

Environmental Assessment

Runway 35 – South & West (Jet) Departure Flight Path Amendment

Canberra Airport

Table of contents

Introduction	3
Runway 35 South & West (Jet) Departure Flight Path.....	4
Assessment Summary	5
Assumptions	5
Nominated Aircraft.....	5
How is noise measured?	5
General Principles	6
Noise Metric – LAmax	6
Noise Metric – N60.....	6
Noise Metric – N70.....	6
Analysis	7
Findings	8
Natural Environment Analysis	8
Cultural and heritage values analysis.....	8
Conclusion	8

Introduction

The purpose of this document is to provide the results of the Environmental Assessment completed in June 2014 for the proposed amendment of the south & west (jet) departure from Runway 35 at Canberra Airport.

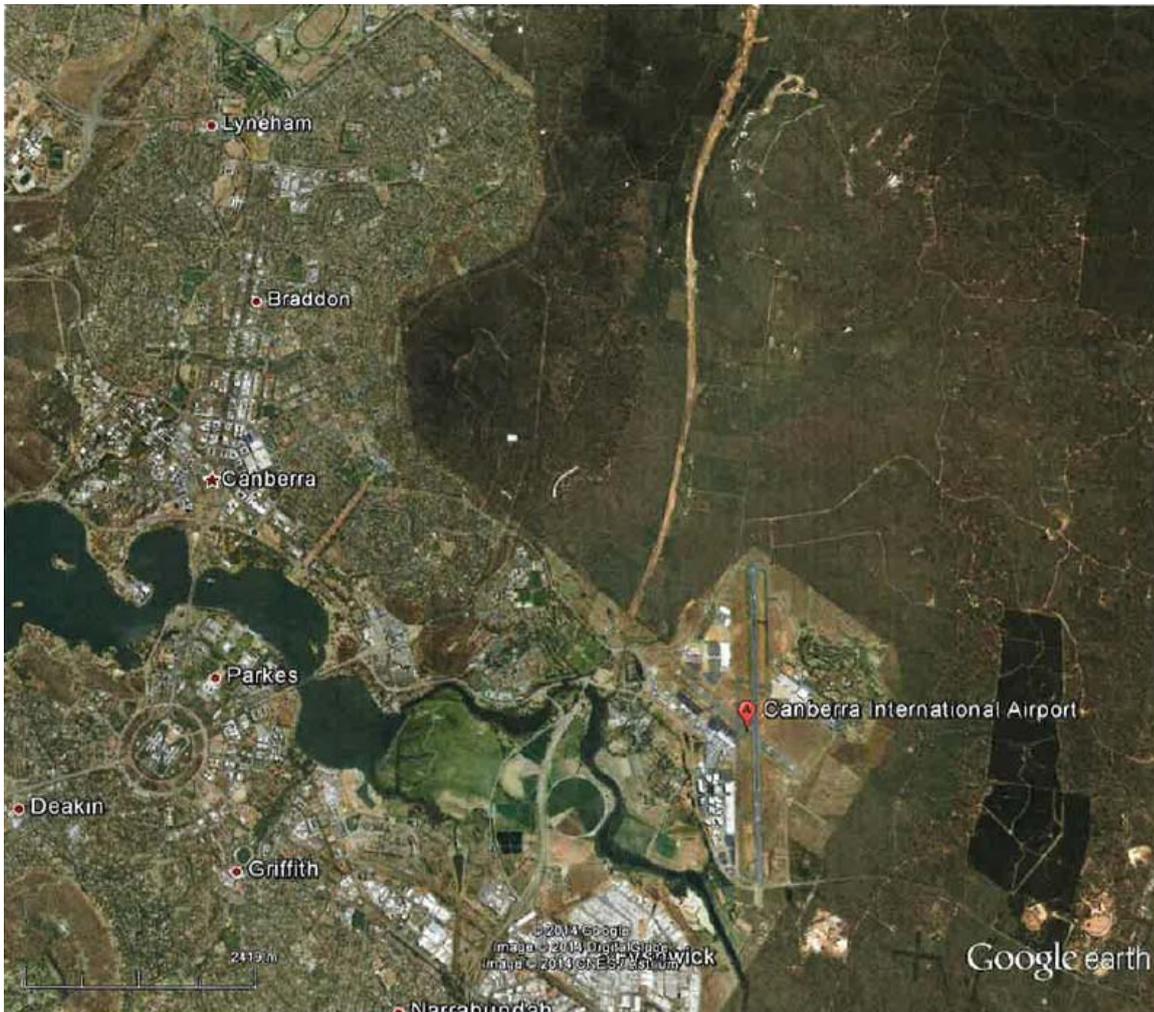
Canberra Airport is located at the eastern edge of north Canberra. The airport has two runways; the main runway (17/35) is 3,283 metres long with a 1679 long crossing secondary runway (12/30).

