

Short Term Monitoring Program

Tweed Heads, NSW

APAGI Standard Instrument Departure flight path trial

Version Control

Version 1: 31 July 2015	
Section	Summary

Glossary of Terms

A	Arrivals
Background noise level (L90)	The sound level in dB(A) that is exceeded 90% of the time
Correlated Noise Event (CNE)	A noise event correlated to an aircraft operation that flew through the capture zone
Correlation Summary	Percentage of captured aircraft operations correlated with noise events recorded by the noise monitor
D	Departures
Day	6:00am to 11:00pm
EMU	Environmental Monitoring Unit
H	Helicopters
LAm _{ax}	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 arrival or departure
Night	11:00 pm to 6:00 am
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
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 and Arrival)
Threshold	Determined level on noise monitor that triggers a noise event when exceeded

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

Airservices Noise Monitoring Program

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: www.airservicesaustralia.com/aircraftnoise/

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 ACT 1460.

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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.

Deployment Purpose

Short term noise monitoring was conducted at four locations to the south of Gold Coast Airport to measure noise events associated with the APAGI Standard Instrument Departure flight path trial, commonly referred to as the Banora Point Golf Course Trial. The purpose of this report is to provide a technical summary of the recorded aircraft noise and operational data collected during March to June 2015 at the following four sites:

- North Banora Point
- West Banora Point
- Oxley Cove
- Chinderah

An explanation of terms used within this report can be found in the Glossary on page 2 of the report.

A detailed post-implementation review of the APAGI Standard Instrument Departure flightpath trial will be conducted in 2016 and data recorded from these EMUs will be included.

