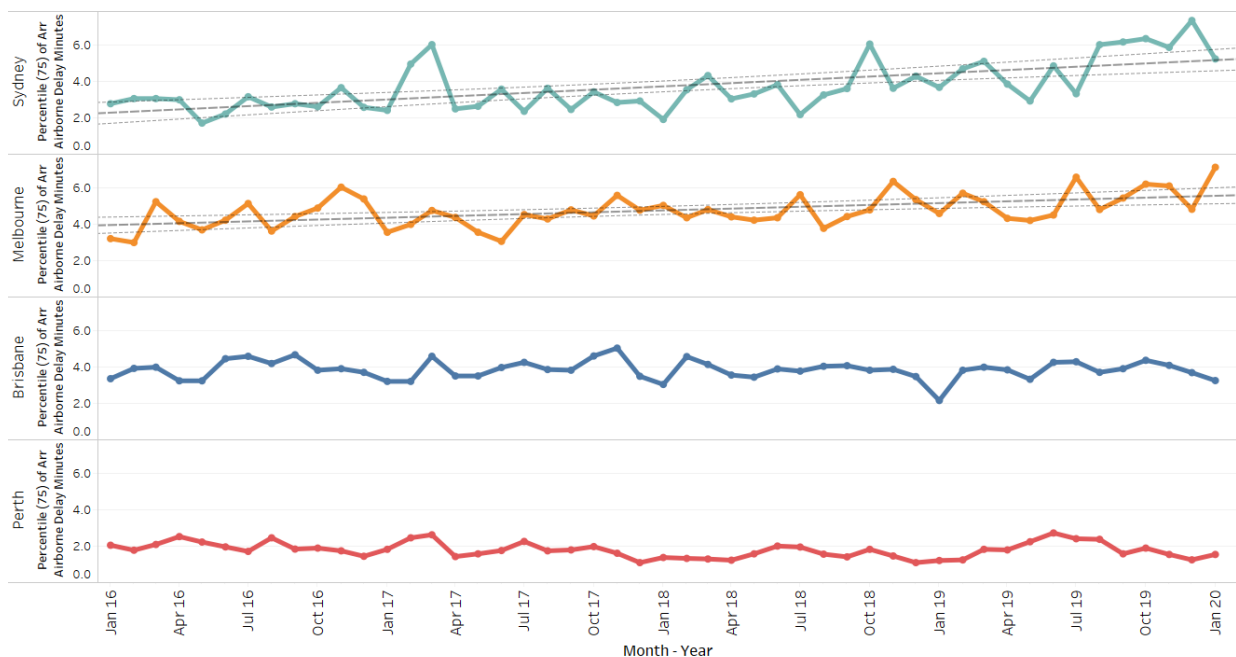

Figure 3: 48-month trend for airborne delay (75th percentile) by airport

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.

	Runway mode	January 2019	October 2019	November 2019	December 2019	January 2020
Sydney	34A/34D	49% (256)	50% (265)	55% (279)	54% (287)	38% (199)
	16A/16D	50% (263)	43% (227)	41% (209)	43% (229)	61% (322)
	SODPROPS (Single)	2% (8)	2% (12)	1% (5)	1% (3)	
	25A/25D (Single)		4% (23)	3% (15)	1% (7)	
	25A/16D					1% (3)
	07A/16D			0% (1)		1% (3)
	07A/07D (Single)			0% (1)	0% (1)	
Melbourne	16A/27D	53% (295)	38% (210)	35% (190)	44% (246)	33% (183)
	27A - 27/34D	6% (34)	14% (79)	13% (69)	7% (40)	11% (61)
	34A/34D (Single)	10% (55)	16% (91)	13% (69)	7% (37)	14% (77)
	16A/16D (Single)	21% (117)	14% (76)	6% (34)	15% (84)	19% (105)
	27/34 LAHSO	3% (19)	5% (29)	7% (36)	3% (15)	4% (20)
	27A/27D (Single)	3% (16)	13% (71)	20% (110)	10% (56)	3% (16)
	09A/09D (Single)	4% (22)	0% (2)	0% (1)		1% (7)
	09A/16D			6% (31)	14% (80)	16% (89)
Brisbane	19A/19D (Single)	9% (45)	35% (183)	21% (105)	34% (180)	13% (69)
	01A/01D (Single)	59% (309)	62% (325)	68% (348)	54% (282)	60% (315)
	01/14A 01D	30% (156)	3% (17)	6% (31)	12% (62)	22% (114)
	01/32A 01D	3% (17)	0% (2)	5% (26)	1% (3)	6% (29)
Perth	21A/21D (Single)	22% (81)	11% (56)	21% (100)	14% (69)	21% (106)
	03A/03D (Single)		11% (55)	4% (18)	7% (34)	8% (41)
	21/24A 21D	64% (237)	64% (317)	55% (262)	59% (293)	57% (283)
	03A 06/03D	8% (28)	10% (51)	15% (73)	17% (83)	7% (36)
	06A/06D (Single)	1% (5)	1% (3)	6% (27)	0% (1)	5% (25)
	24A/24D (Single)	5% (17)	3% (14)		3% (16)	1% (5)

Figure 4: January 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 22% compared to the same month last year (199 hours compared to 256 hours in January 2019). Additionally, the use of parallel 16 operations increased by 22% (322 hours compared to 263 hours in January 2019). The overall single runway usage (runway 07/25 and SODPROPS) decreased by 8 hours compared to the same month last year (from 8 to 0 hours).

