Canberra Airport

Aircraft Noise Information Report

Quarter 1 2016 (January to March)

connecting australian aviation

Version Control

Version Number	Detail	Prepared by	Date
1	-	Environment	June 2016

Canberra - Aircraft Noise Information Report

Contents

1 Purpose

This report summarises data for Quarter 1 of 2016 (January to March) from Airservices' Noise and Flight Path Monitoring System (NFPMS) and Noise Complaints and Information Service (NCIS) for the Canberra area (Canberra Airport).

1.1 Canberra Airport

Canberra Airport is located 8km to the east of the city. There are no residential areas directly aligned with runways, though the suburb of Jerrabomberra is located around 10km to the south east of the airport. Operations at the airport are a mixture of jet aircraft and general aviation traffic. Australia's VIP fleet is based at Canberra, as well as several fixed-wing and helicopter flying schools. During Quarter 1 of 2016 there were approx. 13 500 aircraft movements at Canberra Airport (around 148 per day). More information about Canberra Airport is available from the Airservices website at http://www.airservicesaustralia.com/aircraftnoise/canberra/.

Other operations in the Canberra area may originate from hospital helipads or the Southcare Helicopter base and adjacent ACT Emergency Services Agency helipads (around 7km south of the airport).

1.2 Aircraft noise monitoring at Canberra

Airservices NFPMS captures and stores radar, flight plan and noise data. The NFPMS covers eight city regions around Australia. For the Canberra region, noise data is captured by one noise monitor located at Jerrabomberra, 9km south of the airport (see Figure 1).

The Environmental Noise Monitor (EMU 1) at Jerrabomberra was decommissioned between April 2015 and January 2016, due to site works being conducted. An alternate location was identified in Jerrabomberra and a monitor was installed for the duration of the site works. Noise data from both monitors can be seen in Figure 12.

1.3 Noise Abatement Procedures at Canberra

A noise abatement area applies to most residential areas of Canberra and Queanbeyan. Aircraft will normally be routed to avoid the noise abatement area, which covers most of Gungahlin, North Canberra, Belconnen, South Canberra, Woden, Tuggeranong and Queanbeyan. Where it is not practical for aircraft to remain clear of those areas, overflight of the noise abatement area effectively restricts jet aircraft from flying below 7 000 feet above ground level (AGL), and large propeller aircraft below 5 000 feet AGL. A number of exceptions apply to the noise abatement areas such as aircraft emergencies, medical priorities and the avoidance of hazardous weather.

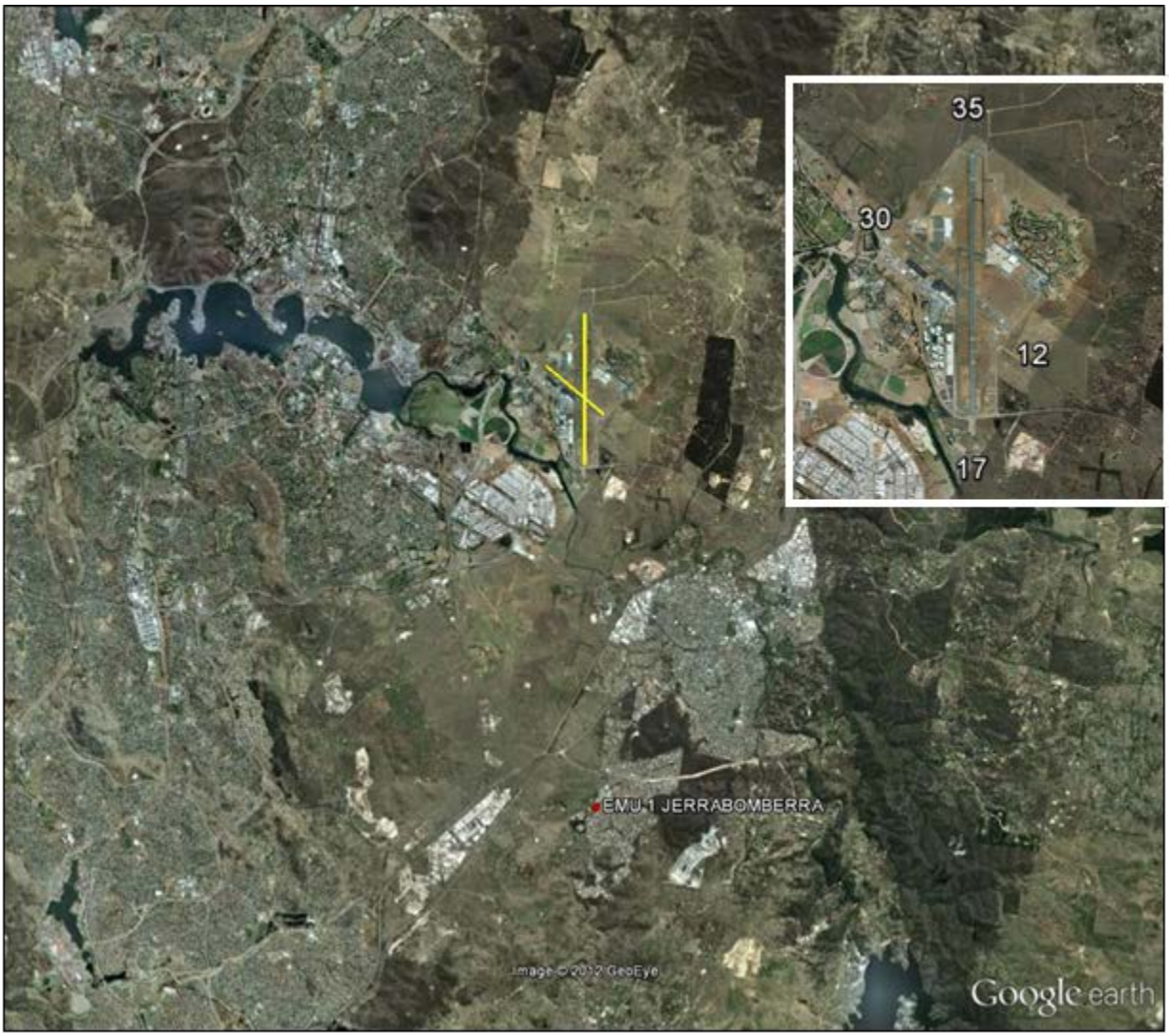

Figure 1 Location of Canberra Airport. Runway orientation for airport is shown in the insert. The noise monitoring site is shown as a red dot.

Figure 1 shows runway configuration at Canberra Airport, which has two runways. The main runway 17/35 length 3 283m is used for the majority of aircraft traffic. The shorter runway is 12/30 length 1 679m and is used mainly by propeller aircraft.

Information about runway selection is available on the Airservices website at www.airservicesaustralia.com/aircraftnoise/factsheets/.

2 Flight patterns

2.1 Jet aircraft

Figure 2 below shows jet aircraft track plots for arrivals and departures at Canberra Airport. Noise monitors are shown as yellow circles.

