



# **REVIEW OF PERTH AIRPORT**

## Noise Abatement Procedures



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## **SUMMARY**

This document presents an overview of the findings of a technical review of existing Noise Abatement Procedures which have been in place for Perth Airport since 1998. The review considered the relevance and effectiveness of the current procedures and provides a baseline against which to measure potential noise improvement opportunities. The technical analysis used data from 2012.

### **Summary of Review Findings**

The review considered ways to minimise the impact of aircraft noise on residential areas around Perth Airport, especially at night, and explored options to focus aircraft noise away from existing residential areas to the extent practicable.

The review identified aspects of air traffic management which will be explored and discussed with relevant aviation industry stakeholders, through the Perth Aircraft Noise Technical Working Group in the first instance, and then communicated with the community via the Perth Airport Community Forum.

Potential areas for improvement:

1. currently, the selection of runways is related to the operational requirements of air traffic control, including wind direction. This does not necessarily align with the current published Noise Abatement Procedures. The Noise Abatement Procedures, therefore, should be amended to reflect the current operational environment, noting that due to its proximity to nearby residences, use of the southern end of the cross runway is to remain the least preferred option
2. Airservices and industry should investigate the viability and the impacts of implementing a change to the preferred runway at night or part of the night period so there are more departures from Runways 03 and 06
3. Airservices should work with the Civil Aviation Safety Authority, Department of Defence and industry to explore if there are operational and environmental benefits for civilian aircraft when using military airspace
4. Airservices should always consider air traffic management at Perth holistically with a view to implementing the best noise outcome overall; balancing the operational need to meet industry requirements with noise improvements already made and those potentially available.

## **BACKGROUND**

### **Noise Abatement Procedures**

Under the *Air Services Act 1995 (Cwth)*, Airservices has an obligation to provide environmentally responsible services to our customers by minimising the environmental impact of aircraft operations to the extent practicable.

Noise abatement is based on the following principles:

- procedures should be optimised to achieve the lowest possible overall impact on the community without unfairly impacting safety and airport operations or efficiency
- noise should be focussed as much as possible over non-residential areas
- noise exposure should be fairly shared whenever possible
- no suburb, group or individual can demand or expect to be exempt from aircraft noise exposure.

Noise Abatement Procedures have been developed for each Australian airport on a case-by-case basis in response to the local conditions, including the demographic profile of the area in which each airport is situated.

The requirement to follow Noise Abatement Procedures is subject to ensuring that the safety and efficiency of the airport are not compromised. Adherence can therefore be affected by weather, traffic complexity, or the specific operating requirements of individual aircraft.

### **Perth Airport Noise Abatement Procedures**

The Noise Abatement Procedures for Perth Airport (see [Attachment 1](#)) were established in 1998 and are published on Airservices website.

The procedures include which runways and flight paths are preferred for use in order to achieve noise abatement principles. Runways 21 and 24 are equally preferred for landing whereas Runway 21 is preferred for departure—this applies to the entire day with no distinction between day and night periods. The procedures also provide for jet aircraft to operate outside specified flight paths when above 5000 feet above ground level, and turboprop aircraft when above 3000 feet.

There are different requirements for jets and non-jets, however, only aircraft above 5 700 kilograms maximum take-off weight (MTOW) are expected to comply with the Noise Abatement Procedures—all jets and most turboprop aircraft exceed 5 700 kg MTOW.

Restrictions on the level of use of the airport for flight training are noted through reference to the En Route Supplement Australia (ERSA). Flight training typically involves pilots flying oval-shaped circuits in close proximity to the main runway and performing 'touch and go' landings on the runway; these are the first basic skills for trainee pilots to learn. Pilots also perform training flights in use of the airport's Instrument Landing System.

## **Noise Abatement Procedure Reviews**

This review sought to examine ways to minimise the impact of aircraft noise on residential areas around Perth Airport, especially at night, and explore options to focus aircraft noise away from existing residential areas.

The review used flight data for the 2012 calendar year.

