Cairns Airport
Aircraft Noise Information Report
Quarter 3 2012 (July to September)
## Version Control

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This report contains a summary of data collected over the specified period and is intended to convey the best information available from the NFPMS at the time. The system databases are to some extent dependent upon external sources and errors may occur. All care is taken in preparation of the report but its complete accuracy can not be guaranteed. Airservices Australia does not accept any legal liability for any losses arising from reliance upon data in this report which may be found to be inaccurate.
Cairns Basin - Aircraft Noise Information Report

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1. Purpose

This report summarises data for Quarter 3 of 2012 (July to September) from Airservices’ Noise and Flight Path Monitoring System (NFPMS) and Noise Complaints and Information Service (NCIS) for the Cairns area (Cairns Airport) as well as some other sources (such as the Flight Charging System).

1.1 Cairns Airport

Cairns Airport is located 5.5 km north of the Cairns central business district (CBD) (see Figure 1). The airport is surrounded by high terrain from the south-east through to the north-west with Lumley Hill (1120 ft) 1 km due west. Operations at Cairns are a mixture of Airport Regular Passenger Transport (RPT), charter, and pilot training. Seaplanes and helicopters also operate nearby out of Cairns harbour, 0.5 km east of the CBD. During Quarter 3 of 2012 there were around 24,000 aircraft movements at Cairns Airport. More information about Cairns Airport is available from the Airservices website at www.airservicesaustralia.com/aircraftnoise/airport-information/.

1.2 Aircraft noise monitoring at Cairns

Airservices NFPMS captures and stores radar, flight plan and noise data. The NFPMS covers eight city regions around Australia. For the Cairns region, noise data is captured by three noise monitors - also known as Environmental Monitoring Units (EMUs) located at; Cairns North, Holloways Beach and Yorkeys Knob.
Figure 1 shows runway configuration at Cairns Airport. The main runway at Cairns Airport, 15/33, is approximately 3.1 km long, orientated north-northwest to south-southeast. There is a smaller 0.9km long runway, 12/30, orientated northwest to southeast, which is primarily used by propeller aircraft.

2. Flight patterns

2.1 Jet aircraft

Figures 2 and 3 show jet aircraft track plots for arrivals and departures at Cairns Airport for one month (August) of Quarter 3 of 2012, coloured according to height (in feet). Noise monitors are shown as grey circles.

Jets operating at Cairns Airport are a mixture of twin engine narrow body (Boeing 737, Embraer ERJ-190 and Airbus A320) and wide body (Boeing 767 and Airbus A330) aircraft.

Figure 2 Jet arrivals for the Cairns region, August 2012 (one month)

Key points shown by Figure 2 are:
- The arrival pattern for jets arriving from the north from two flight paths; a straight in approach in line with the runway or, in good weather conditions to approach the airport from the north-east crossing the coast at Richter’s Creek.
- Arrivals from the north are over the ocean avoiding residential areas until the last 10 km.
- Southern approaches are straight in from the south-east.
The key point shown in Figure 3 is:

- Departures are to the east of the airport over the ocean. Some residential areas are overflown but these are limited to those suburbs within 5 km north and 4 km south of the airport.
2.2 Non jet aircraft

Figure 4 shows non jet tracks (arrivals and departures) at Cairns Airport in Quarter 3 of 2012. Noise monitors are shown as grey circles.

**Figure 4** Non jet arrivals and departures for the Cairns region, August 2012 (one month)

Key points shown by Figure 4 are:
- It is clear that although jet aircraft tend to operate along defined paths, when smaller aircraft are included on the map, there are very few areas of Cairns that are not overflown by aircraft at some stage.
- Movements from Cairns airport to the reef islands (tracks north-east of the airport) are conducted below 3000 ft with a significant number below 1000 ft.
2.3  Track density plots

The track plots in the preceding section show that residents living up to 10 km to the north and 10 km to the south of Cairns Airport and in line with the airport’s runways are regularly overflown by jet aircraft below 5000ft. However, beyond this the regularity of flight path use is not discernible from the track plot display. A track density plot can be useful in showing the underlying track patterns.

To create a track density plot, the land surface is divided into squares, creating a grid. The average number of flights passing over each square per day is then calculated. By colour coding according to frequency of flights, a track density plot can be illustrated.

Figure 5 shows a track density plot for all movements over the Cairns region in Quarter 3 of 2012.

