

Short Term Monitoring Program

Tarragindi Report, QLD

Change Summary

Version 1: 30 Aug 2013		
Section/ Clause	Summary	NRFC

Table of Contents

- 1. Deployment Details 3**
 - 1.1 Deployment Purpose3
 - 1.2 Deployment Monitoring Period3
 - 1.3 Noise Monitoring Terminal (NMT) Details.....3
- 2. Location Images 4**
- 3. Deployment Findings 6**
 - 3.1 Correlation Summary6
 - 3.2 Movement Analysis.....6
 - 3.3 Background Noise Levels and Threshold Settings.....7
- 4. Noise Level Summary 8**
 - 4.1 CNE Count by Hour10
- 5. Aircraft Noise Levels 11**
- 6. Conclusions 12**
- 7. Further Information 12**
- 8. Contact us 13**
- 9. Glossary of Terms 13**

© Airservices Australia. All rights reserved.

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.

1. Deployment Details

1.1 Deployment Purpose

Short term noise monitoring was conducted at Tarragindi following recommendations made by the community.

Tarragindi is located to the south east of Brisbane airport. During the reporting period the suburb was predominately traversed by Runway 01 arrivals.

The purpose of this report is to provide a technical summary of the recorded aircraft noise and operational data collected at Tarragindi over a four week period.

An explanation of terms used within this report can be found in the Glossary at the end of the report.

1.2 Deployment Monitoring Period

30/04/2013 12:00am – 28/05/2013 12:00am

1.3 Noise Monitoring Terminal (NMT) Details

Location	Private Residence, Lutzow Street, Tarragindi, QLD 4121
Latitude	27°31'29.90"S
Longitude	153°2'41.81"E
NMT Altitude	177ft above mean sea level
Capture Zone	2.5km radius with 8,000ft (above ground level) height for noise data capture
Threshold Settings	56.0 dB(A) to 58.0 dB(A) depending on time of day

2. Location Images



Figure 1: Brisbane Fixed NMT Locations and the Tarragindi Short Term Monitoring Program Deployment Location