In Melbourne the availability of Land and Hold Short Operations (LAHSO) increased by 5% compared to the same month last year (20 hours compared to 19 hours in January 2019). Single runway usage decreased by 2% (205 hours compared to 210 hours in January 2019). The use of Runway 34 for arrivals (single runway 34 and LAHSO operations) increased by 87% (to 97 hours) compared to December (52 hours).

Brisbane had single runway operations for 67% of the time in January 2019 and 73% of the time in January 2020. Single runway 01 operations increased by 2% compared to the same month last year (315 hours compared to 305 hours in January 2019). Single runway 19 operations increased by 53% (69 hours compared to 45 in January 2019). The use of two runways for

arrivals in Brisbane decreased by 17% compared to the same month last year (143 hours compared to 173 hours in January 2019). In January 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 36% of the time in January 2020. Single runway operations are 72% higher compared to the same month last year (177 hours compared to 103 hours in January 2019). Changes to reporting at Perth now capture weekend operating configurations. This is creating an artefact change to year-on-year differences (January 2019 had 368 hours, compared to January 2020 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 2018.

Comparing overall traffic levels in January 2020 to January 2019, Sydney (-2.2%) and Melbourne (-2.6%) have decreased, while Brisbane remained unchanged, and Perth (2.5%) has increased. International traffic numbers have decreased in Sydney (-2.1%), but they are increasing at Melbourne (2.1%), Brisbane (1.8%) and Perth (7.7%).