Deployment Monitoring Period

19/3/15 12:00 am – 23/6/2015 12:00 am

Deployment Locations

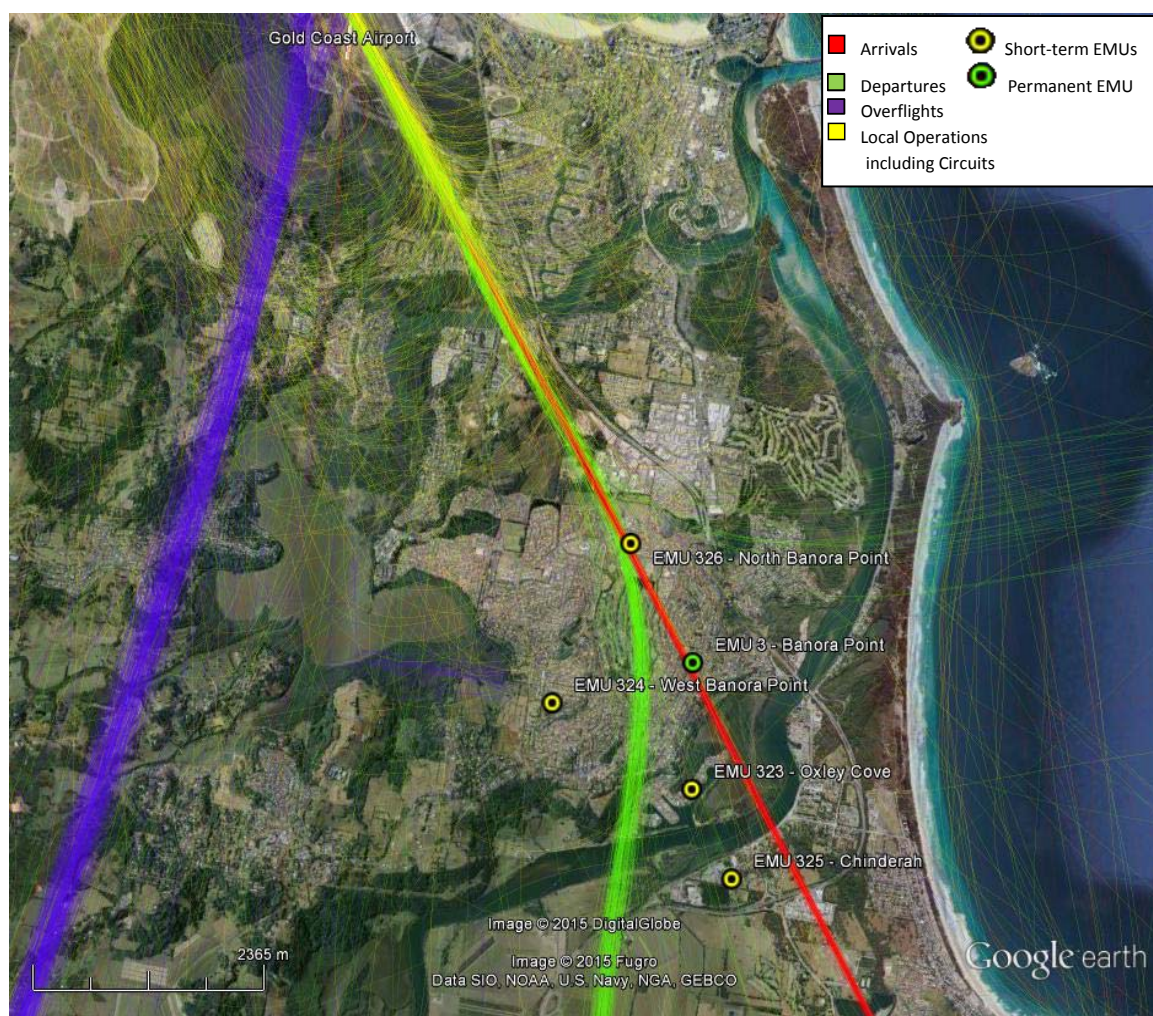


FIGURE 1: COOLANGATTA OPERATIONS FOR 1-7 MAY 15, MONITORING LOCATIONS INCLUDING THE PERMANENT EMU AND THE FOUR SHORT-TERM EMUS.