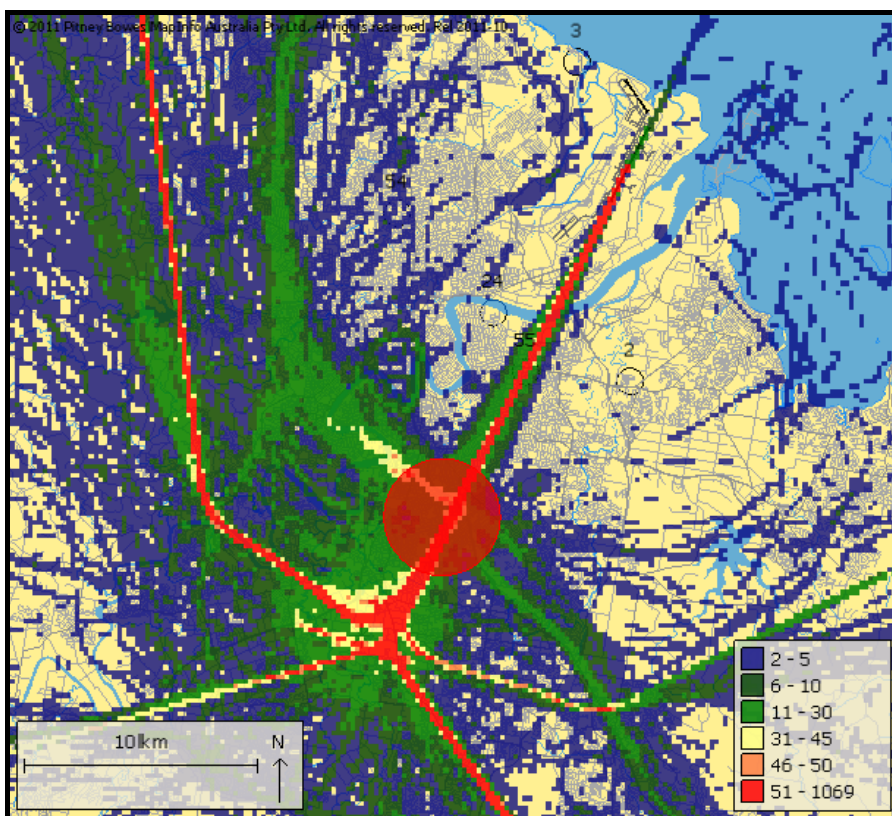


Figure 2: Total Movements Captured Track Density



Figure 3: Brisbane Airport Runway 01 Arrival Movements Captured

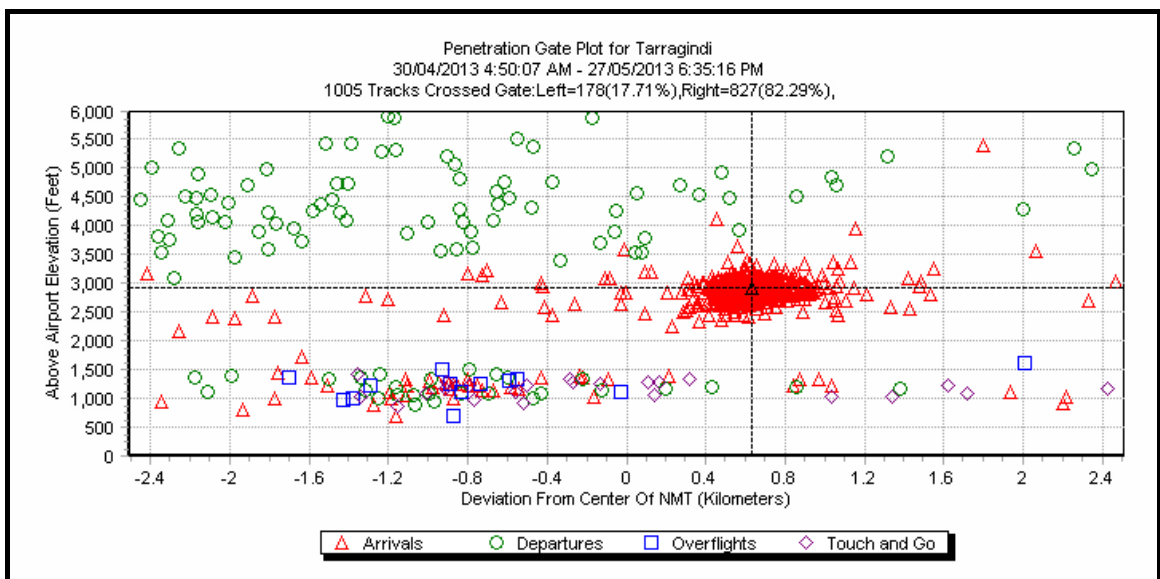


Figure 4: Tarragindi Movements Through Capture Zone Penetration Gate

Note: Brisbane Airport is 13ft above mean sea level. NMT altitude is 177ft above mean sea level. The NMT altitude should be adjusted from the data shown above in order to draw conclusions about height above ground of aircraft operations.

The black line through the capture zone in Figure 3 is a penetration gate, which was crossed by all the flights shown in Figure 4. Some movements within the capture zone are not shown as they did not cross the penetration gate. Some flights may cross the penetration gate more than once, at different altitudes. This may happen, for example, if a flight passes through the penetration gate at a low altitude soon after take off, then again after having climbed to a higher altitude.

3. Deployment Findings

The following tables present a summary of the operations data.

Table 1 Movement Summary (30/04/2013 12:00am – 28/05/2013 12:00am)

Type of Operation	Runway 01 Arrival Movements	All Movements
Number of Movements Through Capture Zone*	816	1,069
Number of Correlated Noise Events (CNE)	802	942
Number of Movements with Correlated Noise Events (CNE)	800	923
Correlation Summary	98.04%	86.34%

Note: * Includes all aircraft with transponder flying through area, regardless of destination/origin airport.