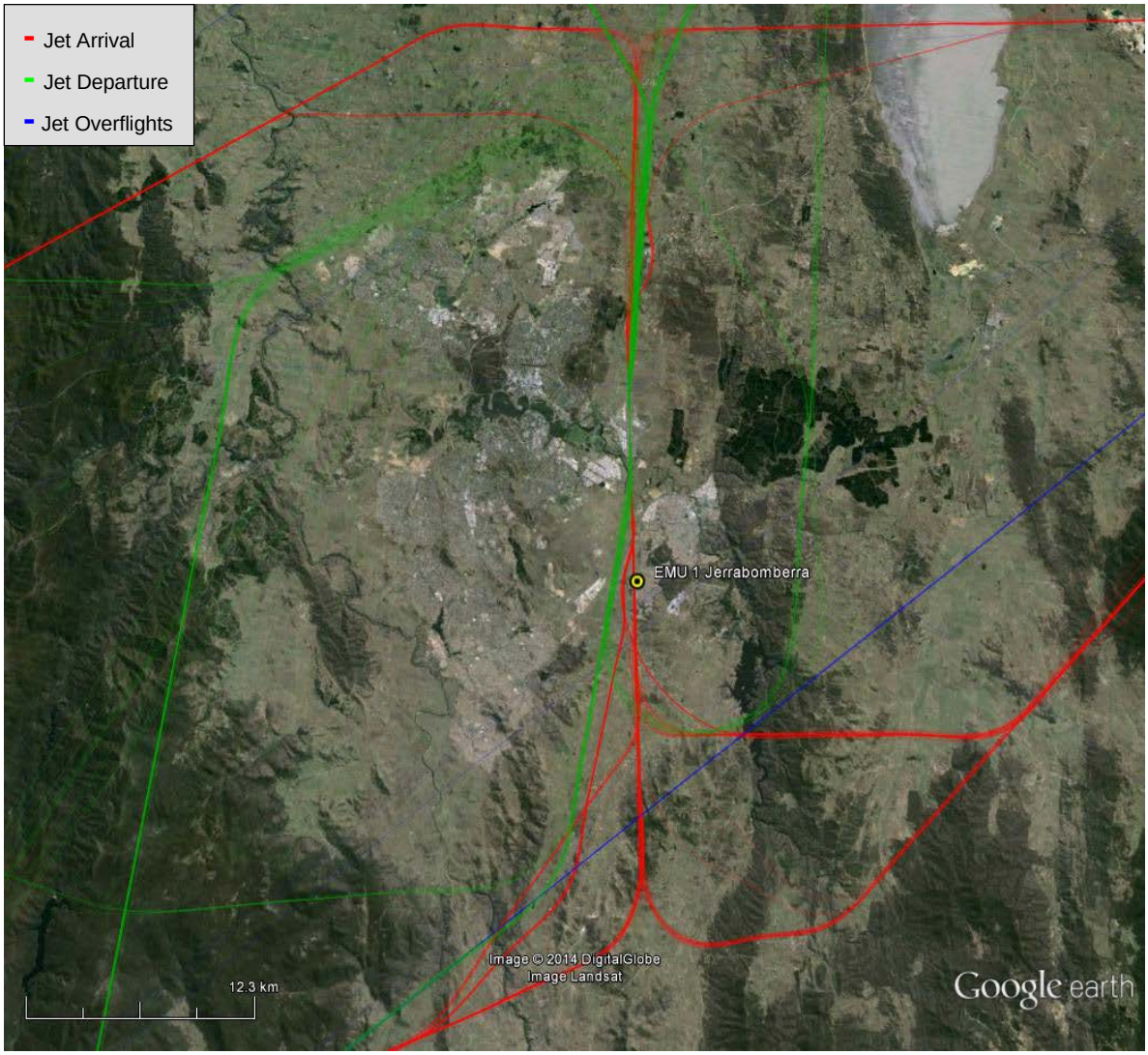

Figure 2: Jet flight paths for the Canberra region

Key points shown by Figure 2 are:

- Most jets departing to the south off Runway 17 turn to the west shortly after take-off. Most jets departing to the north off Runway 35 go straight on for around 15km, though a few turn to the west, north of Gungahlin.
- Jet arrivals tend to be aligned with the runway from around 15km out.
- The overflights track to the south of the city is traffic between Melbourne and Sydney, which flies over the region at a high altitude.

2.2 Non-jet aircraft

Figure 3 below shows non-jet tracks (arrivals and departures) at Canberra Airport Noise monitors are shown as yellow circles.

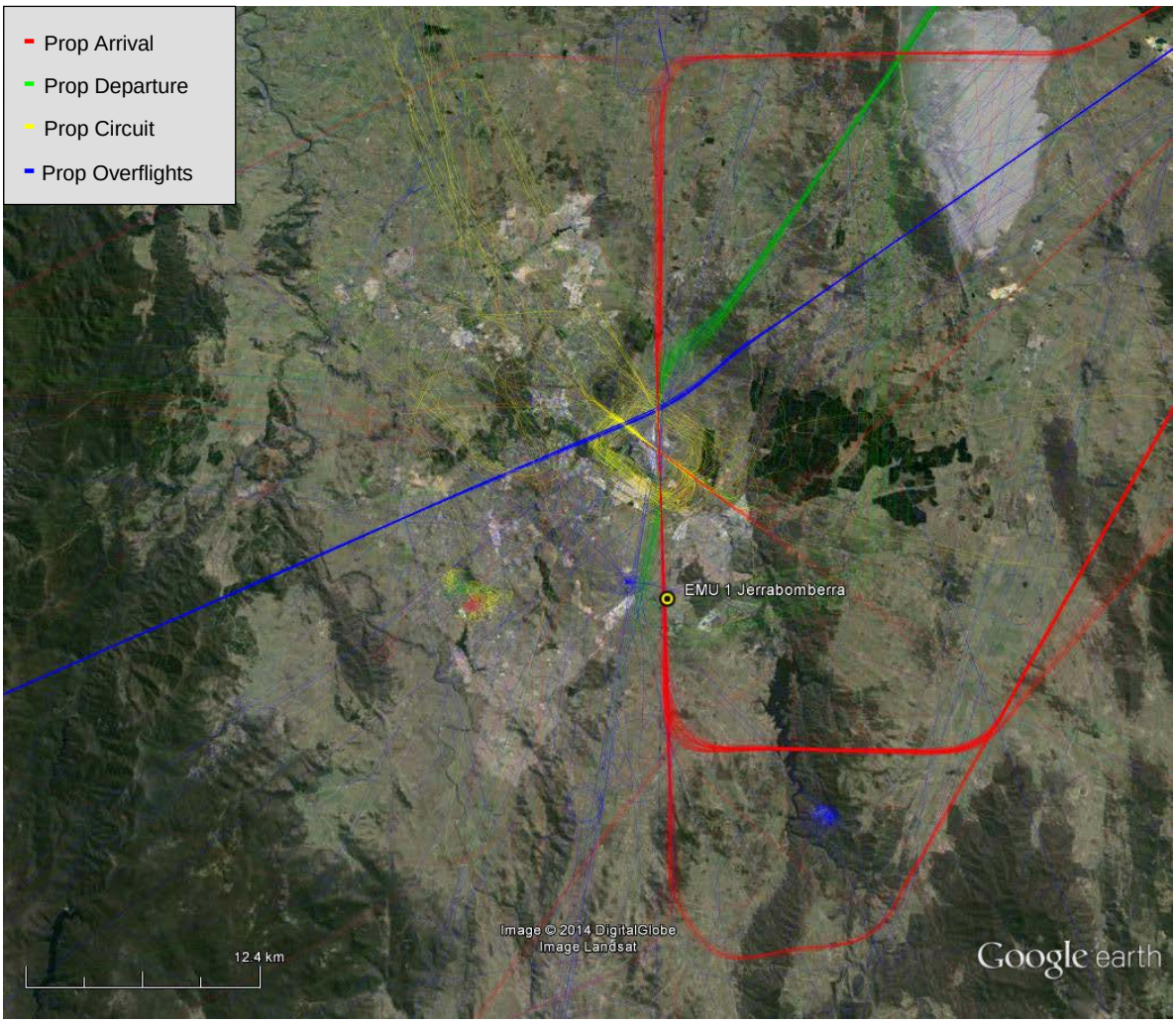

Figure 3: Non jet flight paths for the Canberra region

Key points shown by Figure 3 are:

- The well-defined flight paths from the east are generally commercial turboprops.
- Although circuit training movements can be seen clearly as a ring around the airport, the yellow flight tracks shown over the City are not circuits but light aircraft that took off and landed at Canberra Airport.
- The overflights are turbo-prop aircraft traffic overflying Canberra between Sydney and Albury predominantly around 10 000 feet above ground level.

3 Aircraft Movements and Altitude

3.1 Jet Arrivals / Departures by Altitude

Figure 4 below shows jet aircraft track plots for arrivals and departures at Canberra Airport coloured by altitude. The noise monitor at Jerrabomberra is shown as a grey circle.