Sydney's domestic traffic decline is larger than the in the preceding three months, but the international decline is similar to that observed over the same period (the overall traffic growth/decline in 2019 was quite variable). Melbourne's domestic traffic decline was the largest since 2018, but the growth in international traffic continued on from December after six months of decline. Brisbane's growth in international traffic was similar to levels in 2019, but a slight drop in domestic traffic contrasts with the growth shown in the majority of months in 2019. Perth's domestic traffic growth slowed from the levels seen in 2019, but the decline in international traffic observed from February 2018 to October 2019 has changed to growth from November 2019 onwards.
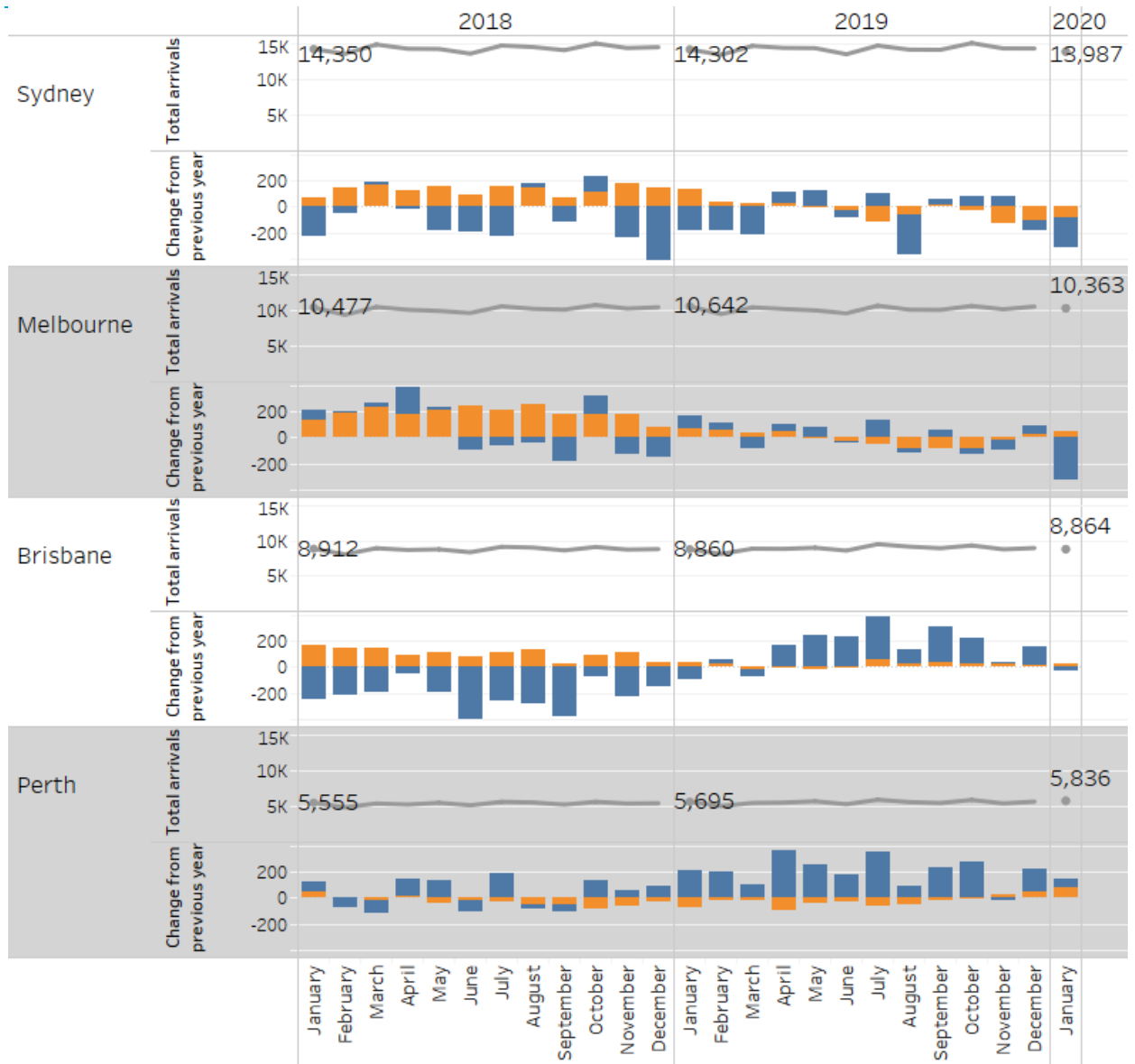
Figure 5: Traffic levels and composition change since January 2018. Grey lines show overall traffic numbers (annotated figures compare current month to same month one and two years earlier). Coloured bars show change in traffic compared to the same month the previous year for domestic (blue) and international (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. **Figure 7** shows the day of week and local hour of day when demand exceeded capacity most often. The displayed hours are 07, 08, 16, 17 and 18. Sydney shows excess demand in 07, 08, 17 and 18, Melbourne is noticeable in 07, 08, 17 and 18 (predominately 07 and 17), and Brisbane in 07, 16 and 18.
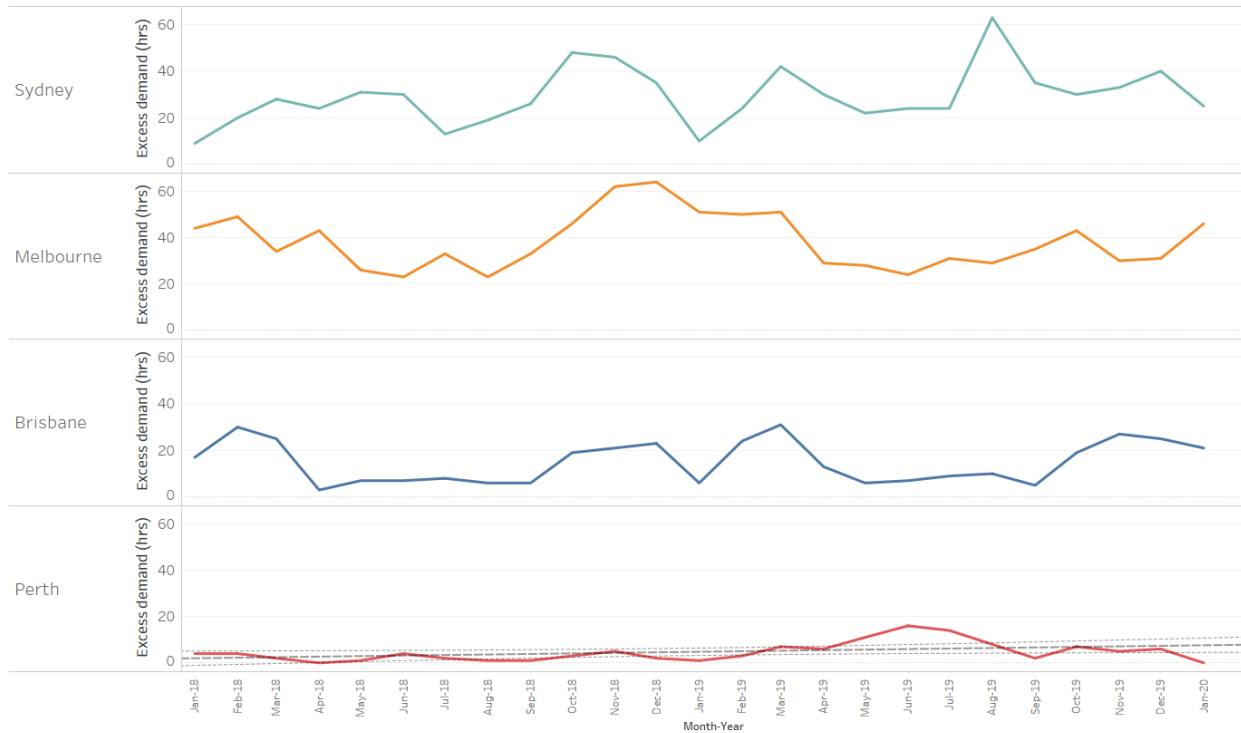
Figure 6: Excess demand estimates. Solid lines indicate the number of hours where estimated demand exceeds the METCDM rate for that hour by three or more flights. Dashed and dotted lines for Sydney and Perth indicate upward trends. Demand is estimated using Harmony Base Estimated Landing Time.
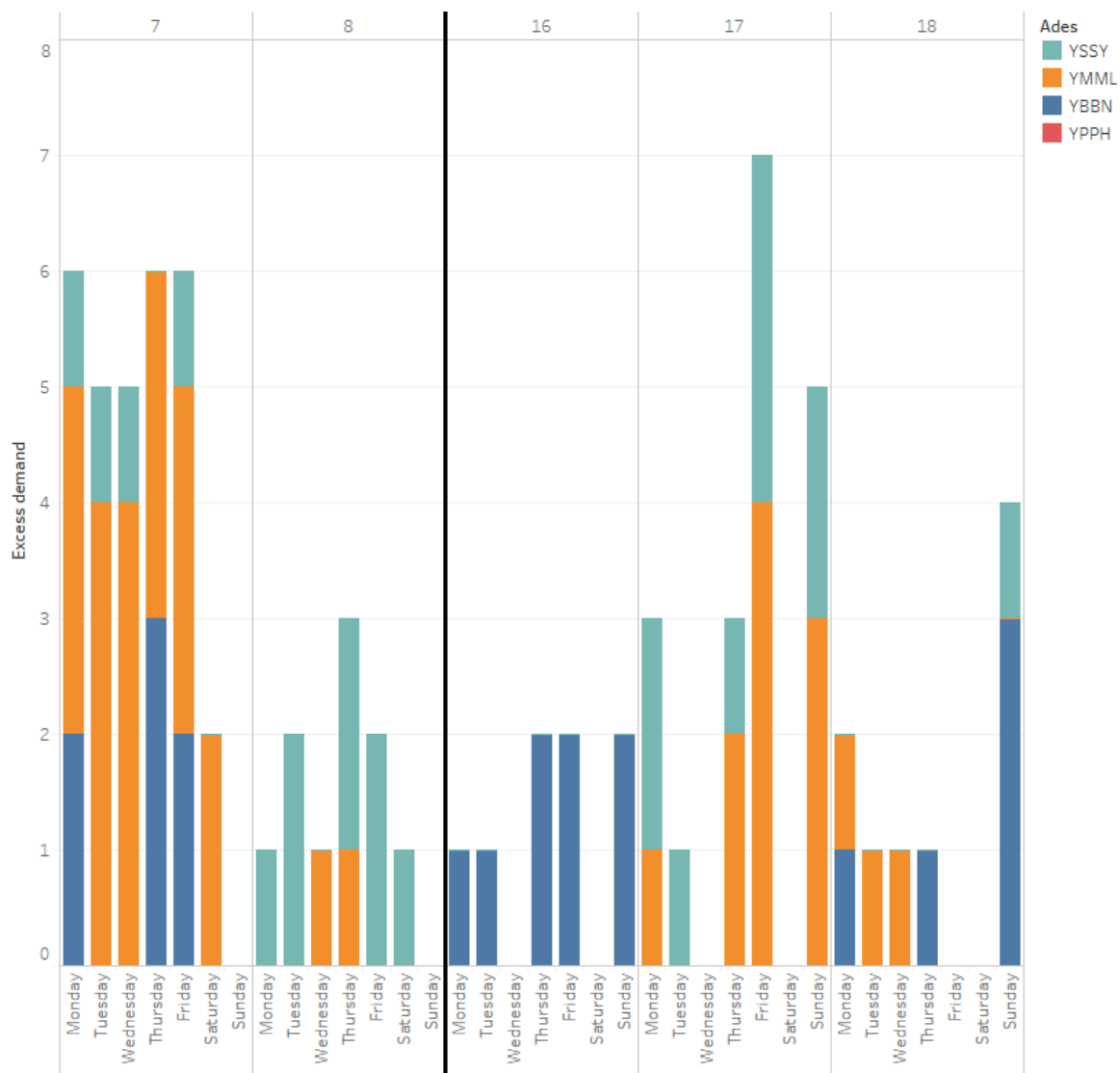
Figure 7: Excess demand estimates by day of the week (bottom axis) and local hour of day (top axis) when scheduled demand is most likely to exceed capacity in January. The count is incremented for a bar when the estimated demand exceeds the METCDM rate for that hour and day of week by three or more flights. 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 Wednesdays, Thursdays and Fridays 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.** January performance for the median (1.5 minutes) and the 75th percentile (5.3 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 0.5 minutes) and in the 75th percentile performance (from 3.7 minutes).