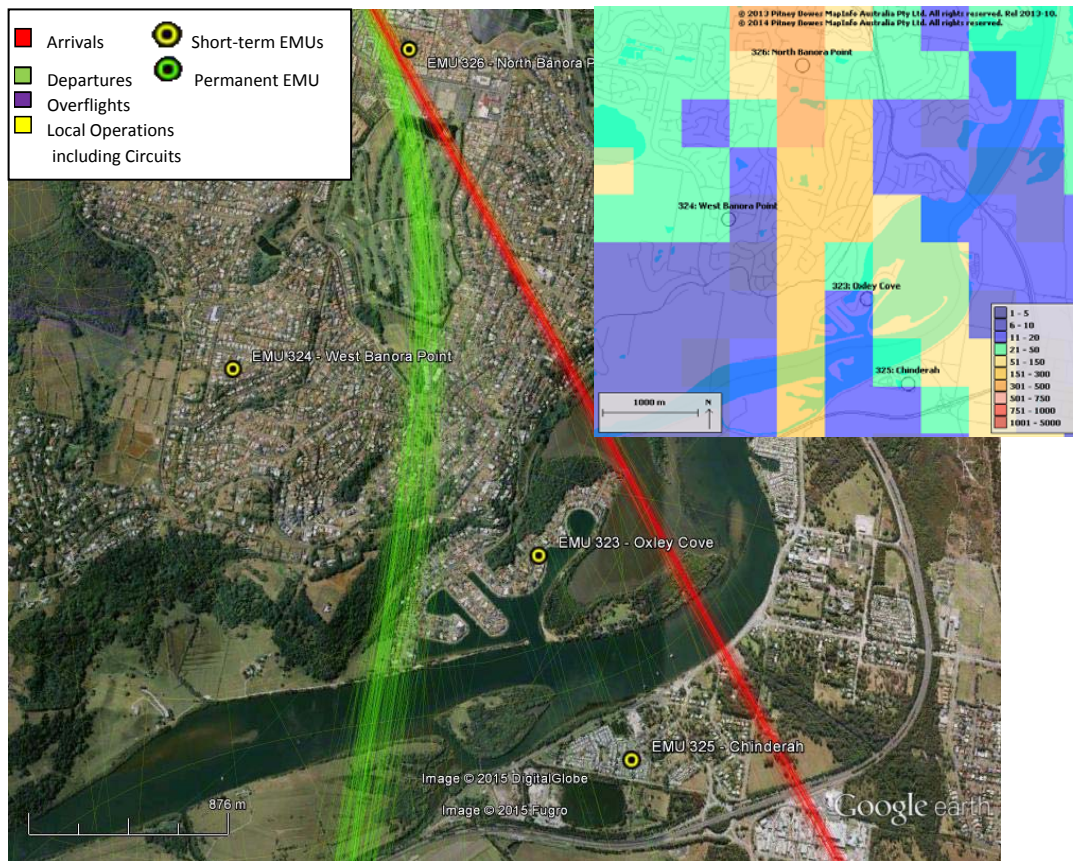


FIGURE 2: COOLANGATTA OPERATIONS FOR 1-7 MAY 15 AND SHORT-TERM MONITORING LOCATIONS.

INSET IMAGE: SHOWS SHORT-TERM MONITORING LOCATIONS WITH TRACK DENSITY FOR THE PERIOD 1-7 MAY 2015.

Environmental Monitoring Unit (EMU) Details

TABLE 1: DETAILS OF ENVIRONMENTAL MONITORING UNITS (EMUS)

EMU Name (EMU Number)	North Banora Point (326)	West Banora Point (324)	Oxley Cove (323)	Chinderah (325)
Location	Private Residence, Leisure Drive, Banora Point NSW 2486	Private Residence, Inverness Court, Banora Point NSW 2486	Private Residence, Midship Court Oxley Cove NSW 2486	Private Residence, Anne Street, Chinderah NSW 2487
Latitude	28° 12' 44.88"S	28° 13' 37.26"S	28° 14' 4.18"S	28° 14' 32.98"S
Longitude	153° 32' 14.28"E	153° 31' 46.15"E	153° 32' 39.48"E	153° 32' 55.28"E
EMU Altitude	26 ft above mean sea level	220 ft above mean sea level	30 ft above mean sea level	23 ft above mean sea level
Distance from Gold Coast Airport	5km to the south	6km to the south	7km to the south	8 km to the south
Capture Zone	2.5 km radius with 8,000 ft (above ground level) height for noise data capture			
Threshold Setting	50.0 dB(A) to 58.0 dB(A) depending on time of day	50.0 dB(A) to 53.0 dB(A) depending on time of day	50.0 dB(A) to 52.0 dB(A) depending on time of day	52.0 dB(A) to 60.0 dB(A) depending on time of day
Monitoring Outages	-	-	1 partial day during the monitoring period.	2 full days and 2 partial days during the monitoring period.