### **Review terms of reference**

In February 2013, drafts Terms of Reference for the review were presented to the Perth Airport Aircraft Noise Management Consultative Committee and the Perth Airport Community Aviation Consultation Group for comment. Following discussion at those forums, the final Terms of Reference at Attachment 2 were unchanged from the draft.

### **Perth Airport operations**

Perth Airport is located 11 kilometres east of the central business precinct on the Perth Plains, approximately midway between the Indian Ocean and the Darling Range (see Figure 1 below). The majority of operations at Perth Airport are international and domestic passenger services, mostly medium to large jets.

The main runway at Perth Airport, 03/21, is 3.4km long, orientated approximately north to south. There is a shorter 2.2km long cross runway, 06/24, orientated approximately south-west to north-east.

Military airspace to the north and west of the airport is regularly unavailable for use by civilian traffic, however Airservices is continually working to maximise use of this airspace, when it is available, for civilian flights.

Airservices monitors the noise impact of Perth Airport operations through the location of permanent noise monitoring terminals as shown in Figure 1 below. Airservices operates noise monitors at Australia's eight major airports on a 24-hours-a-day, seven-days-a-week basis, collecting and displaying data on every flight to and from those airports.

Noise monitoring is undertaken to:

- determine the contribution aircraft noise makes to the overall noise to which a community is exposed
- provide information to the community
- help local authorities make informed, land use planning decisions
- inform estimates of impact to changes in air traffic control procedures, including changes to reduce aircraft noise impacts
- validate noise modeling
- inform the determination of aviation policy by government
- assist the government in implementing legislation.



Figure 1 - Location of Perth Airport and Noise Monitoring Terminals

## Number of aircraft movements

Table 1 below shows the number of arrivals, departures and training flights on the airport's two runways (four runway ends) and helipad from 1 January 2012 to 31 December 2012.

Table 1 - All aircraft operations

Operations	Runway										Total
	03		06		21		24		H		
Arrivals	24,299	32%	593	0.8%	39,868	53%	9,860	13%	326	0.4%	<b>74,946</b>
Departures	21,232	28%	6,926	9%	45,937	61%	498	0.7%	316	0.4%	<b>79,909</b>
Training	138	25%	15	3%	243	44%	21	4%	137	25%	<b>554</b>
Total	<b>45,669</b>	30%	<b>7,534</b>	5%	<b>86,048</b>	57%	<b>10,379</b>	7%	<b>779</b>	0.5%	<b>150,409</b>

The preferred runways for Perth Airport are the same for all times of the day and days of the week. However, day (6am to 10pm) and night (10pm to 6am) data is provided as night operations may present a different noise impact to the community.

Table 2 below shows:

- 132,314 (88 per cent) of operations occurred during the day
- 67 per cent of arrivals during the day used preferred Runways 21 and 24
- 61 per cent of daytime departures used preferred Runway 21
- training flights made up less than 1 per cent of operations.

**Table 2 - All aircraft operations - Day**

<b>Operations</b>	<b>Runway</b>										<b>Total</b>
	<b>03</b>		<b>06</b>		<b>21</b>		<b>24</b>		<b>H</b>		
<b>Arrivals</b>	21,621	33%	403	0.6%	35,145	53%	8,979	14%	326	0.5%	<b>66,747</b>
<b>Departures</b>	18,466	28%	6,295	10%	39,735	61%	480	0.7%	314	0.5%	<b>65,290</b>
<b>Training</b>	138	25%	15	3%	240	44%	21	4%	136	25%	<b>550</b>
<b>Total</b>	<b>40,225</b>	<b>30%</b>	<b>6,713</b>	<b>5%</b>	<b>75,120</b>	<b>57%</b>	<b>9,480</b>	<b>7%</b>	<b>776</b>	<b>0.6%</b>	<b>132,314</b>

Table 3 below shows:

- 18,095 (12 per cent) of operations occurred during the night
- 66 per cent of arrivals at night used preferred Runways 21 and 24
- 64 per cent of night departures used preferred Runway 21
- there were very few training flights at night.

