

# Memo



To TRUenergy – Graham Dowers Date 8 September 2010  
From Matt Davies Project No EN02239.200  
Copy  
Subject **Re: Tallawarra A Noise Criteria**

Graham

As part of the Tallawarra Lands Part 3A application noise study we have re-assessed background noise levels in areas surrounding Tallawarra A power station and specifically at locations representative of future sensitive land uses within the development site. The results of this noise survey have implications for the draft noise criteria, applied to the 'northern residential area as part of the Tallawarra B project application. Noise monitoring locations are shown on **Figure 1**.

## 1. Results of Noise Monitoring

A baseline noise survey was undertaken at six (6) locations within the Tallawarra Lands, each representative of different development areas within the site. The summary results of noise monitoring are presented in **Table 1**.

Graphical noise results for location 1 and 5 which are most relevant to the northern residential area are included in **Attachment A**. The graphical results show the power station load profile (MW) during the periods of noise monitoring.

The noise monitoring equipment included:

- B&K 2260 Sound Level Meter (SLM); and
- EL215 Environmental Noise Loggers.

Equipment calibration checks were performed pre and post monitoring, and the acoustic drift was less than  $\pm 0.5$  dB(A) at 94 dB (1000 Hz).

Meteorological data collected at the Tallawarra A power station site was used to filter noise data, and data for periods of time when wind speeds exceeded 5 m/s or when rain was falling was excluded from the analysis.

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**Table 1 Summary Noise Measurement Results (dB(A))**

Monitoring location	Time period	Rating Background Levels ( $L_{A90}$ ) Tallawarra A Operating	$L_{Aeq}$
Noise Monitoring Location 1 27 July – 3 August 2010	Day	37.5	50.5
	Evening	38.0	48.5
	Night	35.5	40.5
Noise Monitoring Location 2 21 April – 5 May 2010	Day	35.0	57.0
	Evening	37.5	43.3
	Night	34.0	41.1
Noise Monitoring Location 3 21 April – 5 May 2010	Day	45.5	54.0
	Evening	48.0	54.0
	Night	36.0	51.3
Noise Monitoring Location 4 21 April – 5 May 2010	Day	57.0	63.0
	Evening	55.5	62.0
	Night	38.0	60.0
Noise Monitoring Location 5 23 March – 8 April 2010	Day	34.5	48.5
	Evening	39.5	49.0
	Night	36.5	43.0
Noise Monitoring Location 6 23 March – 8 April 2010	Day	39.0	49.0
	Evening	42.0	47.0
	Night	40.0	44.0

Of specific relevance to the northern residential area (Location 1 and 5), it can be seen that minimum background noise levels are 35 dB(A) – Location 1 and 5.

The background noise has increased in this area since the Tallawarra A power station commenced operation, with pre-operation background noise levels in this area of the order of 31 - 33dB(A).

It is considered appropriate to include Tallawarra A power station in the background noise measurements for the purpose of setting noise criteria for Tallawarra B as noise from this source is a “normal feature of the location” as outlined Section 3.1 of the INP.



## 2. Industrial Noise Criteria

The Industrial Noise Policy (INP) sets out approaches for establishing industrial noise criteria using ‘amenity criteria’ or ‘intrusive criteria’. Screening level criteria for sleep disturbance is also provided in the INP.

### 2.1 Amenity Criteria

Amenity criteria are based on zoning and land uses of receiver locations and the extent of existing industrial noise in the area. The relevant noise amenity criteria for suburban areas are summarised in **Table 2**. Once background noise is measured, if existing industrial noise in an area approaches the criterion value for the landuse in that area, recommended noise levels from a new industry would be modified so that the cumulative effect does not produce noise levels that would significantly exceed the criterion. The recommended levels in **Table 2** represent outdoor levels.

■ **Table 2: Amenity Criteria - Suburban (DECC 2000).**

Type of receiver	Indicative noise amenity area	Time of day	Recommended $L_{Aeq}$ noise level, dB(A)	
			Acceptable noise level (ANL)	Recommended maximum
Residence	Suburban	Day	55	60
		Evening	45	50
		Night	40	45

Recent noise surveys undertaken as part of the Tallawarra Lands Part 3A Application indicate that the influence of industrial noise within the proposed ‘northern residential area’ occurs with both Tallawarra A and Port Kembla industrial area audible during evening and night-time periods under certain meteorological conditions.

Attended noise monitoring was undertaken on the evening and night of 26 July 2010 and up until 6 am on the morning of 27 July 2010. Meteorological conditions were calm to light winds with clear skies. The strong propagation of noise from surrounding sources and the differential 2 m and 10 m temperatures measured at the Tallawarra A power station indicate the presence of a moderate to strong temperature inversion during the attended monitoring period. Meteorological conditions are summarised in **Table 3**.

Typically Tallawarra A is audible under calm conditions with clear skies and along the southern boundary of the northern residential area on top of the ridge, and most dominant in the presence of light south-sector winds as evident in the period from 8 pm to midnight on 26 July. Estimated  $LA_{eq}$  noise contributions are of the order of 35 dB(A), this is the same as the measured background noise level.

With respect to the Port Kembla industrial area, it is generally only audible in the presence of very light north sector winds less than 1 – 2 m/s, as was evident between midnight on 26 July and 6 am on 27 July. The meteorological conditions as measured at the Tallawarra A meteorological station shown west to north winds during this period indicative of local

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drainage flows immediately to the north of the power station. At the top of the ridge to north the very light wind conditions were north north-west.

The Port Kembla industrial area influence was only audible on the northern side of the ridge where the low noise influence from Tallawarra A is screened by the ridge topography. The estimated  $LA_{eq}$  noise contribution from the Port Kembla industrial area is at most 35 dB(A), with  $LA_{eq}$  levels of this order measured during attended monitoring and approximately equal noise contributions from the Port Kembla industrial area, intermittent distant insect noise and occasional residential and traffic noise in Koonawarra.

From the noise monitoring it was clear there was no combined influence of industrial noise from Tallawarra A to the south or the Port Kembla industrial area to the north.

■ **Table 3 Attended Monitoring Meteorological Conditions**

Date/Time	WD (deg)	WS (m/s)	2m Temp (deg C)	10 m Temp (deg C)
26-Jul-10 20:00:00	190	1.30	7.3	9.10
26-Jul-10 21:00:00	207	0.40	7.5	9.50
26-Jul-10 22:00:00	313	0.40	6.7	8.50
26-Jul-10 23:00:00	178	0.90	6.4	8.20
27-Jul-10 00:00:00	138	0.50	7.9	9.10
27-Jul-10 01:00:00	217	0.40	8.3	9.10
27-Jul-10 02:00:00	250	0.40	8	9.00
27-Jul-10 03:00:00	252	0.70	7.6	9.30
27-Jul-10 04:00:00	356	0.90	7.1	8.90
27-Jul-10 05:00:00	267	0.50	8.9	10.10
27-Jul-10 06:00:00	283	0.80	8.1	9.30

Table 2.2 of the INP provides modifying factors for establishing amenity criteria in areas where there is already an industrial noise influence. In the case of the proposed 'northern residential area' the existing industrial influence of 35 dB(A) which is 5 dB(A) lower than the acceptable noise level of 40 dB(A) requires the amenity criteria to be set at the acceptable noise level minus 2 dB(A), **i.e. amenity criteria is 38 dB(A).**

## 2.2 Intrusive Noise Criteria

The INP intrusive criteria relate to the difference between the noise under assessment and the rating background level (or long-term background noise level). A noise source is considered to be non-intrusive if the  $L_{Aeq,15minute}$  level does not exceed the  $L_{A90}$  background level by more than 5 dB(A) for each of the day, evening and night periods, and does not contain tonal, impulsive, or other modifying factors as detailed in Chapter 4 of the INP (DECC 2000).

With a minimum background noise level of 35 dB(A), the **intrusive criteria is 40 dB(A).**





## 2.3 Project-Specific Noise Levels

The more stringent of the amenity or intrusive criteria sets the project-specific noise levels. Generally, the intrusive criterion applies to new industries until an area begins to become more developed, causing increased noise levels. At that point the amenity criterion starts to take over as the applicable criterion. Where several new industries are proposed for a new area, equitable levels should be set for each proposed industry.

The relevant criteria applicable for the 'northern residential area' is therefore the amenity criteria of **38 dB(A)** averaged over either day, evening or night-time periods.

## 2.4 Sleep Disturbance Criteria

The INP Application notes set out a screening level sleep disturbance criteria of  $LA_{1(1 \text{ minute})}$  of greater than background noise plus 15 dB(A).

As such the sleep disturbance criteria for the northern residential area is **50 dB(A)**.

