Perth Airport

Runway 03 – RNP (Smart Tracking Approach)

Environment Analysis Summary

August 2015

Change Summary

Version	Date	Change Description	Amended by
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Introduction

Perth Airport is Australia's fourth largest in terms of passenger numbers and operates 24 hours a day, seven days a week. There are currently about 150,000 aircraft movements (take offs and landings) each year and this is expected to rise to 222,000 by 2034. The main runway at Perth Airport (Runway 03/21) is aligned north/south and the shorter cross runway (Runway 06/24) is aligned northeast to southwest.

When considering air traffic management procedures, safety is always Airservices first priority. The organisation must also balance its legislated responsibilities to foster the growth of Australian aviation with mitigating the environmental impacts, especially noise, as far as practicable.

Airservices considers Perth air traffic management holistically, with a view to implementing the best overall noise outcome for the community, whilst ensuring that the efficiency of the airport is not reduced, particularly runway capacity and airline on-time performance. Any changes to address noise impacts that are proposed for one section of the community are not considered in isolation to other areas.

Airservices will make changes to improve noise outcomes where they are operationally feasible and valued by the community. Since 2010, Airservices has considered 31 noise improvement opportunities for the greater Perth area and has, or will shortly, implement 10 changes in total. The remaining proposals were either unable to be safely implemented or implemented without causing a significant noise impact for residents.

The Proposal

The purpose of this document is to provide the results of the environmental analysis for the implementation of a Smart Tracking approach and associated flight paths at Perth Airport. Aviation is critical to the broader Australian economy and essentially links our people with each other and the rest of the world. In recent years, satellite assistance has proved to be a quantum leap in aircraft navigation capability and new aircraft are increasingly being designed to be more capable.

Satellite assisted navigation is recognised internationally for its safety benefits which are achieved through navigation with high precision. For simplicity, Airservices refers to the most advanced technology currently available as 'Smart Tracking'.

Airservices is implementing Smart Tracking across Australian airports to enable all approved operators to utilise the benefits that the procedures provide: making air travel safer, cleaner and more dependable. Smart Tracking has been successfully implemented across many of Australia's airports and will be available in Perth to those airlines and aircraft that are approved by the Civil Aviation Safety Authority (CASA). There are many jet and non-jet aircraft operating into Perth that do not have the capability and or approval.

The Smart Tracking flight path to be introduced in Perth will be used by aircraft arriving from the north and east landing on Runway 03 (the southern end of the main runway). The Standard Terminal Arrival Route (STAR) from the north that terminates in both the Smart Tracking and Visual approaches will follow the existing flight path currently used in good weather during the day, until passing Glen Forrest where the flight path has been moved to the east clear of residential areas to re-join slightly further north of Gosnell than the current flight path. Aircraft will then either visually navigate to the runway as they do now or use the Smart Tracking procedure which will be a narrower flight path.

The existing arrival flight paths for good weather and new flight paths for Smart Tracking are illustrated in **Attachment 1**.

The existing arrival flight path from the north requires the pilot to manually control the rate of descent and often results in extra throttle and levelling out of the aircraft. The Smart Tracking procedure has been designed to allow aircraft to glide to the runway from north of Glen Forrest using as little throttle as possible with a resultant reduction in noise and a higher, more consistent descent profile.

When linked to the new STAR, the Smart Tracking approach is expected to provide fuel savings and reduced CO2 emissions, and improved noise outcomes for some areas of the Perth community.

The final turn of the Smart Tracking flight path is a small distance inside the position of the existing arrival flight path and therefore closer to the jet departure flight path which tracks over Maddington, Kenwick and Beckenham.

How is noise measured?

Noise is measured using A-weighted decibels (dBA) which is a representation of the loudness of sounds in the air as perceived by the human ear.

To measure the maximum sound level of a single noise event, “LAmax” is calculated. This indicates the highest noise level a person on the ground would hear from a single aircraft overflight (arrival or departure).

The noise metrics used in this document provide information on the noise of individual over flights and the number of noise events for all areas situated under the proposed flight path. It is known that the potential impact of noise upon communities will vary dependent upon land use, with urban areas frequently reporting a higher acceptance of increased noise levels than rural areas due to higher ambient noise levels associated with transport, traffic and other activities.

