



AIRSERVICES AUSTRALIA



NOISE AND FLIGHT PATH MONITORING SYSTEM

CANBERRA QUARTERLY REPORT

JULY - SEPTEMBER 2008

CB08Q3



EXECUTIVE SUMMARY

This report presents a summary of data for the period July to September (quarter 3) 2008 collected by the Noise and Flight Path Monitoring System (NFPMS) at Canberra Airport.

During quarter 3 of 2008 the Canberra NFPMS detected 7,995 arrivals and 7,821 departures, a total of 15,816 movements, which is 7.5% above the average over the previous 12 months (4 quarters). Of the 7,821 departures 73.4% used the preferred departure runway 35. Note the increase in jet movements for quarter 3 over the average for the previous 12 months was 23.8%. The total number of movements in quarter 3 of 2008 results in an increase of 1863 movements compared to the same quarter of the previous year.

The noise monitor at Jerrabomberra detected 3,471 aircraft noise events above 70 dB(A) for quarter 3 of 2008. This corresponds to a daily average (or N70 value) of 37.7 which is 25.2% increase over the average for the previous 12 months. This increase is due to the greater number of jet arrivals onto runway 35 (which is on proportion to the increase in jet operations at Canberra airport). The noise levels for individual aircraft types detected at the Jerrabomberra noise monitor were approximately the same (that is within 1 standard deviation) as those recorded over the previous 12 months. The noisiest aircraft during this quarter was the Lockheed Hercules C130 on arrival to runway 35 with an L_{Amax} value of 76.9 dB(A).

DISCLAIMER

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.



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GLOSSARY OF TERMS

A:	Arrivals
AA:	Airservices Australia
AMSL:	Average mean Sea level
CNE:	Correlated noise events - noise events which are correlated with aircraft movements
CNE _{all} :	All correlated noise events
CNE ₇₀ :	Only correlated noise events equal to or above 70 dB(A)
D:	Departures
H:	Helicopters
I:	Indeterminate
JET:	Jet aircraft
LA _{eq} :	Time average A-weighted sound pressure level
Movement:	An aircraft operation, such as a take-off or landing
N70:	Average daily number of correlated noise events equal to or greater than 70 dB(A)
N80:	Average daily number of correlated noise events equal to or greater than 80 dB(A)
N90:	Average daily number of correlated noise events equal to or greater



than 90 dB(A)

NFPMS: Noise and Flight Path Monitoring System

NMT: Noise Monitoring Terminal

Noise Event: A noise exceeding the threshold sound pressure level for longer than the threshold duration

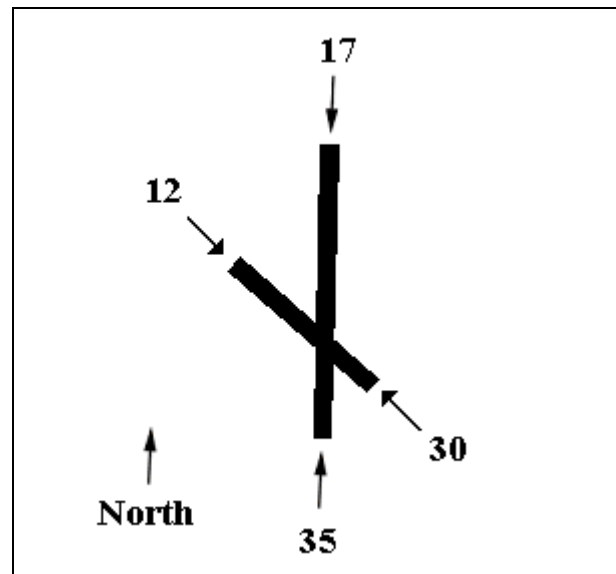
NON-JET: Non-jet aircraft

RNP: Required Navigation Performance

RUNWAY:

Runway on which the aircraft operates.

The runways at Canberra are numbered 17/35 (the main runway), and 12/30 (the cross-runway).



T: Total

TAAATS: The Australian Advanced Air Traffic System

TYPE: Aircraft type

1. INTRODUCTION

Under its environmental responsibilities, Airservices Australia (AA) has established a Noise and Flight Path Monitoring System (NFPMS) at Australia's major airports. An overview of the NFPMS is shown in Appendix A. A map displaying all noise and flight path monitoring locations in Australia is shown in Figure 1.

This report is a summary of data collected by the Canberra segment of the system over the third quarter (July to September) 2008 and some comparisons with the results from previous quarters.



Figure 1: Noise and flight path monitoring locations in Australia

2. NMT LOCATIONS AND NOISE DATA SUMMARIES

The Canberra component of the NFPMS has one permanently installed Noise Monitoring Terminal (NMT) which is strategically located south of Canberra Airport underneath the arrival path on to runway 35 as shown in Figure 2.



Figure 2: Locations of NMTs around Canberra Airport.



The A-weighted average noise exposure levels (LAeq) for the entire quarter and for the night period (23:00 to 6:00 each day) at the NMT are contained in Table 1, the night values are in brackets. These noise levels encompass the whole environment (including aircraft) as measured at each NMT. Also included in Table 1 are the number of correlated noise events (CNE), and the N70, N80 and N90 values for each NMT during the quarter. N70 is calculated by dividing the total number of CNE equal to or greater than 70 dB(A) detected during the quarter by the number of days in the quarter that the NMT is in operation (Op Days). For N80 and N90 the noise threshold is 80 dB(A) and 90 dB(A) respectively.

Appendix B includes graphs showing the daily value of N70 for the Jerrabomberra NMT throughout the quarter, and the distribution of N70 values. Negative N70 daily value indicates that the N70 value for that day is unavailable due to equipment outages.

Table 1: Location and noise parameters for each permanent NMT about Canberra Airport for the 3rd quarter of 2008 and previous four quarters.

NMT 1 Tennis Club Jerrabomberra	2008 Q3	2008 Q2	2008 Q1	2007 Q4	2007 Q3
LAeq 24hr (LAeq night), dBA	54.6 (46.3)	53.7 (45.9)	52.7 (45.4)	55.1 (49.4)	55.9 (49.8)
Days	92	91.0	91.0	89.7	92.0
CNE 24hr (CNE night)	6,111 (277)	6,151 (303)	4,954 (282)	4,605 (229)	4716 (237)
CNE ₇₀	3,471	3,161	2,412	2,234	2455
N70	37.7	34.8	26.5	24.9	26.7
N80	0.2	0.2	0.1	0.2	0.3
N90	0.0	0.0	0.0	0.0	0.0

3. QUARTERLY TRACK DATA

3.1. Quarterly track density plots.

The quarterly track density plot is a map which displays the pattern of aircraft flight tracks passing over the region around the airport during the quarter. The system analyses the number of flights passing over each grid element of an array defined by the user. Grid elements of 200m x 200m have been adopted as a standard. The track density plot takes into account all aircraft and provides a useful indication of the general patterns of the flight operations.

Figure 3 shows the quarterly track density plot for all aircraft operations for the third quarter of 2008. The colour coding from green to red represents the range 184 to 1840 flight tracks (ie. 2 per day to 20 or more per day) over a grid element. If any grid element is not colour-coded, the number of aircraft flight tracks passing over that element during the quarter was less than 184, ie. less than 2 flights per day on average.

For comparison purposes, the quarterly track density plot for jet operations only for the quarter is shown in Figure 4. The location of the noise monitor at Jerrabomberra is shown as a grey box labelled 1 in figures 3 and 4.

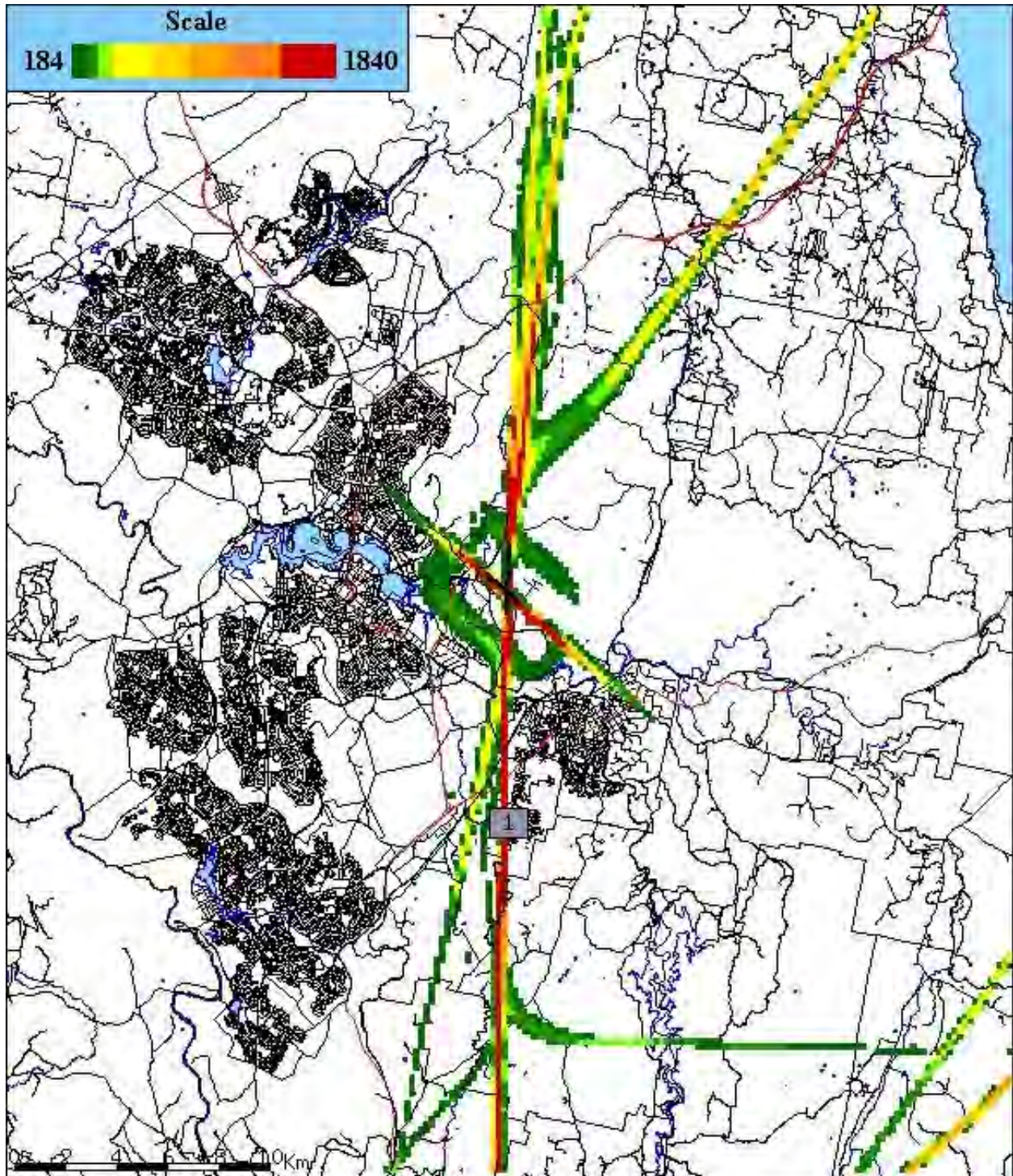


Figure 3: Track density plot for all aircraft movements during the 3rd quarter of 2008.

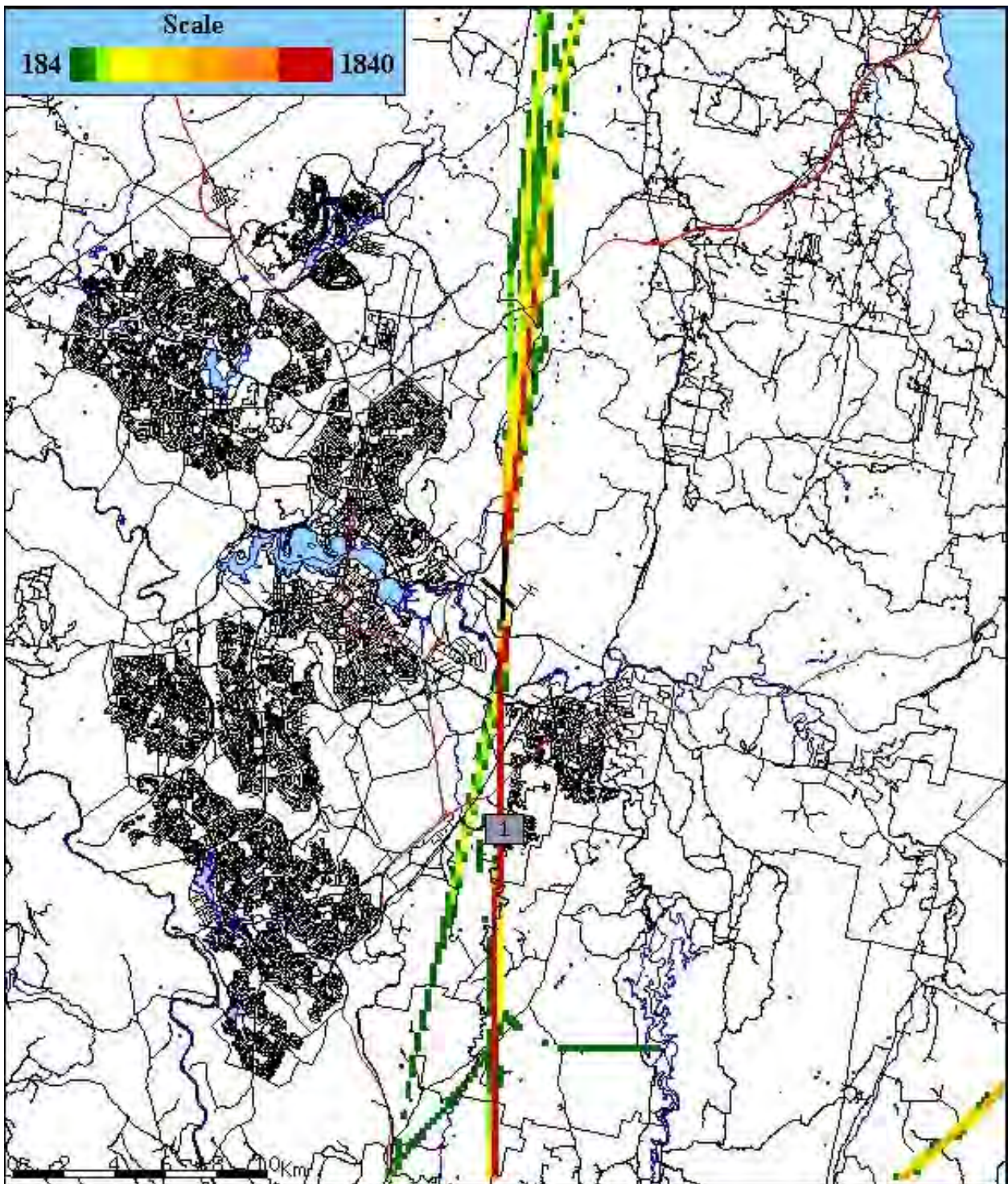


Figure 4: Track density plot for jet operations only during the 3rd quarter of 2008.