## 2.5 Draft Tallawarra B Power Station Noise Criteria

As relevant to the Tallawarra B power station which is in the final stages of development approval, noise criteria as set out in **Table 4** has been applied by DECCW for sensitive residential development areas within the Tallawarra Lands.

■ **Table 4 Tallawarra B Power Station Noise Criteria**

Location	Day	Evening	Night	
	$L_{Aeq}(15 \text{ minute})$	$L_{Aeq}(15 \text{ minute})$	$L_{Aeq}(15 \text{ minute})$	$L_{Amax}$
Most affected residence - proposed northern residential area	36 dB(A)	36 dB(A)	36 dB(A)	46 dB(A)
Most affected residence - proposed central residential area	40 dB(A)	40 dB(A)	40 dB(A)	50 dB(A)
Most affected residence - proposed south-western residential area	41 dB(A)	41 dB(A)	41 dB(A)	51 dB(A)

For the reasons outlined in the assessments undertaken for the Tallawarra Lands project it is recommended that for the northern residential area the  $L_{Aeq}$  criteria be revised to 38 dB(A) averaged over day, evening and night time periods rather than 15 minute criteria.

For the sleep disturbance criteria it is recommended that this be adjusted to 50 dB(A).

Regards

**Matt Davies**

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■ **Figure 1 Tallawarra Lands Noise Monitoring Locations**



#### LEGEND

- Sensitive Receivers
- Tallawarra Lands Project Boundary
- Tallawarra Roads
- Water Bodies

DATA SOURCES  
Warren Lee Urban Design Pty Ltd

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EN02773 Tallawarra Lands

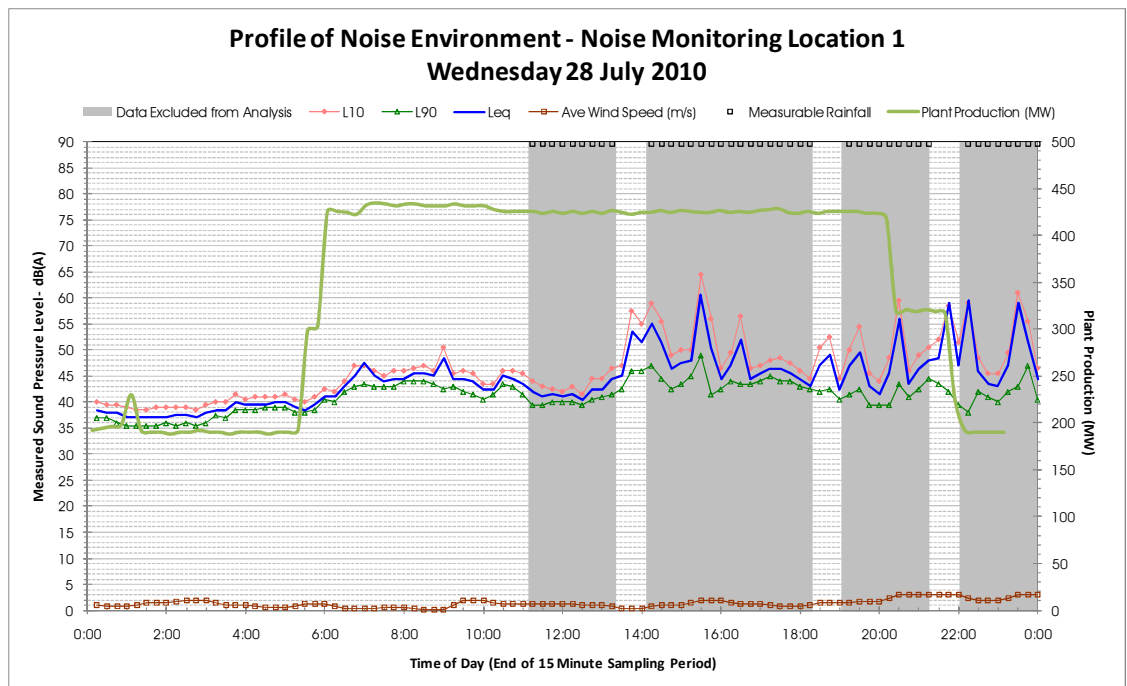
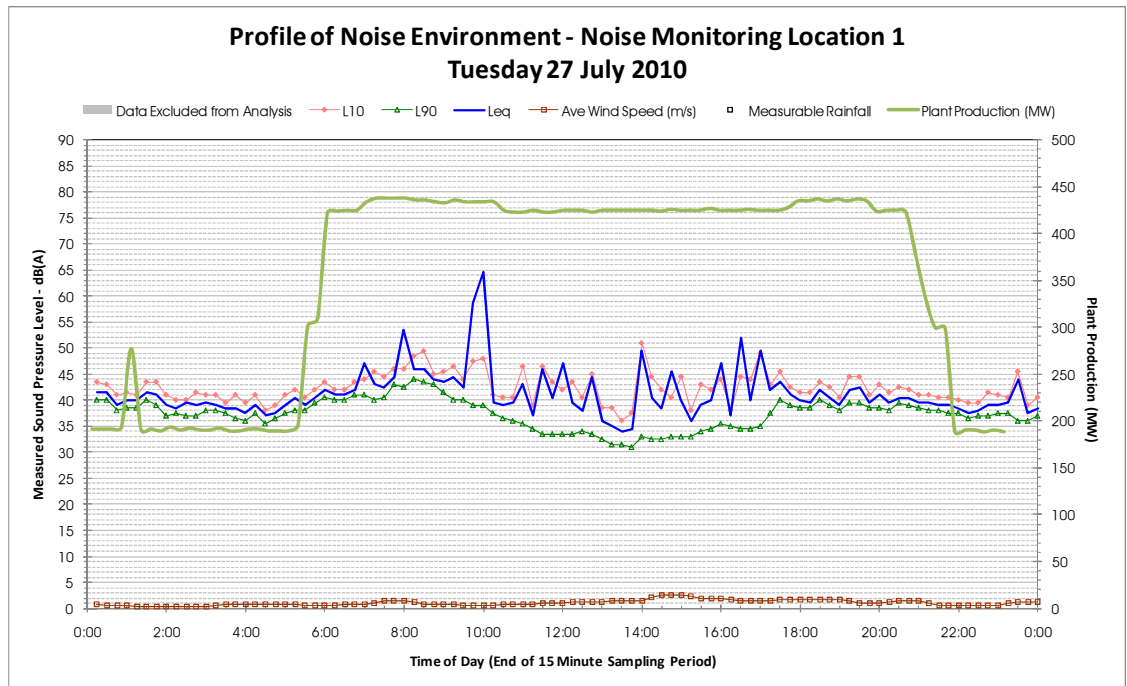


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## Location 1 Noise Monitoring Results



