

# **Post Implementation Review**

## Perth Runway 03 Smart Tracking

January 2017



# Change Summary

Version 1.0:		
Section/ Clause	Summary	Date
	New document	25 January 2017

## Table of Contents

- 1. Overview.....3
- 2. Objectives and anticipated effects of the change .....3
- 3. Summary of environmental assessment .....4
- 4. Summary of industry and community consultation undertaken.....4
  - 4.1 Industry engagement .....5
  - 4.2 Community engagement.....5
- 5. Operational data .....6
- 6. Community feedback .....7
- 7. Findings.....7
- 8. Conclusion.....8

---

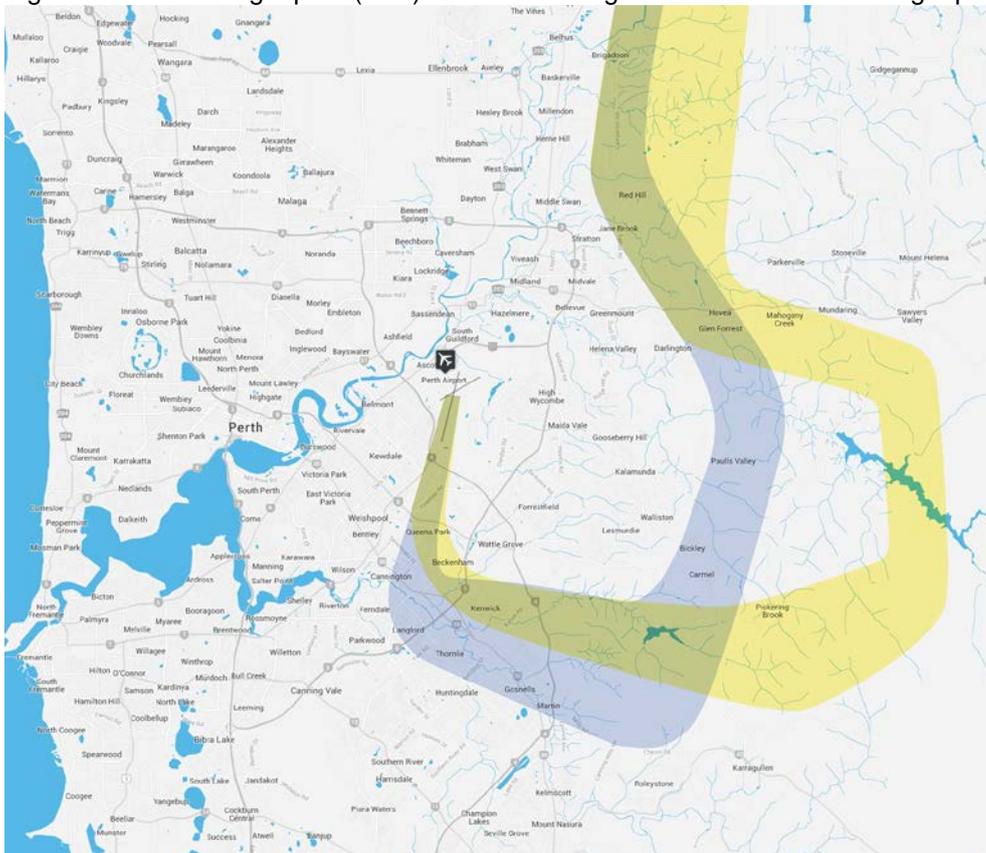
## 1. Overview

The Smart Tracking flight path to Runway 03 was introduced in Perth on 17 September 2015.

The Smart Tracking flight path is available to all suitably equipped aircraft arriving from the north and east landing onto Runway 03 (southern end of the main runway).

The arrival flight path corridor connected to the Smart Tracking approach is located to the east of residential areas in the Perth Hills (shown in yellow in Figure 1). The previous arrival flight path from the north (shown in blue in Figure 1) in the same general location was moved to follow the new arrival flight path corridor. This means that the majority of arrivals to Runway 03 from the north, whether using Smart Tracking or not, will fly the same path (yellow path in Figure 1).

Figure 1: Previous flight path (blue). Smart Tracking and new visual arrival flight path (yellow).



## 2. Objectives and anticipated effects of the change

Airservices is implementing Smart Tracking across Australian airports to enable all approved operators to utilise the benefits that the latest satellite assisted navigation technology provides.