North Banora Point (EMU 326) Findings

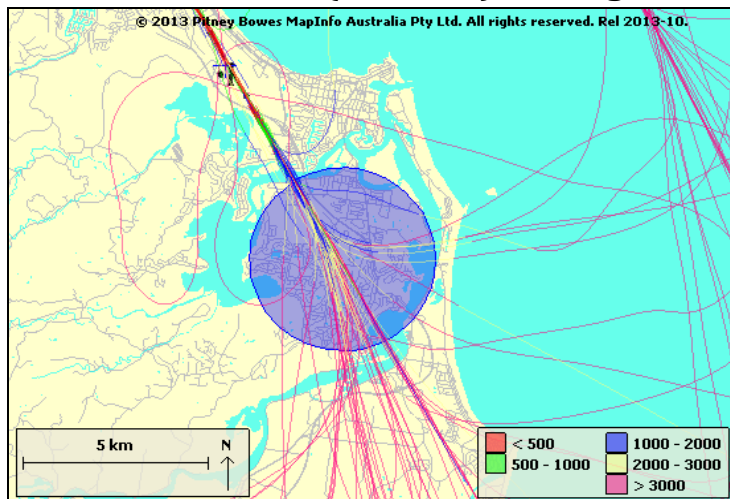


FIGURE 3: OPERATIONS THAT TRAVERSED NORTH BANORA POINT ON 01/05/2015

- 6,705 movements flew through the capture zone during the reporting period. 6,580 of these were Gold Coast Airport operations.
- 63% of total operations that flew through the capture zone (as shown in Figure 3) were Runway 14 Departures operations.
- There were a total of 5,647 correlated noise events above 60 dB(A). These were most common during the hour of 11:00 am.
- Thirteen correlated noise events exceeded 60 dB(A) occurred during the hours of night (11:00 pm to 6:00 am).
- The number of correlated noise events exceeding 60 dB(A) in any one day ranged from 46 to 92, with an average of 59 events daily.
- 2,908 noise events that exceeded 75 dB(A) were recorded during the reporting period. This occurred two times during the hours of night (11:00 pm to 6:00 am).
- The loudest correlated aircraft noise event with a max level of 84.9 dB(A) was a B772 departing off Runway 14.
- The correlation summary for all movements was 83%. This is a similar correlation rate to the recent verified levels for the fixed Environmental Monitoring Units in the Gold Coast.

West Banora Point (EMU 324) Findings

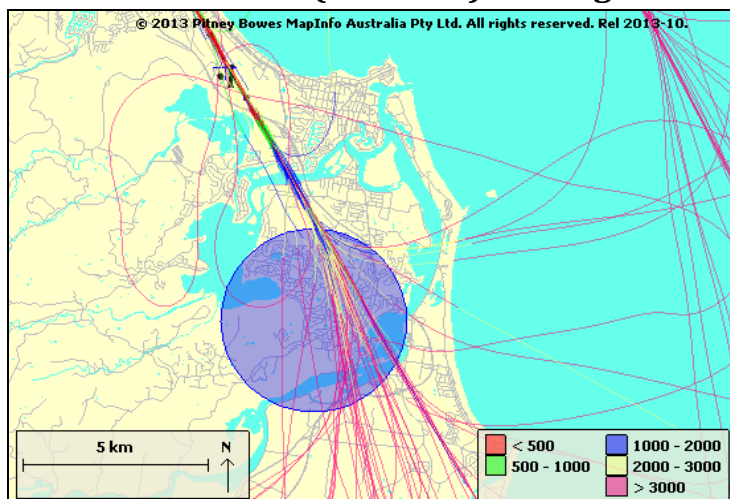


FIGURE 4: OPERATIONS THAT TRAVERSED WEST BANORA POINT ON 01/05/2015

- 6,343 movements flew through the capture zone during the reporting period. 6,202 of these were Gold Coast operations.
- 64% of total operations that flew through the capture zone (as shown in Figure 4) were Runway 14 Departure operations.
- There were a total of 4,047 correlated noise events above 60 dB(A). These were most common during the weekday hour of 09:00 am and the weekend hour of 11:00 am.
- Six correlated noise events exceeded 60 dB(A) occurred during the hours of night (11:00 pm to 6:00 am).
- The number of correlated noise events exceeding 60 dB(A) in any one day ranged from twelve to 64, with an average of 42 events daily.
- 96 noise events that exceeded 75 dB(A) were recorded during the reporting period. This occurred one time during the hours of night (11:00 pm to 6:00 am).
- The loudest correlated aircraft noise event with a max level of 80.5 dB(A) was a B738 departing off Runway 14.

Events as high as a max level of 84.3 dB(A) were recorded during the reporting period however these are not correlated to any aircraft operations, where community noise is believed to be either a contributing factor or responsible for these events. Community activities including construction, mowing and traffic can cause such events to be recorded on the monitor.

- The correlation summary for all movements was 77%. This is a similar correlation rate to the recent verified levels for the fixed Environmental Monitoring Units in the Gold Coast.