The long-term (48-month) and 24-month trends for airborne delay at Sydney are upwards.
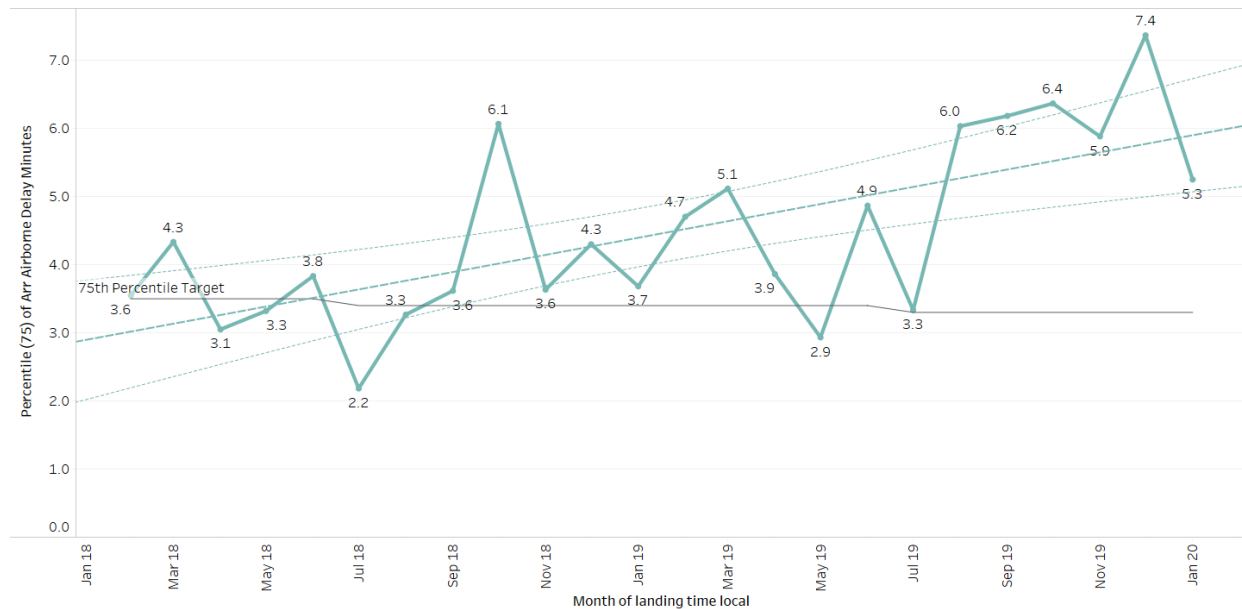
Figure 8: Sydney airborne delay 75th percentile (last 24 months)