The airport has four radio navigation aids:

- Non-Directional Beacon (NDB);
- Instrument Landing System (ILS);
- VHF Omni Directional Range (VOR); and
- Distance Measuring Equipment (DME).

These navigation aids, which are located on the airport provide for instrument approaches in poor weather conditions.

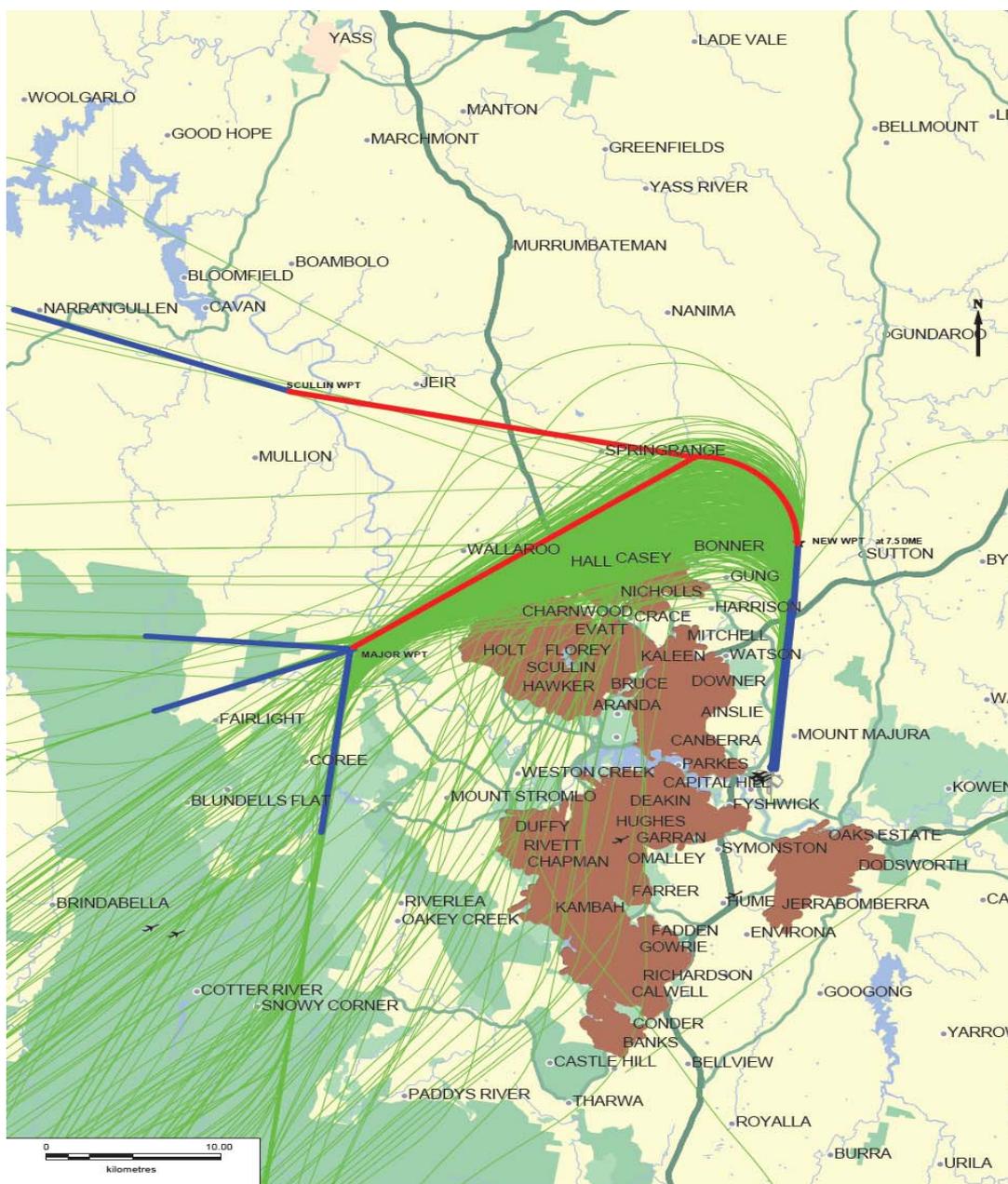
Figure 1 below shows a satellite image of Canberra Airport.