3.2. Jet track plots.

Plots of actual tracks for arrivals and departures of individual aircraft types or groups can also be obtained from the system. Figures 5 and 6 show the track plots for jet arrivals and departures over the one-week period 2 to 8 September 2008. These tracks have been coloured according to the aircraft altitude (height above mean sea level), noting that Canberra Airport is approximately 2000ft above mean sea level:

- Red when less than 3000ft
- Orange between 3000ft and 5000ft
- Yellow between 5000ft and 7000ft
- Green above 7000ft.

These heights have been chosen in accordance with the criteria in the document “Environmental Principles and Procedures for Minimising the Impact of Aircraft Noise”. This document can be found on the Airservices Australia’s web site;

www.airservicesaustralia.com.au/projects/services/reports/principlesprocedures.pdf

The arrival Required Navigational Performance (RNP) procedure for runways 17 and 35 are clearly visible and are labelled in Figure 5. At present there are too few RNP arrivals into Canberra Airport to affect the track densities of figures 3 and 4.

3.3. Non-Jet and helicopter track plots.

Non-jet operations are principally the operations of propeller and turbo-prop aircraft. The track plots for the period 2 to 8 September 2008 for arriving and departing non-jet aircraft and helicopters are shown in Figures 7 and 8 respectively. The same colour coding used for jet track plots is used in these figures. For both arrivals and departures by non-jets, the tracks disperse from the runway centrelines closer to the airport, to allow a clear path for jets, which are significantly faster.

3.4. Scatter plots.

A scatter plot illustrates altitudes (heights above the mean sea level) and horizontal dispersion of aircraft flight tracks when the aircraft pass through a predefined vertical gate in the airspace. Scatter plots are useful tools in detecting aircraft flights operating below a certain altitude.

Scatter plots have been used in figures 10 and 12 used to analyse the height of jet aircraft as they pass over the Canberra Noise Abatement Area. The vertical gate used in generating these figures was aligned with the north-east boundary (high-lighted in red) of the Canberra Noise Abatement Area (as shown in Figure 9), and extends to a height of 12,000 feet above the mean sea level. Figure 9 shows the track plot of northerly jet arrivals during the quarter and the scatter plot of these is shown in Figure 10. Similarly, the track plot and scatter plot of northerly jet departures during the quarter are shown in Figures 11 and 12. The large concentration of data points at the bottom left edge of these scatter graphs correspond to aircraft close to the runway and are strictly



outside the Noise Abatement Area. With the exception of these, jet tracks passing through the gate are above the Noise Abatement Area height threshold of 7000ft (AMSL).

A scatter plot is used to determine the spread of all arrivals onto runway 30 (these are mostly propeller aircraft) tracks over the local community to the north East of Queanbeyan, Kowen Forest. The track plot and scatter plot for these aircraft over Kowen Forest are shown in Figures 13 and 14 respectively. The gate used over Kowen Forest is the straight line highlighted in red on Figure 13. As shown in Figure 14 the arrival tracks are evenly spread over approximately 60-70% of the gate with less traffic for the south-eastern portion.

When considering the scatter plots the reader needs to be cognisant that the airport is at an altitude of 2000ft (AMSL).

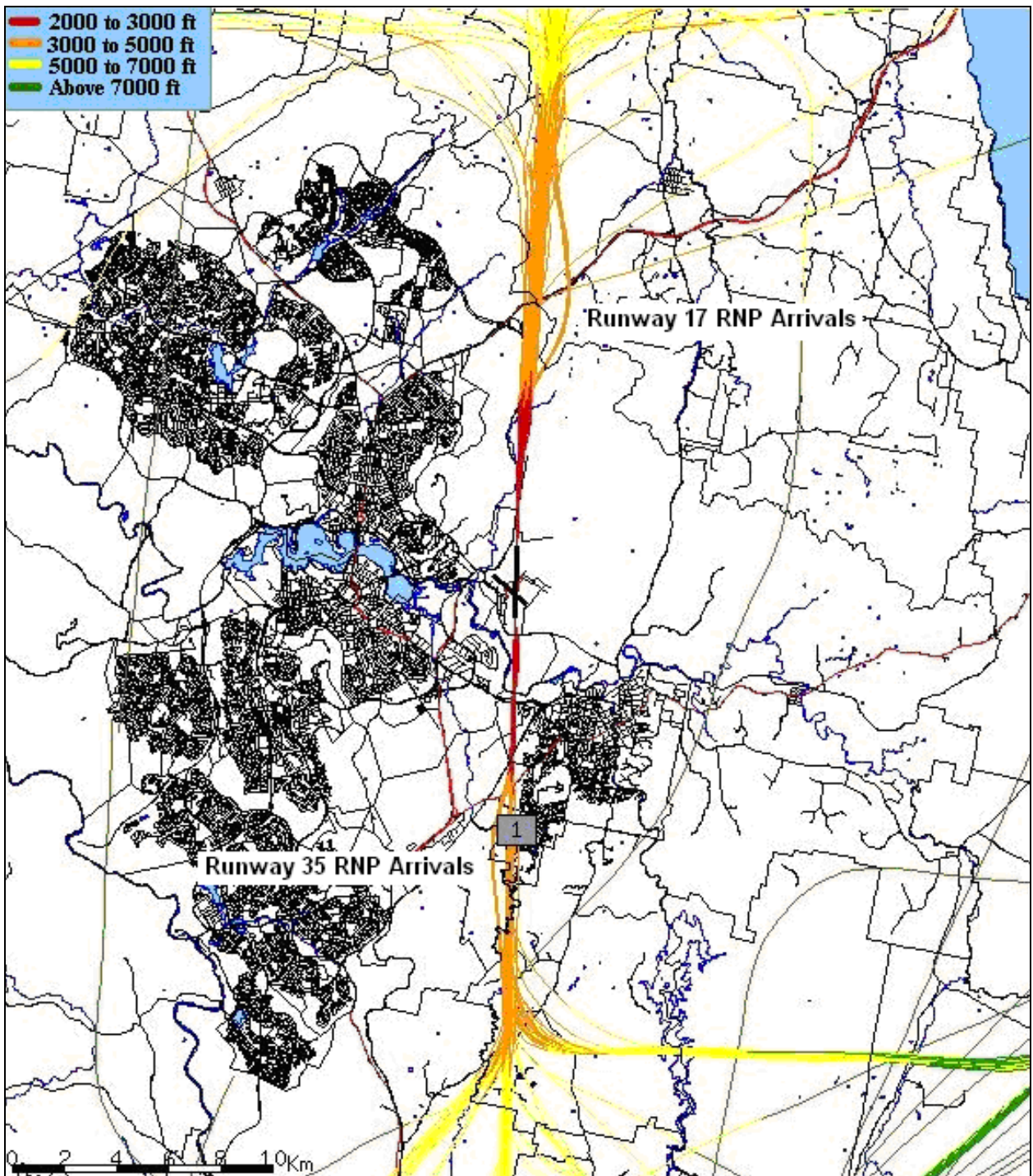


Figure 5: Track plots coloured by altitude above sea level for jet arrivals during the period 2/09/2008 to 8/09/2008.

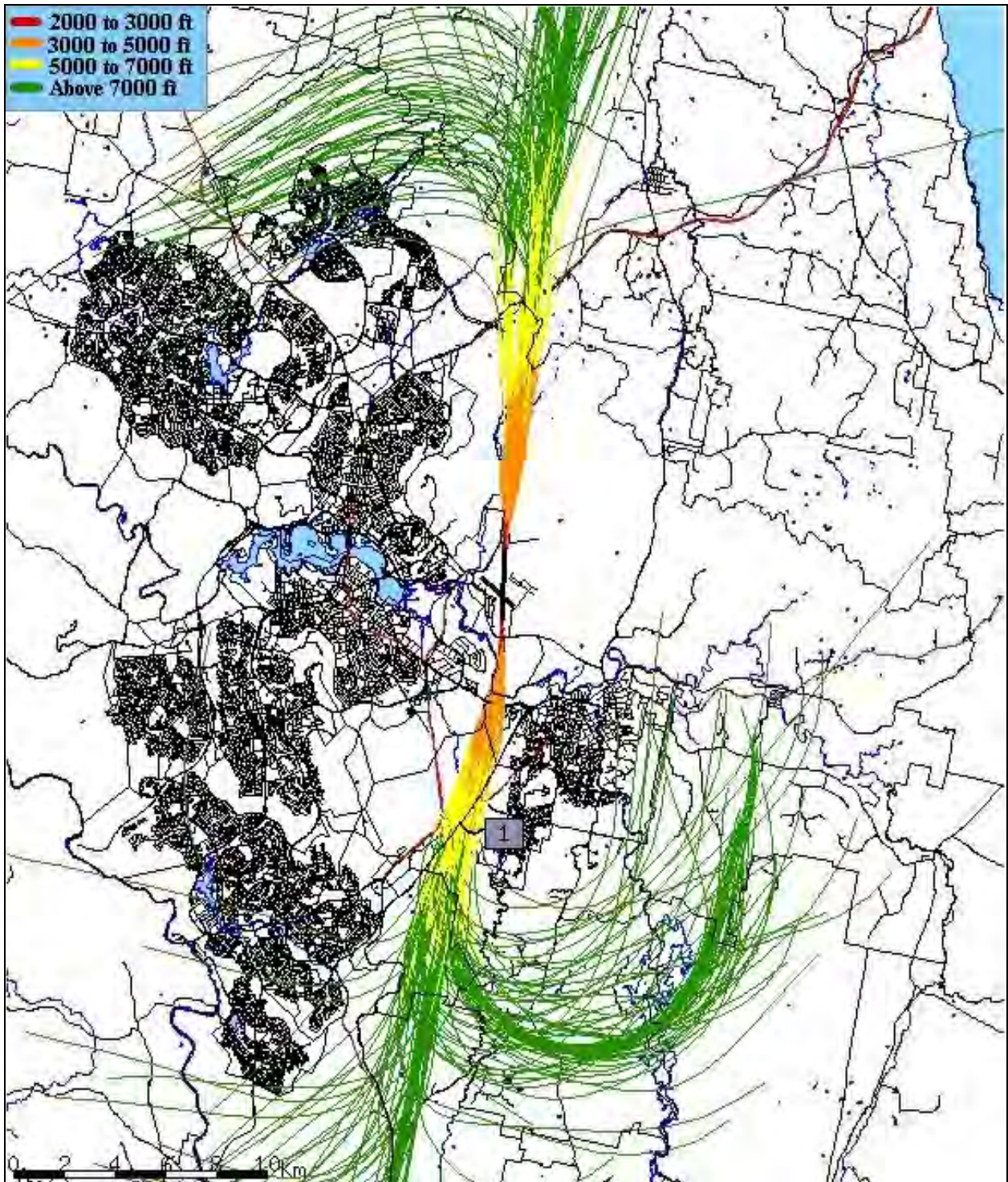


Figure 6: Track plots coloured by altitude above sea level for jet departures during the period 2/09/2008 to 8/09/2008.

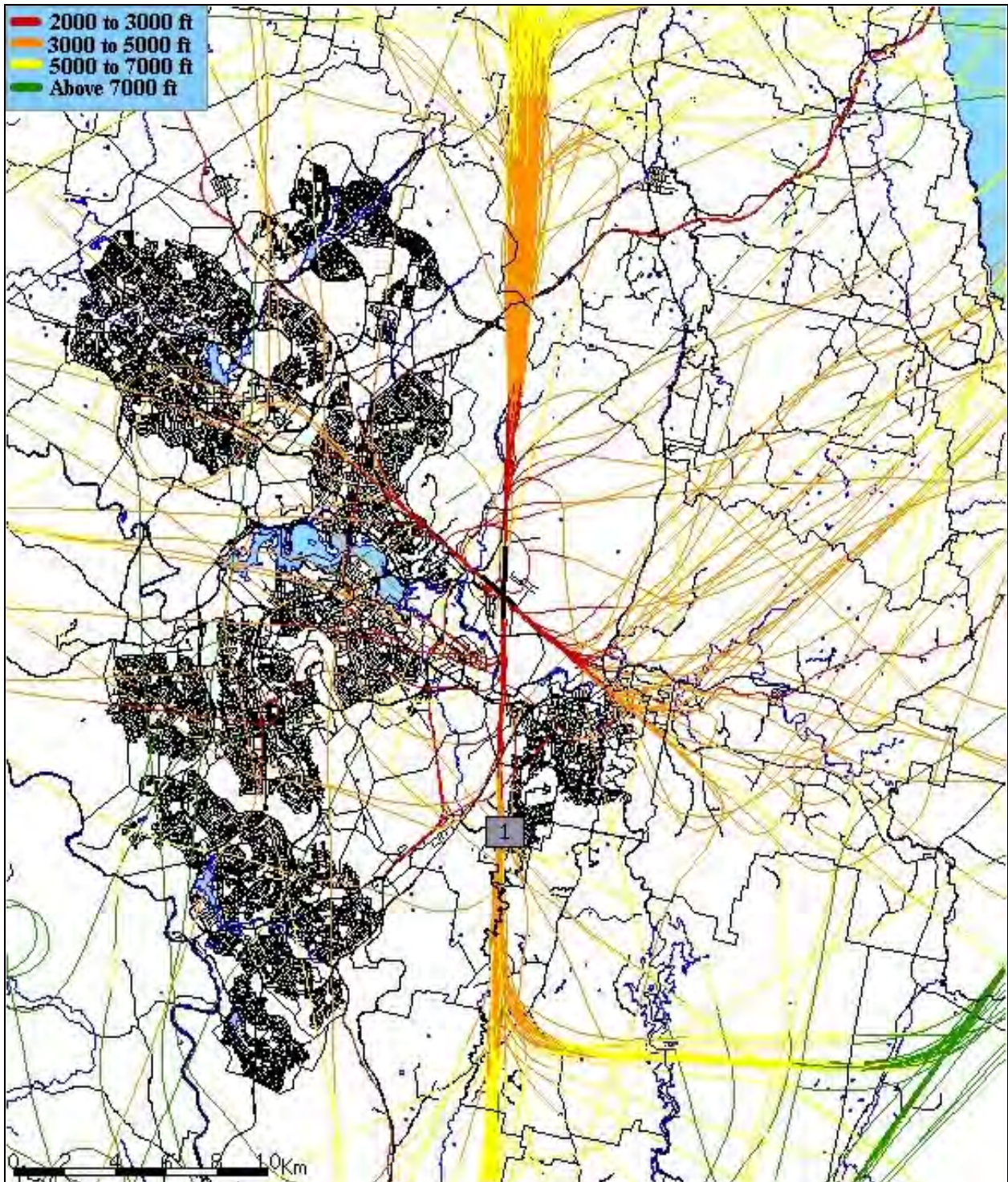


Figure 7: Track plots coloured by altitude above sea level for non-jet and helicopter arrivals during the period 2/09/2008 to 8/09/2008.