Distinctive events

Table 1 describes the distinctive events during January in Sydney.

Day	Event Category	Delay (minutes – 75th percentile)	Event Descriptions (*Contributing causes to increased delays*)
4 January	-	4.0	Afternoon: Strong winds, turbulence and windshear with a runway change earlier than forecast. This lead to only 3 landings in an hour, with multiple missed approaches. Several curfew were dispensations granted, and an international flight diverted.
6 January	Significant	7.9	Afternoon: Worse than forecast thunderstorm conditions with multiple weather diversions. A temporary runway change occurred. Concentration of demand due to flights returning to Sydney, off-schedule internationals and non-compliant flights. Level 2 revision run at 1700 local.
16 January	Significant	14.5	Morning: Thunderstorm arriving earlier than forecast. Afternoon: Thunderstorms and turbulence affecting the terminal area. Concentration of demand due to off-schedule internationals and non-compliant flights. Level 1 revision run at 1450 local.
17 January	Significant	14.6	Morning: Showers and poor weather conditions lead to two missed approaches and multiple weather diversions.

			Concentration of demand due to off-schedule internationals and non-compliant flights. Afternoon: Concentration of demand due to off-schedule internationals and non-compliant flights.
20 January	Significant	13.7	Afternoon: Thunderstorms leading to weather diversions. Concentration of demand due to non-compliant flights.
24 January	Significant	21.2	Morning: Thunderstorms with weather diversions. Concentration of demand due to off-schedule internationals and non-compliant flights. A ground stop followed by Level 2 revision at 0925 local. Afternoon: Cloud lower than forecast. Concentration of demand due to off-schedule internationals and non-compliant flights
27 January	Notable	6.1	Afternoon: Strong winds and low cloud with a go-around. Concentration of demand due to off-schedule internationals and non-compliant flights.
28 January	Significant	12.0	Morning: Concentration of demand due to off-schedule internationals and non-compliant flights. Afternoon: Thunderstorm impacting arrivals from the north causing some weather diversions. Concentration of demand due to off-schedule internationals and non-compliant flights.

Table 1: Distinctive event descriptions for Sydney.

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	PE424	YMDG	16	■	5
	PE723	YTRE	13	■	3
	RXA114	YMRY	7	■	3
	JST610	YMAV	21	■	2
	QLK193	YMOR	20	■	2
	QLK202D	Albury	7	■	2
	QTR2TG	Canberra	14	■	2
	RXA333	YGFN	18	■	2
	RXA456	YNAR	8	■	2
Late	JST785	YBSU	13	■	9
	JST522	Melbourne	21	■	8
	JST518	Melbourne	22	■	7
	QFA420	Melbourne	11	■	7
	QFA517	Brisbane	11	■	6
	TGG252	Melbourne	17	■	6
	TGG369	Brisbane	14	■	6
	VOZ883	Melbourne	21	■	6
	JST520	Melbourne	20	■	5
	JST530	Melbourne	21	■	5
	TGG264	Melbourne	20	■	5
	VOZ827	Melbourne	10	■	5
	VOZ867	Melbourne	19	■	5
	VOZ875	Melbourne	20	■	5
	VOZ883	Melbourne	20	■	5
	VOZ887	Melbourne	21	■	5
	VOZ938	Brisbane	12	■	5
	VOZ958	Brisbane	17	■	5

Table 2: CTOT variation for Sydney arrivals 0600-2300 local – January 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.** January performance for the median (2.2 minutes) and the 75th percentile (7.1 minutes) did not meet the targets. Compared to the same month last year, there was an increase in the airborne delay median performance (1.1 minutes), and in the 75th percentile performance (from 4.6 minutes)