Noise monitors are shown as grey circles.
Figure 5 Track density plot for the Cairns region, Quarter 3 of 2012

Key points shown by Figure 5 are:

- Operations are concentrated to the east (over ocean) and north of the airport.
- The majority of operations are in the 15 direction (arrivals from the north onto runway 15 and departures off runway 15 to the south). This is inline with the noise abatement procedures at the airport.
3. Aircraft movements

3.1 Airport movements

Figure 6 shows aircraft movements at Cairns Airport for the 15 month period to the end of Quarter 3 of 2012.

**Figure 6  Aircraft movements at Cairns Airport from July 2011 to September 2012**

Key points shown by Figure 6 are:

- Around 60% of operations at Cairns are propeller aircraft, 30% by Jets and 10% by helicopters.
- There is a slight increase in both propeller and jet aircraft during the winter months. This is due to winter being the peak tourism period in northern Queensland.
- There was a slight increase in helicopter movements in January 2012. This was largely due to an increase in scenic helicopter flights during this period to cater for demand from an influx of tourists from China during the Chinese New Year holiday.

Figure 7 shows runway usage for arrivals and departures at Cairns Airport for the 15 month period up to the end of Quarter 3 of 2012. Figures 8 and 9 show runway usage over a four year period for the two busiest runways at the airport.

Runway selection is based on weather conditions, traffic volume and noise abatement procedures. As the wind changes, the runway in use may change as aircraft primarily take off and land into the wind for safety and performance reasons.
Figure 7  Runway usage at Cairns Airport to Quarter 3 of 2012

Cairns Airport Runway Usage

Figure 8  Runway 15 usage at Cairns Airport 2009 to 2012

Runway 15 Use 2009 - Current

Number of Movements

January  February  March  April  May  June  July  August  September  October  November  December
Key points shown by figures 7 to 9 are:

- The smaller 0.9 km runway (12-30) is seldom used.
- The pattern of runway use has been stable over the last 4 years, and there is a definite seasonal pattern.
- Runway direction 15 is the dominant direction of use. It is used six times more than the 33 direction during the winter months and twice as much during the summer months. However, as can be seen in the fluctuations for Runway 33 use, during summer months wind direction can vary a great deal.
Figure 10 shows aircraft movements during night hours (11.00pm to 06.00am) at Cairns Airport from July 2011 to September 2012, by aircraft category and Figure 11 table shows the aircraft type usage.

Figure 10 Night movements (11.00pm to 6.00am) at Cairns Airport July 2011 to September 2012 by aircraft category
Table 1 Details of aircraft operating during the night-time (11:00pm to 6:00am) at Cairns Airport for the period July 2012 to September 2012.

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<th>2</th>
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<td>157</td>
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Key points shown by Figure 10 and Table 1 are:
- Despite the majority of all operations at Cairns being propellers, during the night period (23:00-6:00) there are significantly more jet movements than propeller aircraft movements.
- Just over half of the night-time movements are by twin engine jets (Airbus A320, Airbus A330 and Boeing 737).
- During Quarter 3 of 2012, there were on average approximately 10 movements per night between the hours of 11.00pm and 6.00am.
4. Noise monitoring

Airservices collects noise and operational data from noise monitors (EMUs) around Cairns Airport. This data can be expressed in a number of ways, to show average noise during a period, background noise levels and number of noise ‘events’ over a certain threshold.

Sound is measured on a logarithmic scale with the decibel (dB(A)) as the unit of measure. The sound level of typical daytime urban-based activities can vary between 40dB(A) and 80dB(A). The sound levels in a nightclub often exceed 90dB(A).

Figures 14 to 17 show data from the three Cairns noise monitors for the last fifteen months (see Figure 1 for the location of EMUs). The terms used within each of these Figures are:

*LAeq 24hr*: The continuous equivalent noise level over a 24 hour period, including noise from aircraft and the wider environment.

*LAeq night*: The continuous equivalent noise level over the night time period (hours of 11:00pm to 6:00am)

*Background L90dB(A) (L90)*: The sound level that is exceeded 90% of the time over a 24 hour period – effectively removing noise from instantaneous events such as passing aircraft to provide a background level.