**Table 3 - All aircraft operations - Night**

<b>Operations</b>	<b>Runway</b>										<b>Total</b>
	<b>03</b>		<b>06</b>		<b>21</b>		<b>24</b>		<b>H</b>		
<b>Arrivals</b>	2,678	32%	190	2%	4,723	56%	881	10%	0	0.0%	<b>8,472</b>
<b>Departures</b>	2,766	29%	631	7%	6,202	64%	18	0.2%	2	0.0%	<b>9,619</b>
<b>Training</b>	0	0.0%	0	0.0%	3	75%	0	0.0%	1	25%	<b>4</b>
<b>Total</b>	<b>5,444</b>	<b>30%</b>	<b>821</b>	<b>5%</b>	<b>10,928</b>	<b>60%</b>	<b>899</b>	<b>5%</b>	<b>3</b>	<b>0.0%</b>	<b>18,095</b>

# ANALYSIS

## Preferred runways

Weather conditions can, at times, render the preferred runway unsuitable for operations, or there may be air traffic control or pilot operational safety reasons for not using the preferred runway.

Currently, preferred runway procedures apply if there is less than 5 knots of downwind on the specified runway and nil downwind if the runway is wet. There is also a maximum crosswind criterion which is influential at Australian airports with more than one runway available for all operations (as is the case at Perth). In addition, the presence of significant weather phenomena in the vicinity of the airport can also affect runway selection, and in these instances, the safety of aircraft operations overrides the requirements stipulated in the Noise Abatement Procedures. Air traffic control may nominate a runway or an arrival or departure procedure for use, however the pilot makes the final decisions on these matters and is in control of the aircraft at all times.

Runways 21 and 24 are equally preferred for arrivals, and Runway 21 is the only preferred runway for departures. This system has been in place for many years and has been unchanged since the Noise Abatement Procedures were formalised in 1998.

Preference for departing aircraft to use Runway 21 reflected the history and proximity of housing development surrounding the airport. It also recognised the reality of the prevailing wind direction (southerly component) which facilitates departures from this runway. However, over time the reason Runway 21 is preferred for departures has increasingly included the operational requirements of air traffic control during peak traffic periods. The airport's taxiway system, as well as the location of aircraft hangars and the domestic and international terminals, hinders the smooth flow of aircraft while they are on the ground. This became more of an issue as flight schedules increased and runway capacity constrained, accordingly.

Departing aircraft from Runway 21 is the safest and most efficient method of getting aircraft from their hangar or parking bay to the passenger gate and then into the air without impacting flight schedule on-time performance or creating on-ground congestion.

To assist clarity of the Noise Abatement Procedures, the system of runway preference should be changed to incorporate the current operational requirements of air traffic control; noting that due to its proximity to nearby residential areas, the use of the southern end of the cross runway is to remain the least preferred option.

As there are few flights at night, it may be operationally feasible to have reciprocal runway operations during this period. Runway 21 arrivals combined with Runway 03 departures using flight paths through RAAF Pearce airspace would benefit almost all residential areas around the airport. An alternative option could be to make Runway 03 preferred for night-time departures and Runway 21 for arrivals.

## **Use of military airspace**

Design of the flight path structure for Perth Airport is constrained by the large areas of military airspace to the north. However, when this military airspace is not active, which is the case most nights and weekends, air traffic control is able to use it for civilian flights. This can result in considerable fuel savings for aircraft as shorter tracks are available, and it also offers respite to noise-affected areas to the north-east and north-west of the airport.

Maximising use of military airspace is an important noise abatement tool, and there may be value for long-term noise minimisation to include the use of this airspace in Noise Abatement Procedures. At present, aircraft using this airspace commence tracking via the GURAK or KEELS Standard Instrument Departures using an abbreviated RADAR Standard Instrument Departure and then as directed by air traffic control, in accordance with local instructions which have been designed to maximise overflight of non-residential areas until aircraft are over 8000 feet above ground level.