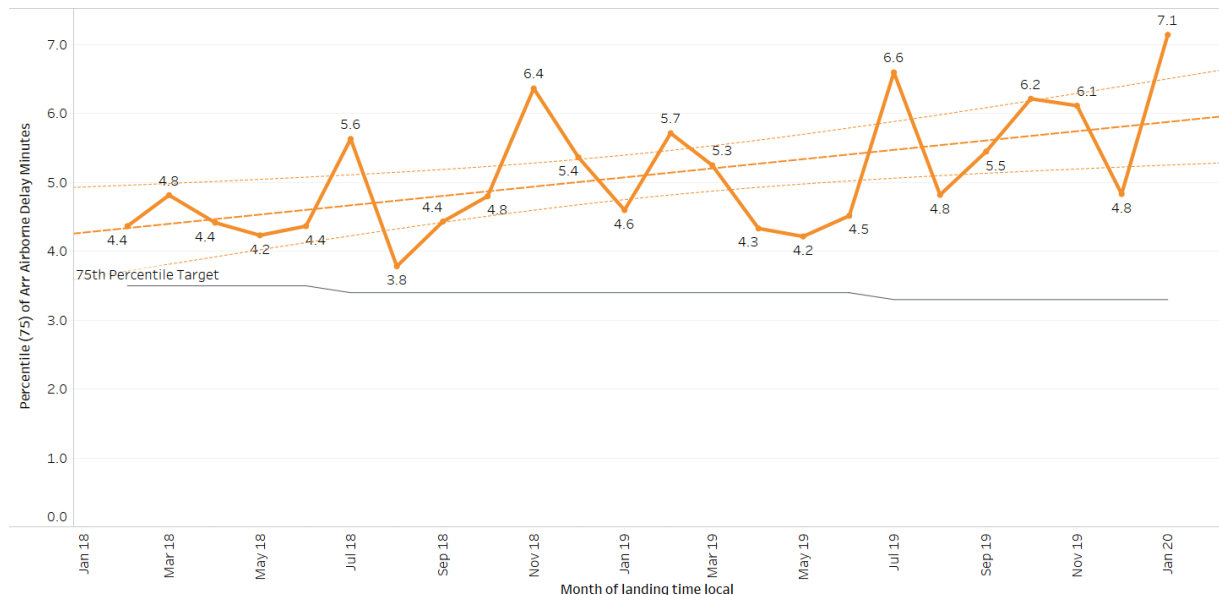The long-term (48-month) and 24-month trends for airborne delay at Melbourne are upwards.

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

Distinctive events

Table 3 describes the distinctive events during January 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 February 2020 with a break taking place over the Christmas period (up to January 13) to avoid disruption during the busy holiday period. Co-ordination group meetings with airlines and airports resulted in the decision 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*)
3 January	Significant	11.1	Afternoon: Rates reduced tactically due to smoke haze and switch to single runway operations with concentration of demand due to off-schedule internationals and non-compliant flights.
6 January	Significant	10.3	Afternoon: Smoke haze with concentration of demand due to off-schedule internationals and non-compliant flights.
9 January	-	4.5	Afternoon: Smoke haze, two go-arounds, concentration of demand due to off-schedule internationals and non-compliant flights.
10 January	Significant	11.9	Morning: Rates reduced tactically due to poor weather conditions (low level winds, turbulence and windshear) continuing longer than forecast during period of single runway operations. Concentration of demand due to off-schedule internationals. Afternoon: Rates reduced tactically due to poor weather conditions (low level winds, low cloud and turbulence) continuing longer than forecast during period of single runway operations. Concentration of demand due to off-schedule internationals and non-compliant flights.
13 January	Significant	42.0	Morning: Rates reduced tactically due to un-forecast low visibility (smoke haze) during period of single runway operations. Combined Melbourne and Essendon sequencing. Afternoon: Rates reduced tactically due to un-forecast low visibility (smoke haze).and un-forecast single runway operations. Concentration of demand due to off-schedule internationals. Level 2 revision conducted at 1540 local.
14 January	Significant	22.0	Morning: Smoke haze with concentration of demand due to off-schedule internationals during period of single runway operations. Afternoon: Smoke haze with concentration of demand due to off-schedule internationals and non-compliant flights during period of single runway operations. An emergency flight, fire-fighting flights and combined Melbourne and Essendon sequencing.
15 January	Significant	23.5 *	Morning: Rates reduced tactically due to smoke haze with concentration of demand due to off-schedule internationals and non-compliant flights during period of single runway operations.

			Midday: Smoke haze with concentration of demand due to off-schedule internationals and non-compliant flights during period of single runway operations.
			Afternoon: Thunderstorm with concentration of demand due to non-compliant flights during period of single runway operations. Ground stop at 1630 local, with no landings from about 1620 until 1800 local, with 3 go-arounds after recommencement of landings. Level 2 revision at 1800 local. Following this rates reduced tactically due to smoke haze.
19 January	Significant	11.3	Afternoon: Thunderstorms in the terminal area with concentration of demand due to off-schedule internationals and non-compliant flights during period of single runway operations.
20 January	Significant	12.5	Morning: Low cloud and showers with concentration of demand due to off-schedule internationals and non-compliant flights.
			Afternoon: Reduced visibility due to low cloud with concentration of demand due to off-schedule internationals and non-compliant flights during a period with single runway operations.
22 January	Significant	16.3 *	Morning: Concentration of demand due to off-schedule internationals and non-compliant flights during a period of single runway operations.
			Afternoon: Rates reduced tactically due to strong and gusty winds with turbulence and windshear with concentration of demand due to off-schedule internationals and non-compliant flights during a period of single runway operations. Several missed approaches and a runway change.
23 January	Significant	10.5 *	Morning: Varying weather (including showers) with concentration of demand due to off-schedule internationals during a period of single runway operations.
			Afternoon: Taxiway E not available to heavy aircraft. Concentration of demand due to off-schedule internationals and non-compliant flights.
24 January	Significant	5.4 *	Afternoon: Un-forecast change to single runway operations with strong winds with concentration of demand due to non-compliant flights. Several aircraft were tactically released before a change to single runway operations which increased delay.
27 January	Notable	3.7	Afternoon: Rates reduced tactically due to different runway configuration than forecast with low visibility with concentration of demand due to off-schedule internationals and non-compliant flights. The period included a runway change.
31 January	Significant	8.7 *	Morning: Concentration of demand due to off-schedule internationals during period of single runway operations.
			Afternoon: Concentration of demand due to non-compliant flights during period of single runway operations. Windshear lead to two go-arounds.