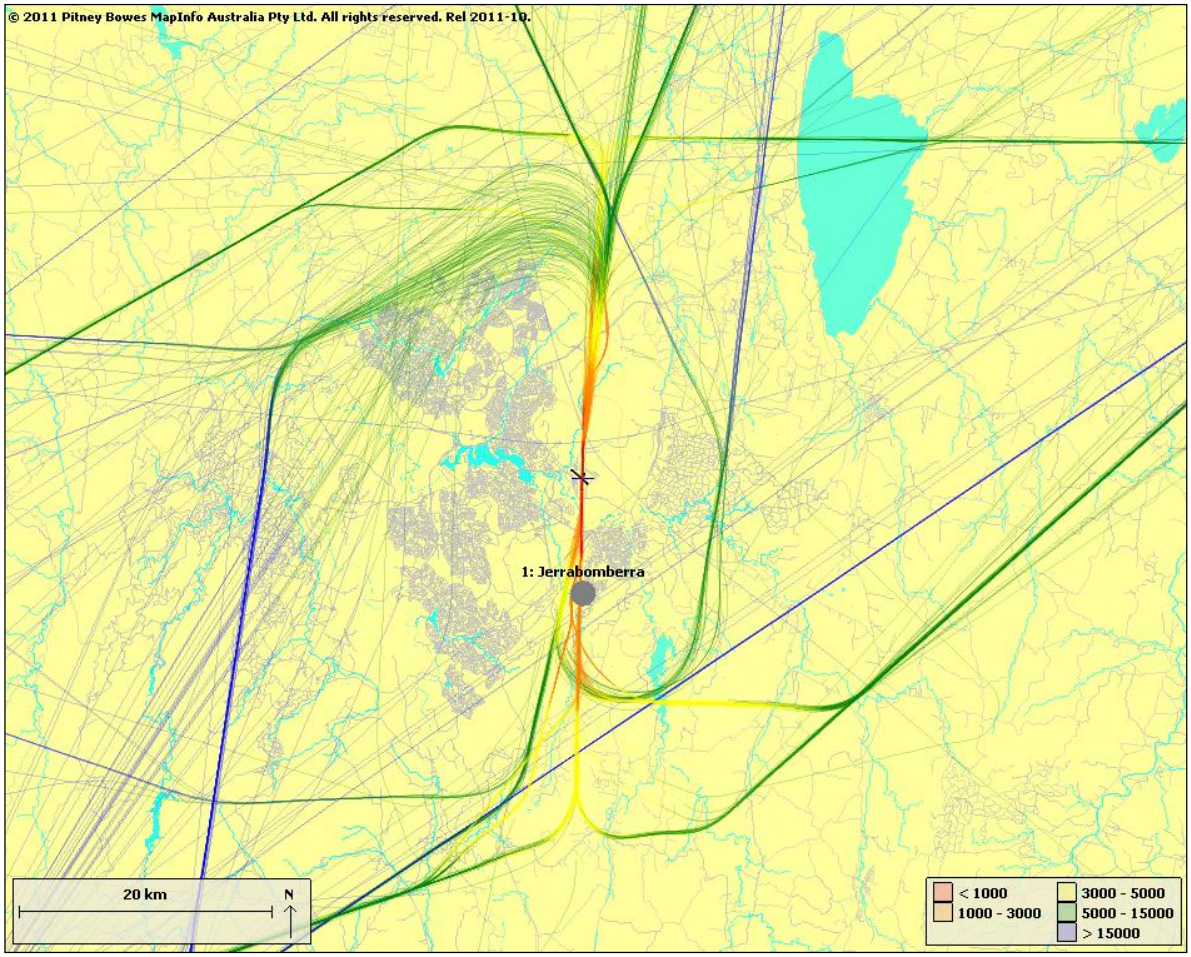

Figure 4: Jet arrivals and departures for the Canberra region
Note the altitude of Canberra Airport is 1 870 feet above mean sea level (AMSL).

Key points shown by Figure 4 are:

- As described above, as a result of the noise abatement area that exists around Canberra, jet aircraft generally avoid overflying residential areas of Canberra below 5 000 feet above ground level.
- Some jet aircraft departing off Runway 35 (to the north) and turning to the south overfly Canberra's northern suburbs, including Gungahlin, but at altitudes above 5 000 feet above ground level.

3.2 Non-Jet Arrival / Departures by Altitudes

Figure 5 below shows non-jet tracks (arrivals and departures) at Canberra Airport coloured by altitude. The noise monitor (EMU) at Jerrabomberra is shown as a grey circle.

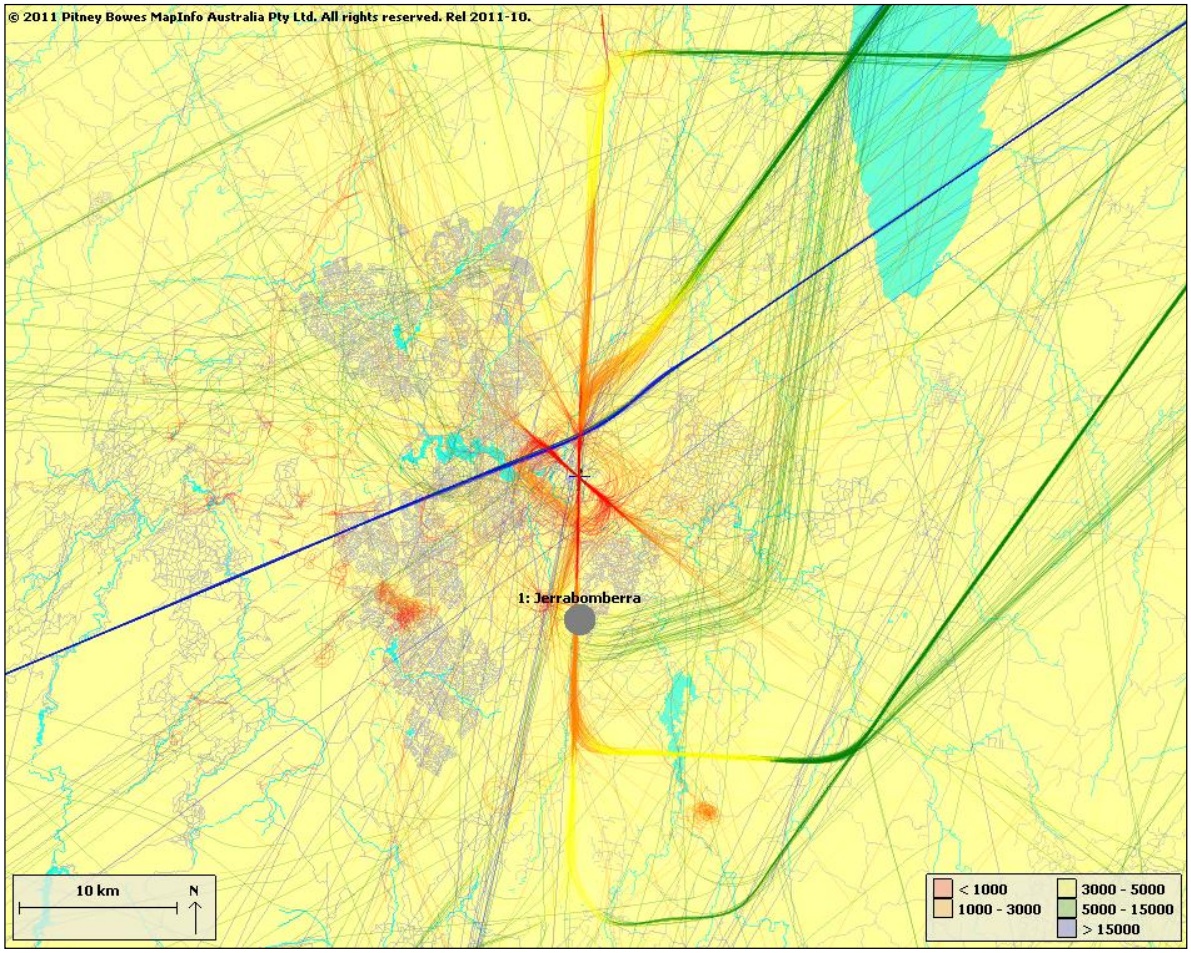

Figure 5: Non-Jet arrivals and departures for the Canberra region
Note the altitude of Canberra Airport is 1 870 feet above mean sea level (AMSL).

Key points of Figure 5 are:

- Aircraft overflying the suburbs of Canberra below 3 000 feet above ground level are smaller general aviation aircraft. Larger propeller aircraft do not overfly Canberra suburbs below 3 000 feet above ground level.

3.3 Track density plots

The track plots in the preceding section show that areas up to 20km to the north and 20km to the south of Canberra Airport and in line with the airport's runways are regularly overflown by jet aircraft below 3 000ft above ground level. 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.

A track density plot is a map which displays the pattern of aircraft flight tracks passing over the region around the airport. The region is divided into a set of small grid elements and the number of flights passing over each grid element is summed. Each grid element is coloured according to the number of overflights.

Figure 6 shows a track density plot for all movements over the Canberra Airport for Quarter 1 of 2016. The grid size adopted is 200m x 200m. The colour coding from green to red represents a range from two flight tracks per day to 20 (184 to 1 840 flight track for the quarter). If any grid element is not colour coded, the number of aircraft flight tracks passing over that element during the quarter was less than two per day on average. The absence of a colour for a grid element does not therefore mean that the grid element is free of aircraft overflights. The grey circle shows the location of the noise monitor.