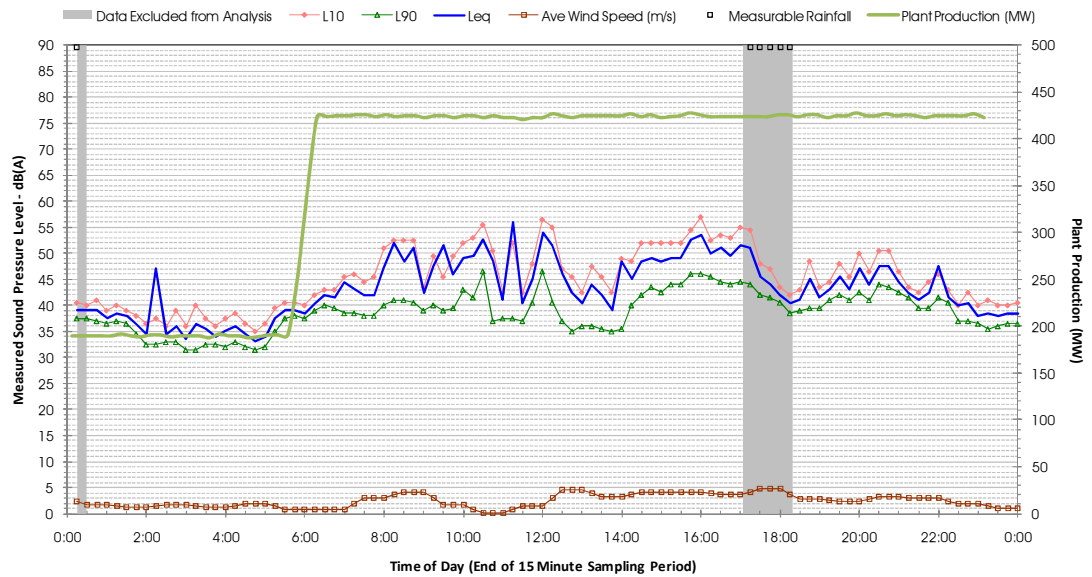
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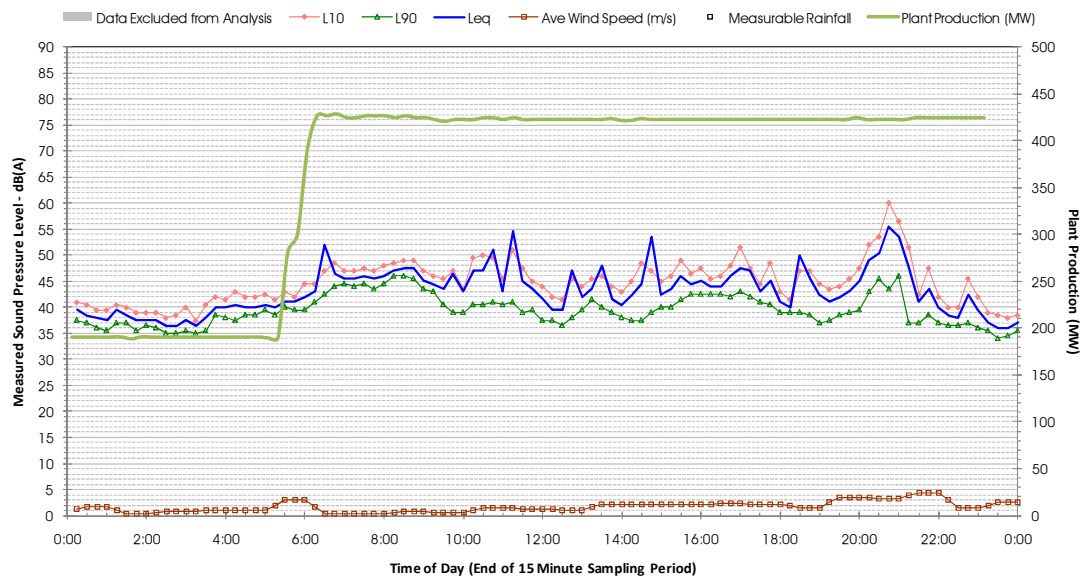




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### Profile of Noise Environment - Noise Monitoring Location 1 Friday 30 July 2010

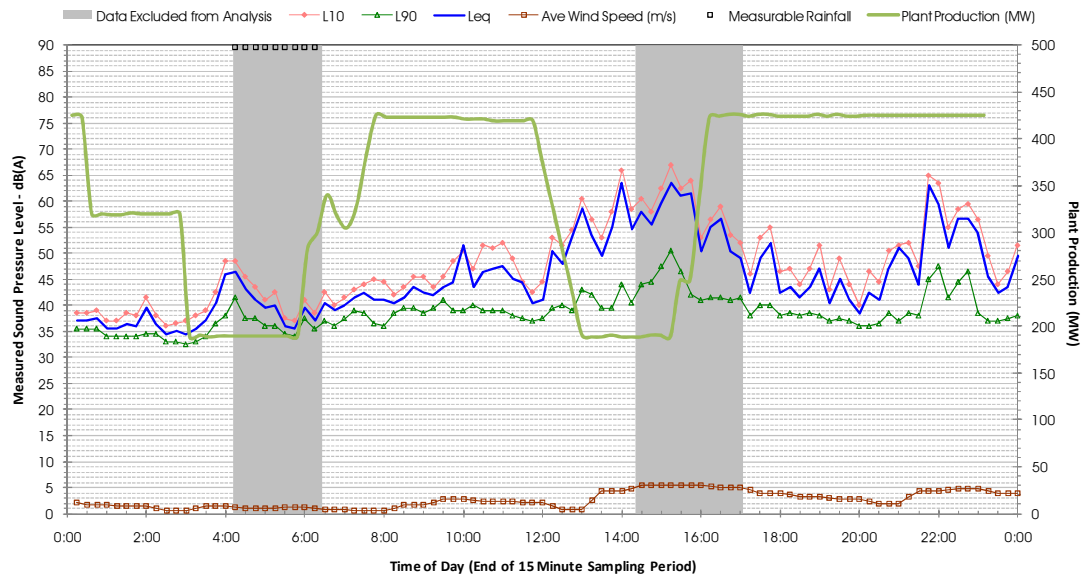


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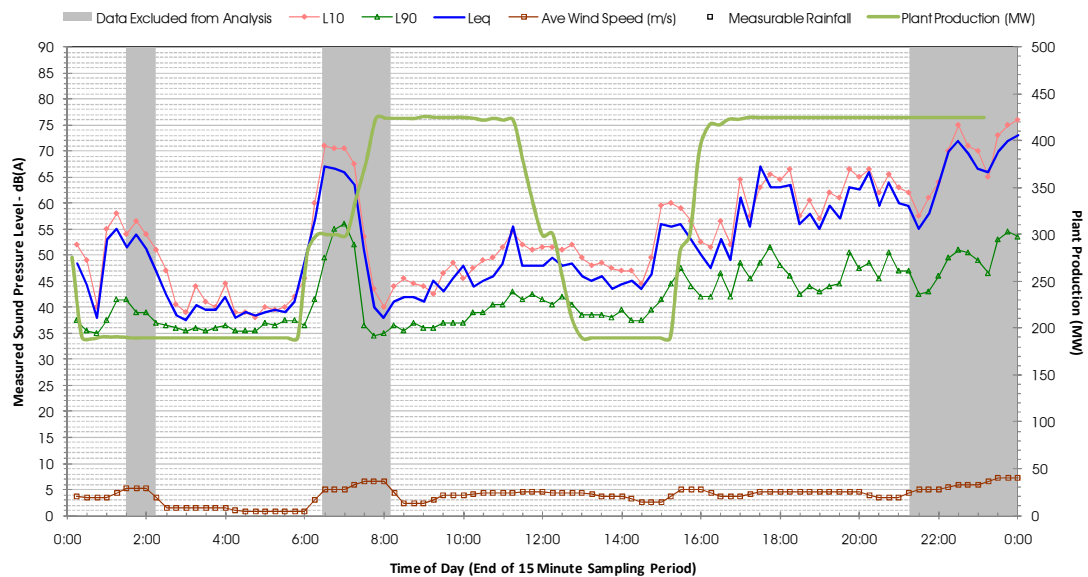
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### Profile of Noise Environment - Noise Monitoring Location 1 Saturday 31 July 2010