Table 3: Distinctive event descriptions for Melbourne.

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	QLK50D	Devonport	8	■	4
	RXA3772	Mount Gambier	19	■	4
	RXA3872	YKII	13	■	3
	JST515	Sydney	15	■	2
	JST665	Ayers Rock	15	■	2
	JST736	Launceston	14	■	2
	JST740	Launceston	19	■	2
	JST742	Launceston	18	■	2
	QFA674	Adelaide	8	■	2
	QLK50D	Devonport	7	■	2
	QLK52D	Devonport	10	■	2
			11	■	2
	QLK77D	Mildura	7	■	2
	QLK280D	Launceston	7	■	2
	QLK284D	Launceston	14	■	2
	RXA3257	Wagga	8	■	2
	TGG239	Sydney	16	■	2
	VOZ1614	Mildura	12	■	2
Late	QFA431	Sydney	13	■	11
	QFA1014	Hobart	16	■	10
	VOZ842	Sydney	14	■	9
	JST511	Sydney	14	■	8
	JST708	Hobart	14	■	8
	QFA427	Sydney	12	■	8
	VOZ318	Brisbane	12	■	8
	VOZ846	Sydney	15	■	8
	VOZ858	Sydney	17	■	8
	JST515	Sydney	15	■	7
	QFA433	Sydney	14	■	7
	QFA441	Sydney	16	■	7
	VOZ738	Gold Coast	15	■	7
	VOZ854	Sydney	17	■	7
	VOZ1034	YBSU	15	■	7
	VOZ1594	Williamtown	16	■	7
	JST477	Williamtown	16	■	6
	JST517	Sydney	15	■	6
	JST521	Sydney	19	■	6
	QFA423	Sydney	11	■	6
	TGG271	Sydney	20	■	6
	TGG279	Sydney	23	■	6
	VOZ332	Brisbane	17	■	6
	VOZ334	Brisbane	18	■	6
	VOZ736	Gold Coast	14	■	6
	VOZ742	Gold Coast	17	■	6
	VOZ824	Sydney	10	■	6
	VOZ838	Sydney	13	■	6
	VOZ1371	Launceston	16	■	6

JST501	Sydney	7	■	5
JST505	Sydney	13	■	5
JST513	Sydney	15	■	5
JST525	Sydney	23	■	5
JST677	Darwin	7	■	5
QFA421	Sydney	11	■	5
QFA439	Sydney	15	■	5
QFA467	Sydney	21	■	5
QFA623	Brisbane	17	■	5
QFA881	Gold Coast	15	■	5
QFA1010	Hobart	7	■	5
RXA3562	YWYY	15	■	5
TGG251	Sydney	16	■	5
VOZ322	Brisbane	13	■	5
VOZ830	Sydney	11	■	5
VOZ898	Sydney	23	■	5
VOZ1325	Hobart	14	■	5

Table 4: CTOT variation for Melbourne arrivals 0600-2300 local – January 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**. January performance did not meet the target for the median (0.7 minutes), but did meet the target for the 75th percentile (3.3 minutes). Compared to the same month last year, there was an increase in the airborne delay median performance (from 0.2 minutes) and the 75th percentile (from 2.2 minutes).
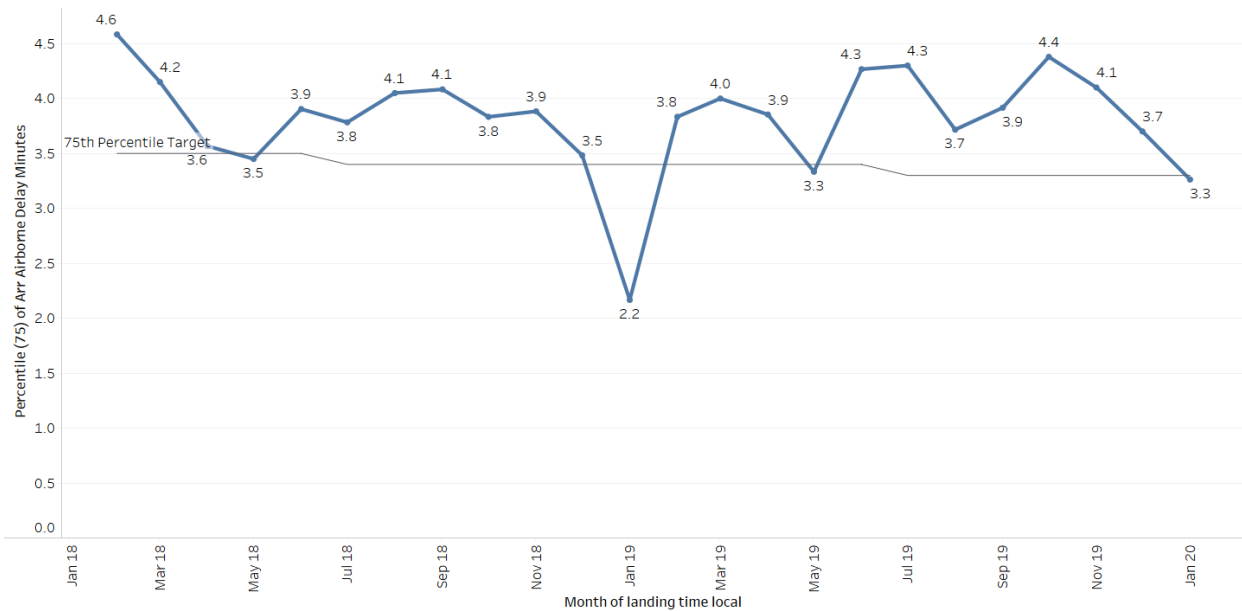

Figure 10: Brisbane airborne delay 75th percentile (last 24 months)

Distinctive events

Table 5 describes the distinctive events during January in Brisbane.