Runway 35 South and West (Jet) Departure

Currently jet aircraft departing from Runway 35 on the Standard Instrument Departure (SID) turn left on reaching 7000 feet (ft) which is in accordance with Canberra Noise Abatement Procedures (NAPs). Aircraft that reach 7000 ft early, track over residential areas to the north-west of Canberra such as Gungahlin. The proposed change is to create a new fly-over waypoint, so aircraft will not turn left until passing over this waypoint (and after reaching 7000 ft). If the aircraft has not reached 7000 ft prior to the waypoint, it will continue north until 7000 ft, then commence a left turn.

Figure 2 below shows current flight path (blue), new flight path (red) and flight tracks (green) for the period 1 to 31 May 2014.



Assessment

Assumptions

The assessment was based on the following assumptions:

- Aircraft departure information obtained from the Noise and Flight Path Monitoring System (NFPMS) at Canberra Airport.
- Geospatial analysis of the existing and proposed flight paths.
- Analysis of air traffic utilising the SID.

Nominated Aircraft

The Environmental Assessment is specific to jets, as this particular departure is for use by jet aircraft only. The most popular aircraft departing from Runway 35 to Adelaide, Melbourne and Perth utilising the SID, was the Boeing B738 representing nearly 44% of the total number of flights. There were an average number of fifteen flights utilising this flight path per day.

How was 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, (L_{Amax}) 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 provides information on the noise of individual over flights and the number of noise events to be considered for all areas situated under a flight path and the procedure associated with the proposed flight path realignment.

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-reflecting higher ambient noise levels associated with transport, traffic and other activities.

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).

These threshold levels have been established by Airservices following consultation with community groups regarding the level at which aircraft noise and/or movement changes are generally noticed by members of the public, and may also be an indicator of community annoyance factors in response to aircraft noise changes.

L_{Amax}: The change in L_{Amax} 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. A useful rule of thumb is summarised below.

- 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.

Noise Events (Nxx): The change in number of noise events thresholds are as outlined below:

For areas receiving a high level (10 or more noise events of 70 dBA or louder/day) of existing over flights

- An increase by 25% in the number of noise events at or above 70 dBA during the day (7am-10pm)
- An increase by 25% in the number of noise events at or above 60 dBA during the day time (7am-10pm)
- An increase by 10% in the number of noise events at or above 60 dBA during the night (10pm-7am)
- Any increase in the number of noise events at or above 70 dBA during the night (10pm-7am)

For areas not receiving a high level (10 or more noise events of 70 dBA or louder/day) of existing aircraft over flights

- An increase of 10 noise events at or above 70 dBA during the day (7am-10pm)
- An increase of 50 noise events at or above 60 dBA during the day (7am-10pm)
- An increase of 3 noise events at or above 60 dBA during the night (10pm-7am)

General Principles

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.