Navigation by traditional means requires the pilot to manually control the rate of descent and often results in extra throttle and levelling out of the aircraft. While not always possible for operational reasons, the Smart Tracking procedure has been designed to maximise opportunities for a more gradual descent with less throttle use and engine noise than the existing procedure.

---

---

Due to the movement to the east of the arrival flight path south of Glen Forrest, it was expected that residents in the areas of Bickley and east of Kalamunda would no longer be overflown and would experience complete respite from aircraft on the previous flight path. These areas may continue to be impacted by infrequent aircraft not flying on the established arrival route.

It was also expected that the introduction of Smart Tracking would reduce the number of flights using the 18km long runway-aligned Instrument Landing System flight path over suburbs such as Canning Vale, particularly at night.

### **3. Summary of environmental assessment**

*(numbers are average estimates only)*

The environmental assessment found that:

- Over 12 months, approximately 1,100 aircraft could use Smart Tracking at night between 10:00pm and 5:00am.
- Due to the slight movement north of the Smart Tracking flight path between Gosnells and the airport there would be an increase in L<sub>A</sub>max noise levels over Kenwick and Beckenham at levels expected to be noticeable. At the same time, a similar reduction in noise over Cannington, Langford and Thornlie was anticipated. Kenwick and Beckenham already experience similar or greater noise levels from departing aircraft however on the days where these areas are overflown by arrivals, there will be an increase in L<sub>A</sub>max levels.
- For the calendar year 2014 there was an average of 53 flights a day overflying the areas likely to be affected by the proposed Smart Tracking arrivals (between Langford and Kenwick). Based on projected Smart Tracking arrivals the proposed change could add 18 flights a day. However, departures from Runway 21 were anticipated to decrease by an estimated 15 movements a day due to the change to preferred runways implemented in May 2015. If so, this would result in a net increase in number of aircraft overflights of three flights per day on average.
- For aircraft arriving from the north, the Smart Tracking approach is shorter in distance than the existing approaches used at night and in poor weather (the Instrument Landing System approach) by about 20 nautical miles or 37 kilometres, and from the east by about 10 nautical miles or 18 kilometres. This could represent a saving in aircraft fuel consumption of between 50 – 100kg per flight with a corresponding reduction in CO<sub>2</sub> emissions as a result of implementing Smart Tracking.

### **4. Summary of industry and community consultation undertaken**

Smart Tracking is being implemented across Australia as part of a national navigation modernisation program. To ensure that the noise benefits of this technology could be maximised in Perth, Smart Tracking was considered as part of the 2015 Noise Improvement Plan which looked at all opportunities for noise improvement for the Perth community by reviewing what had previously been considered and implemented, including the Review of Perth Airport Noise Abatement Procedures.

A Stakeholder Engagement Strategy was delivered for the proposed 2015 Noise Improvement Plan changes including preferred runways, Smart Tracking and a proposal

---

to trial a night time southern departure flight path. This was to ensure that stakeholders understood that these changes were made as part of a broader noise improvement strategy for the Perth community.

#### **4.1 Industry engagement**

Consultation with the airlines and Perth airport commenced in May 2014 through the Perth Aircraft Technical Noise and Environment Working Group (PANTWG) and engagement with senior representatives of the airlines, airport and air traffic control.

The Smart Tracking proposal for Perth was part of an Australia wide Smart Tracking implementation program agreed by Airservices and the airlines to provide the safety, fuel savings and emissions benefits across as many airports as possible.

Once it was determined that Smart Tracking would be implemented in Perth to achieve these benefits, the PANTWG considered what noise improvements could be achieved through the Smart Tracking procedure design to meet the objectives of the 2015 Noise Improvement Plan.

The PANTWG discussed the draft design and considered that the best noise outcomes would be achieved by moving the existing visual Standard Terminal Arrival Route flight path further to the east. This was proposed to provide respite for communities in Bickley and east of Kalamunda and provide a more gradual descent with less throttle use and engine noise than the existing flight paths.

Industry continues to be engaged through the PANTWG every three months to ensure that the benefits are maximised and any noise issues are discussed.

#### **4.2 Community engagement**

Community engagement commenced on 5 March 2015 through the Perth Airport Municipalities Group (PAMG) which comprises local councils representing areas that are directly or indirectly impacted by Perth Airport operations. Airservices also consulted through the Perth Airport Community Forum (PACF), which is an open public forum held immediately after the PAMG every three months.