Note: ** May include operations that produced multiple noise events.

3.1 Correlation Summary

An evaluation of the number of aircraft operations were matched with noise events recorded by the NMT. This is an important aspect of assessing performance of the noise monitoring installation. Ideally, all operations passing the NMT within a reasonable proximity will be matched to the appropriate noise event. Whilst complete matching is not expected, a lack of matches will reveal the need to investigate the reason for anomalies. A correlation summary for all movements of 86% is considered to be a good result, based on reviews of fixed noise monitoring terminals nationally.

3.2 Movement Analysis

Table 2 Height (in feet, above ground level) Above The Monitor Summary

Type of Operation	Min*	Max*	Average*
Departures Through Capture Zone**	710	7,991	3,690
Arrivals Through Capture Zone**	509	7,910	2,658
All Operations Through Capture Zone**	509	7,991	2,724

Note: * Flight tracks are susceptible to an altitude error of up to 200ft which is consistent with normal radar tolerances.

Note: ** Includes all airports within Brisbane Basin.

Table 3 Captured Movements Breakdown By Airport and Aircraft Category

Airport	Jet	Turboprop	Light Propeller	Helicopter	Unknown*	Grand Total
Brisbane	724	174	13	0	3	914
Archerfield	0	2	7	39	21	69
Other	0	1	4	50	31	86
Grand Total	724	177	24	89	55	1,069

Note: *These non-flight planned operations are generally recreational aircraft conducting private flights and will account for the very low altitudes by some aircraft.

3.3 Background Noise Levels and Threshold Settings

At the monitoring site, background noise levels are first assessed to determine the appropriate threshold settings for the NMT. The threshold setting must be above the background noise level in order to clearly distinguish aircraft noise events from other noise sources. The result of background noise assessment and threshold settings are provided below in Figure 5.