Oxley Cove (EMU 323) Findings

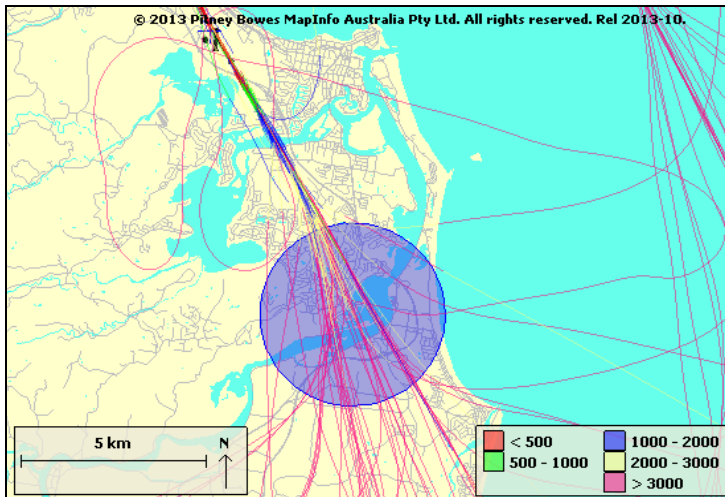


FIGURE 5: OPERATIONS THAT TRAVERSED OXLEY COVE ON 01/05/2015

- 5, 624 movements flew through the capture zone during the reporting period. 5,493 of these were Gold Coast Airport operations.
 - 63% of total operations that flew through the capture zone (as shown in Figure 5) were Runway 14 Departure operations.
 - There were a total of 4, 787 correlated noise events above 60 dB(A). These were most common during the weekend hours of 11:00 am and 01:00 pm.
 - Eight correlated noise events exceeded 60 dB(A) occurred during the hours of night (11:00 pm to 6:00 am).
 - The number of correlated noise events exceeding 60 dB(A) in any one day ranged from 29 to 65, with an average of 50 events daily.
 - 175 noise events that exceeded 75 dB(A) were recorded during the reporting period. There were no occurrences during the hours of night (11:00 pm to 6:00 am).
 - The loudest correlated aircraft noise event with a max level of 79.6 dB(A) was an A321 arriving on Runway 32.
- Events as high as a max level of 80.7 dB(A) were recorded during the reporting period however these are not correlated to any aircraft operations, where community noise is believed to be either a contributing factor or responsible for these events. Community activities including construction, mowing and traffic can cause such events to be recorded on the monitor.
- The correlation summary for all movements was 88%. This is a similar correlation rate to the recent verified levels for the fixed Environmental Monitoring Units in the Gold Coast.

Chinderah (EMU 325) Findings

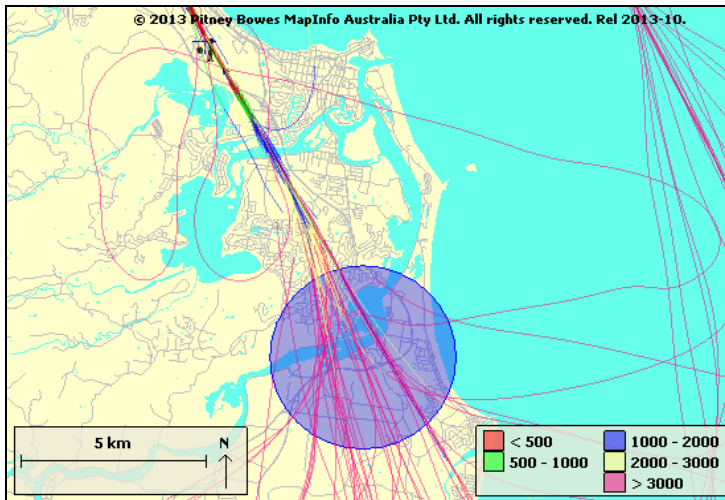


FIGURE 6: OPERATIONS THAT TRAVERSED CHINDERAH ON 01/05/2015

- 5,415 movements flew through the capture zone during the reporting period. 5,246 of these were Gold Coast airport operations.
- 63% of total operations that flew through the capture zone (as shown in Figure 6) were Runway 14 Departure operations.
- There were a total of 4,362 correlated noise events above 60 dB(A). These were most common during the weekday and weekend hour of 11:00 am.
- Two correlated noise events exceeded 60 dB(A) occurred during the hours of night (11:00 pm to 6:00 am).
- The number of correlated noise events exceeding 60 dB(A) in any one day ranged from 20 to 64, with an average of 46 events daily.
- 19 noise events that exceeded 75 dB(A) were recorded during the reporting period. There were no occurrences during the hours of night (11:00 pm to 6:00 am).
- The loudest correlated aircraft noise event with a max level of 80.5 dB(A) was a helicopter landing in the Gold Coast region.