Noise Metrics

Airservices has noted that the following threshold values have been observed as reliable indicators of increased community awareness of aircraft noise changes in urban areas, and these have been applied in order to determine ‘potential significance’ as defined in Section 160 of the *Environment Protection and Biodiversity Conservation Act 1999* (Cth).

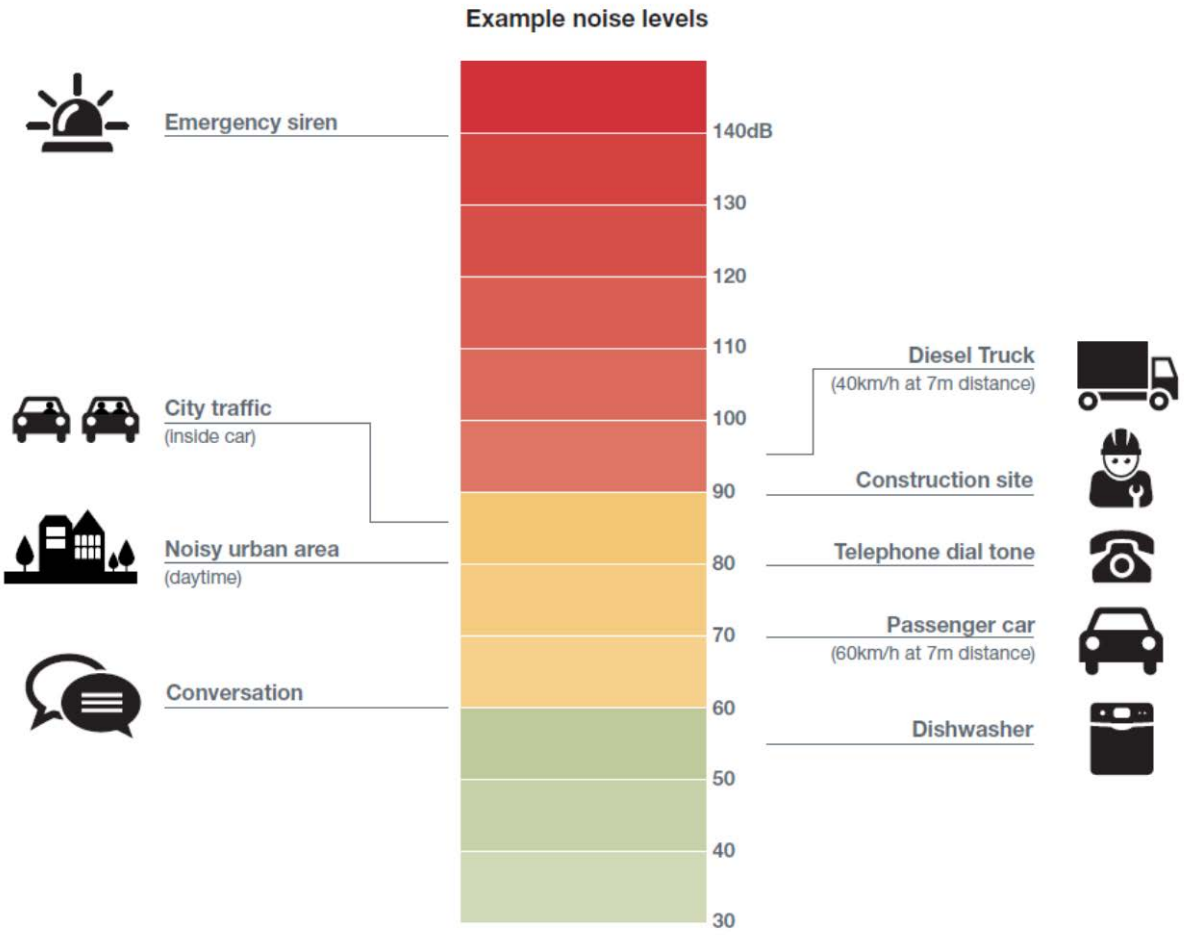
Noise Metric – LAmax

The LAmax is the maximum noise level from a single noise event which may be modelled or measured. LAmax results are reported in dBA, rounded to the nearest whole decibel. LAmax is also reported graphically in 60 dBA and 70 dBA noise contours, representing the geographical area within which the maximum noise of a single over flight event is likely to be at or above these threshold levels.