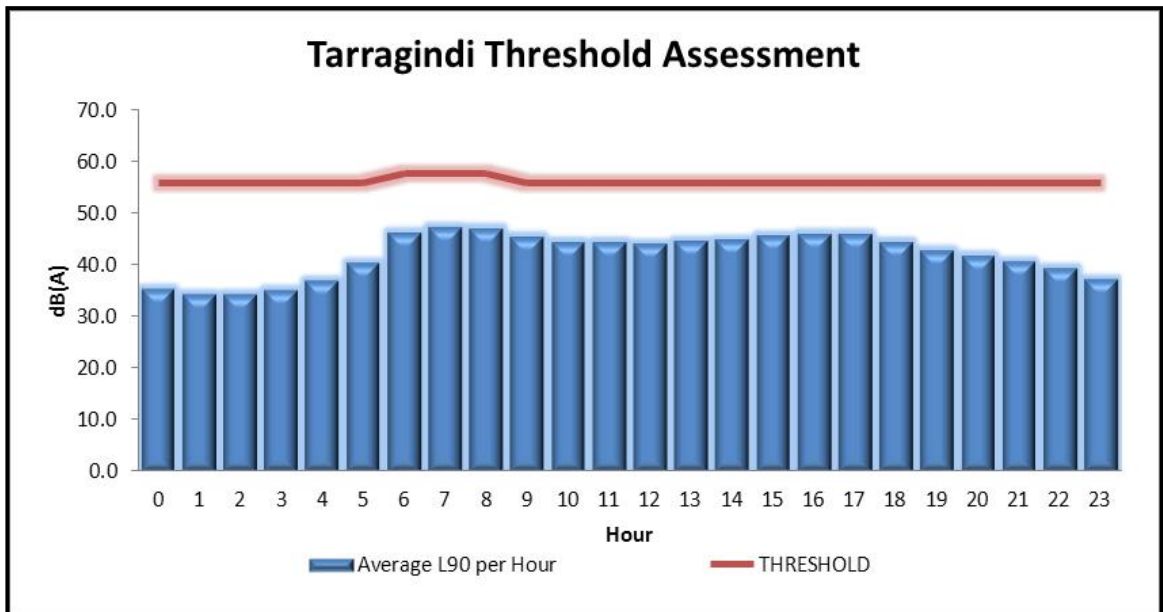


Figure 5: Background and Threshold Assessment

4. Noise Level Summary

The following tables present a summary of the noise data for aircraft that flew through the capture zone and caused a Correlated Noise Event (CNE). Information is provided for Brisbane Runway 01 arrival movements that flew over the NMT, as well as all aircraft that flew over the NMT, noting that this area is affected by arrivals, departures and training flights, as shown in Figure 2 and Figure 3.

Table 4 Noise Summary

Noise Parameters	Noise Level (dB(A))
LAeq 24 hr, dB(A)	54.5
LAeq (night), dB(A)	46.0
Background Day (L90 dB(A))	44.4
Background Night (L90 dB(A))	36.3

Table 5 Correlated Noise Events Summary

	Runway 01 Arrival Movements	All Aircraft
Total number of Correlated Noise Events (CNE 24hr)	802	942
Number of Correlated Noise Events at night (CNE night)	10	15
Operational Days	28.0	28.0
Number of Correlated Noise Events (CNE _{xx}) day/night	CNE _{xx}	CNE _{xx}
CNE ₆₀ – day	781	910
CNE ₆₀ - night	9	14
CNE ₆₅ – day	570	653
CNE ₆₅ – night	8	13
CNE ₇₀ – day	93	135
CNE ₇₀ - night	4	7
CNE ₇₅ – day	5	22
CNE ₇₅ - night	0	1
CNE ₈₀ – day	1	4
CNE ₈₀ - night	0	0

Number of Correlated Noise Events (CNE _{xx}) per 24hr period min – max	Runway 01 Arrival Movements	All Aircraft
CNE ₆₀	0 to 171	2 to 174
CNE ₆₅	0 to 125	0 to 127
CNE ₇₀	0 to 22	0 to 24
CNE ₇₅	0 to 2	0 to 2
CNE ₈₀	0 to 1	0 to 1
Average Number of Correlated Noise Events (CNE _{xx} Ave.) day/night	CNE _{xx} Ave.	CNE _{xx} Ave.
CNE ₆₀ Ave. – day	27.89	32.50
CNE ₆₀ Ave. – night	0.32	0.50
CNE ₆₅ Ave. – day	20.36	23.32
CNE ₆₅ Ave. – night	0.29	0.46
CNE ₇₀ Ave. – day	3.32	4.82
CNE ₇₀ Ave. – night	0.14	0.25
CNE ₇₅ Ave. – day	0.18	0.79
CNE ₇₅ Ave. – night	0.00	0.04
CNE ₈₀ Ave. – day	0.04	0.14
CNE ₈₀ Ave. – night	0.00	0.00

Note: Day period is from 6:00am to 11:00pm. Night period is 11:00pm to 6:00am.

Table 6 L_Amax Summary

Min dB(A)	Max dB(A)	Average dB(A)
56.7	87.0	66.7

Note: Summary for operations that passed through the correlation zone (2.5km radius with 8,000ft height AGL)

4.1 CNE Count by Hour

Investigation was undertaken on the number of correlated noise events that exceed 70dB(A) to reveal patterns and determine what time of the day the majority of these events occurred.

Figure 6 presents daily average number of noise events 70dB(A) or above (CNE₇₀) broken down on an hourly basis.

