Environmental Resources Management Australia

Building C,
33 Saunders Street
Pyrmont NSW 2009
Telephone (02) 8584 8888
Facsimile (02) 8584 8800
Locked Bag 24,
Broadway NSW 2007
www.erm.com

20 February, 2006

Graham Muir
CRAVEN, ELLISTON & HAYES (LITHGOW) Pty Ltd
Rutherford Lane
LITHGOW NSW 2790

Our Reference: 0037448L1.DOC

Dear Graham,

RE: INVINCIBLE COLLIERY LITHGOW - RESPONSE TO DEC REVIEW OF EA NOISE

The following additional information is provided in response to the DEC's review of the previous environmental noise assessment. In order to address the items raised in the DEC's letter of 6 December 2005, additional monitoring and modelling was undertaken.

1. AMBIENT NOISE MONITORING

The EA noise assessment conservatively adopted the DEC's minimum RBL value for noise assessment purposes. The EA data is limited to 3 days and was recorded during a weekend, which is typically quieter than weekdays, in 1999. This is not considered representative of normal weekday conditions. Hence, long term noise monitoring was undertaken in accordance with the INP and results are summarised in *Table 1*. Location numbers are as per the EA noise assessment. Although part of the monitoring period extended into the holiday season, it is considered that data collected is typical of the area. This is supported by the transport activity that was observed during this period. Furthermore, the daily charts demonstrate a trend in morning and afternoon noise patterns consistent with expected road traffic activity. Notwithstanding, data collected is likely to provide a low representation of existing background noise levels, resulting in a conservative noise assessment. The daily charts and ABL data are provided in Annex A.

Table 1 LONG TERM NOISE MONITORING RESULTS 19 TO 31 DEC 2005

Location	Rating Background Level			Ambient (L_{eq}) Noise Level		
	Day dB(A)	Evening dB(A)	Night dB(A)	Day dB(A)	Evening dB(A)	Night dB(A)
1. Billabong Residence (west of site)	35	31	30[2]	45	42	44
2. Hillview Residence (south west of site)	36	30[2]	30[2]	50	45	43

Notes: *1. Data affected by rain and wind speed > 5 m/s excluded.*

2. It should be noted that the EPA's minimum 30dB(A) RBL was adopted here.

Based on the above monitoring data, the derived project specific criteria (limited by intrusiveness) is summarised in *Table 2*.

Table 2 PROJECT SPECIFIC NOISE CRITERIA

Location		Criterion, $L_{eq,15minute}$ dB(A)		
		Day	Evening	Night
1	Billabong	40	36	35
2	Hillview	41	35	35

Notes: *1. Criteria are based on the Existing Background Noise levels.*

2. REVISED NOISE MODELLING

The operational activity previously modelled in the EA noise assessment have been revised. This updated mine planning approach was undertaken to minimise noise emissions through a two stage approach. These two stages are proposed mining areas closest to the nearest residences and hence represent a worst case snap-shot. The selected mine plans display the working areas within approximately 1 month and 4 months of working within that specific area of the mine. Other changes from the EA assessment that are of acoustic significance include:

- A Bund. An earth bund will be constructed adjacent to the crushing plant extending at least 1m above the top of the equipment. This will run north south and shield residences to the west and south west. A conservative reduction of 5dB was applied to the crusher and loader noise level for this bund; and

- Deeper pit operations. A more realistic pit configuration was used to simulate proposed activities. This resulted in a pit depth of 5m below the surface, hence providing significant shielding.

The equipment list for the two modelling scenarios are shown in *Table 2*.

Table 2 Typical Equipment proposed to be on site

Equipment Type	Model/Specifications	Number of units proposed on site
	Stage 1	
Front End Loader	CAT 992, 10 cubic metre	1
Dozer	CAT D11, 522 kW	1
Elevating Scraper	CAT 623F, 13 cubic metre	1
Highway Dump Trucks	CAT 773B, 50 tonne off highway trucks	3
	Stage 2	
Front End Loader	CAT 992, 10 cubic metre	1
Front End Loader	CAT 988, 6 cubic metre	1
Grader	CAT 14G	1
Highway Dump Trucks	CAT 773B, 50 tonne off highway trucks	3
Dozer	CAT D11, 522 kW	1
Crushing Plant	Gundlach Crushing Plant (manufactured in-house)	1
Water Cart	CAT	1
Drill	Reedrill GD2CD	1

A worst case 15 minute scenario was considered for modelling purposes. The scenario assumed simultaneous operation of all plant and equipment, at locations that, in ERM's opinion, represents a worst case scenario for surrounding residences.