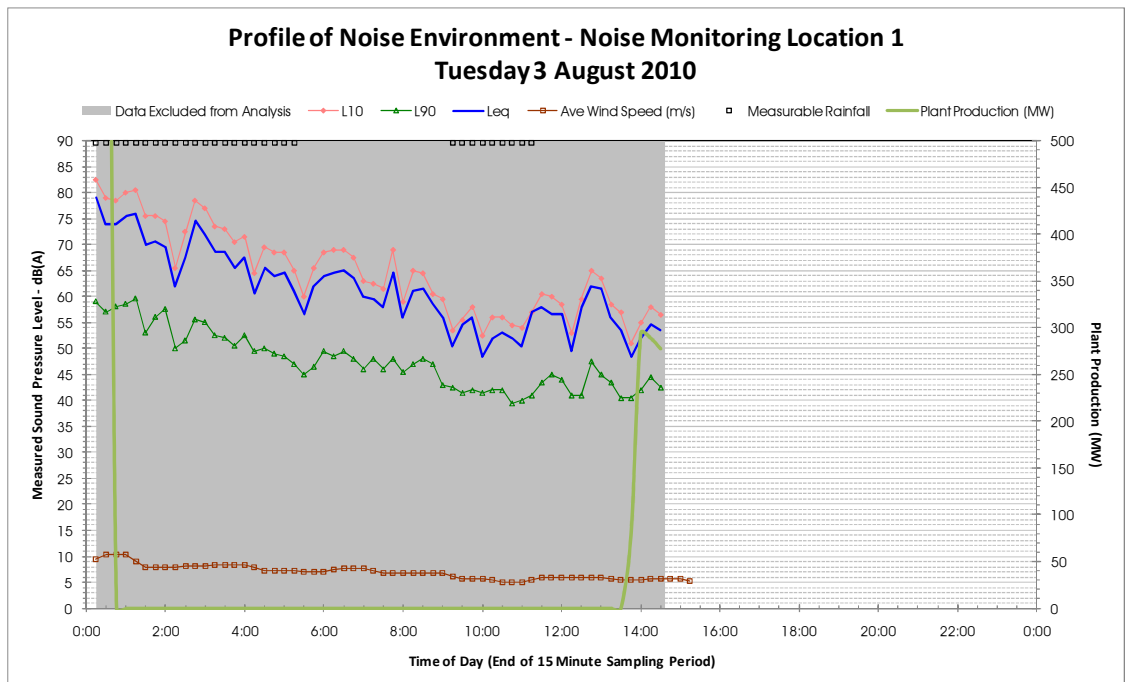
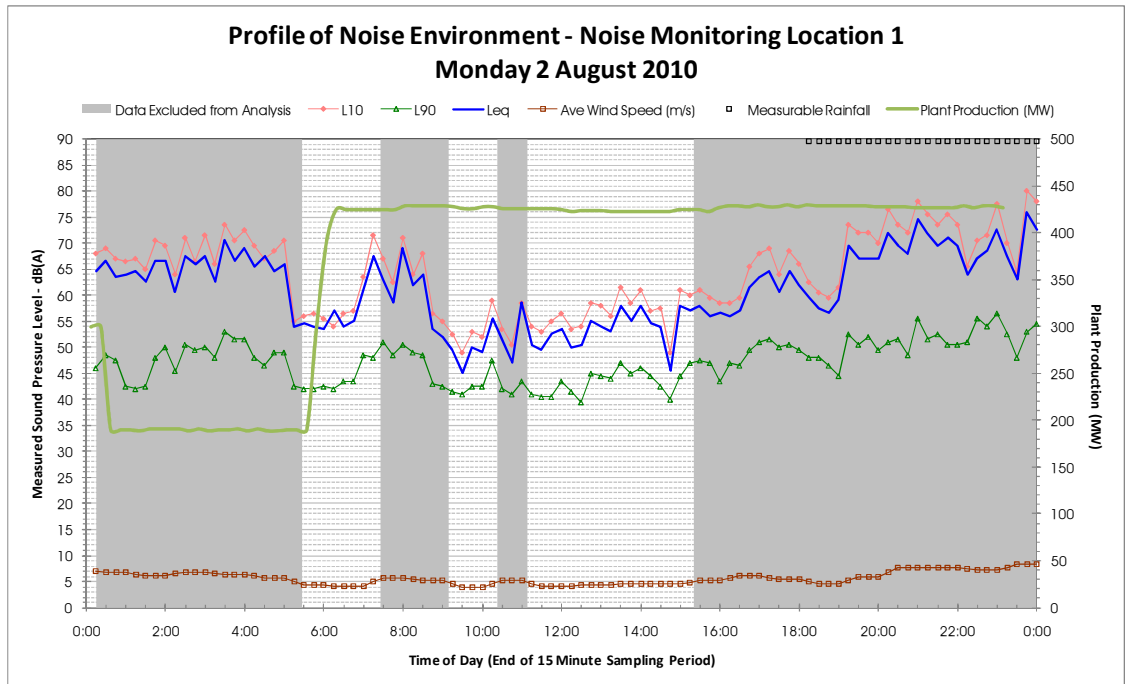


### Profile of Noise Environment - Noise Monitoring Location 1 Sunday 1 August 2010



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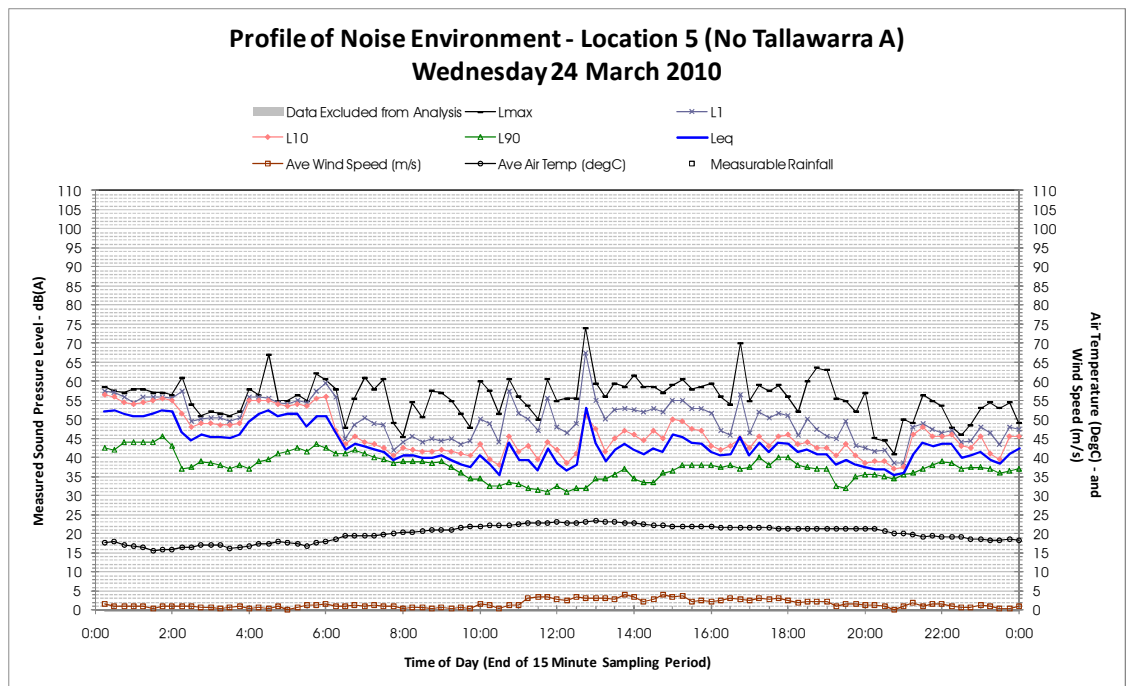
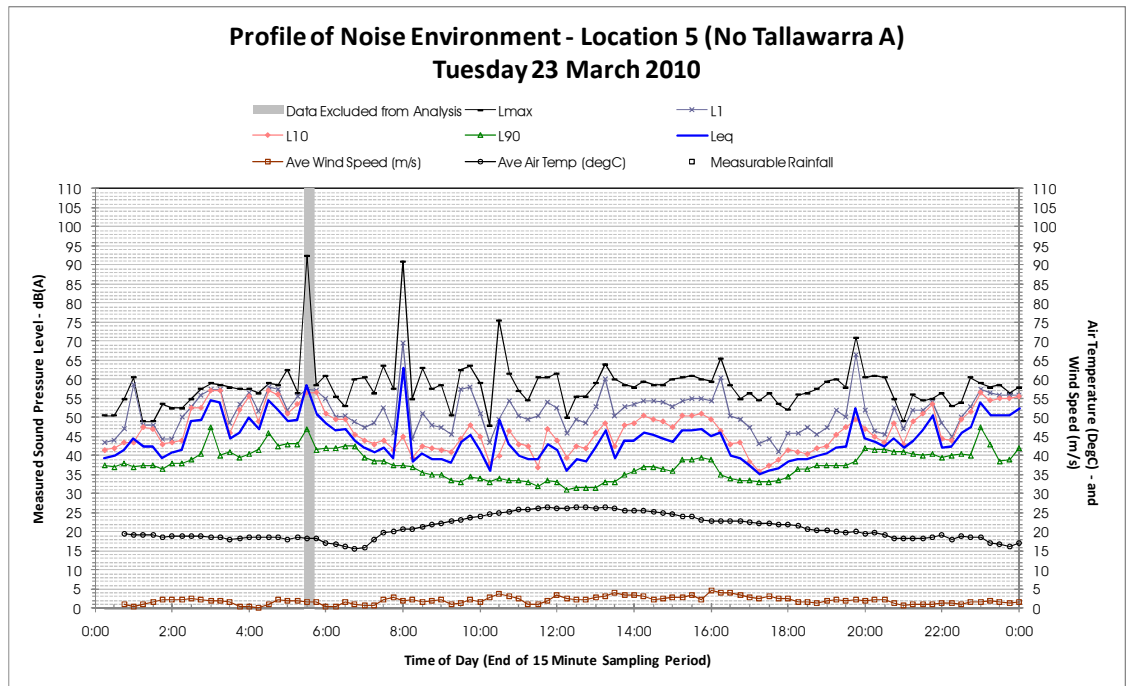


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## Location 5 Noise Monitoring Results