Events as high as a max level of 105.3 dB(A) were recorded during the reporting period however these are not correlated to any aircraft operations, where community noise is believed to be either a contributing factor or responsible for these events. Community activities including construction, mowing and traffic can cause such events to be recorded on the monitor.

- The correlation summary for all movements was 80%. This is a similar correlation rate to the recent verified levels for the fixed Environmental Monitoring Units in the Gold Coast.

Noise Summary

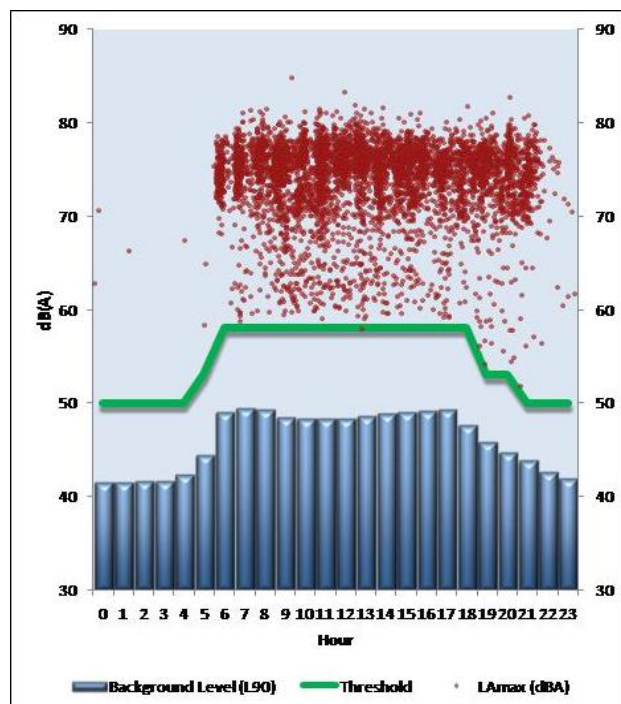


FIGURE 7: NORTH BANORA POINT NOISE SUMMARY
19/03/2015 12:00AM – 23/06/2015 12:00AM

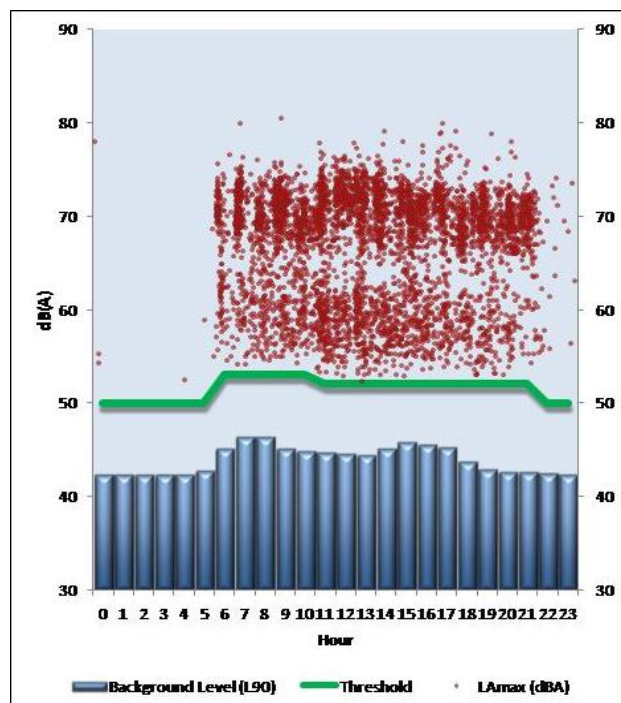


FIGURE 8: WEST BANORA POINT NOISE SUMMARY
19/03/2015 12:00AM – 23/06/2015 12:00AM

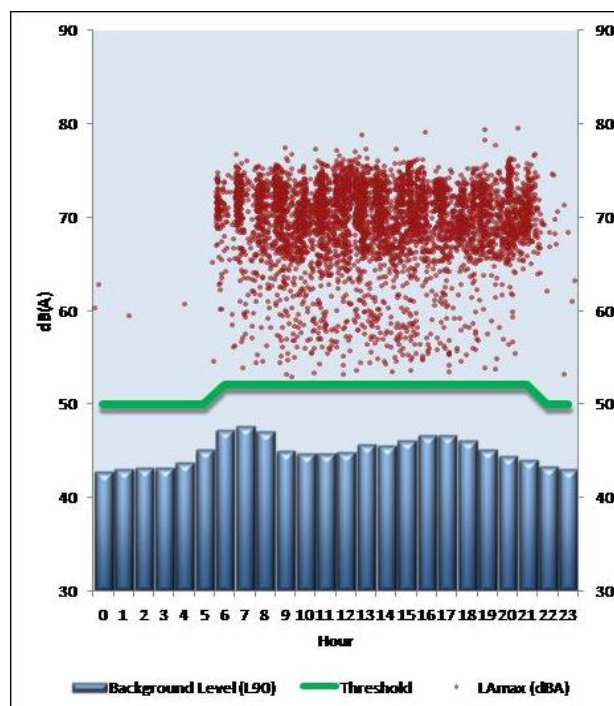


FIGURE 9: OXLEY COVE NOISE SUMMARY