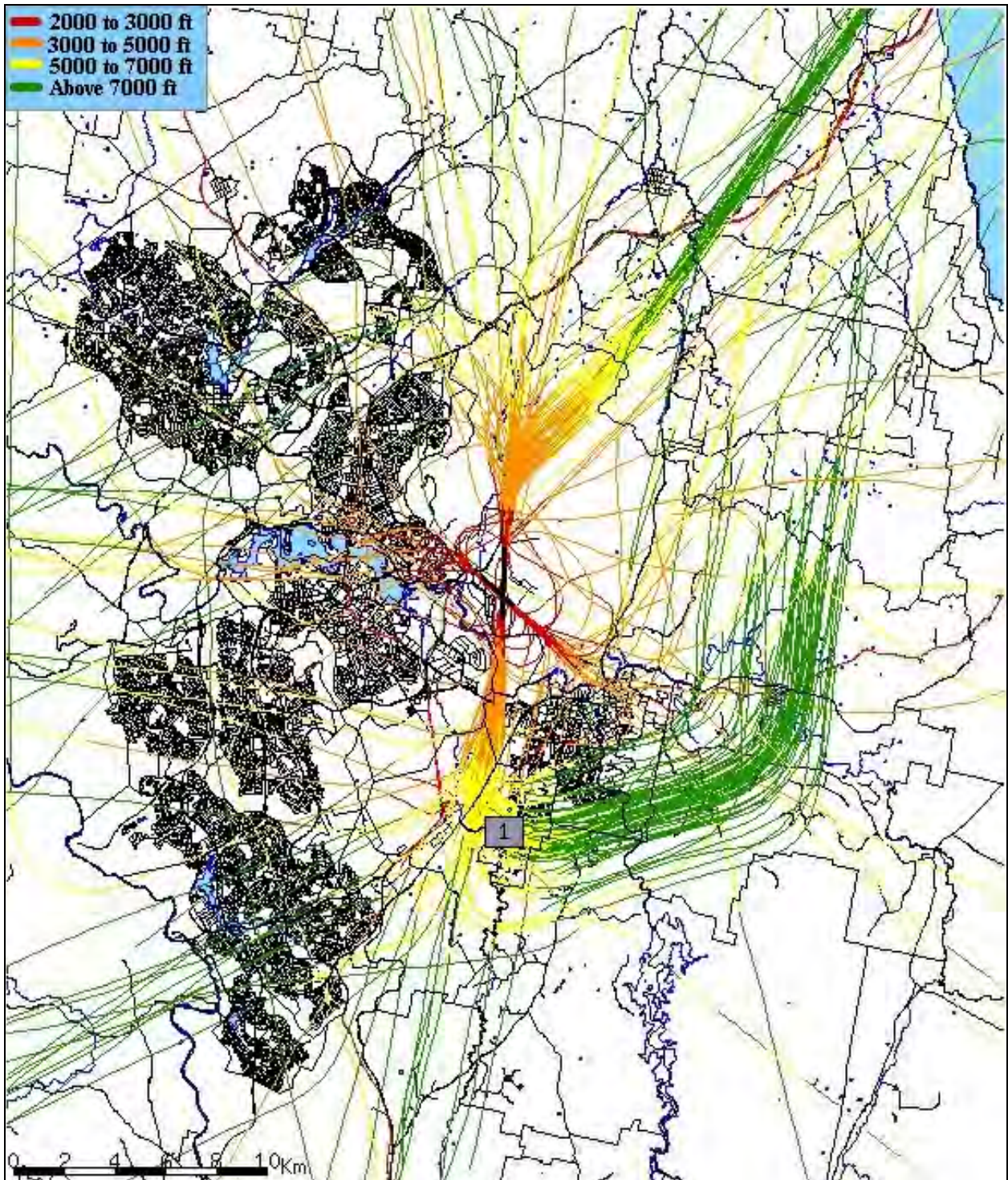


Figure 8: Track plots coloured by altitude above sea level above airport for non-jet and helicopter departures during the period 2/09/2008 to 8/09/2008.

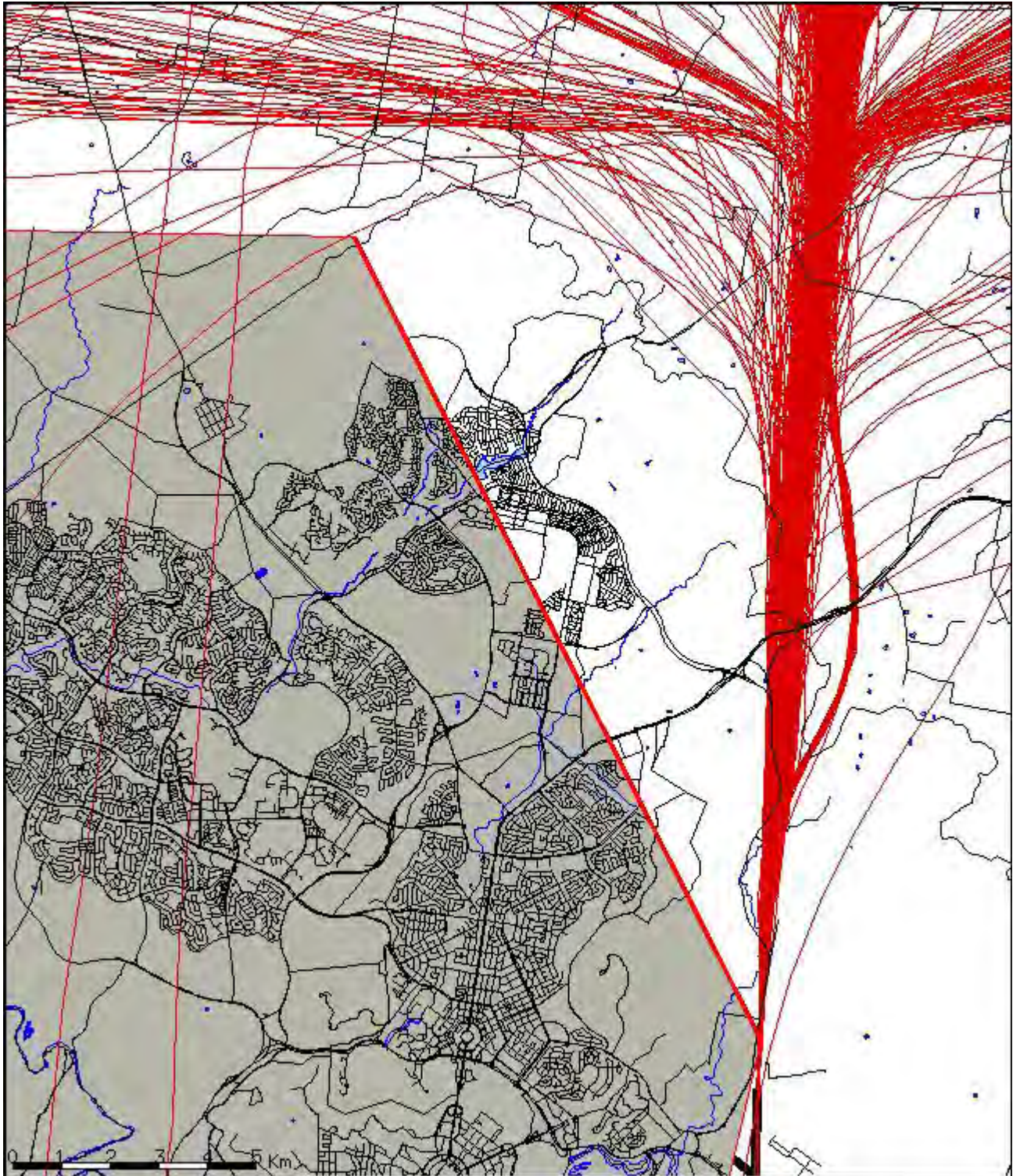


Figure 9: Track plot for northerly jet arrivals during the 3rd quarter of 2008.
(The area coloured in grey is the existing Canberra Noise Abatement Area.
Its north-east boundary, highlighted in red, represents the spatial analysis gate)

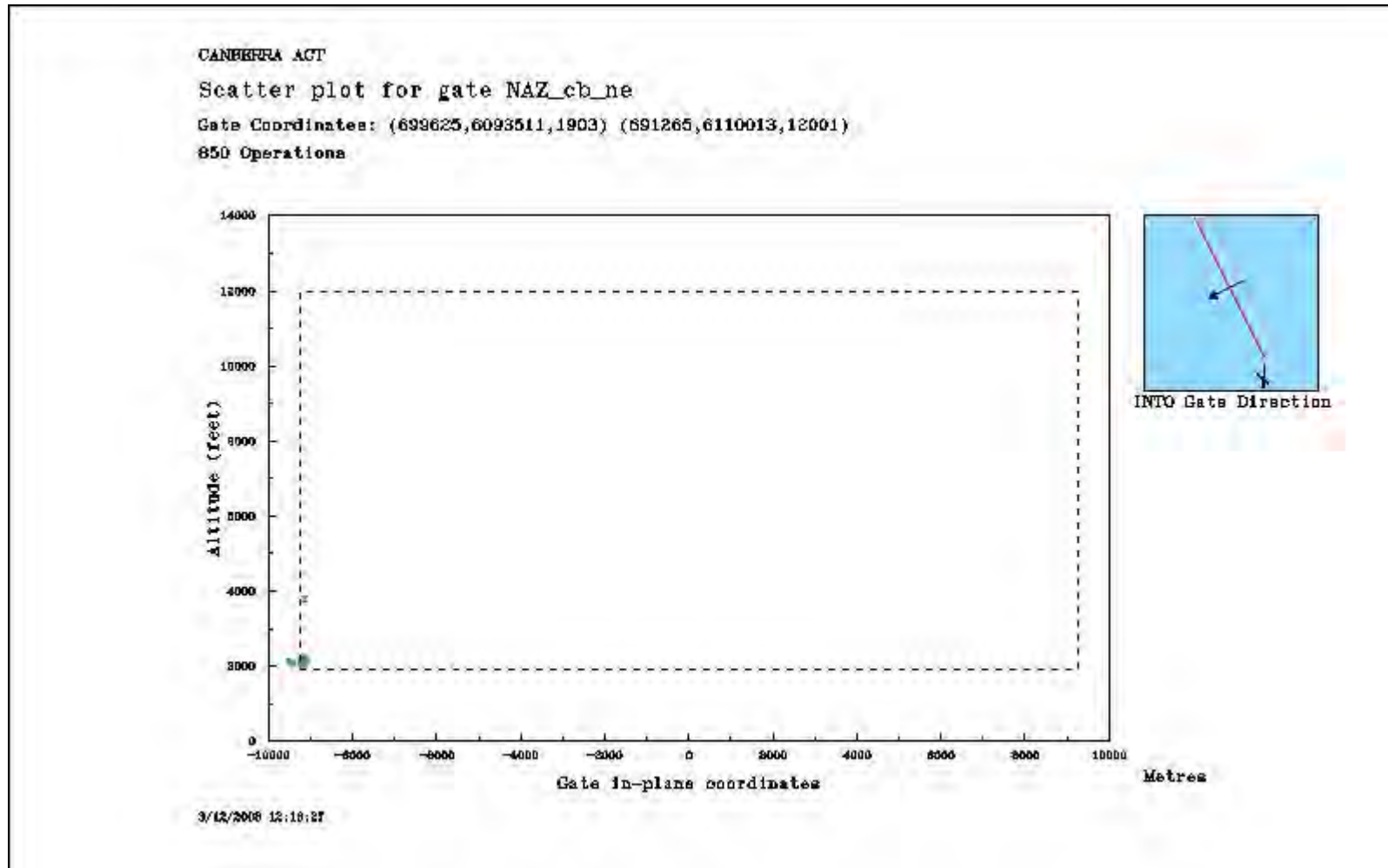


Figure 10: Scatter plot for northerly jet arrivals during the 3rd quarter of 2008, altitude in this figure is relative to sea level.
(Horizontal axis is the north-east boundary of the existing noise abatement area where 0 is the centre of the boundary)