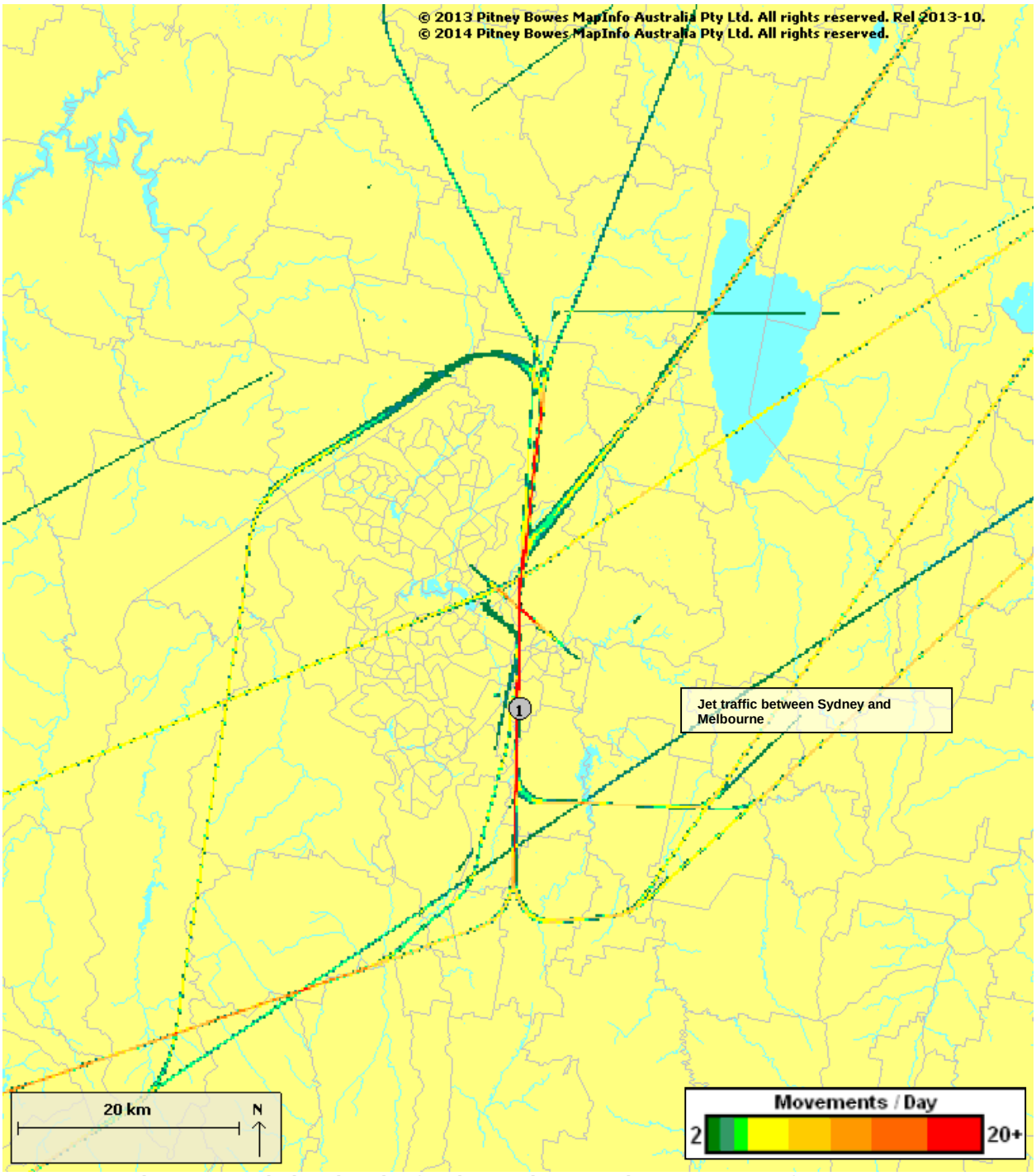

Figure 6 Track density plot for the Canberra region, Quarter 1 of 2016

Key points shown by Figure 6 are:

- While most areas of Canberra are overflown by aircraft there are distinct flight paths.
- There is some concentration of flight tracks apparent to the north west of Canberra. This is because jets departing from Runway 35 track towards waypoints until they turn west, which is where the concentration of tracks becomes apparent.
- There is a flight path associated with high altitude jet aircraft traffic overflying Canberra between Sydney and Melbourne. This has been labelled in figure 6.

4 Airport Statistics and Noise Events

4.1 Canberra Airport

Figure 7 shows aircraft movements at Canberra Airport for the 12-month period to the end of Quarter 1 of 2016 (including three-year average per month).

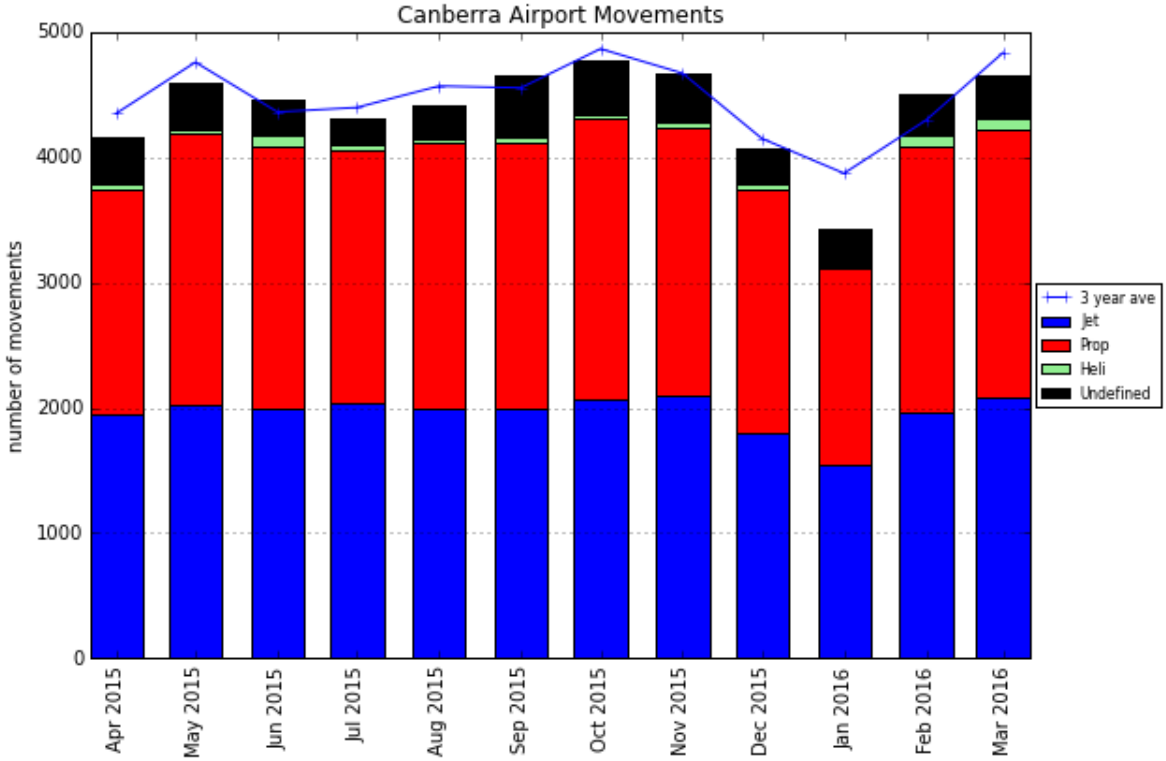

Figure 7: Aircraft movements at Canberra Airport from April 2015 to March 2015 (including three-year average per month)

The key points shown by Figure 7 are:

- During Quarter 1 of 2016 movements at Canberra Airport were generally made up of 50% jet aircraft and 50% non-jet aircraft.
- There was a small number of helicopter movements during this period.
- Movements are slightly down according to the average for Quarter 1 2016.
- The number of movements fluctuates at Canberra Airport, largely according to public sector activity (notably the parliamentary timetable).
- The Undefined category above represents flights within the Noise and Flight Path Monitoring System where the aircraft type is unknown. These are typically small private General Aviation aircraft.

4.1.1 Runway Usage

Figure 8**,** Figure 9, Figure 10 and Figure 11 show runway usage for arrivals, departures and touch and go at Canberra Airport for the year up to the end of Quarter 1 of 2016 (and three-year average per month).

Figure 13 and Figure 14 shows 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.

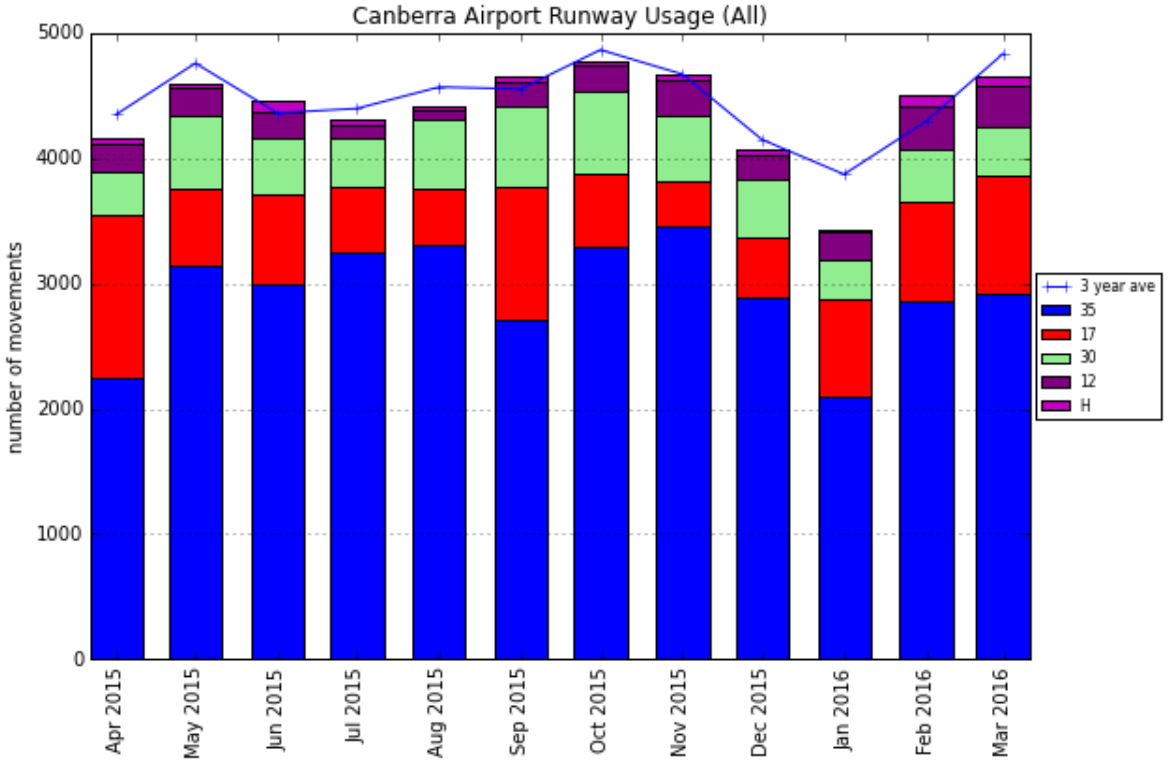

Figure 8: Runway usage (all) at Canberra Airport from April 2015 to March 2016 (including three-year average per month)