Airservices presented at the 5 March 2015 PAMG and PACF meetings on the results of the review of noise improvements and proposed changes including Smart Tracking. There were approximately 180 community members at this meeting.

A fact sheet "Perth Noise Improvements 2015" was published on the Airservices and PAMG websites and distributed at the PAMG and PACF. Information from the fact sheet was distributed through local newspapers and to council representatives to ensure awareness of the community outside the PACF.

Cockburn Council, representing areas south of the airport and represented at the PAMG, contacted Airservices after the community sessions to advise that they required more information about the changes and were provided with the fact sheet and other information as requested.

Community sessions were conducted to provide information and collect feedback on the changes in South Perth twice on 6 March, at Guildford 11 May, Maddington 12 May, and Gosnells 13 May 2015. Maps were used at these sessions to demonstrate where the proposed flight path would be relative to existing flight paths and suburbs.

Feedback from the consultation sessions, the Aircraft Noise Ombudsman and complainants to the Noise Complaints and Information Service was taken into consideration before and after the change was implemented. Meetings were also arranged with Government representatives to respond to any community concerns.

## 5. Operational data

Table 1: Perth Smart Tracking Runway 03 Use – October 2015 to September 2016, Jet Arrivals

Month	All Arrivals Perth Airport	Smart Tracking Arrivals	Smart Tracking as % of all Arrivals	Smart Tracking as % of Runway 03 Arrivals
Oct 2015	5073	217	4	20
Nov 2015	4803	95	2	19
Dec 2015	5152	202	4	21
Jan 2016	4924	294	6	18
Feb 2016	4720	230	5	21
Mar 2016	5108	337	7	22
April 2016	4810	231	5	17
May 2016	4773	101	4	15
June 2016	4743	398	8	17
July 2016	4862	372	8	14
Aug 2016	5042	185	4	14
Sep 2016	4863	211	4	21

Smart tracking use remained fairly constant over the 12 months as a percentage of Runway 03 jet arrivals at an average of 19 per cent.

As a percentage of total Perth jet arrivals, the use averaged at 5 per cent which is equivalent to 240 flights per month or eight flights per day.

The night time use (10 pm to 5 am) averaged 17 flights per month or just over one flight every two nights. While the average was just over one flight every two nights, the range was zero on nights where Runway 21 was used for arrivals, up to a maximum of six flights on one night in June 2016. This was the month in which night time use peaked at an average of two flights per night. Runway 03 tends to be used more frequently in the cooler months due to the typical wind patterns. Table 2 shows the number of Smart Tracking flights each night in June 2016. Where a night is not listed, this means there were no flights or Runway 03 was not in use.

Table 2: Smart Tracking usage, June 2016

Night of month, June 2016	Number of Smart tracking arrivals between 10pm and 5am	Night of month, June 2016	Number of Smart tracking arrivals between 10pm and 5am
1	2	15	2
2	1	16	1
3	2	17	1
5	3	18	2
6	2	21	2
7	1	23	2
8	2	24	3
9	4	25	1
10	1	26	4
11	2	27	6
12	3	28	2
		29	1
<b>Total flights</b>		<b>50</b>	
Average per night		2.2	
Maximum on any night		6	
Mode (most common)		2	

Table 1 indicates that, although the Smart Tracking use varies by month according to wind direction and runway selected, it remains fairly consistent when conditions allow as a percentage of arrivals to Runway 03. The average daily use of eight flights per day is less than the 18 anticipated in the environmental assessment. The reason for this discrepancy is that air traffic control requirements to have aircraft on similar flight paths

---

to manage runway efficiency often does not allow all suitably equipped aircraft to access the Smart Tracking approach. It is anticipated the use of Smart Tracking will increase over time as more aircraft become equipped.

## 6. Community feedback

The flight path changes have not resulted in significantly increased numbers of complainants. The suburbs most likely to be affected by the change were Kenwick, Maddington, Beckenham and Gosnells. The numbers of complainants from these suburbs that contacted the Noise Complaints and Information Service both before and after the change were identified and are shown in the Table 3.