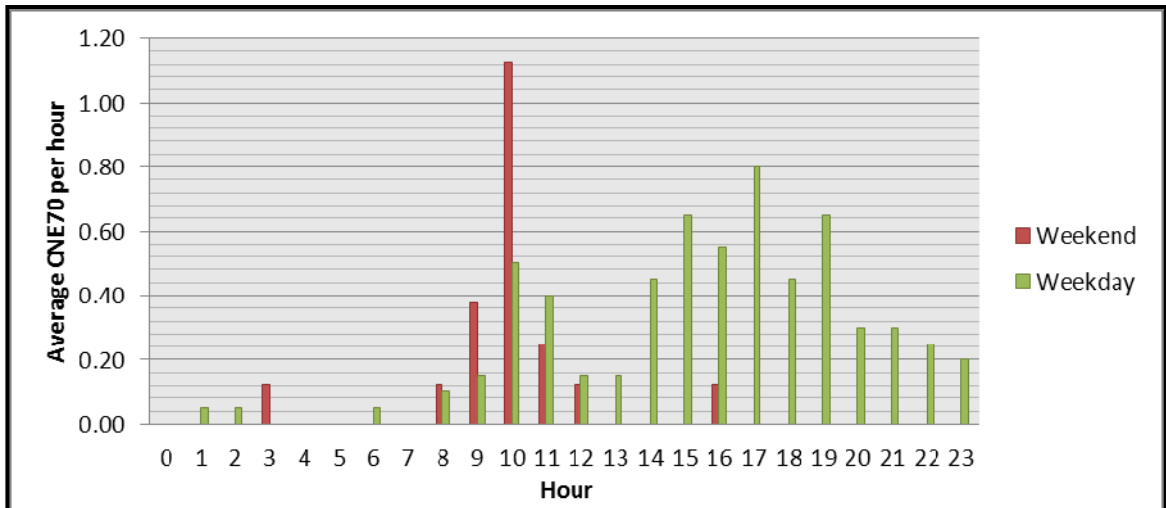


Figure 6: Average CNE70 per Hour for All Operations

The highest number of CNE70 in any one hour throughout the reporting period was 5. This occurred between 5pm and 6pm on May 14th and 10pm and 11pm on May 22nd.

5. Aircraft Noise Levels

Table 7 presents the top 10 average noisiest aircraft types captured during the reporting period. Table 8 shows the 10 most correlated aircraft types that flew over the noise monitoring terminal.

Table 7 Top 10 Average Aircraft Noise Levels (L_{Amax}) at the Tarragindi Noise Monitoring Terminal

Aircraft Type	Airport	Operation Type	Runway	No. Correlated Noise Events	L _{Amax} dB(A)		Highest No. CNE in One Day
					Average	Maximum	
Boeing 747-400 (J)	Brisbane	D	19	17	76.6	81.3	2
AS-350 Ecureuil (H)	Mater Hospital	D	H	1	73.7	73.7	1
Gulfstream V (J)	Brisbane	A	01	1	72.4	72.4	1
AgustaWestland AW139 (H)	Mater Hospital	A	H	2	72.4	73.3	1
Unknown (U)	Mt Cootha Heliport	D	Unknown	2	72.2	74.9	1
Unknown (U)	Redcliffe Airport	D	25	1	72.0	72.0	1
Airbus A330-300 (J)	Brisbane	A	01	14	71.1	76.7	3
AgustaWestland AW139 (H)	Archerfield	A	H	1	71.0	71.0	1
Airbus A330-300 (J)	Brisbane	D	19	18	70.8	75.8	3
Airbus A330-200 (J)	Brisbane	A	01	6	70.8	72.3	2

Table 8 Top 10 Most Correlated Aircraft Types Over the Tarragindi Noise Monitoring Terminal

Aircraft Type	Airport	Operation Type	Runway	No. Correlated Noise Events	L _{Amax} dB(A)		Highest No. CNE in One Day
					Average	Maximum	
Boeing 737-800 (J)	Brisbane	A	01	333	66.7	87.0	63
Airbus A320 (J)	Brisbane	A	01	78	69.0	73.5	17
Embraer E-190 (J)	Brisbane	A	01	60	66.0	74.2	15
Boeing 767-300 (J)	Brisbane	A	01	46	68.3	79.4	10
Bombardier Dash 8 Q400 (T)	Brisbane	A	01	42	64.7	69.9	12
Boeing 717-200 (J)	Brisbane	A	01	27	66.6	70.1	7
Bombardier Dash 8 300 (T)	Brisbane	A	01	26	63.8	66.5	7
Boeing 737-400 (J)	Brisbane	A	01	23	68.7	72.9	6
Airbus A330-300 (J)	Brisbane	D	19	18	70.8	75.8	3
Fokker F100 (J)	Brisbane	A	01	18	64.3	66.5	6