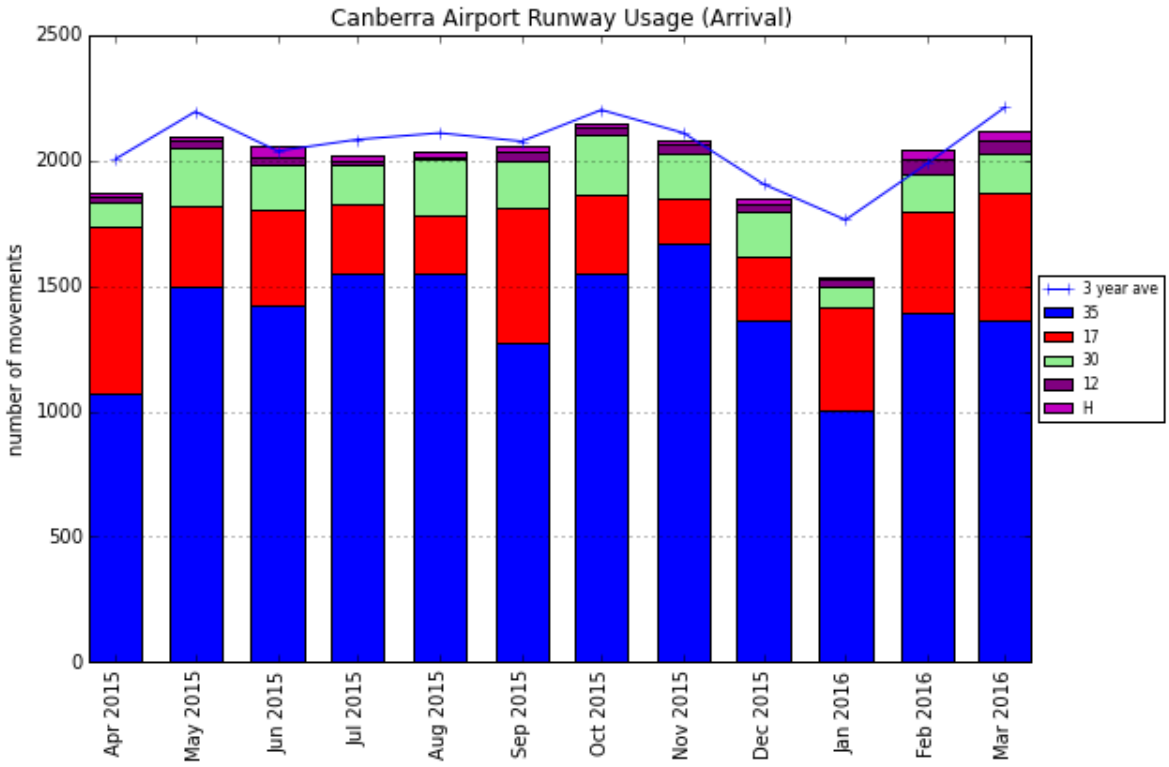

Figure 9: Runway usage (arrivals) at Canberra Airport from April 2015 to March 2016 (including three-year average per month)

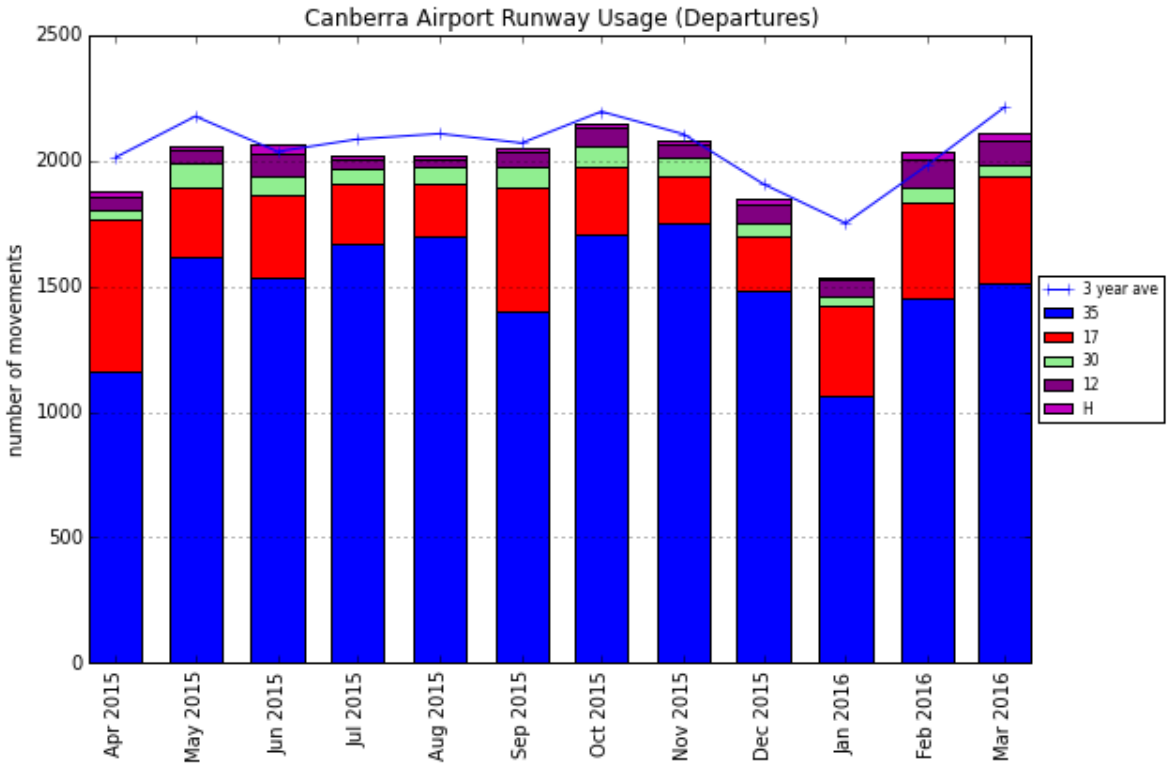

Figure 10: Runway usage (departures) at Canberra Airport from April 2015 to March 2016 (including three-year average per month)

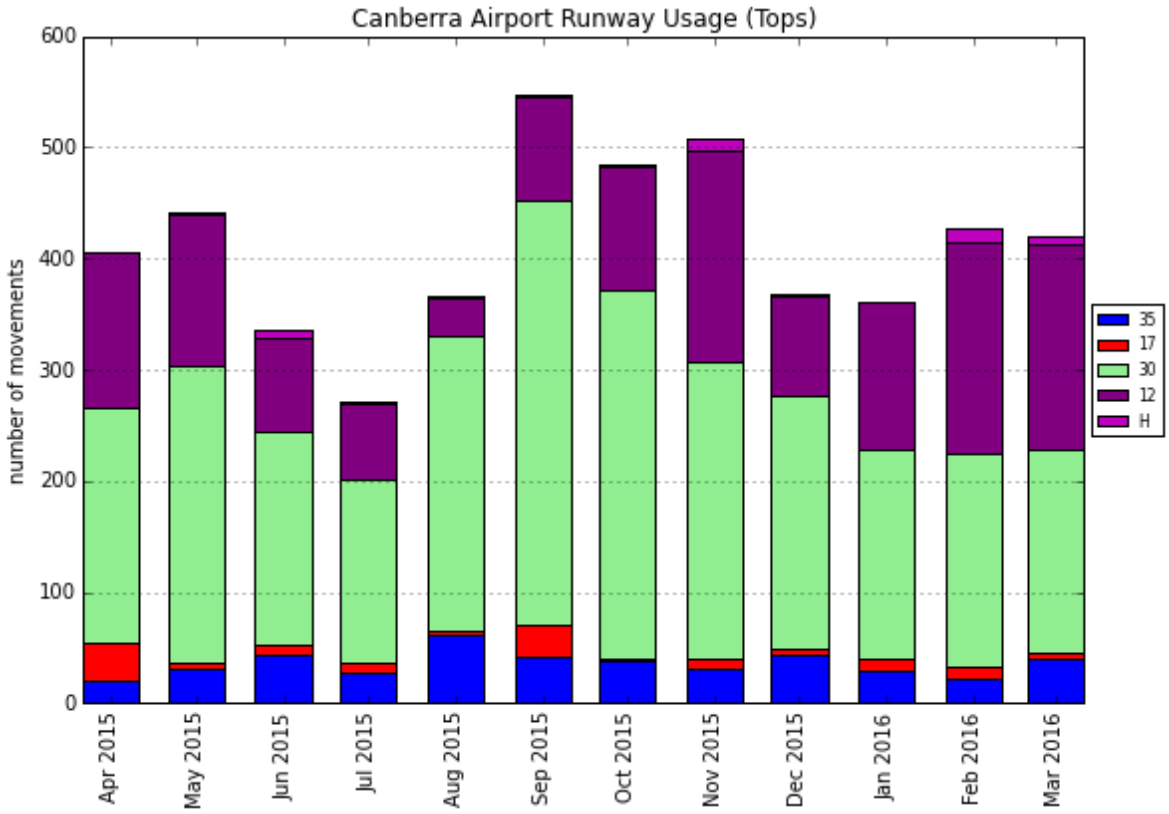

Figure 11: Runway usage (Touch and Go) at Canberra Airport from April 2015 to March 2016

Figure 8**,** Figure 9 and Figure 10 show that throughout the year Runway 35 is most used, this is in line with noise abatement procedures. When using Runway 35 aircraft take off to the north and land from the south.