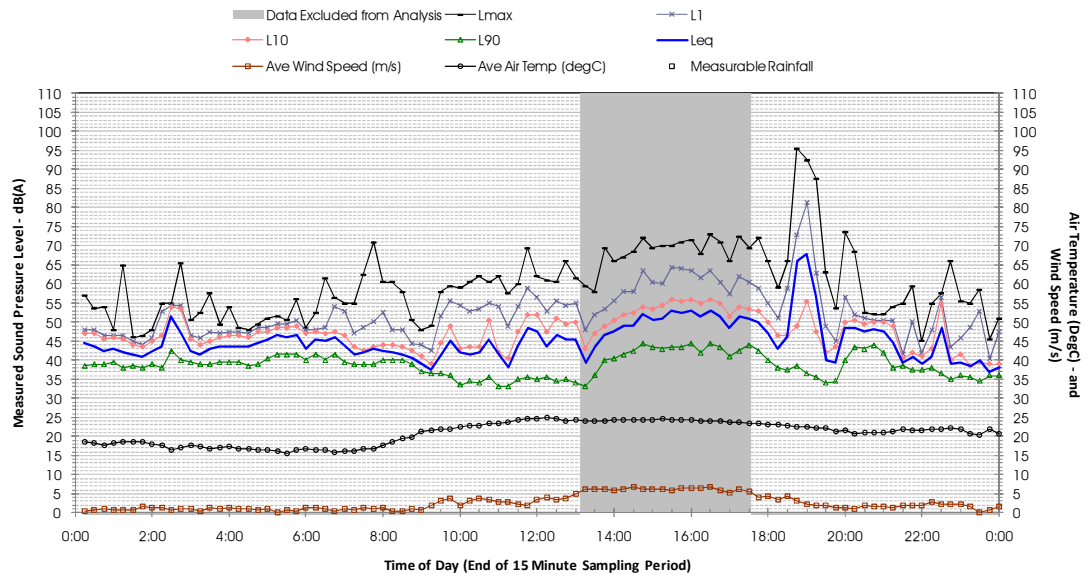


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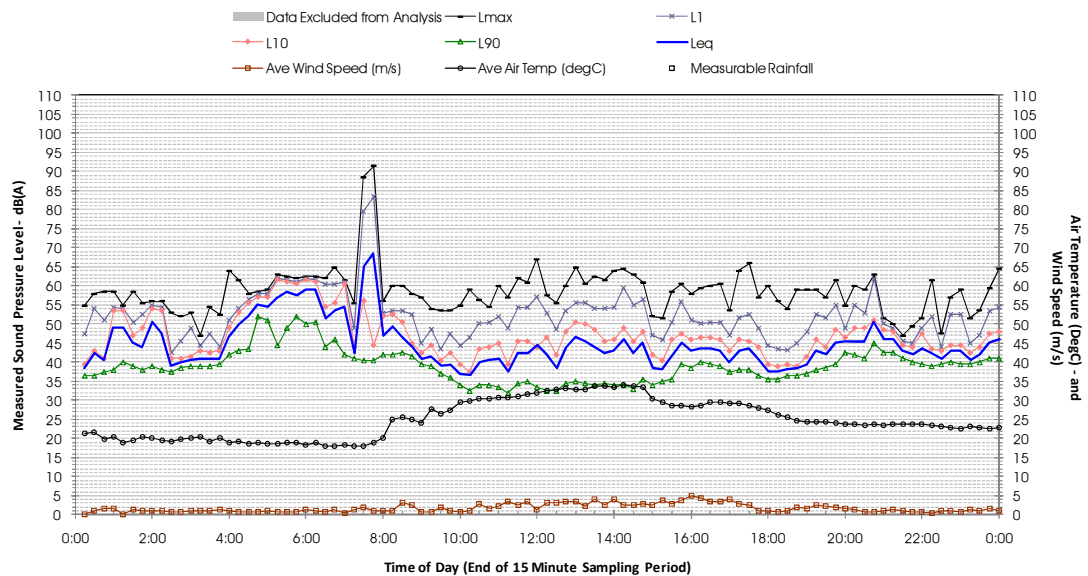
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### Profile of Noise Environment - Location 5 (No Tallawarra A) Friday 26 March 2010



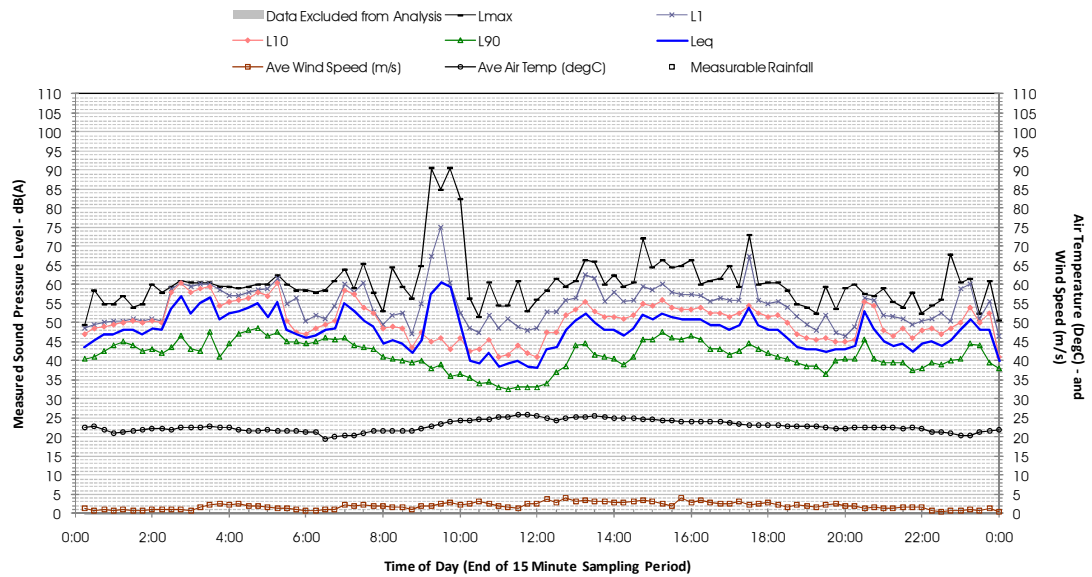
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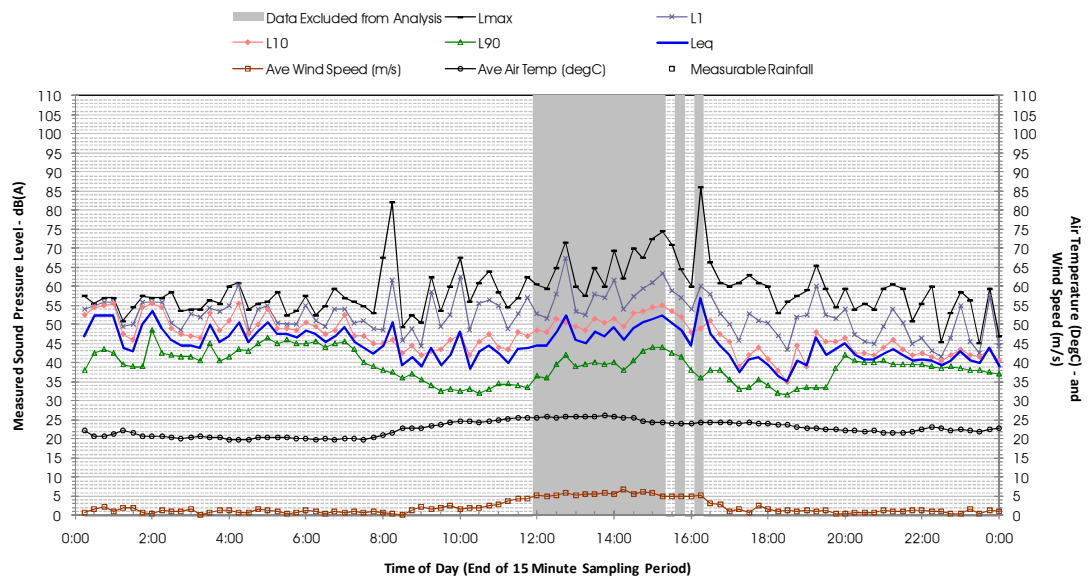




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### Profile of Noise Environment - Location 5 (No Tallawarra A) Sunday 28 March 2010