3. NOISE MODELLING RESULTS

The results of noise modelling are summarised in *Table 3*. As per the EA assessment, the same weather conditions were modelled using the ENM software.

Table 3 Predicted Operational Noise at Residences

	Receiver	Predicted Noise Level, $L_{eq,15minute}$ dB(A)		INP Criteria Leq,15minute dB(A)	Previous Consent Limits, $L_{10,15minute}$ dB(A)
		Day (Calm)	Day (Adverse Weather)		
	Stage 1				
1	Billabong	34	44	40	45
2	Hillview	31	43	41	45
	Stage 2				
1	Billabong	35	45	40	45
2	Hillview	32	46	41	45

It is ERM's understanding that the operations at Invincible Colliery will not extend outside of the operating hours of 7am to 10pm. Typically, operations will occur between 7am and 6pm, which is the EPA defined daytime hours. Thus, night time operation and sleep disturbance scenarios have not been included as part of this assessment. Furthermore, if evening operations eventuated, the calm weather predictions above would be considered representative as evening wind conditions are not a feature of the area as defined by the INP.

4. DISCUSSION

The results indicate compliance with the INP goals at the nearest residences of Billabong and Hillview during calm weather conditions. During adverse weather conditions, exceedances of the INP targets are predicted. The previous consent conditions are predicted to be generally met even under adverse winds.

A comparison between the EA results and those above show a 6 to 8 dB reduction in noise levels under calm weather conditions. Similarly, a 3 to 4 dB noise reduction is achieved under adverse winds. Such reductions are considered

significant and are a result of the proponent's concerted effort to reduce noise as much as practicable. It is considered that all reasonable and feasible noise mitigation has been applied in accordance with the intent of the INP and only residue noise levels remain above the target INP levels (during adverse winds only). Further, the INP acknowledges that for existing operations, such as this, noise mitigation is limited and alternate noise targets (not the project specific) should be adopted. This coupled with the understanding that agreements (verbal) between the affected residences and the proponent exits, suggests that noise impact is unlikely.

5. CONCLUSION

ERM has completed a revised operational noise assessment associated with the open cut mine at the Invincible Colliery Coal Handling and Processing Plant located within the rural outskirts of Lithgow. The noise assessment has been conducted in accordance with the relevant DEC policy.

The noise predictions indicate a marked improvement compared to the previous EA assessment. The noise predictions indicate that noise levels would be below the INP's non-mandatory targets under calm weather conditions. During adverse wind conditions, noise levels are predicted to be above the INP targets at the two nearest residential receivers – Billabong and Hillview. It is considered that all reasonable and feasible noise mitigation has been applied to the operations. Further, the INP acknowledges that for existing operations, such as this, noise mitigation is limited and alternate noise targets (not the project specific) should be adopted. This coupled with the understanding that agreements (verbal) between the affected residences and the proponent exits, suggests that noise impact is unlikely.

We trust the above information is of benefit to the DEC's review and if you require further information please contact the undersigned.