4.2 Noise monitoring

Airservices collects noise and operational data from the noise monitor at Jerrabomberra. 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 (dBA) as the unit of measure. The sound level of typical daytime urban-based activities can vary between 40dBA and 80dBA.

Figure 12 shows data from the Canberra noise monitor for the last 15 months (see Figure 1 for the location of the noise monitor).

The term used within each of these figures is Nxx, being number of events over the specified decibel level e.g. N65 - the average number of daily noise events caused by aircraft that are over 65dBA. Figures for N70, N80 and N90 are also provided.

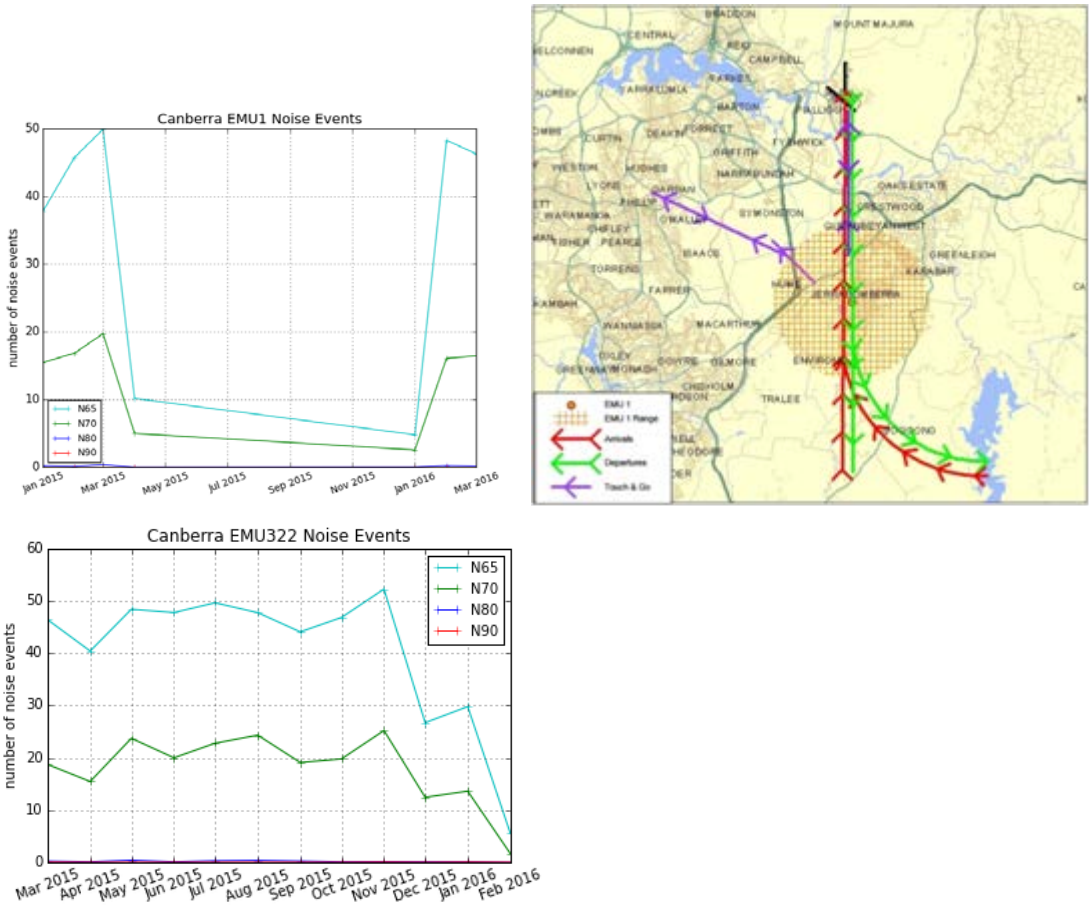

Figure 12: Average daily noise events at EMU 1 (Jerrabomberra) and EMU 322 from Quarter 1 of 2015 to Quarter 1 of 2016

The key points shown are:

- EMU 1 captures arrivals to Runway 35.
- EMU 1 was decommissioned in April 2015 due to site construction works and re-instated in January 2016. This can be seen in the above chart.
- EMU 322 was installed temporarily at a similar location to EMU 1 from March 2015 to January 2016 to eliminate any data gap.
- The number of noise events is fairly constant throughout the year.

4.3 Historic Canberra Runway Statistics

Historic movement data is given below for the most frequently used runways at Canberra Airport.