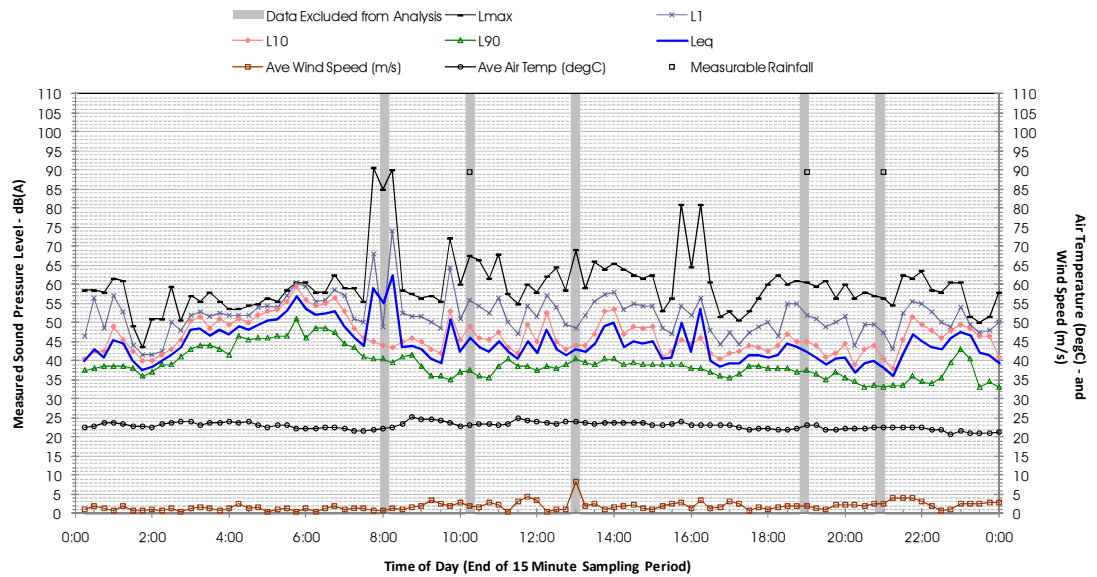


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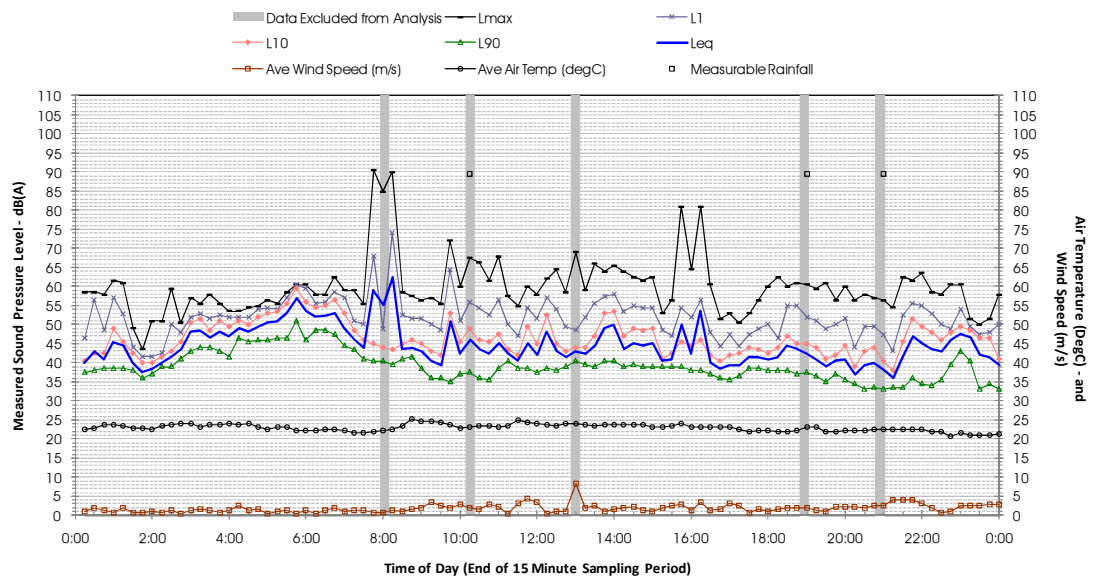
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### Profile of Noise Environment - Location 5 (No Tallawarra A) Monday 29 March 2010



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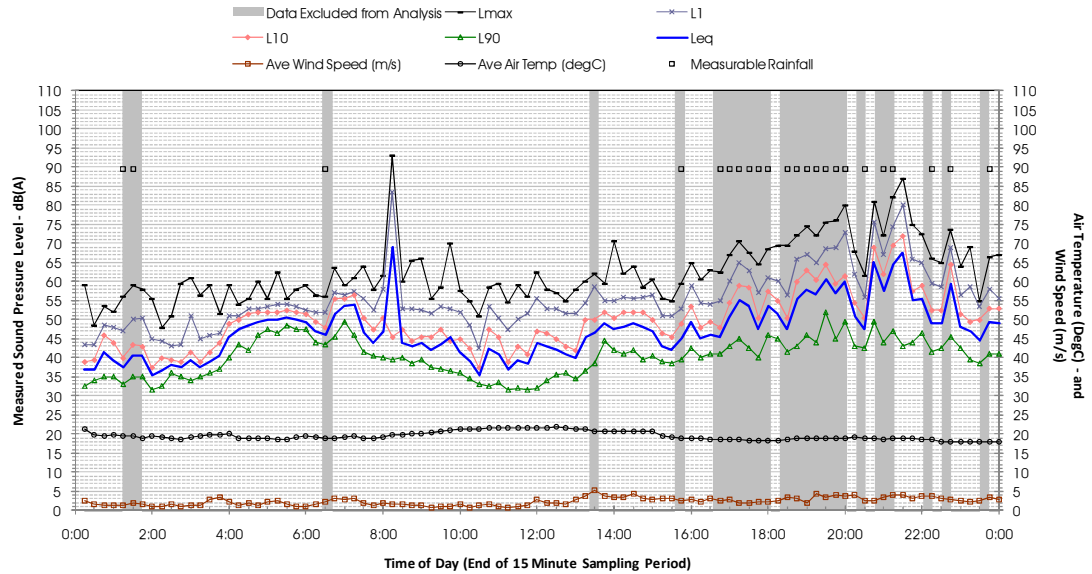


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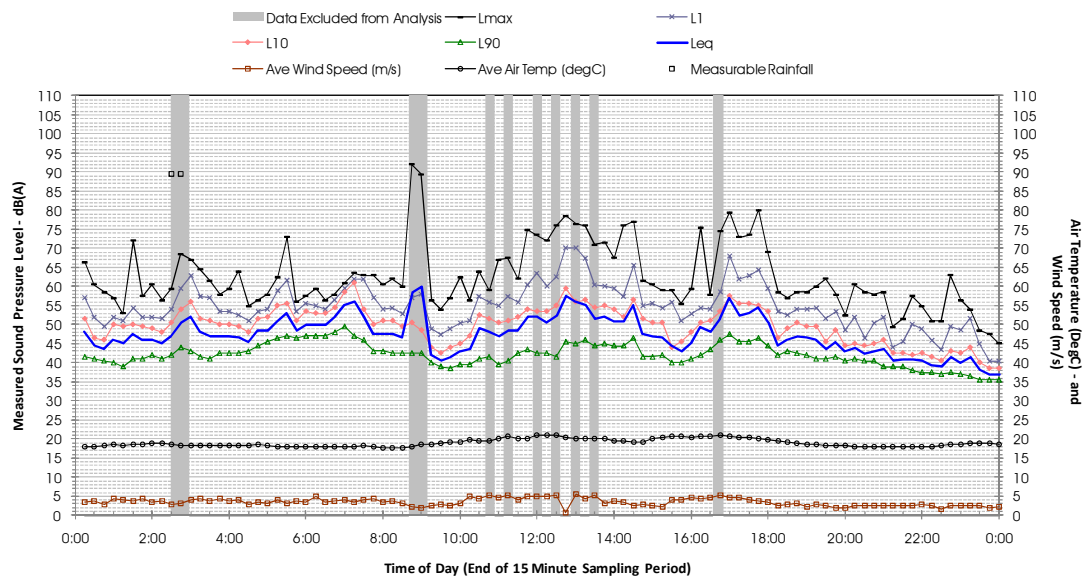
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### Profile of Noise Environment - Location 5 (No Tallawarra A) Tuesday 30 March 2010