The change in LAmax noise levels with reference to how people may perceive the sound is outlined below, noting that each individual may experience sound and perceive changes in noise levels differently:

- LAmax noise level changes of up to 3 dBA are not likely to be perceptible.
- LAmax noise level changes of between 3 dBA and 5 dBA may be perceptible.
- LAmax noise level increases of between 5 dBA and 10 dBA are likely to be perceptible.
- LAmax noise levels of greater than 10 dBA may be perceived as twice as loud.

Some comparisons of sound levels most people would experience on a regular basis are shown below. A noise level heard outside a house will generally be reduced by 10 dBA inside the house due to the attenuation of walls and building fabric as noted in Australian Standard 2021-2000.



Above are some comparisons of sound levels most of us would experience on a regular basis.

Assessment

Assumptions

The assessment was based on the following assumptions:

- Aircraft movement and noise data between January 2015 and December 2104.
- Aircraft arriving from the north and east of Perth.
- Airlines and aircraft with current Civil Aviation Safety Authority approval.

Nominated Aircraft

When assessing the noise impacts of Smart Tracking, data was collected for existing aircraft and projected aircraft movements with a particular emphasis on those operating at night (9pm to 5am) - the metrics used for environmental analysis of noise considers there is a greater impact at night due to the potential to cause sleep disturbance.

As shown in **Table 1** below there is an average expected night-time use of the Smart Tracking flight path for arriving aircraft of 3-4 aircraft over the areas of Maddington, Kenwick and Beckenham.

The maximum number of expected arriving aircraft on the Smart Tracking flight path on a night is 13 flights with very few flights expected between midnight and 5am.

Time	Yearly	Average Night
2100-2200	435	1
2200-2300	491	1
2300-0000	357	1
0000-0100	89	0
0100-0200	56	0
0200-0300	144	0
0300-0400	5	0
0400-0500	11	0
Total	**1586**	**3-4**

Table 1 – Projected Runway 03 Night Arrivals by Smart Tracking capable aircraft (over Maddington, Kenwick and Beckenham)

As shown in **Table 2**, the existing average number of departures over the areas of Maddington, Kenwick and Beckenham is 7 flights per night, with a maximum of 12 flights and very few flights between 2am and 5am.

Time	Yearly	Average Night
2100-2200	63	0
2200-2300	535	1
2300-0000	1165	3
0000-0100	659	2
0100-0200	224	1
0200-0300	46	0
0300-0400	4	0
0400-0500	16	0
Total	**2712**	**7**

Table 2 – Runway 03 departures (over Maddington, Kenwick and Beckenham)

Analysis

Noise levels

The data analysis to determine changes in noise levels was collected through existing noise monitors and using noise modelling by selecting specific locations at which data analysis was undertaken. Data from the noise monitor at Maddington showed that the departure noise levels were higher than for arrivals for the most common aircraft type (Boeing 738) flying over the monitor while the noise levels for departures and arrivals were similar for the Airbus A330-200.

At those locations between Gosnell and Perth Airport there was a variation in changes to noise depending on aircraft type and location. Due to the slight movement northwards of the flight path over these areas there was an increase in LAmax noise levels from arriving aircraft by at least 3 dBA over Kenwick and Beckenham and a similar reduction in noise over Cannington, Langford and Thornlie. The areas impacted were considered to already experience similar or greater noise levels from departing aircraft but would notice the increase in noise of arriving aircraft. The number of flights, LAmax noise levels, and comparison to existing noise levels were considered before findings were made about the overall impacts.

Due to the movement to the east of the arrival flight path south of Glen Forrest, residents in the areas of Bickley and east of Kalamunda will no longer be regularly overflown and will experience respite from aircraft on the existing flight path. They may continue to be impacted by infrequent aircraft not flying on the established arrival route as directed by Air Traffic Control.