Yours sincerely,
for Environmental Resources Management Australia Pty Ltd

Najah Ishac
Manager, Acoustics

APPENDICES

Appendix A

LONG TERM NOISE MONITORING DATA

Table A.1 LOCATION 1 BILLABOONG RESIDENCE

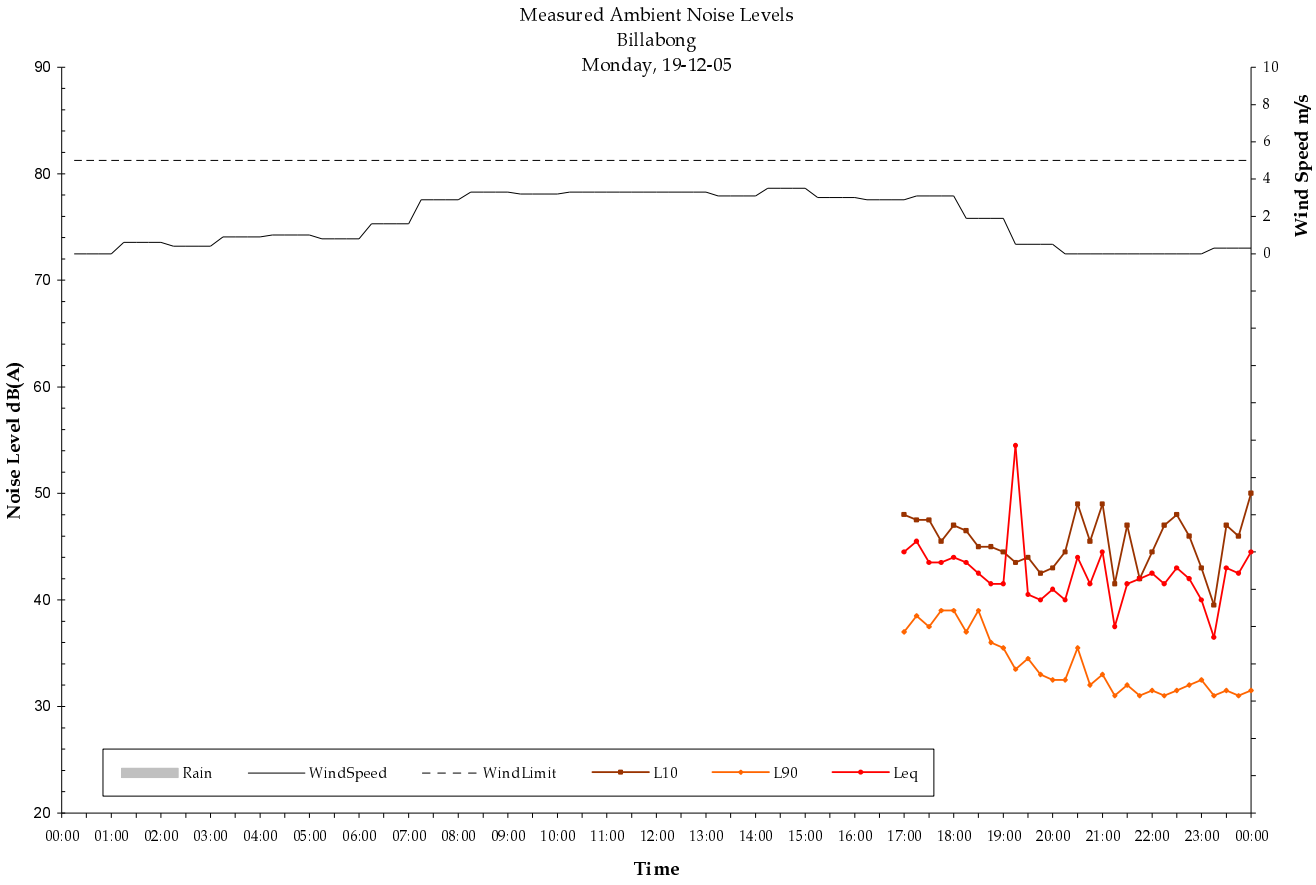
Date	ABL Day	ABL Evening	ABL Night	Leq 11hr Day	Leq 4hr Evening	Leq 9hr Night
Monday, 19-12-05	0	31	31	0	45	46
Tuesday, 20-12-05	36	31	31	46	42	44
Wednesday, 21-12-05	35	32	0	46	43	0
Thursday, 22-12-05	36	33	31	46	44	43
Friday, 23-12-05	37	32	31	46	43	47
Saturday, 24-12-05	37	31	31	48	39	44
Sunday, 25-12-05	34	31	30	42	41	44
Monday, 26-12-05	34	31	30	42	40	42
Tuesday, 27-12-05	35	32	31	46	41	42
Wednesday, 28-12-05	37	31	30	46	41	45
Thursday, 29-12-05	0	31	31	0	41	43
Friday, 30-12-05	33	31	31	43	41	42
Saturday, 31-12-05	33	0	0	45	0	0
RBL	**35**	**31**	**31**			
Summary Values				**45**	**42**	**44**