There are some residential areas to the north-west of the airport that are overflowed by civilian aircraft transiting military airspace. The current practice for departing aircraft (radar vectoring) provides effective noise sharing and safety benefits including improved communication between military and civilian air traffic controllers and enables a check on the status of RAAF Pearce airspace.

Airservices should work with the Civil Aviation Safety Authority, Department of Defence and industry to explore if there are operational and environmental benefits for civilian aircraft when using military airspace.

## **CONSULTATION AND FEEDBACK**

Airservices will present the findings of this review to the Perth Aircraft Noise Technical Working Group and the Perth Airport Community Forum for discussion and comment.

For further information or to provide feedback on this review please contact [community.relations@airservicesaustralia.com](mailto:community.relations@airservicesaustralia.com).



## **Attachment 2**

### ***Perth Airport Noise Abatement Procedures Review Terms of Reference***

#### **Context**

Airservices Australia has legislated obligations to, first and foremost, regard safety as its most important consideration and, subject to that requirement, to protect the environment from the effects of, and effects associated with, the operation and use of aircraft. Airservices is also required by Ministerial Direction to:

*“develop and implement effective aircraft noise abatement procedures and monitor and report to the secretary on compliance with those procedures at Australian airports.”*

A review of noise abatement procedures at Perth Airport is part of a broader program of Noise Abatement Procedure reviews, covering most major Australian airports in the period 2011–2013.

#### **Purpose**

To review ways to minimise the impact of aircraft noise on residential areas around Perth Airport, especially at night, and explore options to concentrate aircraft noise away from existing residential areas.

#### **Scope**

The review will identify:

1. current noise distribution, which will rely on:
  - a. noise and flight path monitoring data
  - b. noise complaint data
  - c. community impacts of aircraft noise
2. demography and land use around Perth Airport
  - a. historical
  - b. future growth projections where available
3. current Noise Abatement Procedures, including:
  - a. historical and legal foundation, including ICAO-balanced approach
  - b. preferred runways
  - c. preferred flight paths
4. compliance with Noise Abatement Procedures (an appropriate period considering seasonal variation will be used)
  - a. preferred runways
  - b. preferred flight paths
5. effectiveness of Noise Abatement Procedures
  - a. preferred runways
  - b. preferred flight paths
  - c. operating restrictions

6. forecast growth of traffic (as per Master Plan)
  - a. traffic levels
  - b. aircraft types
  - c. impact on effectiveness of Noise Abatement Procedures
7. opportunities for improvement, including likely operational, environmental and efficiency implications for their implementation
  - a. preferred runways
  - b. preferred flight paths
  - c. noise abatement areas
  - d. night operations
  - e. operating restrictions
  - f. concentration versus sharing of noise
  - g. opportunities from new technology
  - h. noise monitoring studies.

## **Consultation**

Airservices will consult with interested parties via the Perth Airport Community Aviation Consultation Group (CACG), convened by airport management. The CACG comprises representatives from the airport, Airservices, Commonwealth (Department of Infrastructure and Transport) and WA (State and Local) government, the aviation industry (i.e. airport users) and residents' associations (or similar purpose organisations) for areas surrounding the airport. Airservices will also provide information to the Perth Airport Aircraft Noise Management Consultative Committee (ANMCC).

## **Review Process**

### ***Terms of Reference***

The Terms of Reference for the review will be finalised by Airservices following consultation through the members of the CACG and ANMCC. Comments on the draft Terms of Reference are to be received from those forums by 8 March 2013. Comments are to be sent to [community.relations@airservicesaustralia.com](mailto:community.relations@airservicesaustralia.com). The final Terms of Reference will be provided to the CACG and ANMCC secretariats for distribution after that time.

### ***Review Report***

In 2014, a final draft of Airservices report of the Noise Abatement Procedure review will be provided to members of the CACG for discussion, targeting either the August or November CACG; and August or November ANMCC meetings (dependent on review being finalised).

### ***Final Report***

The final report will be provided to the CACG after receiving comments on the draft report from the CACG and published on Airservices website at <http://www.airservicesaustralia.com/>