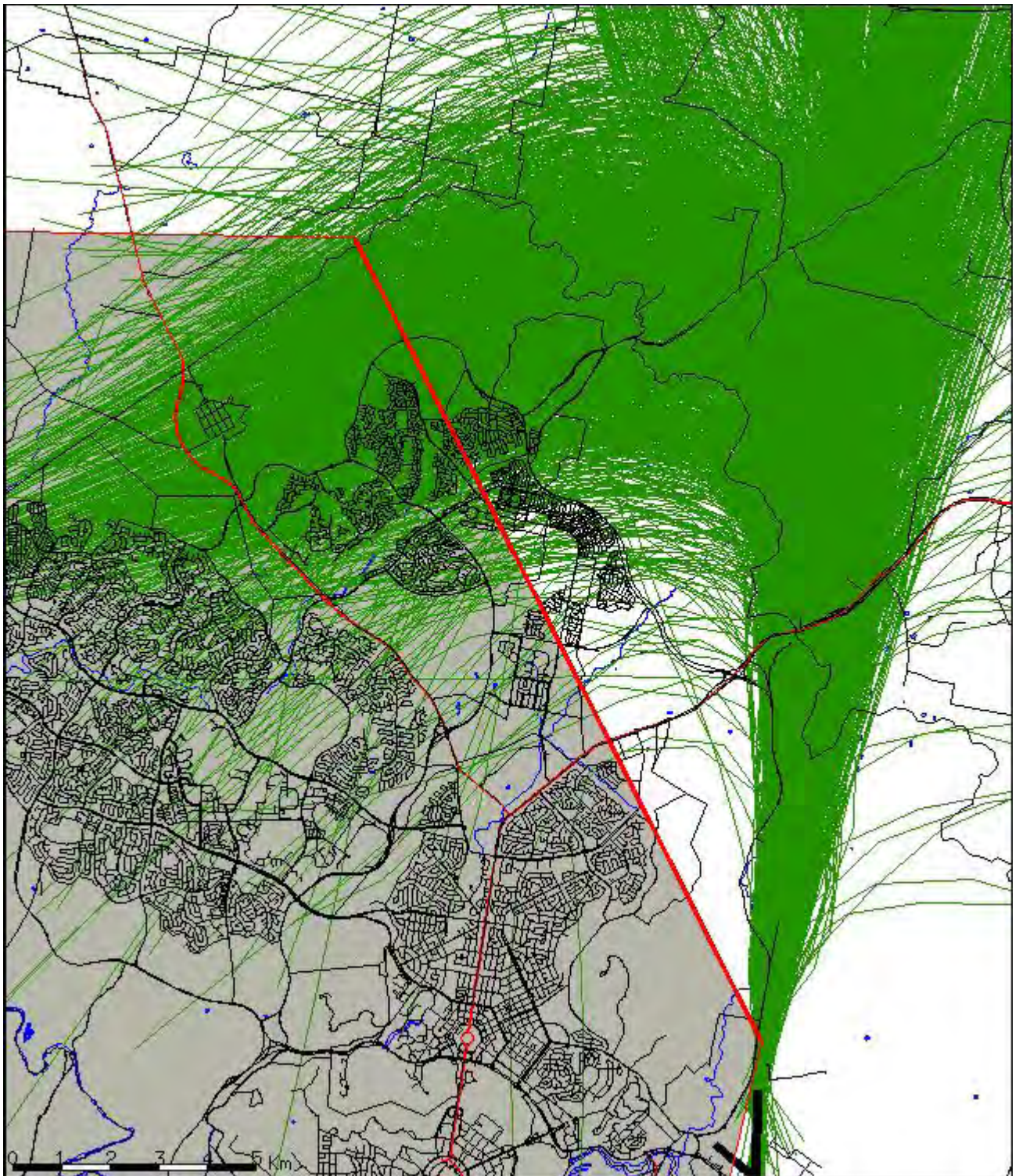


Figure 11: Track plot for northerly jet departures during the 3rd quarter of 2008.
(The area coloured in grey is the existing Canberra Noise Abatement Area.
Its north-east boundary, highlighted in red, represents the spatial analysis gate)

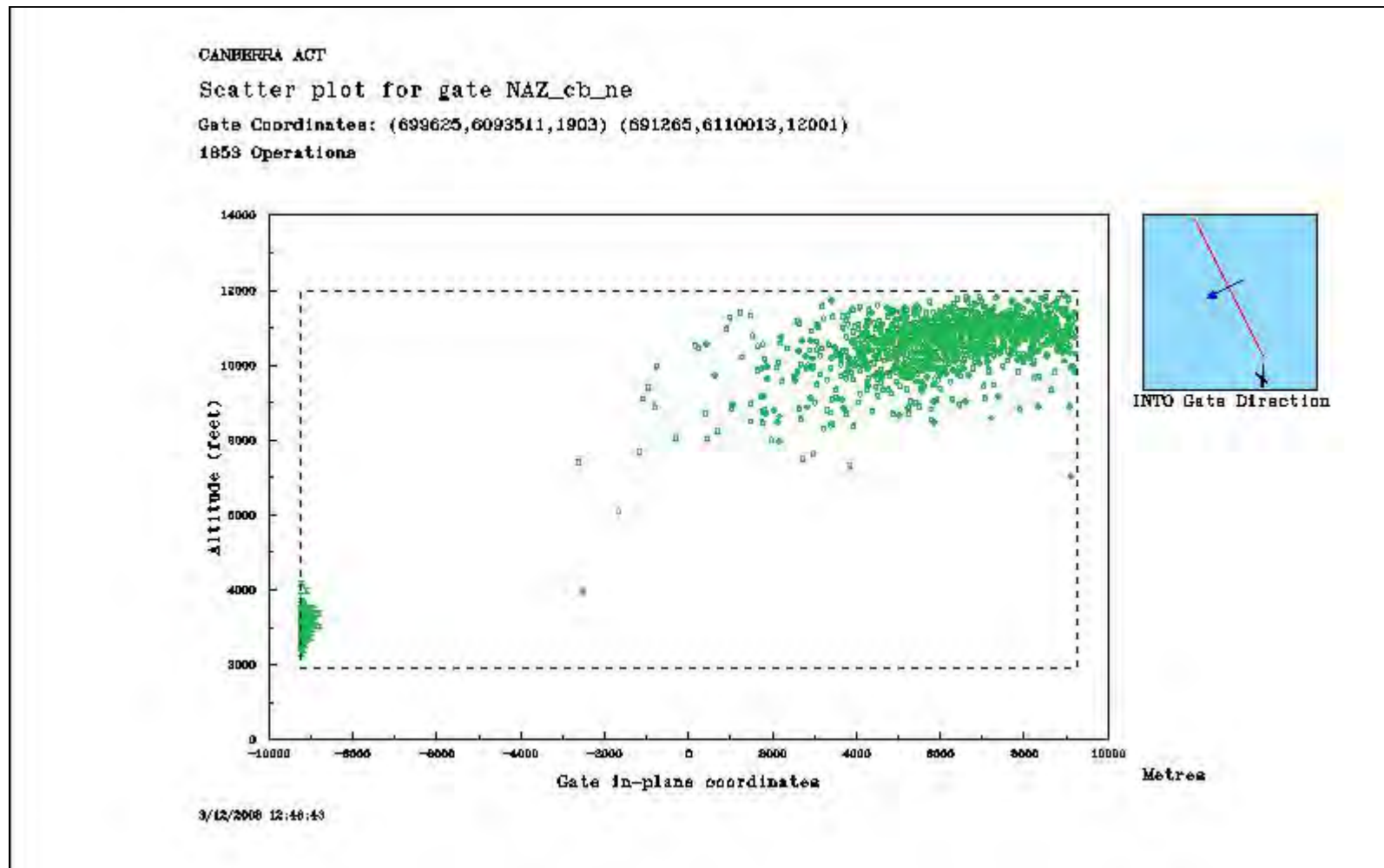


Figure 12: Scatter plot for northerly jet departures during the 3rd quarter of 2008, altitude in this figure is relative to sea level.
(Horizontal axis is the north-east boundary of the existing noise abatement Area where 0 is the centre of the boundary)

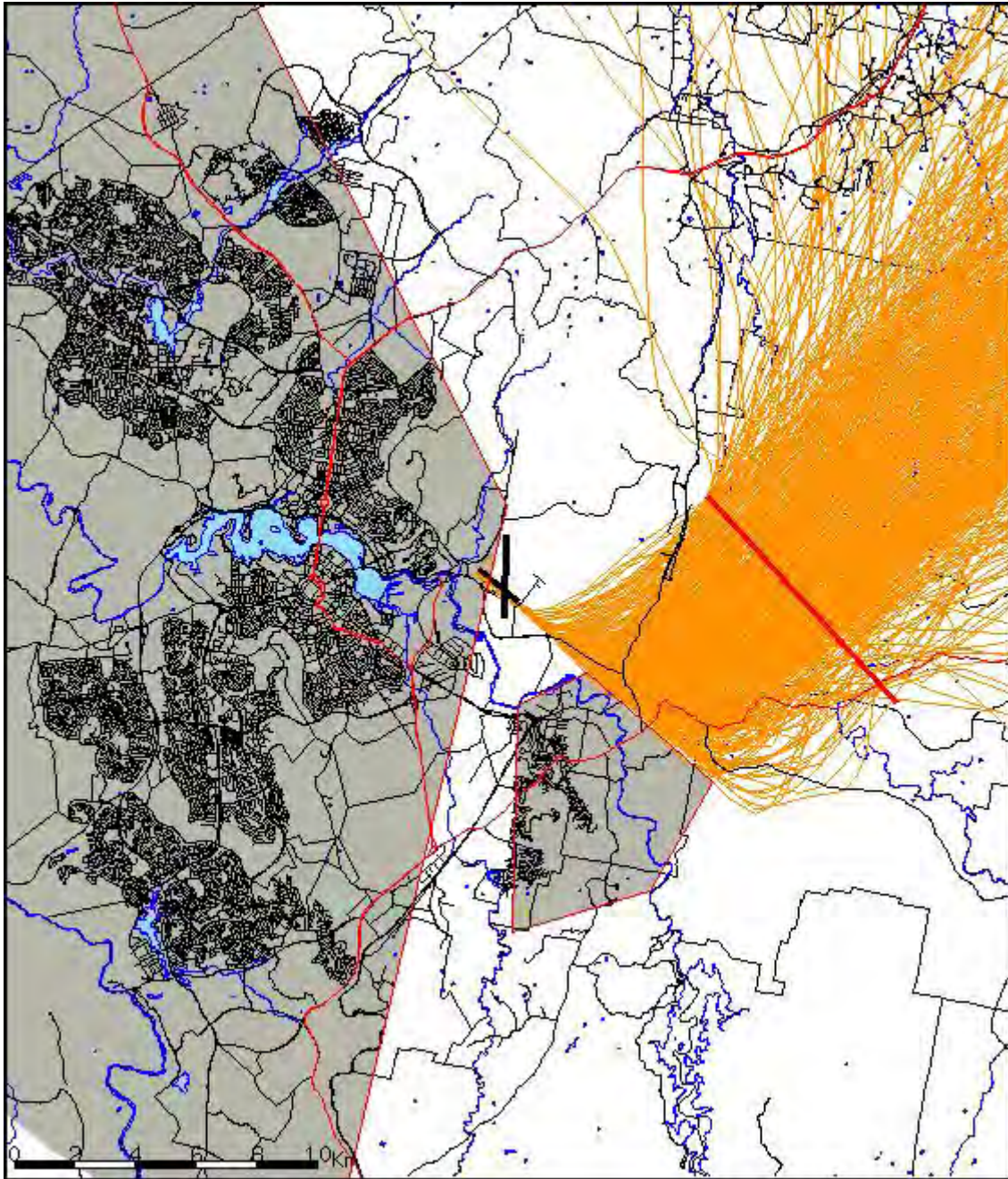


Figure 13: Track plot for aircraft arriving onto runway 30 during 3rd quarter of 2008. (The grey areas are the existing Canberra and Queanbeyan Noise Abatement Areas. The gate for detecting aircraft arriving onto runway 30 over Kowen Forest is highlighted in red)

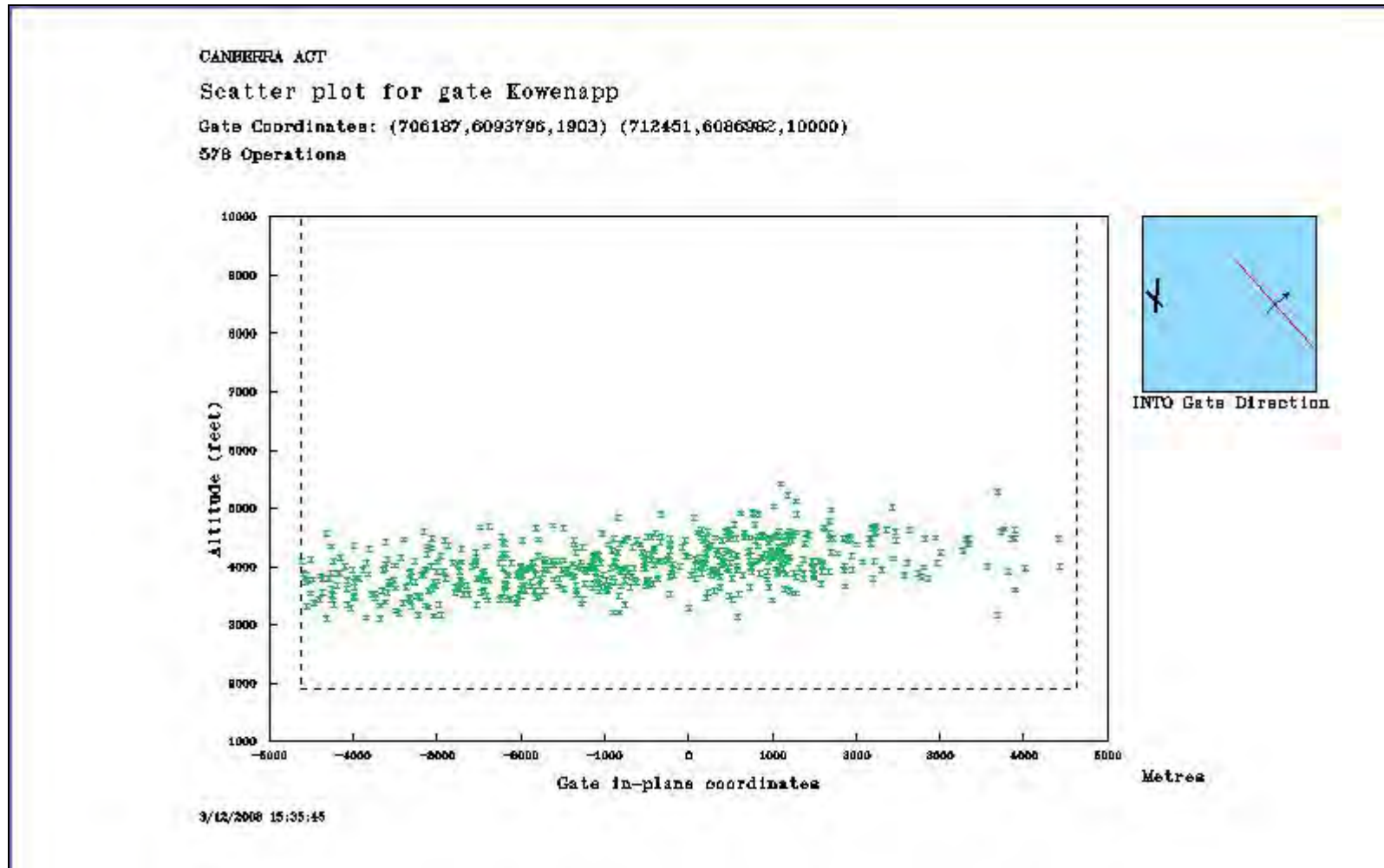


Figure 14: Scatter plot for aircraft arriving onto runway 30 over Kowen Forest during the 3rd quarter of 2008, altitude in this figure is relative to sea level. (Horizontal axis is the straight line (gate) crossing over Kowen forest where 0 is the centre of the gate)



4. AIRCRAFT MOVEMENT AND AIRCRAFT NOISE DATA

4.1. Movement statistics.

Movement statistics for Canberra Airport expressed in monthly figures are shown in Table 2. Explanations of the terms shown in Table 2 can be found in the Glossary section on Pages 8 and 9. The figures are based on TAAATS data.