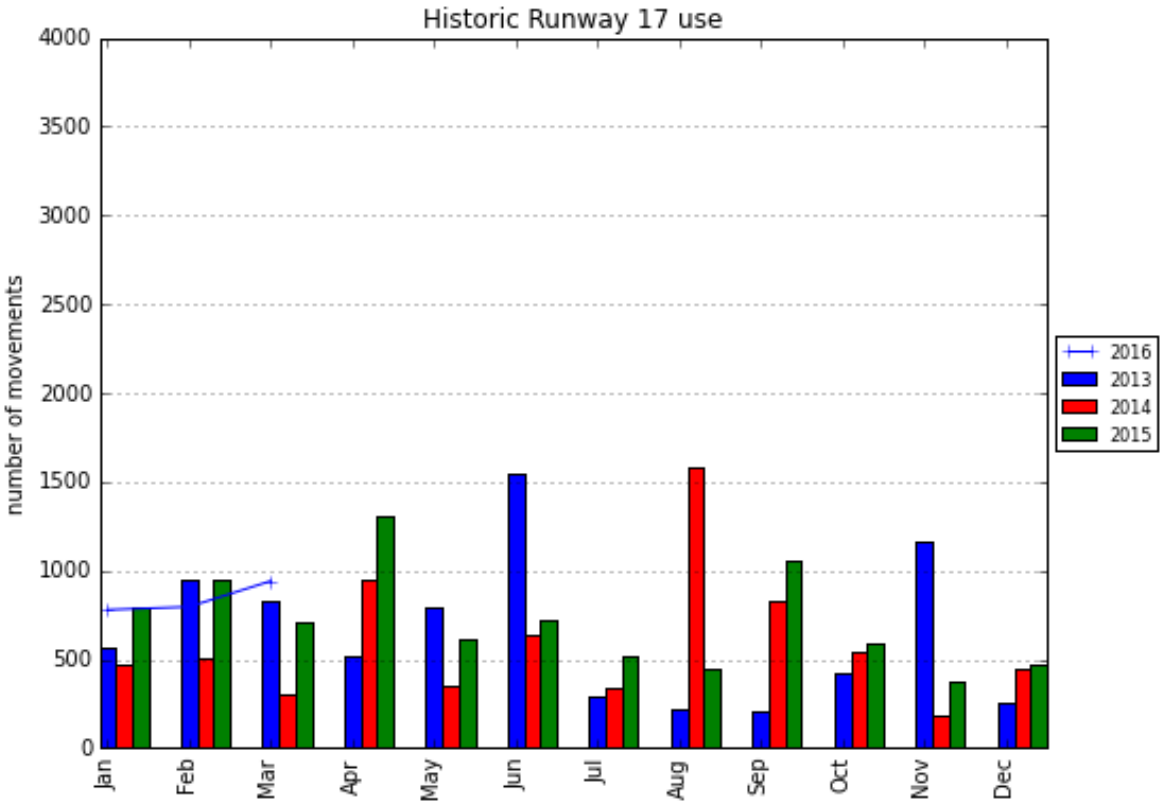

Figure 13: Runway 17 usage at Canberra Airport from January 2013 to March 2016

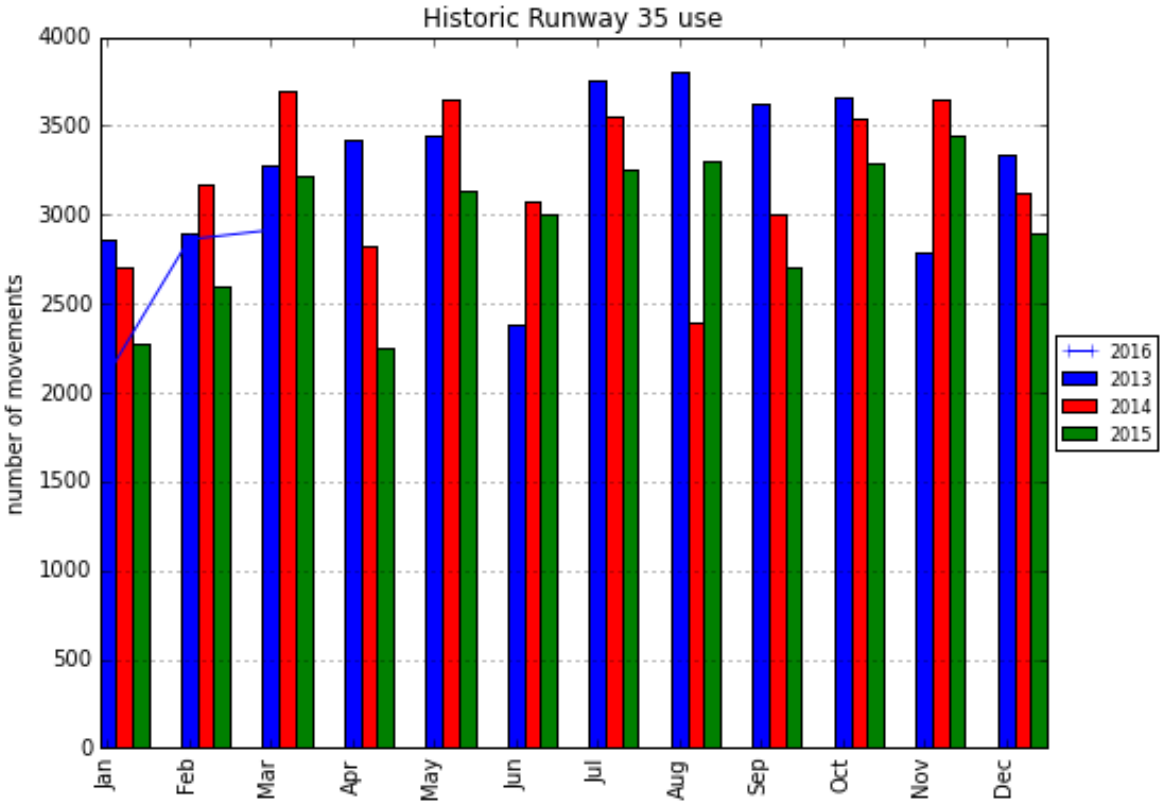

Figure 14: Runway 35 usage at Canberra Airport from January 2013 to March 2016

The key points in Figure 13 and Figure 14 are:

- Runway 35 is the most used runway at Canberra Airport due to prevailing winds being from the north most of the year, however the use of Runway 17 was significantly higher in September than in previous years. This is due to winds from the south not enabling the use of the preferred Runway 35.
- Runway 35 is also the preferred runway for departures, in order to avoid overflight of residential areas as much as possible.
- Runway 35 also has the best navigation aids of all the runways at the airport, along with high intensity lighting, so it is used more when visibility is poor.

4.4 Night Movements

Figure 15 and Figure 16 show aircraft movements during night hours (11pm to 6am) at Canberra Airport for the 12 month period to the end of Quarter 1 of 2016 (and three-year average per month).

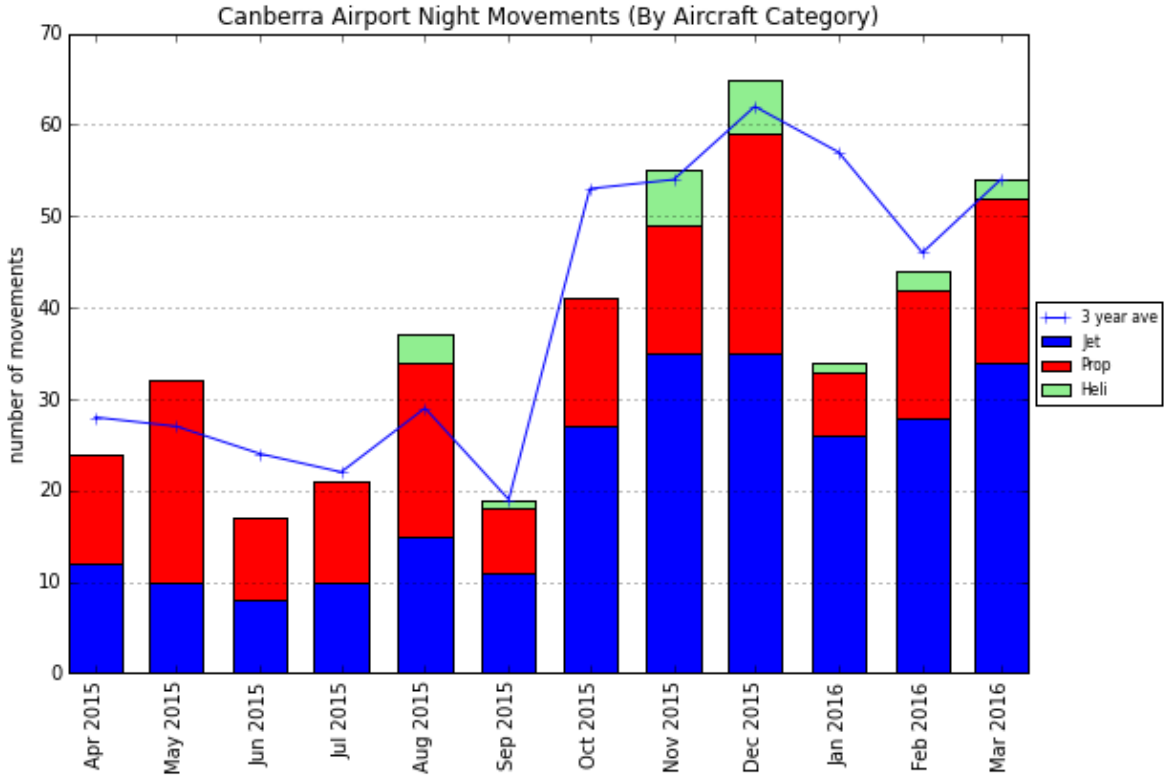

Figure 15: Night movements (11pm to 6am) by aircraft category at Canberra Airport from April 2015 to March 2016 (including three-year average per month)

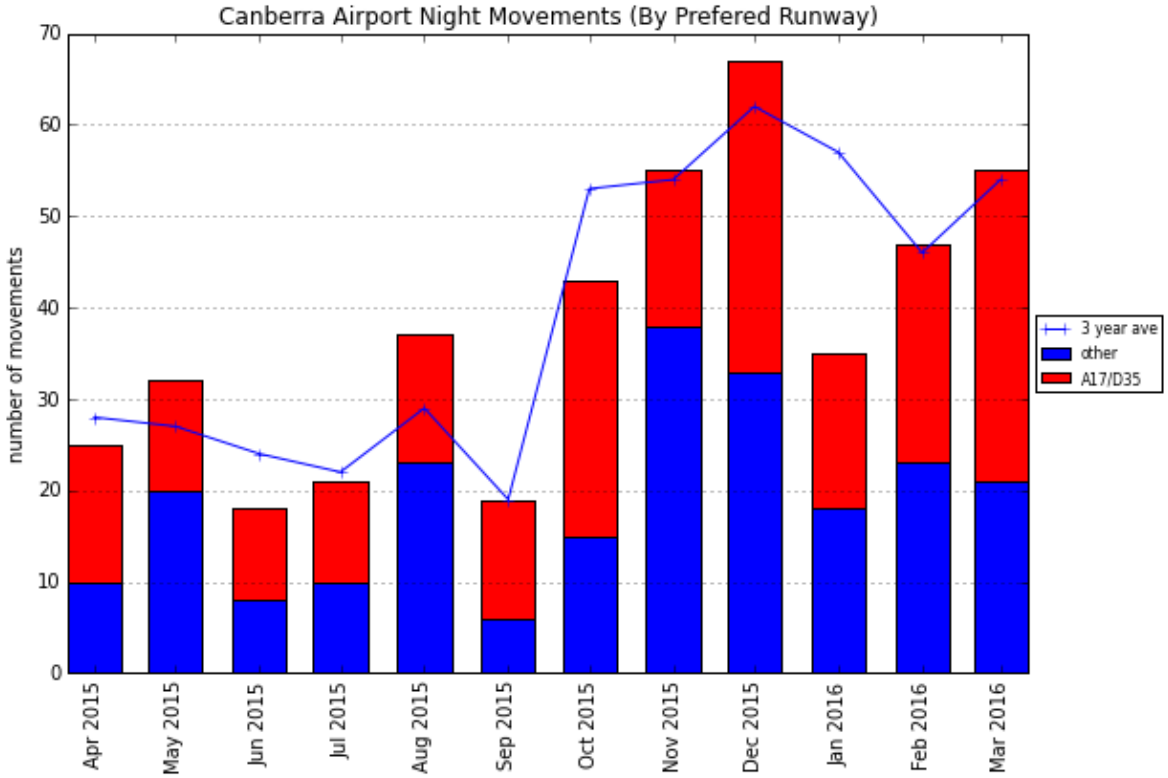

Figure 16: Night movements (11pm to 6am) by preferred runway (A17/D35) at Canberra Airport from April 2015 to March 2016 (including three-year average per month)

Key points shown by Figure 15 and Figure 16:

- During Quarter 1 of 2016 night movements were generally in line with the three year average for February and March, but below the three-year average in January, reflective of the reduction in overall movements for the month.
- Overall, there was an average of one to two movements per night for the quarter.
- Due to daylight saving in ACT from October 2015 to April, there is a time difference of one hour between ACT and Queensland during the summer. This means that at least one jet per night that takes off at the same time all the year around in Queensland, arrives an hour later Canberra time, after 11pm. This partly accounts for the increase in night jet movements in summer months at Canberra Airport.