Notes: *1. 0 indicates periods with too few valid samples due to weather or logger operation.*

Table A.2 LOCATION 2 HILLVIEW RESIDENCE

Date	ABL Day	ABL Evening	ABL Night	Leq 11hr Day	Leq 4hr Evening	Leq 9hr Night
Monday, 19-12-05	0	26	26	0	44	43
Tuesday, 20-12-05	38	28	26	47	43	43
Wednesday, 21-12-05	34	29	0	45	46	0
Thursday, 22-12-05	38	28	26	48	44	40
Friday, 23-12-05	37	30	26	47	47	49
Saturday, 24-12-05	43	26	25	57	45	39
Sunday, 25-12-05	33	27	25	48	46	38
Monday, 26-12-05	35	26	25	46	43	38
Tuesday, 27-12-05	35	30	25	44	43	42
Wednesday, 28-12-05	37	34	25	53	44	42
Thursday, 29-12-05	0	27	25	0	43	42
Friday, 30-12-05	34	29	25	46	48	41
Saturday, 31-12-05	0	0	0	0	0	0
RBL	**36**	**28**	**25**			
Summary Values				**50**	**45**	**43**

Notes: 1. 0 indicates periods with too few valid samples due to weather or logger operation.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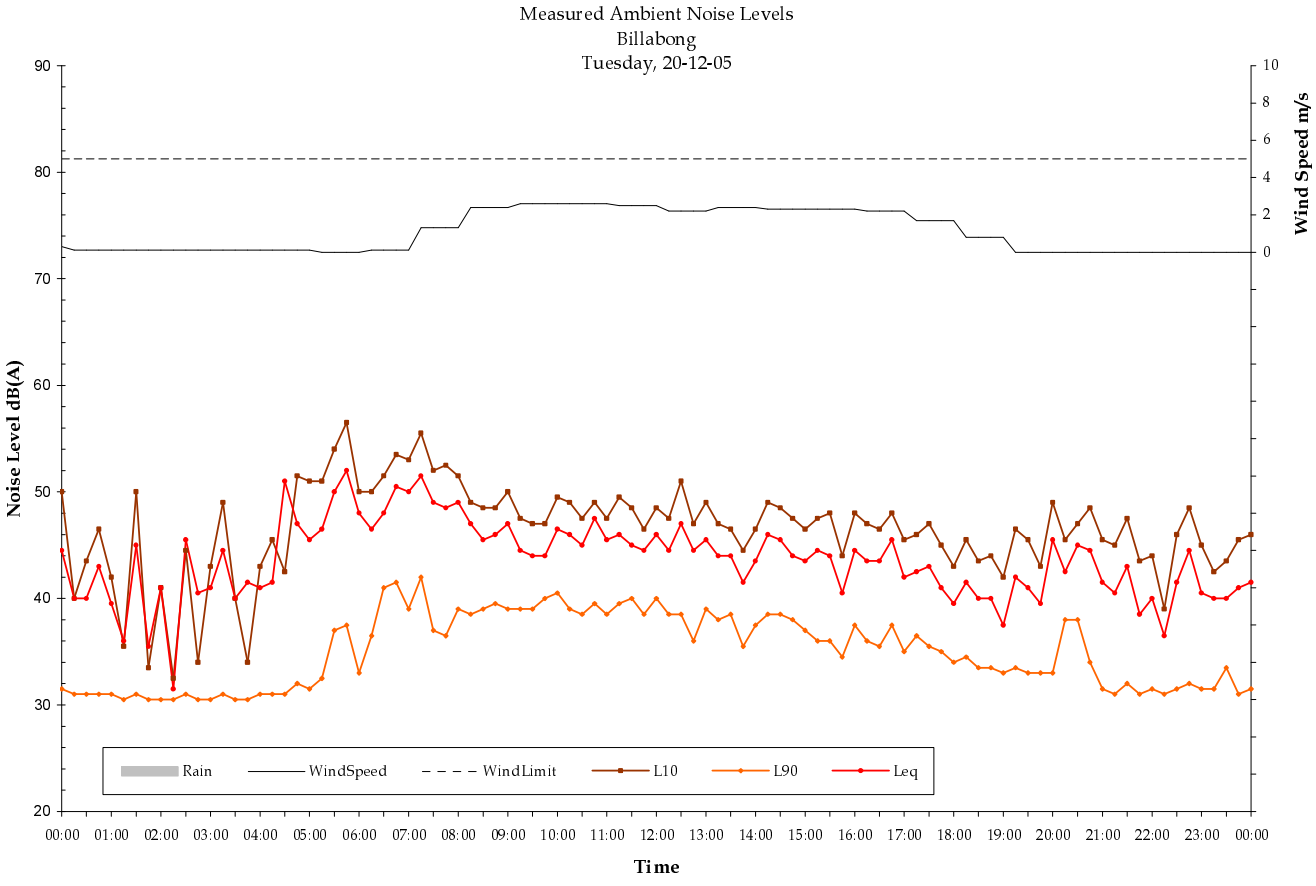