### Profile of Noise Environment - Location 5 (No Tallawarra A) Wednesday 31 March 2010

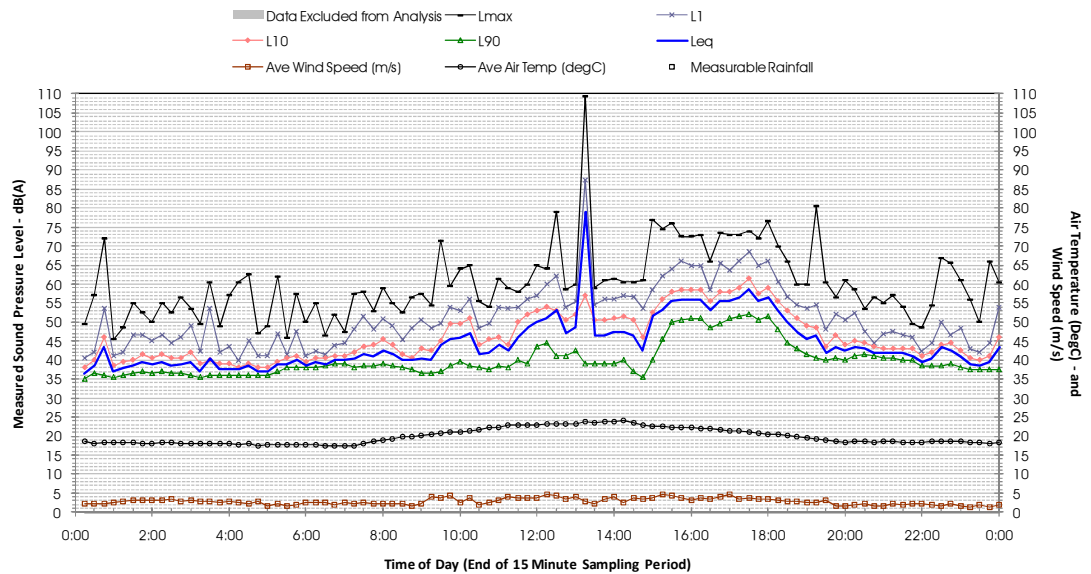


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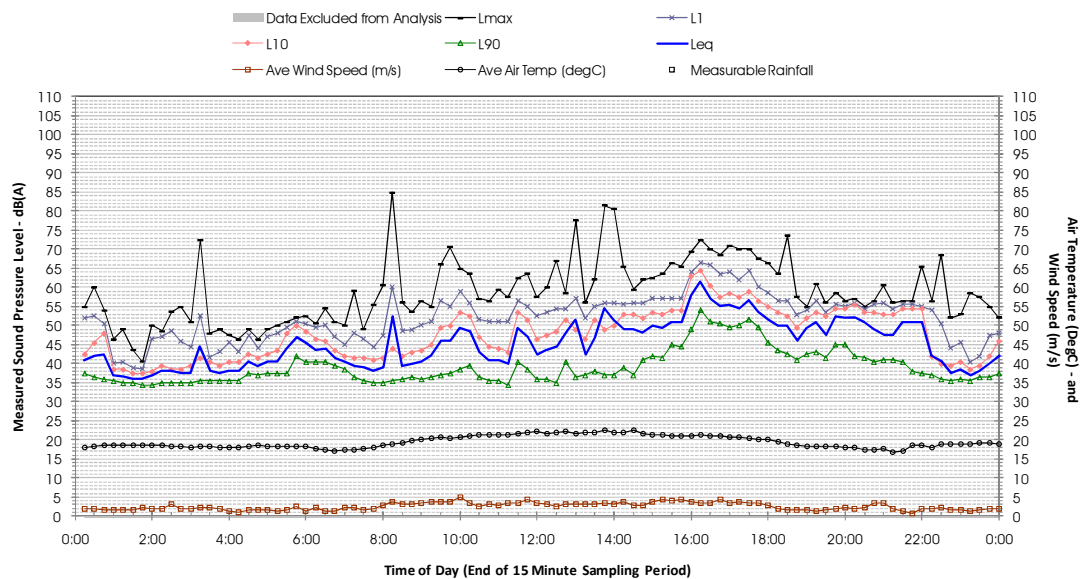
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### Profile of Noise Environment - Location 5 (No Tallawarra A) Thursday 1 April 2010