Table 2 also covers the runway usage for arrivals and departures individually and as a total for each runway. In Table 2 brackets are used to indicate the number of RNP arrivals onto runways 17 and 35. Although their flight tracks may be available in the NFPMS, TAAATS does not always provide operational details for movements by helicopters and light propeller-driven aircraft. This is the main reason that Table 2 includes figures for operations by miscellaneous General Aviation aircraft, or aircraft with indeterminate runway (I).

The total number of monthly arrival and departure movements of all types (jets, non-jets and helicopters) at Canberra Airport for July was 5133, for August was 5339 and for September was 5344. The total number of arrival and departure movements for all aircraft types during the quarter was 15816.

Note that a training operation involving multiple circuits is counted by the system as a single movement, which may be arrival or departure. This is the reason that numbers of arrivals may differ from the corresponding numbers of departures. It is also the reason that movement numbers obtained from TAAATS data may differ from other ATC-sourced data.

There were also 1131 local area operations (these operations are not classified as arrivals nor departures by the NFPMS) of General Aviation aircraft recorded in the quarter by the NFPMS. Most of these operations performed multiple training circuits at the airport. Movement statistics for the previous four quarters are shown in Table 3. Note RNP movement numbers are within the brackets.

4.2. Night movement statistics.

Movement statistics for aircraft operating during the night hours (23:00 to 6:00) for Canberra Airport are shown in Table 4. The total number of movements during the night period in the third quarter of 2008 was 513. Movement figures for the previous four quarters are shown in Table 5.

4.3. Daily runway usage per calendar month for arrivals and departures during the quarter.

The daily runway usage per calendar month for arrivals and departures of all aircraft types including jets, non-jets, helicopters and emergency aircraft during the quarter is shown in Appendix C in which the movement figures of aircraft arrivals and departures are counted separately and wholly per runway for each day of the calendar month for the quarter.



Table 2
Movement statistics for each month of the 3rd quarter of 2008

		Jul-08	Aug-08	Sep-08	3 rd Quarter	2008
		Movements	Movements	Movements	Movements	Percents
Jets	A	1365	1406	1414	4185	
	D	1365	1403	1416	4184	
	T	2730	2809	2830	8369	
Non-Jets	A	1060	1071	1077	3208	
	D	1061	1100	1079	3240	
	T	2121	2171	2156	6448	
Helicopter	A	30	60	58	148	
	D	46	80	45	171	
	T	76	140	103	319	
Miscellaneous General Aviation Aircraft	A	138	162	154	454	
	D	68	57	101	226	
	T	206	219	255	680	
All Types *	A	2593	2699	2703	7995	100.0%
	D	2540	2640	2641	7821	100.0%
	T	5133	5339	5344	15816	
Runway Usage Arrivals	12	43	53	34	130	1.6%
	17	466 (26)	573 (39)	397 (28)	1436 (104)	18.0%
	30	291	317	389	997	12.5%
	35	1725 (52)	1643 (73)	1786 (50)	5154 (175)	64.5%
	H	30	60	58	148	1.9%
	I	38	53	39	130	1.6%
Runway Usage Departures	12	76	79	59	214	2.7%
	17	413	504	368	1285	16.4%
	30	65	100	145	310	4.0%
	35	1915	1836	1988	5739	73.4%
	H	46	80	45	171	2.2%
	I	25	41	36	102	1.3%
Runway Usage All Movements	12	119	132	93	344	
	17	879	1077	765	2721	
	30	356	417	534	1307	
	35	3640	3479	3774	10893	
	H	76	140	103	319	
	I	63	94	75	232	

* In addition to the total number of aircraft movements listed in the table, there were also another 1131 local area operations of General Aviation aircraft, mostly training circuits at the airport. RNP arrival statistics are given within the brackets.



Table 3. Quarterly movement statistics for the previous four quarters

		2 nd Quarter 2008		1 st Quarter 2008		4 th Quarter 2007		3 rd Quarter 2007	
		Movements	Percents	Movements	Movements	Movements	Movements	Movements	Percents
Jets	A	4071		3207		2720		2735	
	D	4062		3193		2715		2732	
	T	8133		6400		5435		5467	
Non-Jets	A	3373		3370		3526		3745	
	D	3401		3396		3541		3776	
	T	6774		6766		7067		7521	
Helicopter	A	187		237		181		193	
	D	187		230		161		172	
	T	374		467		342		365	
Miscellaneous General Aviation Aircraft	A	492		443		374		386	
	D	262		239		259		215	
	T	754		682		628		600	
All Types	A	8123	100.0%	7257	100.0%	6801	100.0%	7059	100.0%
	D	7912	100.0%	7058	100.0%	6671	100.0%	6894	100.0%
	T	16035		14315		13472		13953	
Runway Usage Arrivals	12	194	2.4%	279	3.8%	173	2.5%	125	1.8%
	17	1641(113)	20.2%	1395(91)	19.2%	1260(72)	18.5%	1211(58)	17.2%
	30	992	12.2%	960	13.2%	1285	18.9%	1513	21.4%
	35	5011(118)	61.7%	4267(91)	58.8%	3812(83)	56.1%	3944(87)	55.9%
	H	187	2.3%	237	3.3%	181	2.7%	186	2.6%
	I	98	1.2%	119	1.6%	90	1.3%	80	1.1%
Runway Usage Departures	12	347	4.4%	391	5.5%	280	4.2%	228	3.3%
	17	1437	18.2%	1165	16.5%	1213	18.2%	1112	16.1%
	30	256	3.2%	226	3.2%	340	5.1%	334	4.8%
	35	5617	71.0%	4970	70.4%	4596	68.9%	4979	72.2%
	H	187	2.4%	230	3.3%	161	2.4%	172	2.5%
	I	68	0.9%	76	1.1%	81	1.2%	69	1.0%
Runway Usage All Movements	12	541		670		453		353	
	17	3078		2560		2473		2323	
	30	1248		1186		1625		1847	
	35	10628		9237		8408		8916	
	H	374		467		342		365	
	I	166		196		171		149	



Table 4
Night movement statistics for each month of the 3rd quarter of 2008

		Jul-08	Aug-08	Sep-08	3 rd Quarter	2008
		Movements	Movements	Movements	Movements	Percents
Jets	A	35	35	38	108	
	D	3	7	5	15	
	T	38	42	43	123	
Non-Jets	A	77	89	74	240	
	D	32	34	36	102	
	T	109	123	110	342	
Helicopter	A	2	9	10	21	
	D	3	4	3	10	
	T	5	13	13	31	
Miscellaneous General Aviation Aircraft	A	4	5	2	11	
	D	2	2	2	6	
	T	6	7	4	17	
All Types	A	118	138	124	380	100.0%
	D	40	47	46	133	100.0%
	T	158	185	170	513	
Runway Usage Arrivals *	12	1	0	0	1	0.3%
	17	20	47	37	104	27.4%
	30	6	5	4	15	3.9%
	35	85	70	70	225	59.2%
	H	2	9	10	21	5.5%
	I	4	2	3	9	2.4%
Runway Usage Departures *	12	0	0	1	1	0.8%
	17	19	19	15	53	39.8%
	30	0	0	0	0	0.0%
	35	15	22	26	63	47.4%
	H	3	4	3	10	7.5%
	I	3	2	1	6	4.5%
Runway Usage All Movements	12	1	0	1	2	
	17	39	66	52	157	
	30	6	5	4	15	
	35	100	92	96	288	
	H	5	13	13	31	
	I	7	9	4	20	

* Takeoffs and landings preferentially use runways 17 and 35.



Table 5: Quarterly night movement statistics for the previous four quarters

		2 nd Quarter 2008		1 st Quarter 2008		4 th Quarter 2007		3 rd Quarter 2007	
		Movements	Percents	Movements	Percents	Movements	Percents	Movements	Percents
Jets	A	99		66		44		37	
	D	4		14		30		11	
	T	103		80		74		48	
Non-Jets	A	258		291		235		228	
	D	116		103		76		79	
	T	374		394		311		307	
Helicopter	A	17		26		23		9	
	D	16		21		12		6	
	T	33		47		35		15	
Miscellaneous General Aviation Aircraft	A	16		17		11		7	
	D	4		9		9		6	
	T	20		26		20		13	
All Types	A	390	100.0%	400	100.0%	313	100.0%	281	100.0%
	D	140	100.0%	147	100.0%	127	100.0%	102	100.0%
	T	530		547		440		383	
Runway Usage Arrivals	12	0	0.0%	2	0.5%	1	0.3%	1	0.4%
	17	87	22.3%	91	22.8%	60	19.2%	50	17.8%
	30	10	2.6%	7	1.8%	29	9.3%	18	6.4%
	35	269	69.0%	267	66.8%	198	63.3%	201	71.5%
	H	12	3.1%	26	6.5%	23	7.3%	9	3.2%
	I	12	3.1%	7	1.8%	2	0.6%	2	0.7%
Runway Usage Departures	12	3	2.1%	4	2.7%	2	1.6%	2	2.0%
	17	38	27.1%	36	24.5%	43	33.9%	41	40.2%
	30	0	0.0%	0	0.0%	1	0.8%	0	0.0%
	35	81	57.9%	83	56.5%	64	50.4%	53	52.0%
	H	16	11.4%	21	14.3%	12	9.4%	6	5.9%
	I	2	1.4%	3	2.0%	5	3.9%	0	0.0%
Runway Usage All Movements	12	3		6		3		3	
	17	125		127		103		91	
	30	10		7		30		18	
	35	345		350		262		254	
	H	33		47		35		15	
	I	10		7		2		6	



4.4. Hourly movements per calendar month for arrivals and departures during the quarter.

The hourly movements per calendar month of the quarter for all aircraft movements operating in and out of the airport including helicopters and emergency aircraft are shown in Appendix D. The data in Appendix D are calculated for whole clock hours within the day.

4.5. Quarterly aircraft average noise levels.

Appendix E presents a summary of movement numbers and noise levels recorded over the quarter for jet and non-jet aircraft types. It shows the actual movements and the correlated noise events of aircraft types operating on specific runways together with the average maximum sound pressure levels and standard deviations of the maxima for overflights by each type at the Jerrabomberra NMT. The terms used in the data output are explained in the Glossary. The data is sorted in order of descending maximum sound pressure levels.

4.6. Data included in Appendix E.

It may be noted in Appendix E that in some cases there is a difference between the reported number of aircraft movements and the number of correlated noise events.

A noise event occurs when a noise being measured at an NMT stays above a preset level for a preset time duration. When that condition occurs, the NFPMS looks at the radar input to see whether there is an aircraft track within a preset radius around the NMT location. If there is, the noise event is correlated with that aircraft track and registered as a correlated noise event.

Differences between the number of aircraft movements and the number of correlated noise events may be due to the following:

- (i) For aircraft operations which are not relatively close to the NMT location, the noise levels received from the aircraft may be below the event threshold level. This results in less correlated noise events than actual aircraft movements.
- (ii) Noise events may not be correlated with aircraft tracks due to radar system downtime or transponders on the aircraft being turned off. This also results in less correlated noise events than actual aircraft movements.
- (iii) In some cases, extraneous noise events caused by sources other than aircraft occur concurrently with an aircraft operation, and are coincidentally correlated with an aircraft track in the vicinity of the NMT. This may result in more correlated noise events than actual aircraft movements.

For larger data samples, the absence or mistaken identity of some noise events will have minimal effect on the mean data presented in the report. Data for small sample sizes may however not be truly representative. Noting that aircraft noise certification procedures specify a minimum of six overflights (under closely controlled conditions) to establish a mean noise level, the figure of six



has been adopted in this analysis as the minimum number of arrival or departure operations of any one aircraft type for the data to be considered meaningful.



APPENDIX A

An overview of the Noise and Flight Path Monitoring System



A. SYSTEM OVERVIEW

A.1. System configuration and features.

The NFPMS is the world's largest, most geographically-spread system of its type. The complete system is operated and controlled from AA Head Office in Canberra.

Around each of the airports are a number of noise monitoring terminals (NMTs). The NMT basically consists of a microphone, atop a mast of 6m height, and an electronics box. The noise level to which the microphone is exposed over the range 30 to 130 dB(A) is continuously measured and then transmitted, via a data line, to the NFPMS central computer where it is processed and stored for later analysis. Apart from measuring the aircraft noise, the NMT also continuously monitors the background noise levels.

Through the TAAATS system, the NFPMS acquires flight track and operational information on aircraft operating in and out of the airport.

On a map display for each airport, the system displays the noise levels measured by each of the NMTs and the flight tracks of the aircraft in the vicinity of the airport.

When the level and duration of noise from any noise source in the vicinity of an NMT exceed the threshold level and duration which have been set for the NMT, a "noise event" is recorded. The time at which the noise event is recorded at the NMT location is then checked against movement times and radar tracks of aircraft operating in the vicinity. If the time and NMT location of the noise event match the movement time and radar track of an aircraft, the noise event is attributed to that aircraft, i.e it becomes a "correlated noise event". Otherwise, it is regarded as part of the background noise.