19/03/2015 12:00AM – 23/06/2015 12:00AM

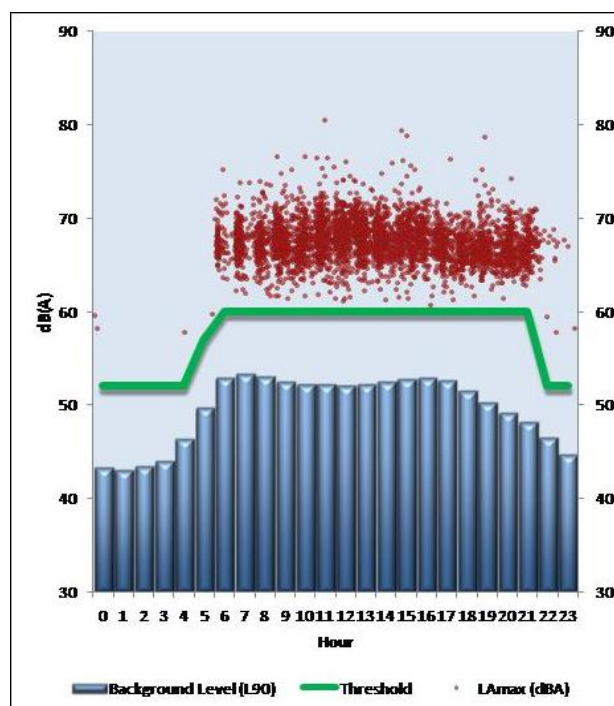


FIGURE 10: CHINDERAH NOISE SUMMARY
19/03/2015 12:00AM – 23/06/2015 12:00AM

Top 10 Most Correlated Aircraft Types

TABLE 2: TOP 10 MOST CORRELATED AIRCRAFT TYPES OVER THE NORTH BANORA POINT ENVIRONMENTAL MONITORING UNIT

Aircraft Type	Airport	Operation Type	RWY	No. Correlated Noise Events	LAmax dB(A)	
					Average	Maximum
Airbus A320 (J)	Gold Coast	D	14	1809	74.3	81.8
Boeing 737-800 (J)	Gold Coast	D	14	1216	74.9	80.4
Airbus A320 (J)	Gold Coast	A	32	532	76.2	80.1
Boeing 737-800 (J)	Gold Coast	A	32	406	78.2	83.3
Airbus A321 (J)	Gold Coast	D	14	383	75.8	82.8
Embraer ERJ-190/195 (J)	Gold Coast	D	14	242	73.2	78.6
Airbus A321 (J)	Gold Coast	A	32	127	77.3	81.2
Cessna Skyhawk (P)	Gold Coast	T	32	60	63.5	72.1
Embraer ERJ-190/195 (J)	Gold Coast	A	32	57	75.9	78.5
Boeing 787-800 (J)	Gold Coast	D	14	53	71.2	78.4