Findings

Number of aircraft

For the calendar year 2014 there in total 19,455 flights (average of 53 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 will add 18 flights per day. However, departures from Runway 21 will decrease by an estimated 15 movements per day due to a change to preferred runways implemented in May 2015. This will result in a net increase in number of aircraft overflight of 3 flights per day on average.

On an average night, the areas of Kenwick, Beckenham, Maddington and Cannington currently receive 7 departures and will receive 6 departures and 3-4 arrivals after the change. The Smart Tracking flights are expected to be mostly before midnight. There is expected to be an average of one extra flight to the existing departure flights between 9pm and 12 midnight.

Aircraft noise

An analysis of departure noise levels shows that for the most common aircraft type (B738) departure noise levels are higher than for Smart Tracking arrivals whilst departure and arrival noise levels for the A330 aircraft type were similar. Residents in the Maddington, Cannington and Kenwick areas are likely to benefit from a reduction in overall noise impact due to the reduction in the number of departure overflights despite the increase in Smart Tracking arrivals.

There is expected to be an increase in maximum (LAmax) noise levels for single Smart Tracking flights arriving over the Beckenham and Kenwick areas. These arrivals noise levels are expected to be generally lower than departure noise levels over the same areas.

Night operations

The areas of Maddington, Kenwick and Beckenham are currently overflown by departures at night but not arrivals. The Smart Tracking arrivals will average 3-4 flights per night and up to 13 on the busiest night. These areas currently are overflown by 7 departures on an average night and 12 departures on a busy night. The average increase in the number of flights over these areas is 3 flights per night. There is an average of 2 departures each night between 9pm and 12 midnight and there is expected to be 1 additional Smart Tracking arrival flight after the change.

Emissions

For aircraft arriving from the north, the Smart Tracking approach is shorter in distance by about 20 nautical miles or 37 kilometres, and from the east by about 10 nautical miles or 18 kilometres than the existing approaches used at night and in poor weather via the Instrument Landing System approach. This may represent a saving in aircraft fuel consumption of between 50 – 100kg per flight with a corresponding reduction in CO2 emissions as a result of implementing Smart Tracking.

Natural Environment

The Department of the Environment Protected Matters Search Tool was utilised to determine if any aspect of the proposed changes would overfly national parks, sensitive wetland areas or other areas of environmental significance. The proposal did not expose any new areas to aircraft noise. Although there would be increases in the number of overflights, these were not expected to have an adverse effect on the natural environment.

Cultural and heritage values

The Noongar people are acknowledged as the traditional custodians of the Perth area. No new areas of cultural significance would be overflown as a result of the proposed change.

Conclusion

The proposed Runway 03 Smart Tracking approach flight path may result in a change to aircraft noise, or a visual change to aircraft tracking particularly in the East Cannington, Maddington, Kenwick and Beckenham areas. The average increase of the number of flights over these areas is 3 flights per night and the noise levels are expected generally to be less than the levels of existing departures. It is not likely that the proposed change has the potential to cause a significant environmental impact within the meaning of the *Environmental Protection and Biodiversity Conservation Act (1999)* Cth.