### Profile of Noise Environment - Location 5 (No Tallawarra A) Friday 2 April 2010

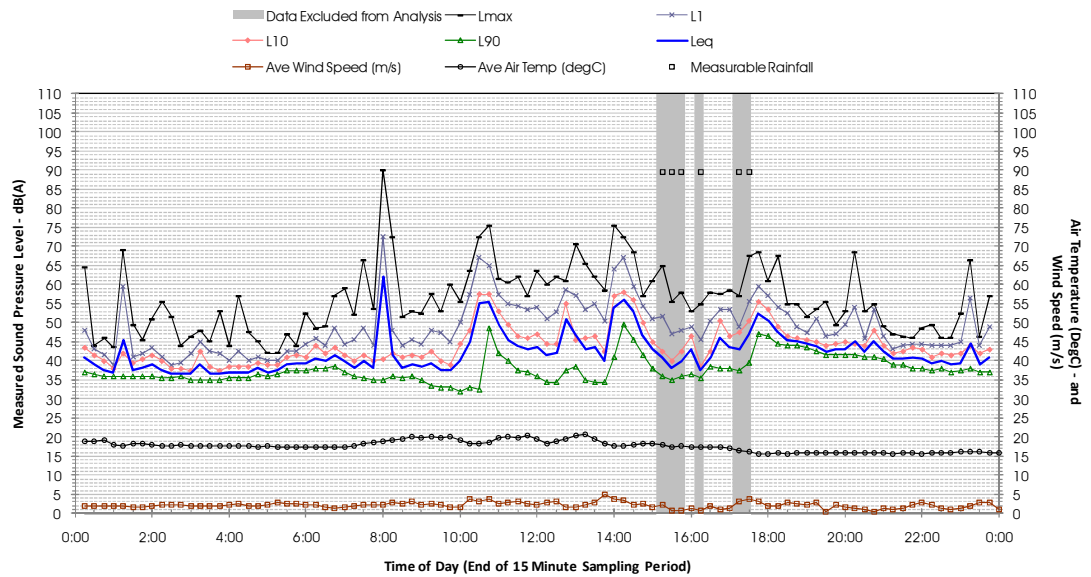


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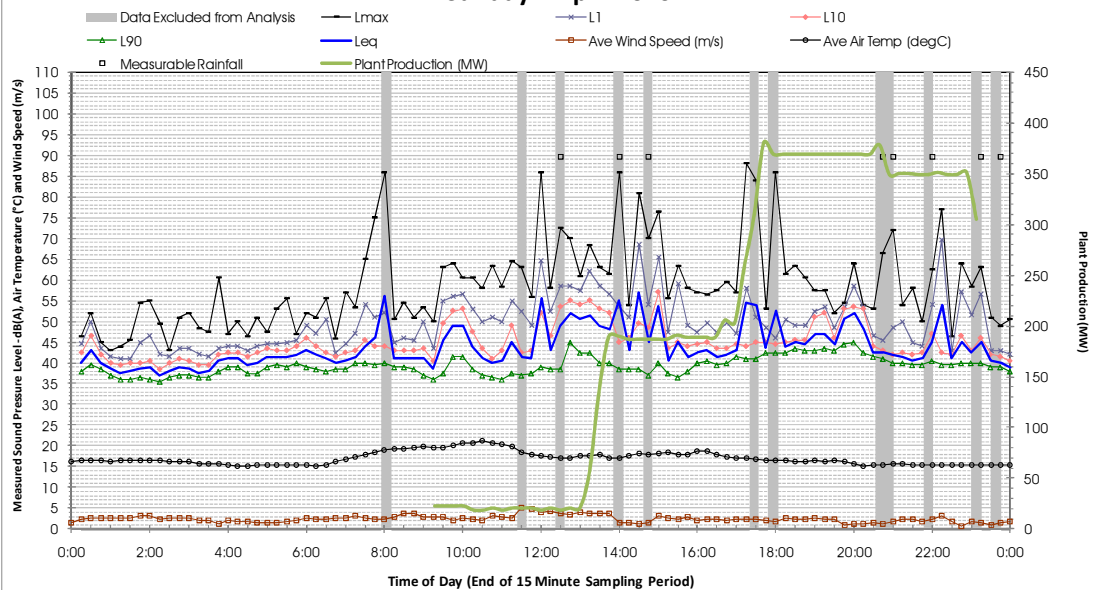
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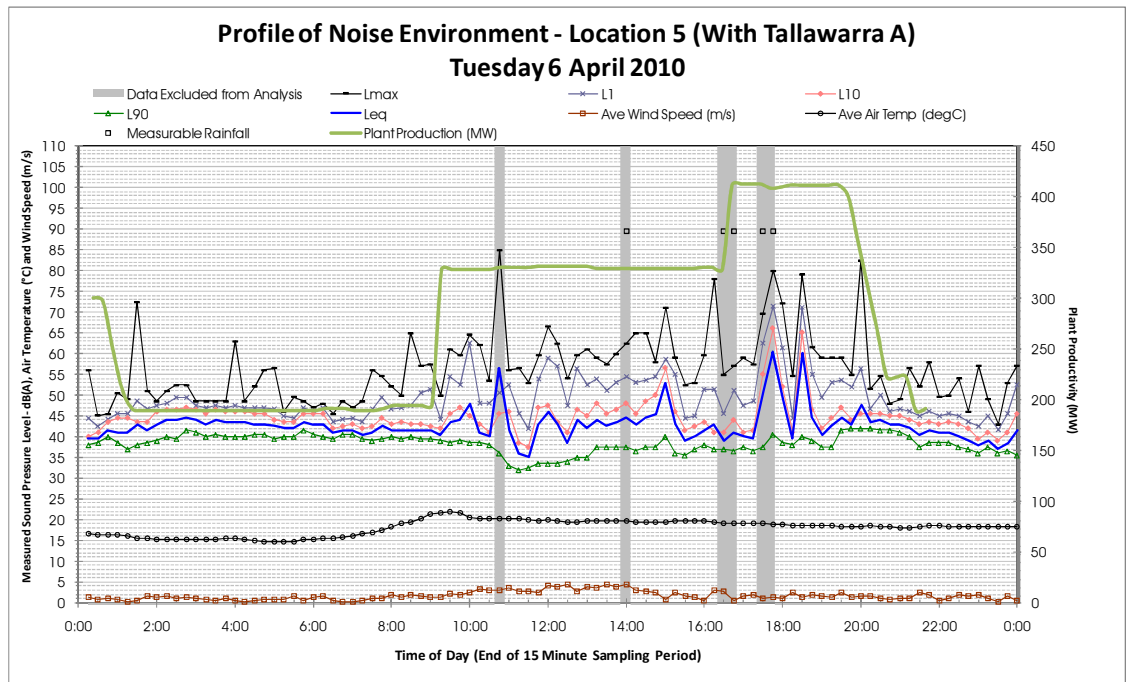
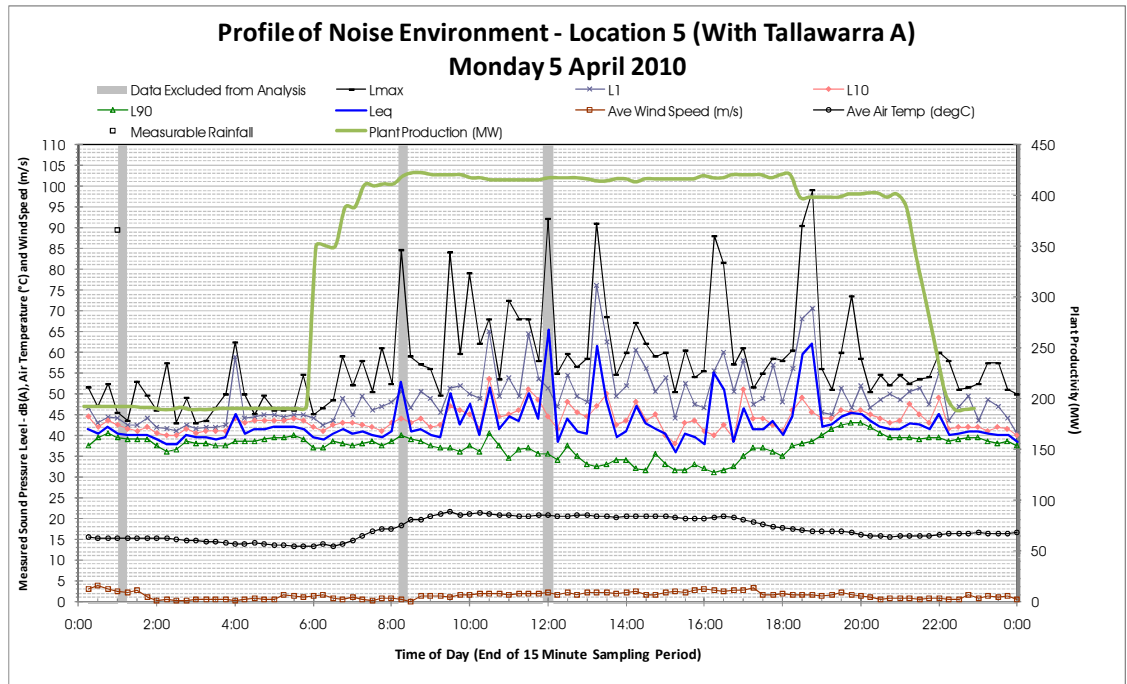
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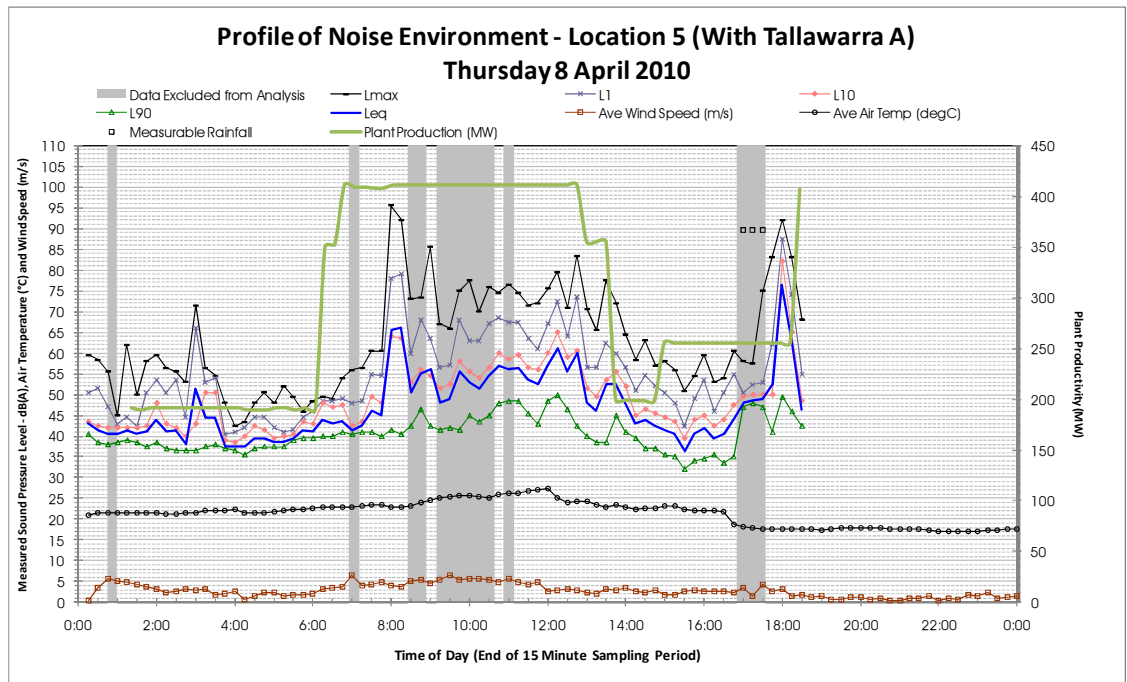
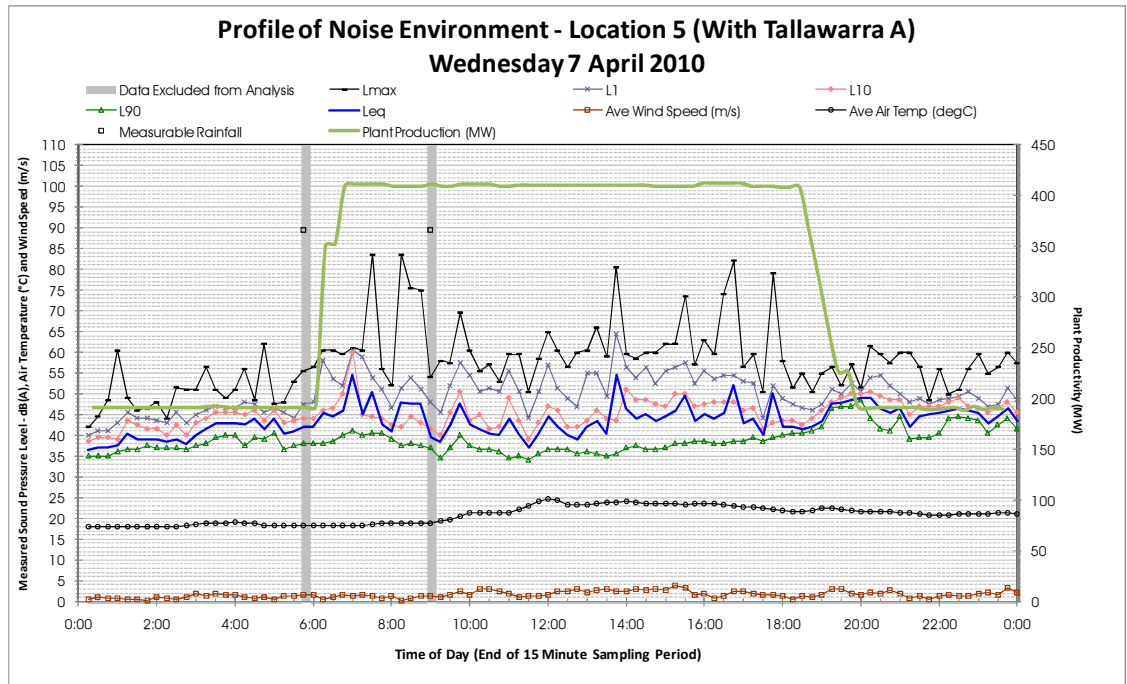
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