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

Operation Type: Arrival (A), Departure (D), Local Operation (T), Overflight (O)

TABLE 3: TOP 10 MOST CORRELATED AIRCRAFT TYPES OVER THE WEST BANORA POINT ENVIRONMENTAL MONITORING UNIT

Aircraft Type	Airport	Operation Type	RWY	No. Correlated Noise Events	LAmax dB(A)	
					Average	Maximum
Airbus A320 (J)	Gold Coast	D	14	1550	68.5	78
Boeing 737-800 (J)	Gold Coast	D	14	1154	72.5	80.5
Boeing 737-800 (J)	Gold Coast	A	32	394	60.2	77.7
Airbus A321 (J)	Gold Coast	D	14	379	71.0	79.1
Airbus A320 (J)	Gold Coast	A	32	319	58.2	76.3
Embraer ERJ-190/195 (J)	Gold Coast	D	14	241	70.5	80
Airbus A321 (J)	Gold Coast	A	32	99	58.0	66.1
Cessna Skyhawk (P)	Gold Coast	T	32	52	59.7	76.1
Embraer ERJ-190/195 (J)	Gold Coast	A	32	48	57.6	65.4
Fairchild MerlinIV/C Metro23 (T)	Gold Coast	D	14	42	61.1	71.1

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

Operation Type: Arrival (A), Departure (D), Local Operation (T), Overflight (O)

TABLE 4 : TOP 10 MOST CORRELATED AIRCRAFT TYPES OVER THE OXLEY COVE ENVIRONMENTAL MONITORING UNIT

Aircraft Type	Airport	Operation Type	RWY	No. Correlated Noise Events	LAmax dB(A)	
					Average	Maximum
Airbus A320 (J)	Gold Coast	D	14	1452	70.7	78.9
Boeing 737-800 (J)	Gold Coast	D	14	1158	72.5	79.4
Airbus A320 (J)	Gold Coast	A	32	530	66.8	73.8
Boeing 737-800 (J)	Gold Coast	A	32	407	69.8	75.6
Airbus A321 (J)	Gold Coast	D	14	381	73.1	77.1
Embraer ERJ-190/195 (J)	Gold Coast	D	14	239	71.0	74.9
Airbus A321 (J)	Gold Coast	A	32	123	67.9	79.6
Embraer ERJ-190/195 (J)	Gold Coast	A	32	56	67.6	70.9
Cessna Skyhawk (P)	Gold Coast	T	32	30	59.7	72
Cessna Skyhawk (P)	Gold Coast	A	32	29	59.5	69.3

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

Operation Type: Arrival (A), Departure (D), Local Operation (T), Overflight (O)

TABLE 5: TOP 10 MOST CORRELATED AIRCRAFT TYPES OVER THE CHINDERAH ENVIRONMENTAL MONITORING UNIT

Aircraft Type	Airport	Operation Type	RWY	No. Correlated Noise Events	LAmax dB(A)	
					Average	Maximum
Airbus A320 (J)	Gold Coast	D	14	1365	67.2	76.7
Boeing 737-800 (J)	Gold Coast	D	14	1100	68.1	79.5
Airbus A320 (J)	Gold Coast	A	32	476	67.0	76.1
Boeing 737-800 (J)	Gold Coast	A	32	380	69.3	75.4
Airbus A321 (J)	Gold Coast	D	14	364	68.6	78.9
Embraer ERJ-190/195 (J)	Gold Coast	D	14	220	66.7	72
Airbus A321 (J)	Gold Coast	A	32	115	67.4	74
Embraer ERJ-190/195 (J)	Gold Coast	A	32	54	67.2	71.4
Unknown Overflight	Gold Coast	O		18	68.5	80.5
Boeing 787-800 (J)	Gold Coast	D	14	12	67.2	70.8

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

Operation Type: Arrival (A), Departure (D), Local Operation (T), Overflight (O)