The incoming data is stored in the central computer and can be recalled to display the tracks flown by any user selection of aircraft operations, together with the noise levels which those operations produced at the NMTs. The track information includes aircraft identity, altitude and speed.

The system includes statistical and acoustical software to undertake analyses of noise or flight track information as required by the user.

Automatically and regularly, the NFPMS produces reports that contain tabular and graphical summaries of noise and aircraft movement data for each airport over selected time periods.

The system includes the capability to analyse aircraft tracks, by selecting and listing the tracks which have passed through defined windows and corridors. The analysis can be selective, e.g. on specification of aircraft type or the route being flown.



A.2. System applications.

The NFPMS collects noise and flight path data 24 hours a day, seven days per week. It also accumulates flight plan and weather data.

The information collected is used by AA to:

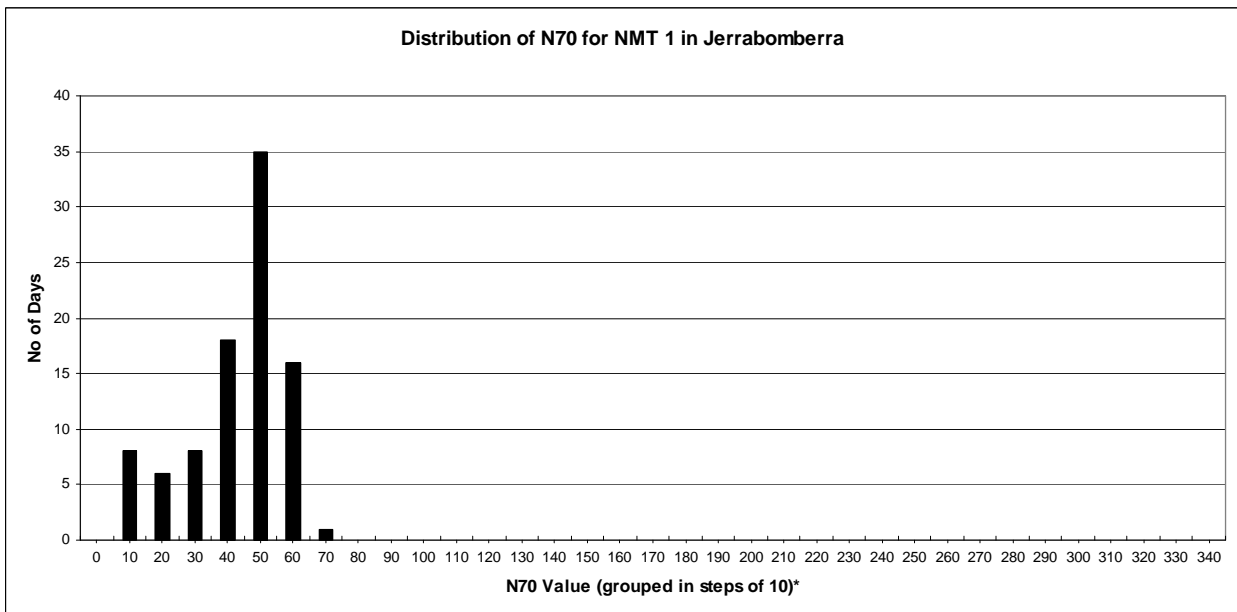
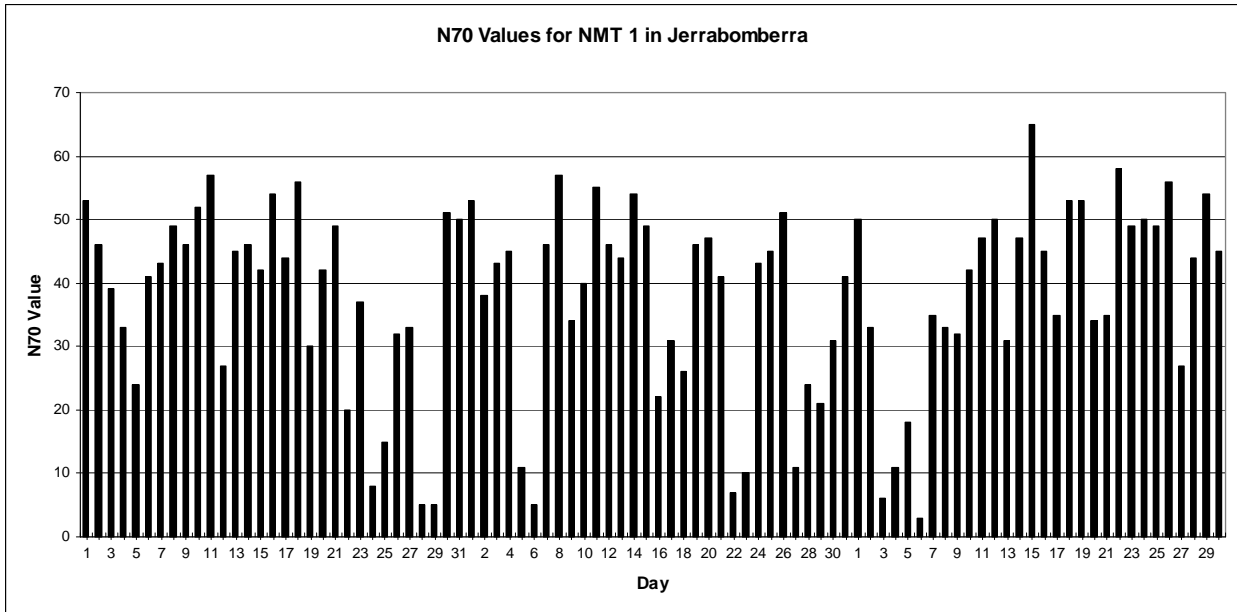
- . determine the contribution of aircraft to overall noise exposure;
 - . detect occurrences of excessive noise levels from aircraft operations;
 - . assess the effects of operational and administrative procedures for noise control and compliance with these procedures;
 - . assist in planning of airspace usage;
 - . validate noise forecasts and forecasting techniques;
 - . assist relevant authorities in land-use planning for developments on areas in the vicinity of an airport;
 - . provide reports to, and responses to questions from, Government and other Members of Parliament, industry organisations, airport owners, community groups and individuals; and
 - . assist in answering noise complaints about aircraft operations from the general public.
-



APPENDIX B

Daily value of N70 and N70 distribution for each NMT

during the period July to September 2008



Except for N70 value of 0, which shows number of days with zero exceedances of 70 dB(A). All other values are in steps of 10 (eg. days with N70 of 1 to 10, 11 to 20, 21 to 30 etc).



APPENDIX C

Daily runway usage per calendar month for arrivals and departures
during the period July to September 2008



Canberra Airport
Daily Runway Usage (Arrivals for All Aircraft Types)
Jul-08

days	Totals	12	17	30	35	H	I
01-Jul-08	82	0	0	8	74	0	0
02-Jul-08	81	0	0	17	64	0	0
03-Jul-08	99	1	20	15	57	2	4
04-Jul-08	88	5	27	2	53	0	1
05-Jul-08	67	2	5	14	42	2	2
06-Jul-08	73	0	0	15	56	1	1
07-Jul-08	73	1	1	0	71	0	0
08-Jul-08	79	0	1	6	71	0	1
09-Jul-08	78	0	0	8	69	0	1
10-Jul-08	76	0	1	4	69	1	1
11-Jul-08	83	0	0	6	76	0	1
12-Jul-08	71	0	0	17	52	0	2
13-Jul-08	81	0	1	18	57	1	4
14-Jul-08	104	0	3	16	77	4	4
15-Jul-08	92	0	2	18	71	1	0
16-Jul-08	87	1	1	8	75	1	1
17-Jul-08	88	0	0	8	79	0	1
18-Jul-08	88	0	0	9	78	0	1
19-Jul-08	67	0	0	8	55	2	2
20-Jul-08	69	0	0	5	61	3	0
21-Jul-08	75	0	0	12	63	0	0
22-Jul-08	98	2	53	8	31	1	3
23-Jul-08	89	4	35	2	47	1	0
24-Jul-08	103	17	79	0	5	1	1
25-Jul-08	98	6	55	4	30	2	1
26-Jul-08	63	0	4	14	42	1	2
27-Jul-08	75	0	24	8	42	0	1
28-Jul-08	85	2	75	1	4	2	1
29-Jul-08	85	2	78	0	3	1	1
30-Jul-08	100	0	0	17	82	0	1
31-Jul-08	96	0	1	23	69	3	0
total	2593	43	466	291	1725	30	38
percentage	100.0%	1.7%	18.0%	11.2%	66.5%	1.2%	1.5%



Canberra Airport
Daily Runway Usage (Departures for All Aircraft Types)
Jul-08

days	Totals	12	17	30	35	H	I
01-Jul-08	82	0	1	3	77	1	0
02-Jul-08	80	0	1	6	71	1	1
03-Jul-08	99	4	18	3	68	3	3
04-Jul-08	92	10	28	0	51	2	1
05-Jul-08	62	1	1	2	53	3	2
06-Jul-08	71	0	0	4	66	1	0
07-Jul-08	73	0	0	0	72	1	0
08-Jul-08	80	3	1	1	74	1	0
09-Jul-08	76	0	1	1	73	0	1
10-Jul-08	80	0	1	1	76	1	1
11-Jul-08	79	0	0	1	77	0	1
12-Jul-08	65	2	1	5	56	1	0
13-Jul-08	72	0	1	3	63	2	3
14-Jul-08	100	0	0	4	92	3	1
15-Jul-08	90	0	1	2	85	2	0
16-Jul-08	84	0	2	4	77	1	0
17-Jul-08	85	0	3	1	79	2	0
18-Jul-08	89	0	1	2	85	0	1
19-Jul-08	67	0	0	6	57	3	1
20-Jul-08	65	0	0	1	60	3	1
21-Jul-08	78	1	0	0	77	0	0
22-Jul-08	98	7	39	2	46	1	3
23-Jul-08	85	9	34	0	41	1	0
24-Jul-08	98	16	74	0	7	1	0
25-Jul-08	94	6	46	2	36	3	1
26-Jul-08	63	2	0	2	56	1	2
27-Jul-08	67	1	11	1	52	1	1
28-Jul-08	82	4	69	0	7	1	1
29-Jul-08	90	8	77	0	2	3	0
30-Jul-08	98	1	1	5	91	0	0
31-Jul-08	96	1	1	3	88	3	0
total	2540	76	413	65	1915	46	25
percentage	100.0%	3.0%	16.3%	2.6%	75.4%	1.8%	1.0%



**Canberra Airport
Daily Runway Usage (Arrivals and Departures for All Aircraft Types)
Jul-08**

days	Totals	12	17	30	35	H	I
01-Jul-08	164	0	1	11	151	1	0
02-Jul-08	161	0	1	23	135	1	1
03-Jul-08	198	5	38	18	125	5	7
04-Jul-08	180	15	55	2	104	2	2
05-Jul-08	129	3	6	16	95	5	4
06-Jul-08	144	0	0	19	122	2	1
07-Jul-08	146	1	1	0	143	1	0
08-Jul-08	159	3	2	7	145	1	1
09-Jul-08	154	0	1	9	142	0	2
10-Jul-08	156	0	2	5	145	2	2
11-Jul-08	162	0	0	7	153	0	2
12-Jul-08	136	2	1	22	108	1	2
13-Jul-08	153	0	2	21	120	3	7
14-Jul-08	204	0	3	20	169	7	5
15-Jul-08	182	0	3	20	156	3	0
16-Jul-08	171	1	3	12	152	2	1
17-Jul-08	173	0	3	9	158	2	1
18-Jul-08	177	0	1	11	163	0	2
19-Jul-08	134	0	0	14	112	5	3
20-Jul-08	134	0	0	6	121	6	1
21-Jul-08	153	1	0	12	140	0	0
22-Jul-08	196	9	92	10	77	2	6
23-Jul-08	174	13	69	2	88	2	0
24-Jul-08	201	33	153	0	12	2	1
25-Jul-08	192	12	101	6	66	5	2
26-Jul-08	126	2	4	16	98	2	4
27-Jul-08	142	1	35	9	94	1	2
28-Jul-08	167	6	144	1	11	3	2
29-Jul-08	175	10	155	0	5	4	1
30-Jul-08	198	1	1	22	173	0	1
31-Jul-08	192	1	2	26	157	6	0
total	5133	119	879	356	3640	76	63
percentage	100.0%	2.3%	17.1%	6.9%	70.9%	1.5%	1.2%



Canberra Airport
Daily Runway Usage (Arrivals for All Aircraft Types)
Aug-08

days	Totals	12	17	30	35	H	I
01-Aug-08	82	0	2	4	73	2	1
02-Aug-08	63	0	0	10	47	3	3
03-Aug-08	84	0	0	17	66	1	0
04-Aug-08	100	0	0	21	76	1	2
05-Aug-08	94	4	65	3	14	1	7
06-Aug-08	95	5	87	0	3	0	0
07-Aug-08	93	0	2	12	74	4	1
08-Aug-08	91	0	1	14	75	1	0
09-Aug-08	58	0	1	11	44	1	1
10-Aug-08	64	0	0	1	61	0	2
11-Aug-08	93	0	1	19	72	1	0
12-Aug-08	84	0	2	11	68	2	1
13-Aug-08	90	0	1	14	71	3	1
14-Aug-08	92	0	2	16	67	5	2
15-Aug-08	94	0	1	21	69	1	2
16-Aug-08	70	0	28	13	24	4	1
17-Aug-08	86	1	19	14	49	1	2
18-Aug-08	88	3	37	10	35	3	0
19-Aug-08	96	0	1	18	73	2	2
20-Aug-08	112	0	2	21	84	3	2
21-Aug-08	100	0	2	16	75	6	1
22-Aug-08	88	6	76	1	2	0	3
23-Aug-08	57	4	42	0	9	0	2
24-Aug-08	79	1	0	7	69	2	0
25-Aug-08	96	0	2	14	80	0	0
26-Aug-08	112	2	5	16	84	4	1
27-Aug-08	103	8	76	1	12	1	5
28-Aug-08	95	10	46	2	35	0	2
29-Aug-08	109	7	56	3	38	2	3
30-Aug-08	68	2	16	5	36	6	3
31-Aug-08	63	0	0	2	58	0	3
total	2699	53	573	317	1643	60	53
percentage	100.0%	2.0%	21.2%	11.7%	60.9%	2.2%	2.0%