Table 3: Numbers of complainants by suburb before and after the change

Suburbs	Pre-change: 17 September 2014 to 16 September 2015	Post-change: 17 September 2015 to 16 September 2016
Kenwick	6	3
Maddington	3	5
Beckenham	5	7
Gosnells	2	3

Overall the numbers of complainants for each suburb was low. While numbers increased in Maddington, Beckenham and Gosnells, this was from a low base in each case.

One complainant in the Canning Vale area complained that the change had not produced the hoped-for reduction in traffic using the Instrument Landing System approach to Runway 03.

One complainant from Glen Forrest and another from Paulls Valley proposed further changes to the flight path.

The Paulls Valley resident commented that the Smart Tracking flight path was a great change providing aircraft don't turn late and recommended that the waypoint prior to the turn be moved further north away from their property.

The Glen Forrest resident also provided three options as proposed changes to move the flight path further away from the Glen Forest residential areas.

Airservices has reviewed both proposals which were provided after the final flight path design work had been completed and approved by the Civil Aviation Safety Authority.

The Perth Aircraft Noise Technical Working Group will consider the input from both residents when reviewing the use and design of Smart Tracking during 2017.

## 7. Findings

The expected additional flights due to the use of Perth Smart Tracking arrivals prior to implementation was up to 18 flights per day over the areas between Langford and Kenwick, with an estimated 15 fewer departures a day resulting from the Preferred Runways change implemented in May 2015, resulting in a net increase over these areas of three flights per day.

The actual use of Smart Tracking averaged eight flights per day in total over the 12 month period between October 2015 and September 2016. Most of these flights were

---

during the day and would have used the visual flight path prior to Smart Tracking implementation. Whilst there has been some movement of the visual flight path arrivals as a result of the Smart Tracking implementation, these aircraft navigate less accurately and are spread over a broader residential area. There has been only minor reductions in departures per day over these areas and the net effect is that there is likely to be a small increase in noise due to the use of the Smart Tracking flight path at night.

It is at night that these areas would experience new arrivals, however night time use over the 12 months is, on average, less than one additional flight per night. Considering there is existing overflight from departures, an increase of less than one arrival flight per night, even up to the maximum use of six flights on one night, did not appear to be noticeable given the very small number of complainants from these areas. In time however, as the number of flights using Smart Tracking increases, more residents may notice the change.

The Smart Tracking flight path was designed to move the existing visual flight path further east of Bickley and Carmel and reduce overflight of populated areas in the Perth Hills. This was achieved as shown in Figure 1 by both Smart Tracking arrivals and visual arrivals to Runway 03 and is considered a noise improvement.

The expected reduction in flights over areas between Canning Vale and Casuarina was around 1100 fewer arrival flights a year that would use the Smart Tracking in preference to the longer Instrument Landing System approach. This benefit would be achieved by night time use as the Instrument Landing System is generally used during poor weather. The actual night time use was quite low at an average of 17 flights per month or a total of around 204 flights for the year.

This did provide some reduction in night time flights for these areas but not to the extent expected. It is not likely to have been noticed by the community.

## **8. Conclusion**

Airservices considers that Smart Tracking implementation has resulted in small noise improvements for the Perth community and minimal negative noise impact.

A summary of noise benefits and impacts is as follows:

- Implementation of Smart Tracking moved the existing visual flight path further east of Bickley and Carmel and reduced overflight of populated areas in the Perth Hills. This is considered a noise improvement for those areas as most flights from the north to Runway 03 use the visual flight path.
- Smart Tracking use was less than expected and has not provided the anticipated extent of night time overflight reduction for the community south of Perth. There was a reduction on average of 17 flights per month at night over these areas which is a small improvement but unlikely to be noticed by the community.
- Arrivals at night over the areas between Langford and Kenwick averaged less than one arrival per night over the review period. Whilst the arrivals during daylight hours have moved slightly over residential areas and resulted in increased noise impacts for some residents, there is variation in where aircraft fly due to the less accurate nature of visual arrivals which account for most arrivals. Given that these areas are currently overflowed by departures, the noise impacts

---

of Smart Tracking and the change to visual arrivals over these areas are unlikely to be noticed.

- Aircraft using Smart Tracking over the areas between Langford and Kenwick will fly more consistent vertical descent profiles, resulting in less variation in engine noise relative to the aircraft using the visual arrival flight paths and this may be noticeable to some residents.

In addition to improved safety, fuel burn and emissions outcomes, Perth Smart Tracking over the past 12 months has provided a small degree of noise benefits for the Perth community.