Note: Aircraft Category: Jet (J), Turboprop (T), Propeller (P), Helicopter (H), Unknown (U)

6. Conclusions

Short term noise monitoring was conducted in Tarragindi during the period of 30th April to 28th May 2013. This followed recommendations made by the community. It was determined the most common aircraft movements to traverse the Tarragindi community are Brisbane Regular Public Transport (RPT) arrivals on to Runway 01.

Throughout the reporting period the highest number of correlated aircraft noise events exceeding 70dB(A) in one day was 24. Between 5pm and 6pm on May 14th and 10pm and 11pm on May 22nd, 5 events exceeding 70dB(A) occurred. This was the greatest number of CNE70 in one hour during the period. Residents in the area of Tarragindi were exposed to a correlated noise events exceeding 75dB(A) during the hours of day and night. There were 14 correlated noise events above 60dB(A) that occurred during the hours of night. The average correlated L_{Amax} during the reporting period was 66.7dB(A), with a max level of 87.0dB(A) and minimum level of 56.7dB(A) recorded.

Noise events above 70dB(A) were most common in the weekday hours of 3:00pm to 8:00pm and weekend ours of 10:00am and 11:00am.

A review of Tables 7 and 8 indicates the loudest movements residents of Tarragindi experience are a combination of the less common Runway 19 departures from Brisbane airport and one off movements from local helipads and secondary airports. The Boeing 737-800 arriving on to Runway 01 is the most frequent correlated aircraft to traverse Tarragindi with 333 correlated noise events.

The correlation summary of 86.34% for all movements is considered a good result based on reviews of fixed noise monitoring terminals nationally. During the reporting period Brisbane Runway 01 arrivals had a correlation summary of 98.04%.

Due to the distinctive flight paths and distance from Brisbane Airport, it is not expected the ratio of arrival and departure flights over Tarragindi will change due to seasonal variation over a twelve month period.

7. Further Information

Further information about Airservices noise monitoring program is available on the Airservices website, including reports of the noise and operational data collected by the Noise and Flight Path Monitoring System, as well as fact sheets about topics related to aircraft noise. The website is available at:

<http://www.airservicesaustralia.com/aircraftnoise/>

8. 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.

9. Glossary of Terms

A	Arrivals
AGL	Above Ground Level
Background noise level (L90)	The sound level in dB(A) that is exceeded 90% of the time
CNE	Correlated noise events - noise events which are matched with aircraft movements
CNExx	Correlated noise events that are equal or greater than the noise level XX dB(A)
D	Departures
Day	6:00am to 11:00pm
H	Helicopters
Jet	Jet aircraft
LAeq	Continuous equivalent noise level over a time period
LAeq 24hr	Continuous equivalent noise level over a 24 hour period
LAeq night	Continuous equivalent noise level over the night time period (hours of 11:00pm to 6:00am)
LAmx	Maximum sound level in dB(A)
Local	Operation that departs and arrives at the same airport. Local movements include circuits and training flights.
Movement	An aircraft operation, such as a take-off or landing
Nxx	Average daily number of correlated noise events equal to or greater than XX dB(A)
Night	11:00pm to 6:00am
NFPMS	Noise and Flight Path Monitoring System
Noise Event	A noise that exceeds the threshold sound level for longer than the threshold time that is set
NMT	Noise Monitoring Terminal
Non-Jet	Non-jet aircraft
O	Overflight i.e. an aircraft movement that flew over the area but did not arrive or depart from the airport of concern
T	Local Operation (Departure & Arrival)

Note: For further information on the metrics used in this report refer to Australian Standard 1055.1–1997 “Acoustics – Description and measurement of environmental noise”.

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