Canberra Airport
Daily Runway Usage (Departures for All Aircraft Types)
Aug-08

days	Totals	12	17	30	35	H	I
01-Aug-08	82	1	3	2	75	1	0
02-Aug-08	60	0	0	5	50	2	3
03-Aug-08	75	1	0	5	66	1	2
04-Aug-08	97	1	0	3	92	1	0
05-Aug-08	85	8	52	0	23	2	0
06-Aug-08	99	12	84	0	2	1	0
07-Aug-08	94	1	1	2	87	3	0
08-Aug-08	87	0	2	2	82	0	1
09-Aug-08	57	0	0	1	50	4	2
10-Aug-08	60	0	0	0	58	1	1
11-Aug-08	91	1	1	3	82	1	3
12-Aug-08	87	0	2	3	79	2	1
13-Aug-08	88	1	1	2	80	4	0
14-Aug-08	96	0	1	3	87	4	1
15-Aug-08	86	0	1	6	77	1	1
16-Aug-08	66	0	19	10	32	5	0
17-Aug-08	84	6	20	7	47	1	3
18-Aug-08	90	4	29	5	50	2	0
19-Aug-08	85	1	1	5	76	1	1
20-Aug-08	105	0	1	7	90	4	3
21-Aug-08	108	0	0	7	93	6	2
22-Aug-08	85	1	69	0	9	3	3
23-Aug-08	62	0	52	0	5	5	0
24-Aug-08	75	1	2	8	60	2	2
25-Aug-08	97	1	0	5	89	1	1
26-Aug-08	106	1	3	8	88	5	1
27-Aug-08	103	10	64	0	19	6	4
28-Aug-08	96	9	37	1	46	2	1
29-Aug-08	104	9	46	0	45	2	2
30-Aug-08	68	10	13	0	37	6	2
31-Aug-08	62	0	0	0	60	1	1
total	2640	79	504	100	1836	80	41
percentage	100.0%	3.0%	19.1%	3.8%	69.5%	3.0%	1.6%



Canberra Airport
Daily Runway Usage (Arrivals and Departures for All Aircraft Types)
Aug-08

days	Totals	12	17	30	35	H	I
01-Aug-08	164	1	5	6	148	3	1
02-Aug-08	123	0	0	15	97	5	6
03-Aug-08	159	1	0	22	132	2	2
04-Aug-08	197	1	0	24	168	2	2
05-Aug-08	179	12	117	3	37	3	7
06-Aug-08	194	17	171	0	5	1	0
07-Aug-08	187	1	3	14	161	7	1
08-Aug-08	178	0	3	16	157	1	1
09-Aug-08	115	0	1	12	94	5	3
10-Aug-08	124	0	0	1	119	1	3
11-Aug-08	184	1	2	22	154	2	3
12-Aug-08	171	0	4	14	147	4	2
13-Aug-08	178	1	2	16	151	7	1
14-Aug-08	188	0	3	19	154	9	3
15-Aug-08	180	0	2	27	146	2	3
16-Aug-08	136	0	47	23	56	9	1
17-Aug-08	170	7	39	21	96	2	5
18-Aug-08	178	7	66	15	85	5	0
19-Aug-08	181	1	2	23	149	3	3
20-Aug-08	217	0	3	28	174	7	5
21-Aug-08	208	0	2	23	168	12	3
22-Aug-08	173	7	145	1	11	3	6
23-Aug-08	119	4	94	0	14	5	2
24-Aug-08	154	2	2	15	129	4	2
25-Aug-08	193	1	2	19	169	1	1
26-Aug-08	218	3	8	24	172	9	2
27-Aug-08	206	18	140	1	31	7	9
28-Aug-08	191	19	83	3	81	2	3
29-Aug-08	213	16	102	3	83	4	5
30-Aug-08	136	12	29	5	73	12	5
31-Aug-08	125	0	0	2	118	1	4
total	5339	132	1077	417	3479	140	94
percentage	100.0%	2.5%	20.2%	7.8%	65.2%	2.6%	1.8%



Canberra Airport
Daily Runway Usage (Arrivals for All Aircraft Types)
Sep-08

days	Totals	12	17	30	35	H	I
01-Sep-08	94	0	0	21	69	4	0
02-Sep-08	93	0	26	10	54	2	1
03-Sep-08	97	4	78	1	12	2	0
04-Sep-08	93	5	74	0	9	3	2
05-Sep-08	84	1	59	0	21	1	2
06-Sep-08	61	6	47	1	2	2	3
07-Sep-08	68	0	3	13	49	1	2
08-Sep-08	102	4	34	15	47	1	1
09-Sep-08	101	3	23	13	59	2	1
10-Sep-08	106	1	9	16	76	1	3
11-Sep-08	101	1	4	15	79	1	1
12-Sep-08	107	1	2	25	77	2	0
13-Sep-08	60	0	0	11	47	2	0
14-Sep-08	70	0	0	7	61	1	1
15-Sep-08	84	0	0	11	73	0	0
16-Sep-08	91	0	1	18	69	1	2
17-Sep-08	110	5	21	15	66	2	1
18-Sep-08	102	1	1	16	82	1	1
19-Sep-08	105	0	2	22	76	3	2
20-Sep-08	64	0	0	15	45	3	1
21-Sep-08	88	0	0	19	65	2	2
22-Sep-08	87	0	0	9	77	1	0
23-Sep-08	89	0	1	10	72	2	4
24-Sep-08	100	0	1	20	75	2	2
25-Sep-08	113	1	2	13	91	5	1
26-Sep-08	99	0	3	14	80	1	1
27-Sep-08	65	0	0	12	49	4	0
28-Sep-08	77	0	0	16	55	3	3
29-Sep-08	87	1	6	6	73	0	1
30-Sep-08	105	0	0	25	76	3	1
total	2703	34	397	389	1786	58	39
percentage	100.0%	1.3%	14.7%	14.4%	66.1%	2.1%	1.4%



Canberra Airport
Daily Runway Usage (Departures for All Aircraft Types)
Sep-08

days	Totals	12	17	30	35	H	I
01-Sep-08	91	0	0	7	81	3	0
02-Sep-08	93	4	21	4	62	2	0
03-Sep-08	96	9	66	1	17	2	1
04-Sep-08	95	8	75	0	6	2	4
05-Sep-08	88	3	49	0	34	0	2
06-Sep-08	63	5	49	4	0	4	1
07-Sep-08	62	0	1	4	56	0	1
08-Sep-08	93	2	28	6	56	0	1
09-Sep-08	105	5	31	4	60	2	3
10-Sep-08	102	5	10	7	74	2	4
11-Sep-08	98	2	2	2	91	0	1
12-Sep-08	111	1	1	9	94	4	2
13-Sep-08	64	0	0	5	57	2	0
14-Sep-08	62	0	0	3	58	1	0
15-Sep-08	82	0	0	3	79	0	0
16-Sep-08	91	0	1	9	79	0	2
17-Sep-08	104	7	16	4	75	1	1
18-Sep-08	98	0	1	8	87	1	1
19-Sep-08	100	1	2	7	88	0	2
20-Sep-08	66	0	1	8	55	2	0
21-Sep-08	75	2	1	3	67	1	1
22-Sep-08	84	1	0	4	78	1	0
23-Sep-08	86	0	0	3	81	1	1
24-Sep-08	95	1	1	1	87	3	2
25-Sep-08	110	0	2	6	97	3	2
26-Sep-08	99	1	1	7	88	0	2
27-Sep-08	70	0	0	10	57	2	1
28-Sep-08	70	0	0	9	58	3	0
29-Sep-08	84	2	8	0	73	0	1
30-Sep-08	104	0	1	7	93	3	0
total	2641	59	368	145	1988	45	36
percentage	100.0%	2.2%	13.9%	5.5%	75.3%	1.7%	1.4%



Canberra Airport
Daily Runway Usage (Arrivals and Departures for All Aircraft Types)
Sep-08

days	Totals	12	17	30	35	H	I
01-Sep-08	185	0	0	28	150	7	0
02-Sep-08	186	4	47	14	116	4	1
03-Sep-08	193	13	144	2	29	4	1
04-Sep-08	188	13	149	0	15	5	6
05-Sep-08	172	4	108	0	55	1	4
06-Sep-08	124	11	96	5	2	6	4
07-Sep-08	130	0	4	17	105	1	3
08-Sep-08	195	6	62	21	103	1	2
09-Sep-08	206	8	54	17	119	4	4
10-Sep-08	208	6	19	23	150	3	7
11-Sep-08	199	3	6	17	170	1	2
12-Sep-08	218	2	3	34	171	6	2
13-Sep-08	124	0	0	16	104	4	0
14-Sep-08	132	0	0	10	119	2	1
15-Sep-08	166	0	0	14	152	0	0
16-Sep-08	182	0	2	27	148	1	4
17-Sep-08	214	12	37	19	141	3	2
18-Sep-08	200	1	2	24	169	2	2
19-Sep-08	205	1	4	29	164	3	4
20-Sep-08	130	0	1	23	100	5	1
21-Sep-08	163	2	1	22	132	3	3
22-Sep-08	171	1	0	13	155	2	0
23-Sep-08	175	0	1	13	153	3	5
24-Sep-08	195	1	2	21	162	5	4
25-Sep-08	223	1	4	19	188	8	3
26-Sep-08	198	1	4	21	168	1	3
27-Sep-08	135	0	0	22	106	6	1
28-Sep-08	147	0	0	25	113	6	3
29-Sep-08	171	3	14	6	146	0	2
30-Sep-08	209	0	1	32	169	6	1
total	5344	93	765	534	3774	103	75
percentage	100.0%	1.7%	14.3%	10.0%	70.6%	1.9%	1.4%



APPENDIX D

Hourly movements per calendar month for arrivals and departures
during the period July to September 2008



Canberra Airport																									
Hourly Movements (Arrivals and Departures for All Aircraft Types)																									
Jul-08																									
days	total	00:00	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
01-Jul-08	164	3	1	0	0	0	1	9	10	14	12	10	8	5	6	6	15	7	10	20	7	11	6	2	1
02-Jul-08	161	2	2	0	0	0	1	11	8	7	12	10	9	9	5	8	10	9	14	13	12	9	6	1	3
03-Jul-08	198	2	1	0	0	0	0	7	13	11	13	15	13	6	11	11	10	11	20	16	17	10	5	4	2
04-Jul-08	180	2	1	0	0	0	0	7	9	11	14	10	12	7	10	13	11	10	18	15	9	13	4	3	1
05-Jul-08	129	1	2	0	0	0	0	6	2	7	14	14	9	10	10	11	10	6	10	4	5	2	4	1	1
06-Jul-08	144	0	0	2	0	0	0	4	3	5	9	14	14	5	15	11	6	10	11	7	8	11	4	3	2
07-Jul-08	146	0	1	0	0	1	0	13	7	8	13	10	9	2	6	9	5	8	12	12	11	12	3	2	2
08-Jul-08	159	2	1	0	0	1	1	12	7	8	16	11	6	7	8	6	11	10	13	10	11	9	6	1	2
09-Jul-08	154	2	1	0	0	0	0	10	6	12	11	10	9	5	7	9	8	10	14	7	7	12	6	3	5
10-Jul-08	156	1	2	0	2	0	0	9	7	13	11	8	7	8	8	9	10	9	10	11	10	10	7	2	2
11-Jul-08	162	2	0	1	0	0	0	9	7	11	13	10	7	8	11	8	11	7	13	11	9	12	8	3	1
12-Jul-08	136	0	1	0	0	0	0	5	4	5	10	14	14	13	8	10	15	13	7	4	4	4	2	3	0
13-Jul-08	153	0	1	2	0	0	0	3	3	7	14	9	9	11	10	13	9	11	12	9	6	14	6	3	1
14-Jul-08	204	0	2	0	0	1	0	11	7	12	16	10	13	17	14	8	11	14	21	12	13	12	4	3	3
15-Jul-08	182	2	1	0	0	0	0	7	10	14	13	12	10	8	10	10	12	16	17	12	11	10	4	1	2
16-Jul-08	171	1	2	0	0	0	0	7	12	6	12	11	12	9	9	8	8	14	14	19	8	9	6	1	3
17-Jul-08	173	3	1	0	0	0	0	8	8	7	11	12	8	5	11	10	10	11	20	11	11	14	5	5	2
18-Jul-08	177	2	1	0	0	0	0	10	8	13	20	11	10	5	6	11	9	7	16	15	10	11	8	2	2
19-Jul-08	134	0	1	0	1	1	0	6	2	8	10	10	9	10	14	12	12	9	8	9	5	3	3	1	0
20-Jul-08	134	0	1	1	0	0	0	4	2	7	10	11	8	6	9	9	7	11	14	7	7	6	7	6	1
21-Jul-08	153	0	1	0	0	1	1	15	7	12	14	10	5	7	5	6	7	8	18	9	9	8	7	2	1
22-Jul-08	196	3	1	0	1	0	1	11	8	13	14	12	13	13	11	11	13	13	20	14	8	7	5	2	2
23-Jul-08	174	2	1	0	0	0	0	7	12	11	16	13	10	6	6	8	13	10	18	12	9	10	5	3	2
24-Jul-08	201	2	1	0	1	1	0	10	11	14	15	9	13	9	13	16	11	12	20	16	10	10	5	1	1
25-Jul-08	192	3	1	0	0	0	0	10	6	9	14	16	15	14	7	11	10	9	18	16	11	14	5	2	1
26-Jul-08	126	0	1	0	0	0	0	5	5	7	7	11	5	8	13	14	11	9	14	5	4	4	1	2	0
27-Jul-08	142	0	1	1	0	0	0	5	2	5	9	11	10	5	10	11	8	11	12	13	8	8	8	4	0
28-Jul-08	167	1	1	0	0	1	0	5	11	9	14	11	6	8	8	13	8	13	13	10	11	9	11	2	2
29-Jul-08	175	1	3	1	1	0	0	8	9	12	14	13	8	5	7	11	9	12	19	14	12	9	4	1	2
30-Jul-08	198	1	3	0	0	0	3	10	7	12	12	13	14	9	11	12	13	13	18	14	15	6	6	4	2
31-Jul-08	192	1	1	1	0	0	0	9	5	15	18	11	12	9	10	13	11	10	21	13	11	9	10	1	1
Total	5133	39	38	9	6	7	8	253	218	305	401	352	307	249	289	318	314	323	465	360	289	288	171	74	50
Percentage	100.0	0.8	0.7	0.2	0.1	0.1	0.2	4.9	4.2	5.9	7.8	6.9	6.0	4.9	5.6	6.2	6.1	6.3	9.1	7.0	5.6	3.3	1.4	1.0	



