

Brisbane Airport

Runway 01 – RNP (Smart Tracking Approach)

Environment Analysis Summary

September 2015

Change Summary

Version	Date	Change Description	Amended by
1	4 September 2015	New document	Community Relations

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Introduction

Brisbane Airport is located approximately 12km north east of Brisbane. The airport has two non-intersecting runways. The main runway; Runway 01/19 is 3 560 metres long. The smaller runway; 14/32 is 1 700 metres long.

As part of continuous improvement to the Smart Tracking rollout across Australian airports, Airservices is replacing Multi-Variant Design Procedures (MVD) which are proprietary and only usable by a small number of operators and limited to a specific group of similar aircraft types, with International Civil Aviation Authority (ICAO) procedures which are public procedures and available to all operators with suitably equipped aircraft and appropriate approval.

Smart Tracking provides a range of benefits including less track miles, lower emissions, reduced noise due to a consistent descent profile, and an alternative to the use of the Runway 01 Instrument Landing System (ILS) flight path for arriving aircraft which provides respite to the community that receives the most overflight from arriving aircraft.

The changes proposed are as a result of an agreed industry plan to convert existing Smart Tracking approaches to ICAO Smart Tracking procedures. This will provide the benefits of Smart Tracking to more operators and aircraft across Australian airports and potentially reduce the impact of aircraft noise on some communities.

The Proposal

The purpose of this document is to provide the results of the environmental analysis for the replacement of existing Smart Tracking approach procedures with International Civil Aviation Organisation (ICAO) Smart Tracking procedures and associated flight paths at Brisbane Airport.

The Smart Tracking flight paths to be updated in Brisbane will be used by aircraft arriving from the north and south landing on Runway 01. The flight path from the south replicates the existing flight path. The flight path from the north also closely replicates the existing flight path with a slight increase in the turn radius over the Brisbane River in the Bulimba area.

The existing and updated flight paths are illustrated in **Attachment 1**.

There is expected to be limited use of the new procedures by Air Traffic Control due to operational and safety requirements to use the Instrument Landing System (ILS) during busy periods and when crossing runway operations are in use.

The Smart Tracking flight path from the north is expected to be used on average for six flights per day. There may be an opportunity to increase the use of the new Smart Tracking flight path from the south which replicates the existing flight path with no change in areas overflown. The increase in flights as a result of this change is expected to be between two and eight flights per day with three additional noise events expected.

All changes will be implemented on 17 September 2015.

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, “LAm_{ax}” 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).