*N65*: The average number of daily noise events caused by aircraft that are over 65dB(A). Figures for N70, N80 and N90 are also provided.
Figure 11 Average daily noise events at EMU 2 (Holloways Beach) from Quarter 3 of 2011 to Quarter 3 of 2012 (captures mainly arrivals to Runway 15 and departures from Runway 33)

Figure 12 Average noise levels at EMU 2 to Quarter 3 of 2012

The key point shown by figures 12 and 13 is:
- The drop in N65-N80 events during Quarter 2 was due to a reduction in the number of movements at the airport during this period.
Key points shown by figures 13 and 14 are:

- Although fewer aircraft operated at Cairns during Quarter 1 of 2012, this was offset by the greater use of Runway 33 for arrivals. Departures off Runway 15 aircraft turn to the east and away from the monitor soon after leaving the runway. Arrivals onto Runway 33, however, directly overfly EMU 3.
- The drop in N65-N80 events at North Cairns in Quarter 2 of 2012 was due to the higher usage of Runway 15 during this period.
Figure 15 Average daily noise events at EMU 9 (Yorkeys Knob) from Quarter 3 of 2011 to Quarter 3 of 2012 (captures mainly arrivals to Runway 15 and departures from Runway 33)

Key points shown by figures 15 and 16 are:

- The drop in N65-N70 events during Quarter 2 of 2012 was due to a reduction in the number of movements at the airport during this period.
- This monitor is further north than EMU 2 (Holloways Beach) and therefore aircraft are higher, resulting in fewer aircraft generating a noise level above 80dBA.
5. Complaints data

Airservices manages complaints and enquiries about aircraft noise and operations through its Noise Complaints and Information Service (NCIS). Complaints, enquiries and requests for information about aircraft operations received by the NCIS are collected and stored in a database for the purpose of complaint management, analysis of issues and identification of causal factors. Each complaint, enquiry or request for information is referred to as a contact and each person who makes contact with the NCIS is referred to as a client.

5.1 NCIS Clients by suburb

The NCIS received contacts from 11 clients from Cairns Airport during Quarter 3 of 2012. Client density maps are used to show the number of clients from each suburb, with suburbs coloured according to how many clients had contacted the NCIS. The data does not include clients who contacted other organisations (eg. airports).

Table 2 provides a breakdown of clients from July to September 2012.

Figure 17 shows client density with flight tracks overlaid for Cairns Basin for Quarter 3 of 2012.

Table 2 Recorded clients July to September 2012 by suburb and airport

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<tr>
<th>Suburb</th>
<th>Airport Location</th>
<th>Clients</th>
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</thead>
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<td>1</td>
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<tr>
<td>BENTLEY PARK</td>
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</tr>
<tr>
<td>CAIRNS</td>
<td>CAIRNS</td>
<td>2</td>
</tr>
<tr>
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<td>CAIRNS</td>
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<td><strong>Total</strong></td>
<td><strong>Cairns</strong></td>
<td><strong>11</strong></td>
</tr>
</tbody>
</table>

Table 2 shows that only two suburbs received complaints from more than one client during Quarter 3 of 2012.
Key points shown by Figure 17 are:

- Suburbs closest to the airport have most NCIS clients.
- Holloways Beach is under the approach flight path to Runway 15 and the departure flight path from Runway 33. It is also overflown by aircraft involved in circuit training.
5.2 Issues raised by NCIS clients

Figure 18 shows the top five issues raised by clients at Cairns Airport for the 15 month period to the end of Quarter 3 of 2012. A single contact can involve multiple issues (ie. a client may have raised more than one issue when they contacted the NCIS). During Quarter 3 of 2012, the issues raised by the greatest number of clients were: Jet Aircraft, Helicopter, Aircraft Height, Increased Frequency of Air Traffic and Flight Paths / Diversions.

Figure 18 Top five issues for Cairns Airport for the 15 month period, July 2011 to September 2012

Key points shown by Figure 17 are:
- There was a spike in complaints about jet aircraft in September 2012. Four of these were about aircraft departing Runway 33 that did not follow standard flight paths due to specific aircraft requirements. Runway 33 was used more than normal in September 2012 due to weather conditions, so it is possible that people living under the Runway 33 departure flight tracks were more aware of aircraft noise at this time.
- Other issues raised in September 2012 regarding jets were night time flights and a jet that turned slowly onto its departure track.
Contact us

To lodge a complaint or make an enquiry about aircraft operations, you can:

- go to WebTrak (www.airservicesaustralia.com/aircraftnoise/webtrak/)
- use our online form (www.airservicesaustralia.com/aircraftnoise/about-making-a-complaint/)
- telephone 1800 802 584 (freecall) or 1300 302 240 (local call –Sydney)
- fax (02) 9556 6641 or
- write to, Noise Complaints and Information Service, PO Box 211, Mascot NSW 1460.

Airservices welcomes comments about this report. Please contact us via e-mail at community.relations@airservicesaustralia.com if you would like to provide feedback.