Day	Event Category	Delay (minutes – 75th percentile)	Event Descriptions (*Contributing causes to increased delays*)
20 January	Notable	6.0	Afternoon: Thunderstorm activity in the terminal area. Two go-arounds. Concentration of demand due to off-schedule internationals and non-compliant flights.
21 January	Significant	7.4	Afternoon: Thunderstorm activity in the terminal area. Concentration of demand due to off-schedule internationals and non-compliant flights.

Table 5: Distinctive event descriptions for Brisbane.

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	SKP738	YCCA	17	■	4
	TFX5	YBTL	20	■	4
	QLK465D	Moranbah	18	■	3
	RXA5661	Toowoomba	16	■	3
	HT730	Moranbah	18	■	2
	QLK549D	YROM	15	■	2
	TFX131	YBTL	21	■	2
	VEM	Dubbo	12	■	2
	VEO	YBSU	15	■	2
	VJE	YEML	19	■	2
Late	QFA624	Melbourne	16	■	8
	JST824	Sydney	21	■	6
	QFA626	Melbourne	17	■	6
	VOZ337	Melbourne	17	■	6
	VOZ341	Melbourne	19	■	6
	VOZ347	Melbourne	19	■	6
	JST566	Melbourne	19	■	5
	QFA546	Sydney	19	■	5
	QFA556	Sydney	22	■	5
	QFA628	Melbourne	18	■	5
	QFA7430	Melbourne	22	■	5
	TGG534	Melbourne	18	■	5
	VOZ341	Melbourne	18	■	5
	VOZ1225	Canberra	18	■	5

Table 6: CTOT variation for Brisbane arrivals 0600-2300 local – January 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**. January performance for the median (-0.4 minutes) and the 75th percentile (1.6 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 1.2 minutes).
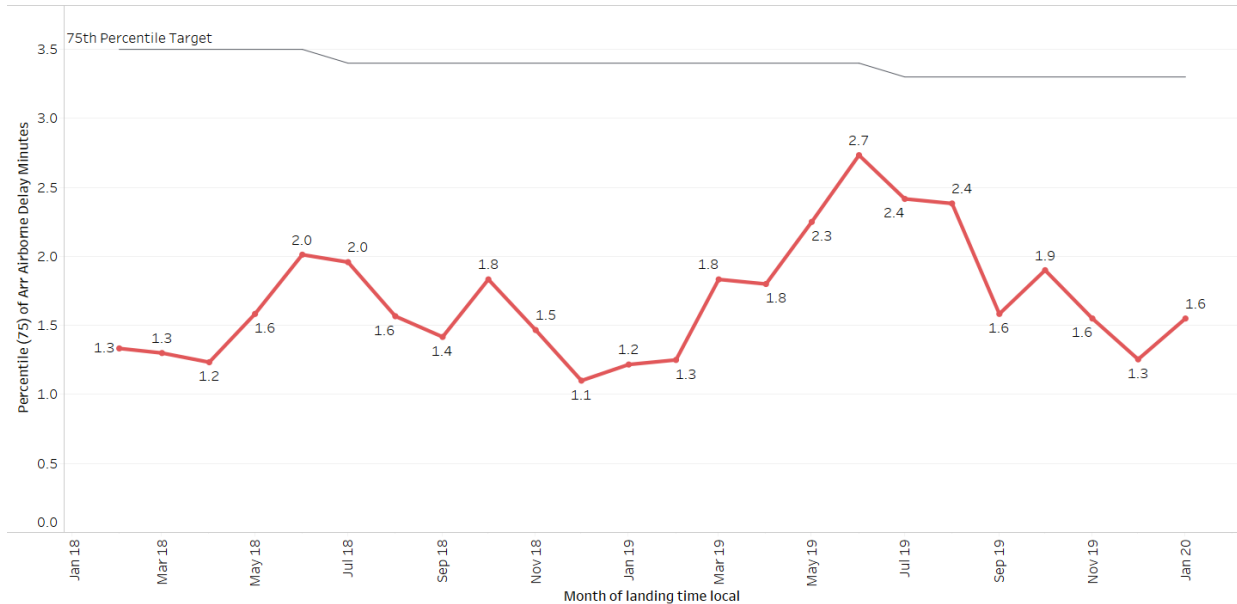

Figure 11: Perth airborne delay 75th percentile (last 24 months)

Distinctive events

Table 7 describes the distinctive events during January in Perth.

Day	Event Category	Delay (minutes – 75th percentile)	Event Descriptions (*Contributing causes to increased delays*)
15 January	Notable	3.4	Afternoon: Wind required use of different runway to forecast with lower rates. No GDP.
16 January	Notable	3.6	Morning: Change to single runway operations due to aircraft failure (with hydraulic leak).

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).