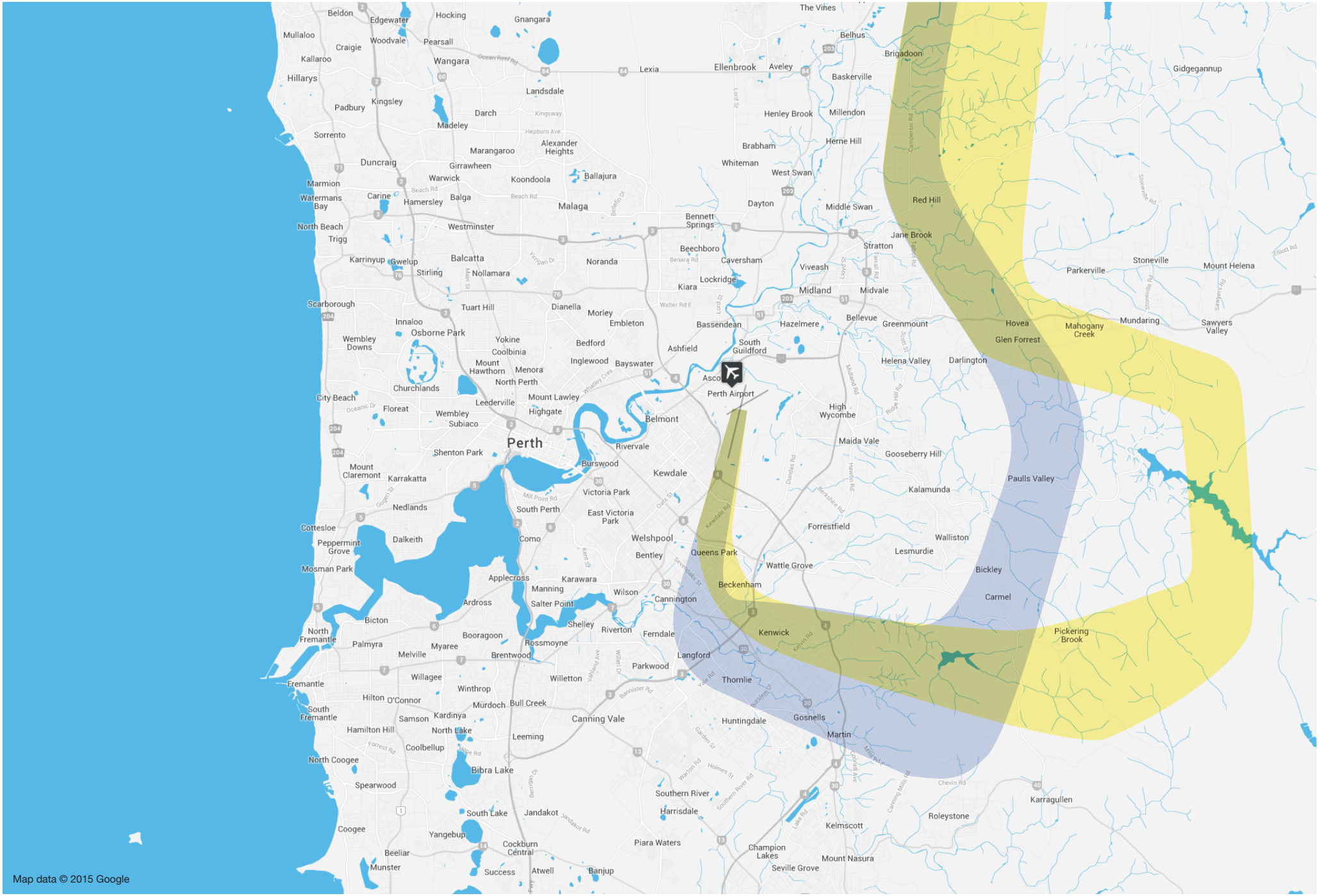
The implementation of Smart Tracking in Perth is part of an Australian wide program to provide the benefits of this technology. In Perth those benefits include substantial fuel savings and reduced CO2 emissions, and a reduction in noise for some areas.

Due to the movement to the east of the arrival flight path south of Glen Forrest, residents in the areas of Bickley and east of Kalamunda will no longer be overflown and will experience respite from aircraft on the existing flight path. They may continue to be impacted by infrequent aircraft not flying on the established arrival route as directed by Air Traffic Control.

The existing arrival flight path from the north requires the pilot to manually control the rate of descent and often results in extra throttle and levelling out of the aircraft. The Smart Tracking procedure has been designed to allow aircraft to glide to the runway from north of Glen Forrest using as little throttle as

possible with a resultant reduction in noise and a higher, more consistent descent profile. This is expected to provide a benefit to residents under the existing flight path.

The introduction of Smart Tracking in Perth will provide a small reduction in the number of flights using the Instrument Landing System flight path, particularly at night. This will provide noise improvement for the residential areas to the south of the airport between Casuarina and Canning Vale.



Current visual approach flight path (blue) and new Smart Tracking and visual flight path (yellow)