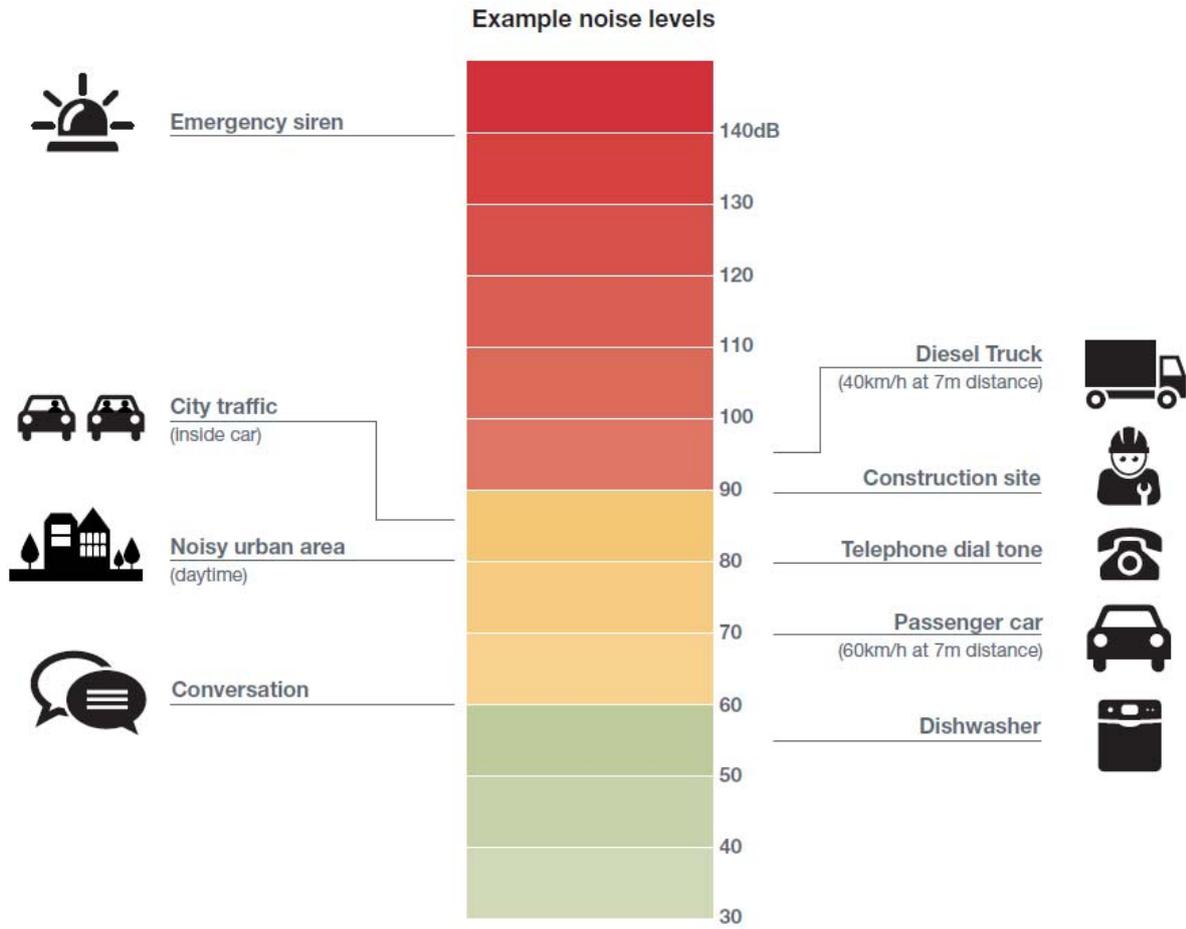
LAmax is also reported graphically in 60 dBA and 70 dBA noise contours, representing the geographical area within which the maximum noise of a single over flight event is likely to be at or above these threshold levels.

Noise Metric – N60

The N60 metric is the calculated number of noise events with a modelled maximum noise level of 60 dBA or louder.

Noise Metric – N70

The N70 metric is the calculated number of noise events with a modelled maximum noise level of 70 dBA or louder.



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

Analysis

The proposed turn at the later of a fixed waypoint, or on reaching 7000 ft will result in aircraft tracking to the north of residential areas including Gungahlin. As the majority of jets would reach 7000 ft by the new waypoint, a much narrower spread of tracks is likely.

Noise Levels

Departures from Runway 35 overflying the new waypoint will be at or above 7000 ft over residential areas and their maximum noise levels will be below 60 dBA, and are unlikely to result in intrusive noise. Aircraft following the proposed SID will be on average 2nM further away from Gungahlin relative to the nominal track. The nominal track is calculated as the current track that, on average would be followed by aircraft once they have reached 7000 ft. The average of 2nM was estimated based on the widest difference between the nominal and proposed tracks over Amaroo, which is about 3nM and the narrowest difference of 1nM over Parkwood. At 7000 ft, a 2nM lateral track change can reduce the single event noise level by about 5 dBA.

Number of events

Traffic movements from Canberra to Adelaide, Melbourne and Perth via the Runway 35 SID are expected to be on average 15 movements per day.

Findings

Natural Environment Analysis

No environmental impact on areas of Natural Environmental Significance is expected as a direct result of implementation of the proposed Runway 35 departure SID.

Cultural and heritage values analysis

The proposed Runway 35 departure SID change is not expected to result in any change to overflight of, or any additional overflight on areas of indigenous cultural or heritage significance.

Conclusion

The proposed Runway 35 departure SID change is expected to direct flights away from the residential areas of Gungahlin, and will provide a potential benefit to the Gungahlin community by reducing aircraft noise. It is important to note that departures from Runway 35 overflying the new waypoint will be at or above 7,000 ft, and their maximum noise levels will be below 60 dBA. A decrease in maximum noise of each individual overflight is by up to 5 dBA, which is likely to be noticeable.

The proposed creation of a new waypoint on the south and west SID from Runway 35 is not likely to result in any significant environmental impact within the meaning of the *Environmental Protection and Biodiversity Conservation Act, 1999 (Cth)*.