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 complainant. For this report, only complainants making complaints have been included.

5.1 NCIS Complainants by suburb

The NCIS received contacts from 16 complainants for Canberra Airport during Quarter 1 of 2016. Complainant density maps are used to show the number of complainants from each suburb, with suburbs coloured according to how many complainants had contacted the NCIS. The data does not include complainants who contacted other organisations (e.g. airports).

Table 1 provides a breakdown of suburbs from Quarter 1 of 2016 with five or more complainants.

Figure 17 shows complainant density with sample flight tracks overlaid for Canberra Airport for Quarter 1 of 2016.

The following data is derived from a dynamic database and is correct as at 15 April 2016 and may change without notification.

Table 1: Recorded Complainants by Suburb for Canberra Airport, Quarter 1 of 2016

Suburb	Quarter 2 2015	Quarter 3 2015	Quarter 4 2015	Quarter 1 2016
-	-	-	-	-
All Other Complainants	7	3	4	16
Total Complainants	7	3	4	16

Table 1 shows that no suburb had more than five complainants in Quarter 1 of 2016. Canberra Airport activities continue to affect a relatively small number of complainants.

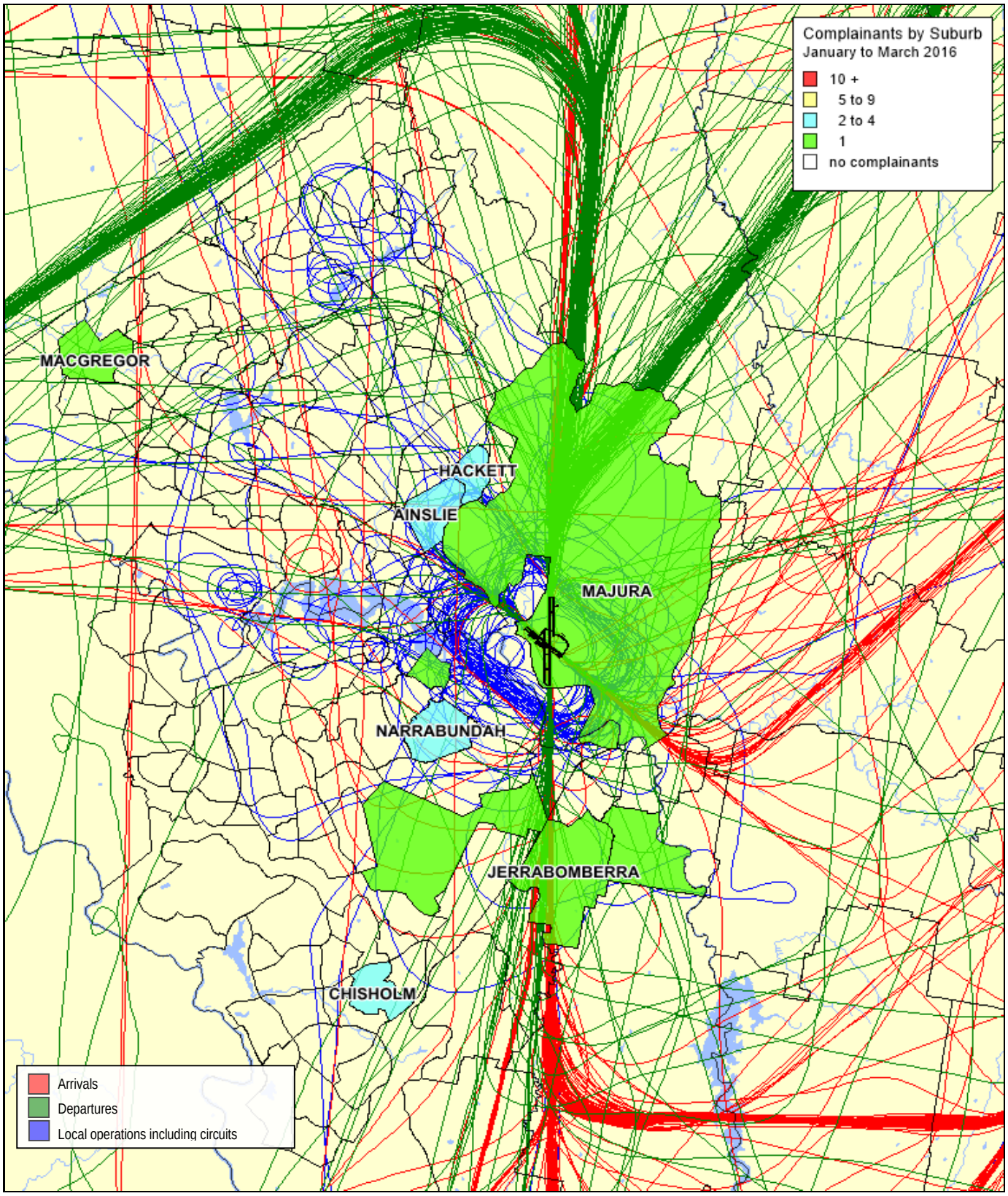

Figure 17: Complainant density by suburb with an overlay of tracks for sample period, 1 to 4 March 2016 for the Canberra region.

Key point shown by Figure 17:

- Increased departures from Runway 17 due to southerly winds disturbed four complainants - one complainant was disturbed in each of January and February.
- In March the key area of complaint was a night-time military operation over the northern suburbs.

6 Airservices update

6.1 Improving Noise Outcomes

Airservices has developed a process to investigate aircraft noise improvements across Australia. Working with the community and the aviation industry, Airservices will assess the benefits of noise improvement proposals and implement them if feasible.

The process has been developed with the support of the Department of Infrastructure and Regional Development and the Aircraft Noise Ombudsman. A key objective is to work with communities to identify opportunities for improvements, particularly through Community Aviation Consultation Groups (CACGs) or similar airport consultation forums.

Airservices will assess the potential safety, efficiency and environmental impacts of proposals. We will seek community views throughout this process to help inform decisions. Safety remains out top priority and any change must meet rigorous Air Traffic Control requirements. This means it may not be possible to implement some proposals.

Airservices will only implement a new procedure or a trial after a comprehensive community engagement process, including consultation and community forums. We will discuss potential changes with the aviation industry and publish details of any changes to procedures or trials on its website.

Appendix 1 provides details of noise improvements that have been implemented at Canberra Basin and others that are in progress.

6.2 Community Meetings

Canberra Airport Community Aviation Consultation Group (CACG)

14 April 2016

Airservices provided a presentation on Canberra Airport noise abatement procedures and other work that has been undertaken to further reduce the impact of aircraft noise on residents. The most recent noise improvement being the Runway 35 jet departure procedure change were jet aircraft travel further north to a 'waypoint' before commencing their left hand turn to avoid flying over the north-west suburbs (Gungahlin). The procedure has now been in place over 12 months, with a post implementation review undertaken recently. The review concluded that jet aircraft were compliant with the change, resulting in aircraft avoiding residential areas to the north-west of Canberra.

Airservices also presented on Smart Tracking usage and complainant information.

12 November 2015

Airservices presented the Quarter 3 (July – September 2015) Aircraft Noise Information Report and provided an update on Smart Tracking usage.

A visual presentation was provided on future enhancements to WebTrak including; additional noise information and runway usage.

Highlights of the Airservices Annual Report 2014-15 and an update on the appointment of CEO and CFO positions and Waypoint 2015 forum were also provided.

18 June 2015

Airservices presented the Quarter 1 2015 Noise Information Report and provided an update on Smart Tracking usage.

A visual presentation was also provided on possible future enhancements to WebTrak including; additional noise information and runway usage.

19 March 2015

Airservices provided an update on smart tracking usage and presented the Quarter 4 2014 Noise Information Report.

A presentation was also provided on the recent change of procedure that now requires jet aircraft departing on Runway 35 to reach a 'waypoint' before turning left, avoiding flying over residential areas of Gungahlin.

7 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/how-to-make-a-complaint/)
- telephone 1800 802 584 (freecall) or 1300 302 240 (local call –Sydney)
- fax (02) 9556 6641
- 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.

Appendix 1 Airservices update

Canberra Noise Improvements

Parachute operator Letter of Agreement

In August 2013, Airservices issued a Letter of Agreement to parachute operators from Canberra Airport, which will result in them flying over residential areas to the north of the airport less, particularly at weekends.

Jet departures from Runway 35

In November 2014, Airservices implemented a change of procedure that will require jet aircraft departing on Runway 35 to reach a 'waypoint' at 7.5 nautical miles from the runway north of Canberra suburbs before turning left, rather than as soon as they reach 7 000 feet. This will result in jet aircraft flying more over non-residential land rather than residential areas of Gungahlin. A review of the change commenced in November and when completed, results will be presented to the CACG and published on our website.