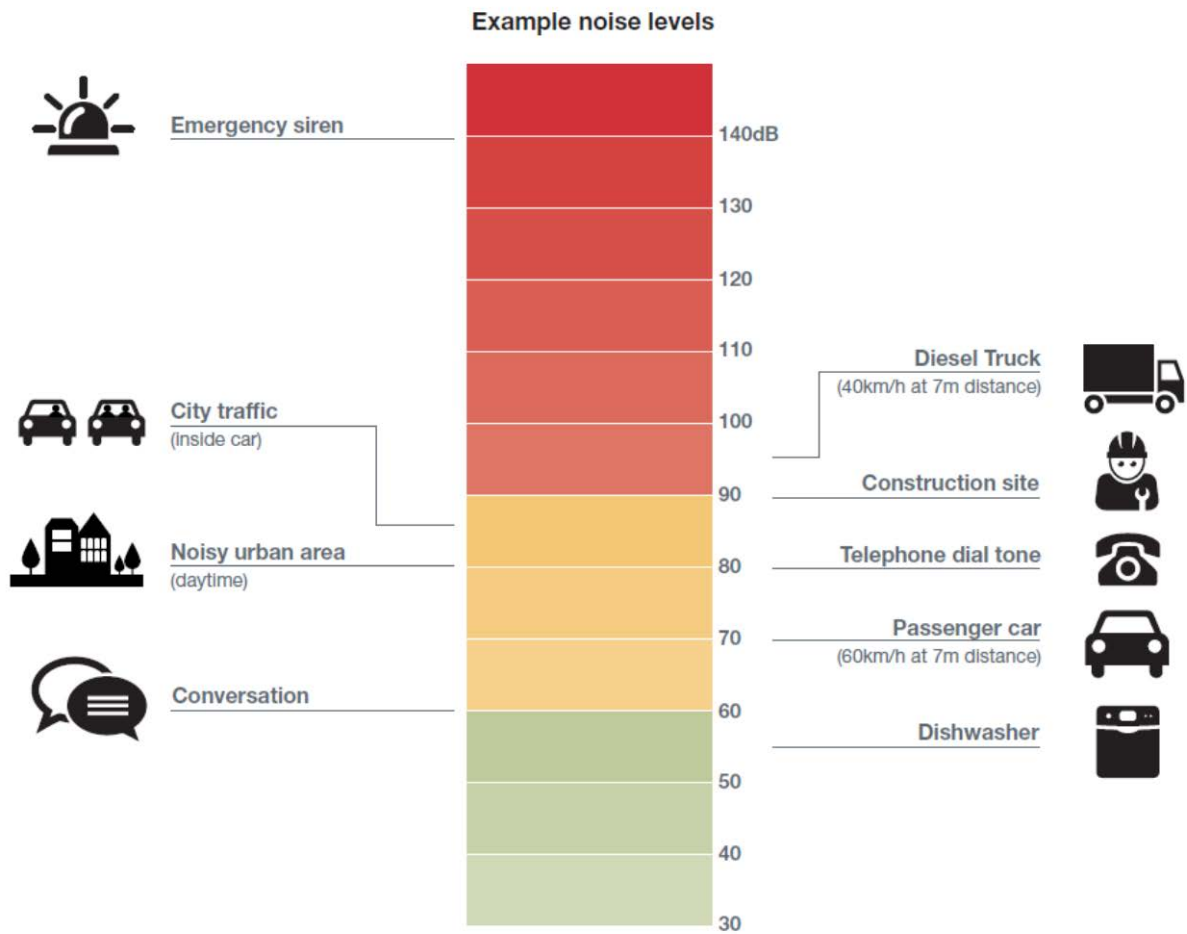
Noise Metric – LAm_{ax}

The LAm_{ax} is the maximum noise level from a single noise event which may be modelled or measured. LAm_{ax} results are reported in dBA, rounded to the nearest whole decibel. LAm_{ax} 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 LAm_{ax} 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:

- LAm_{ax} noise level changes of up to 3 dBA are not likely to be perceptible.
- LAm_{ax} noise level changes of between 3 dBA and 5 dBA may be perceptible.
- LAm_{ax} noise level increases of between 5 dBA and 10 dBA are likely to be perceptible.
- LAm_{ax} 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 data for the 2014 calendar year – the most recent full calendar year.
- Proportion of aircraft operations forecast to use the proposed new procedures.
- Jet aircraft only considered – as the flight paths affected by the proposed changes are available only for jet aircraft.

Findings

Number of aircraft

Data collected for the calendar year 2014 indicated that there were a total of 39 801 jet aircraft arrivals to Runway 01 (average of 109 a day). Of these, 37 719 occurred during the daytime period of 7am to 10pm (local time) and 2 082 occurred during the night time period of between 10pm and 7am (local time).

As the average number of jet aircraft arrivals during the night time period of 10pm to 7am is relatively low (average 5 per night) it is not possible to accurately model noise contours for cumulative night time noise metrics due to the very low percentage of aircraft arrivals using Smart Tracking procedures. For the purposes of this assessment, the total average daily number of jet aircraft arrivals will be treated as operating during the day time period of 7am to 10pm (local time).

The table below shows the total number of arrivals and average daily arrivals via the Smart Tracking approach procedures.

	Total 2014	Average/day	Percent of total
Flight path from the north	995	3	2.50%
Straight-in approach	37 055	102	93.10%
Flight path from the south	1 751	5	4.40%

The table below shows the five most commonly used jet aircraft types arriving to Brisbane Airport Runway 01 in 2014.

Aircraft type	Average/day	Percent of total
Boeing B738	56	51
Airbus A320	18	17
Embraer E190	8	7
Boeing B712	7	6
Boeing B767	4	4

Aircraft noise

L_{Amax} noise levels were calculated at reference locations to compare the updated flight path from the north with the existing flight path at Brisbane Airport. The table below compares the noise levels at reference locations under the existing and proposed procedures.

Number	Location Name	LAm _{ax} current	LAm _{ax} Proposed	Difference
1	Catholic Church, Chermside West	65	64	-1
2	Windsor Park, Albion	70	69	-1
3	Breakfast Creek Hotel	71	71	<1
4	Bulimba Golf Club	71	71	<1
5	Nutrition Smart Dietician and Cooking School, Bulimba	74	74	<1
6	Johnston Park, Bulimba	73	70	-3
9	Bulimba Riverside Park	60	68	8
10	Bulimba Post Office	67	73	6
11	Bulimba Library	66	72	6

The table shows that there is a 1 dB(A) LAm_{ax} decrease at the Catholic Church, Chermside West and Windsor Park, Albion and a 3 dB(A) LAm_{ax} noise level decrease modelled at Johnston Park, Bulimba under the updated flight path, these noise decreases are not likely to be perceptible. There is a 6 dB(A) LAm_{ax} increase modelled at the Bulimba Post Office and Public Library and an 8 dB(A) LAm_{ax} noise increase modelled at the Bulimba Riverside Park. These increases are likely to be perceptible.

For three locations, no measurable change was modelled under implementation of the updated flight path; the Breakfast Creek Hotel, Bulimba Golf Club and the Nutrition Smart Dietician and Cooking School, Bulimba.

While there may be an increase in the both the volume and quantity of aircraft overflight noise events in this area, the quantity does not trigger Airservices environmental assessment threshold for further analysis, and it is therefore considered to be not potentially significant under Section 160 of the *Environment Protection and Biodiversity Conservation Act 1999* (Cth).

A potential for an increased number of noise events was modelled for the Cannon Hill area, however as the potential increase in noise events (approximately three additional events per day) is quite small within the context of existing noise levels from aircraft overflight (over 100 noise events per day) it is unlikely that this increase in the number of noise events will be perceptible for residents in the Cannon Hill area.

Natural Environment

There is not expected to be any change to impact, or any additional impact on matters of National Environmental Significance as a direct result of implementing the proposed flight paths.

Cultural and heritage values

The proposed flight path changes are not expected to result in any change to over flight of, or any additional over flight of, areas of indigenous cultural significance.

Conclusion

The proposed flight path changes are not likely to have a significant impact with the meaning of the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) and environmental clearance should be granted.

Attachment 1



Map: Current Smart Tracking flight paths (dashed blue outline) and updated Smart Tracking flight paths (yellow). *Note - the updated flight path to the south replicates the current flight path.*