**Canberra Airport
Hourly Movements (Arrivals and Departures for All Aircraft Types)
Aug-08**

days	total	00:00	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
01-Aug-08	164	2	2	0	0	0	0	11	8	12	15	9	11	6	7	7	4	10	14	13	11	12	6	4	0
02-Aug-08	123	2	0	0	0	0	0	7	3	6	13	10	6	12	8	11	10	8	11	4	3	5	3	0	1
03-Aug-08	159	0	1	1	0	0	0	2	4	5	8	16	13	10	12	13	12	15	16	7	10	9	4	1	0
04-Aug-08	197	0	1	0	0	1	1	12	8	14	16	18	12	8	12	10	9	12	20	15	10	11	4	1	2
05-Aug-08	179	1	2	0	0	1	0	8	11	9	15	17	9	9	11	13	8	10	13	11	12	11	5	2	1
06-Aug-08	194	2	1	1	0	2	1	11	11	12	16	12	12	7	9	8	6	13	21	15	12	13	6	0	3
07-Aug-08	187	3	2	0	1	0	0	11	7	11	19	18	7	7	13	12	6	5	15	18	12	7	10	2	1
08-Aug-08	178	3	0	1	1	0	0	10	9	9	16	14	8	6	6	11	12	11	16	17	11	7	8	0	2
09-Aug-08	115	0	2	0	1	1	0	6	3	5	16	11	6	6	7	9	10	10	7	5	4	4	2	0	0
10-Aug-08	124	0	0	2	0	0	0	6	1	5	13	10	6	4	5	7	8	14	12	8	8	9	4	1	1
11-Aug-08	184	2	1	0	0	0	0	9	7	10	19	10	7	9	11	14	13	13	19	10	12	10	3	2	3
12-Aug-08	171	2	1	0	1	0	1	10	9	11	15	13	8	6	6	10	9	11	18	12	8	7	8	4	1
13-Aug-08	178	3	1	0	1	0	0	7	10	10	13	11	11	7	10	9	12	10	16	14	11	9	5	5	3
14-Aug-08	188	2	2	1	1	0	0	9	9	11	16	12	12	6	11	11	10	10	18	12	14	11	4	3	3
15-Aug-08	180	3	2	0	2	1	1	9	7	14	15	11	9	6	6	16	8	4	22	14	9	9	10	2	0
16-Aug-08	136	0	3	0	0	1	1	6	3	5	11	12	13	8	9	13	10	14	7	8	4	4	4	0	0
17-Aug-08	170	1	1	1	0	0	0	6	2	7	11	13	16	10	9	14	15	11	20	6	9	11	4	2	1
18-Aug-08	178	0	1	0	0	0	2	12	7	9	21	11	11	10	9	9	7	13	18	11	9	7	7	2	2
19-Aug-08	181	2	1	0	1	0	0	8	8	13	14	12	6	11	7	10	17	13	17	10	11	10	4	2	4
20-Aug-08	217	2	1	0	1	0	1	10	9	11	17	21	17	7	11	12	17	14	18	14	15	11	4	2	2
21-Aug-08	208	2	1	0	1	0	0	10	12	16	16	14	8	11	17	14	11	13	16	12	9	11	8	4	2
22-Aug-08	173	2	1	1	1	0	2	10	7	13	12	14	9	6	10	10	7	10	10	12	18	8	6	2	2
23-Aug-08	119	4	0	0	0	0	0	6	3	8	10	12	14	6	9	7	7	11	5	6	5	3	2	1	0
24-Aug-08	154	0	1	1	1	0	1	5	1	6	11	10	12	7	10	15	11	12	16	9	9	10	4	1	1
25-Aug-08	193	0	1	0	0	0	0	9	9	10	12	11	9	9	17	14	14	13	16	13	16	9	5	3	3
26-Aug-08	218	2	2	0	2	0	2	11	11	16	18	11	11	10	14	15	12	16	15	13	9	15	7	2	4
27-Aug-08	206	2	2	0	1	0	0	13	9	21	16	12	9	11	11	12	11	12	19	15	11	9	7	2	1
28-Aug-08	191	2	2	0	1	0	0	11	9	11	16	12	9	7	13	6	11	15	22	13	12	10	6	1	2
29-Aug-08	213	3	1	3	1	0	1	10	12	15	18	14	9	6	15	5	13	16	21	16	17	7	8	1	1
30-Aug-08	136	1	0	0	0	0	0	5	7	8	9	18	8	16	9	9	11	14	5	4	4	5	1	2	0
31-Aug-08	125	1	1	0	0	0	1	3	1	4	12	9	6	6	7	8	6	14	13	8	6	12	4	1	2
Total	5339	49	37	12	18	7	15	263	217	317	449	398	304	250	311	334	317	367	476	345	311	276	163	55	48
Percentage	100.0	0.9	0.7	0.2	0.3	0.1	0.3	4.9	4.1	5.9	8.4	7.5	5.7	4.7	5.8	6.3	5.9	6.9	8.9	6.5	5.8	5.2	3.1	1.0	0.9



**Canberra Airport
Hourly Movements (Arrivals and Departures for All Aircraft Types)
Sep-08**

days	total	00:00	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
01-Sep-08	185	1	1	0	0	0	0	11	10	13	14	10	6	10	7	8	10	16	18	13	14	12	6	3	2
02-Sep-08	186	1	2	0	1	0	0	9	13	12	11	12	10	10	13	6	12	14	19	11	10	12	5	2	1
03-Sep-08	193	2	3	0	0	1	0	12	10	17	13	12	10	15	11	5	8	12	18	14	13	10	4	1	2
04-Sep-08	188	1	2	0	0	2	1	12	6	15	13	9	13	6	12	5	10	16	18	10	11	13	11	1	1
05-Sep-08	172	2	2	1	0	1	1	11	8	17	11	7	6	7	10	6	9	11	15	12	14	11	7	1	2
06-Sep-08	124	1	1	0	0	0	0	5	6	7	9	12	11	5	11	11	8	13	6	6	5	3	3	1	0
07-Sep-08	130	0	1	1	0	0	0	5	2	4	8	14	7	5	11	7	8	15	12	6	10	10	2	1	1
08-Sep-08	195	0	1	0	0	1	0	6	12	11	15	9	6	14	16	13	11	19	17	12	12	12	4	0	4
09-Sep-08	206	1	2	1	0	0	1	11	13	18	14	16	9	7	11	8	12	16	18	16	10	12	7	1	2
10-Sep-08	208	2	1	0	0	0	1	11	10	20	17	10	8	7	12	11	11	21	18	14	12	11	8	1	2
11-Sep-08	199	3	1	0	0	0	1	8	10	16	16	13	12	8	12	10	8	15	19	16	13	10	5	2	1
12-Sep-08	218	3	1	0	0	0	0	10	9	19	18	16	13	13	12	8	11	12	18	18	17	9	8	2	1
13-Sep-08	124	2	1	1	0	0	0	7	5	8	16	13	10	6	12	6	7	10	5	4	4	4	2	1	0
14-Sep-08	132	1	0	2	1	0	1	5	1	6	7	7	10	6	9	8	6	12	14	9	7	13	5	0	2
15-Sep-08	166	0	1	0	0	0	0	11	7	14	12	10	9	10	10	3	8	12	15	10	12	12	6	2	2
16-Sep-08	182	2	1	0	0	0	0	10	6	16	12	10	11	4	15	6	13	17	20	8	12	10	5	2	2
17-Sep-08	214	4	1	0	0	0	1	13	9	19	13	8	9	12	14	12	14	20	18	15	11	10	7	0	4
18-Sep-08	200	2	1	0	0	0	1	10	5	15	18	9	10	14	16	6	11	13	20	14	12	11	6	4	2
19-Sep-08	205	2	0	1	1	0	1	10	10	15	14	13	9	11	13	10	16	19	16	10	12	13	6	2	1
20-Sep-08	130	1	1	0	0	0	2	7	4	9	10	14	8	8	11	9	7	12	5	4	6	4	2	4	2
21-Sep-08	163	1	0	1	1	0	1	5	5	9	10	12	11	8	12	14	11	13	18	7	10	5	6	2	1
22-Sep-08	171	0	1	0	0	0	0	8	9	17	13	13	10	9	8	3	7	10	18	10	11	13	7	2	2
23-Sep-08	175	1	1	1	0	0	0	8	12	13	11	9	6	6	12	7	10	16	17	12	14	9	5	2	3
24-Sep-08	195	1	3	1	0	0	0	12	9	15	16	12	10	10	12	9	12	12	15	16	10	11	5	2	2
25-Sep-08	223	2	1	2	0	0	0	14	7	16	16	15	13	12	10	15	16	15	19	16	11	11	7	1	4
26-Sep-08	198	2	0	0	1	0	2	10	8	14	17	16	11	11	8	11	9	15	17	14	11	9	7	3	2
27-Sep-08	135	0	0	1	0	1	0	8	5	10	13	12	17	8	8	11	8	9	6	4	7	3	3	1	0
28-Sep-08	147	1	0	3	0	0	0	5	1	6	10	9	10	7	11	11	9	13	16	10	8	7	4	4	2
29-Sep-08	171	0	1	0	0	0	1	8	10	14	13	8	8	9	8	6	8	15	15	13	15	9	6	1	3
30-Sep-08	209	1	2	0	0	0	0	10	7	19	13	13	9	12	5	16	20	17	17	11	12	12	4	6	3
Total	5344	40	33	16	5	6	15	272	229	404	393	343	292	270	332	261	310	430	467	335	326	291	163	55	56
Percentage	100.0	0.7	0.6	0.3	0.1	0.1	0.3	5.1	4.3	7.6	7.4	6.4	5.5	5.1	6.2	4.9	5.8	8.0	8.7	6.3	6.1	5.4	3.1	1.0	1.0



APPENDIX E

Aircraft average noise levels

July to September 2008



CANBERRA AIRPORT
Aircraft Average Noise Levels
Third Quarter 2008 and Previous Four Quarters
Location: Jerrabomberra NMT 1

TYPE	DESCRIPTION	OPERATION	RUNWAY	MOVEMENTS	CORRELATED NOISE EVENTS	MEAN MAXIMUM SOUND LEVEL (Std Dev) , dB(A)				
						08Q3	RESULTS FROM PREVIOUS QUARTERS*			
							08Q2	08Q1	07Q4	07Q3
C130	Lockheed Hercules	A	35	6	6	76.9(0.8)				
B763	Boeing 767-300	A	35	31	30	75.4(1.7)	74.5(1.6)	74.0(1.3)	74.6(1.5)	75.1(1.6)
B734	Boeing 737-400	A	35	1213	1211	74.4(1.6)	74.1(1.5)	73.8(1.5)	73.8(1.8)	74.1(1.8)
B737	Boeing 737-700	A	35	211	211	71.9(1.7)	71.6(1.3)	71.4(1.3)	71.3(1.6)	71.7(1.6)
E190	Embraer ERJ-190/195	A	35	521	514	71.7(1.5)	71.5(1.3)			
A320	Airbus A320	A	35	118	115	71.6(2.3)	71.1(1.7)	70.8(1.2)		
E170	Embraer ERJ-170	A	35	564	561	70.8(1.3)	70.4(1.5)	70.2(1.5)	70.0(1.7)	
DH8D	DHC Dash 8D	A	35	964	945	70.1(2.4)	69.7(2.3)	69.5(2.3)	69.8(2.3)	70.3(2.5)
B738	Boeing 737-800	A	35	481	470	70.0(4.5)	70.8(4.0)	70.8(4.0)	70.9(4.0)	71.4(3.8)
PC9	Pilatus T/Trainer PC9	A	35	9	8	69.4(2.8)				
WW24	IAI Westwind 24/24A	A	35	11	11	69.3(1.8)		69.0(0.9)		
B734	Boeing 737-400	D	17	314	222	68.8(2.0)	68.8(1.7)	68.4(1.9)	68.7(1.7)	68.9(1.6)
DH8B	DHC Dash 8B	A	35	15	15	68.8(1.9)	68.6(3.2)	68.1(1.9)	68.4(2.8)	69.0(3.3)
DH8C	DHC Dash 8C	A	35	87	86	68.8(2.8)	69.1(2.7)	68.4(2.6)	68.6(3.0)	68.9(3.7)
DH8A	DHC Dash 8A	A	35	28	28	68.5(4.4)	67.7(2.3)	67.6(2.5)	67.4(2.8)	68.0(3.3)
BE20	Beech 200&1300S	A	35	37	29	68.4(2.8)	67.2(2.2)	67.4(2.4)	67.5(3.0)	68.0(2.0)
JS41	Bae Jetstream 41	A	35	35	32	68.4(2.7)	67.7(1.3)			
CL60	Canadair CL600/601	A	35	111	109	67.6(1.1)	67.5(1.5)	67.2(1.2)	67.1(1.1)	67.7(1.4)
B350	Beech S/KingAir350	A	35	17	17	67.2(1.8)	67.4(2.4)	66.4(2.4)	66.8(2.3)	67.9(2.5)
PA31	Piper Chieftan/Navajo	D	12	49	15	67.0(3.5)	66.5(3.7)	65.1(3.2)		
C441	Cessna Conquest II	A	35	46	43	66.6(2.4)	66.5(2.9)	65.5(2.4)	65.6(3.2)	65.7(3.4)
E120	Embraer Brasilia	A	35	10	10	66.6(1.5)	66.7(1.3)	65.9(1.4)	65.7(0.7)	66.8(2.2)
PA31	Piper Chieftan/Navajo	A	35	50	44	66.0(2.9)	64.9(1.7)	63.7(2.1)	64.2(2.2)	65.0(3.6)
B738	Boeing 737-800	D	17	111	90	65.9(2.1)	65.7(2.0)	65.4(2.2)	66.5(2.7)	68.0(2.5)
E190	Embraer ERJ-190/195	D	17	114	37	65.9(2.3)	66.7(1.8)			

*Data in the first 6 columns apply to the current quarter only.