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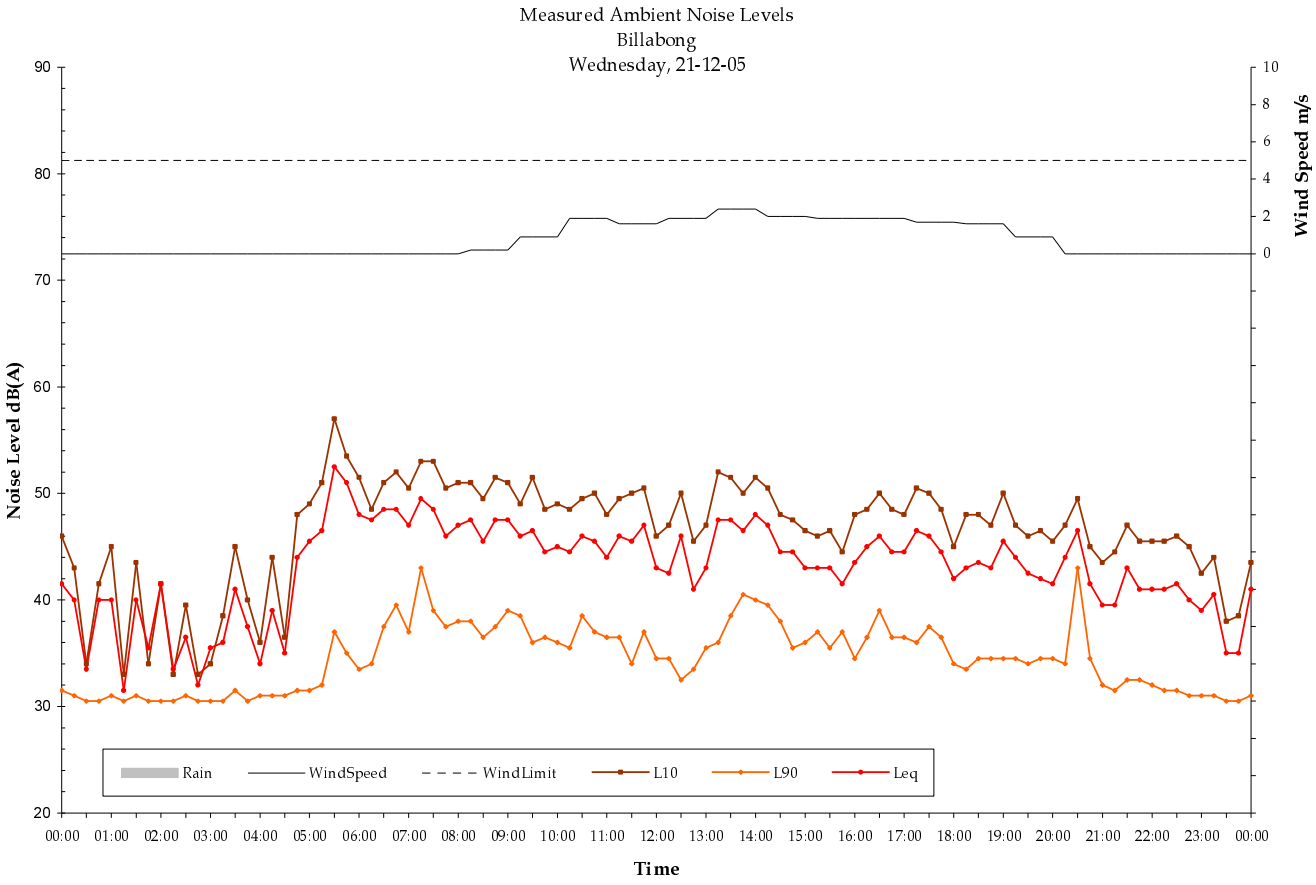
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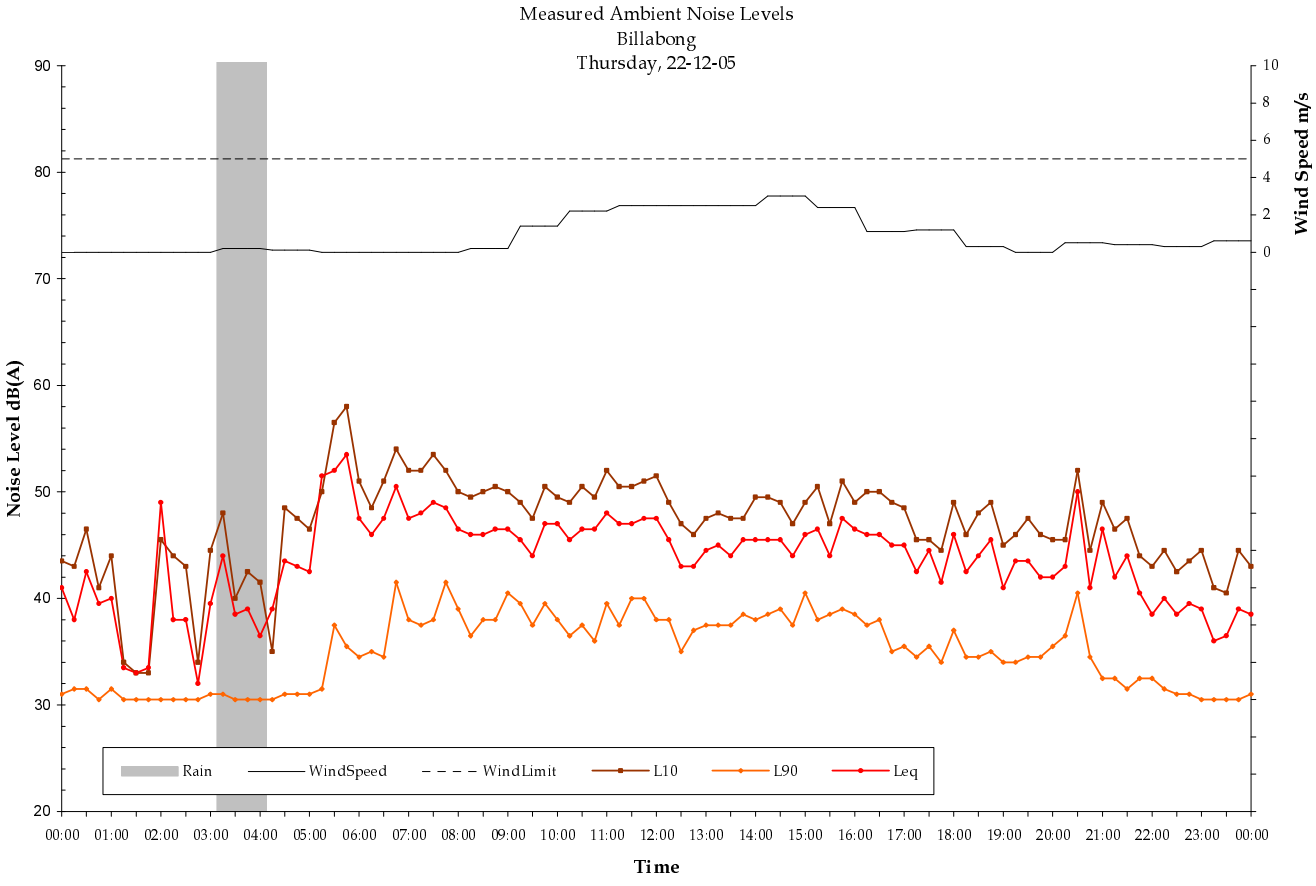
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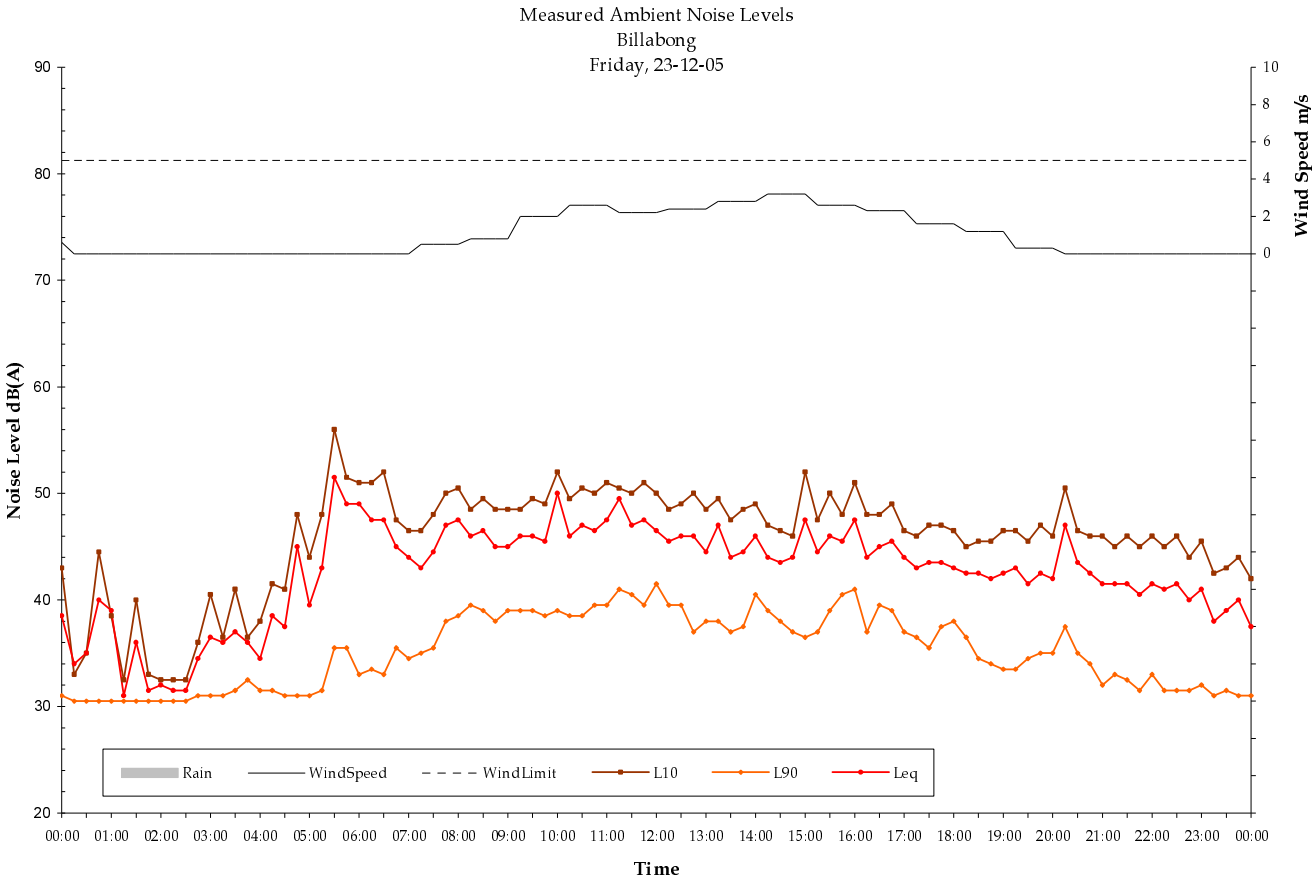
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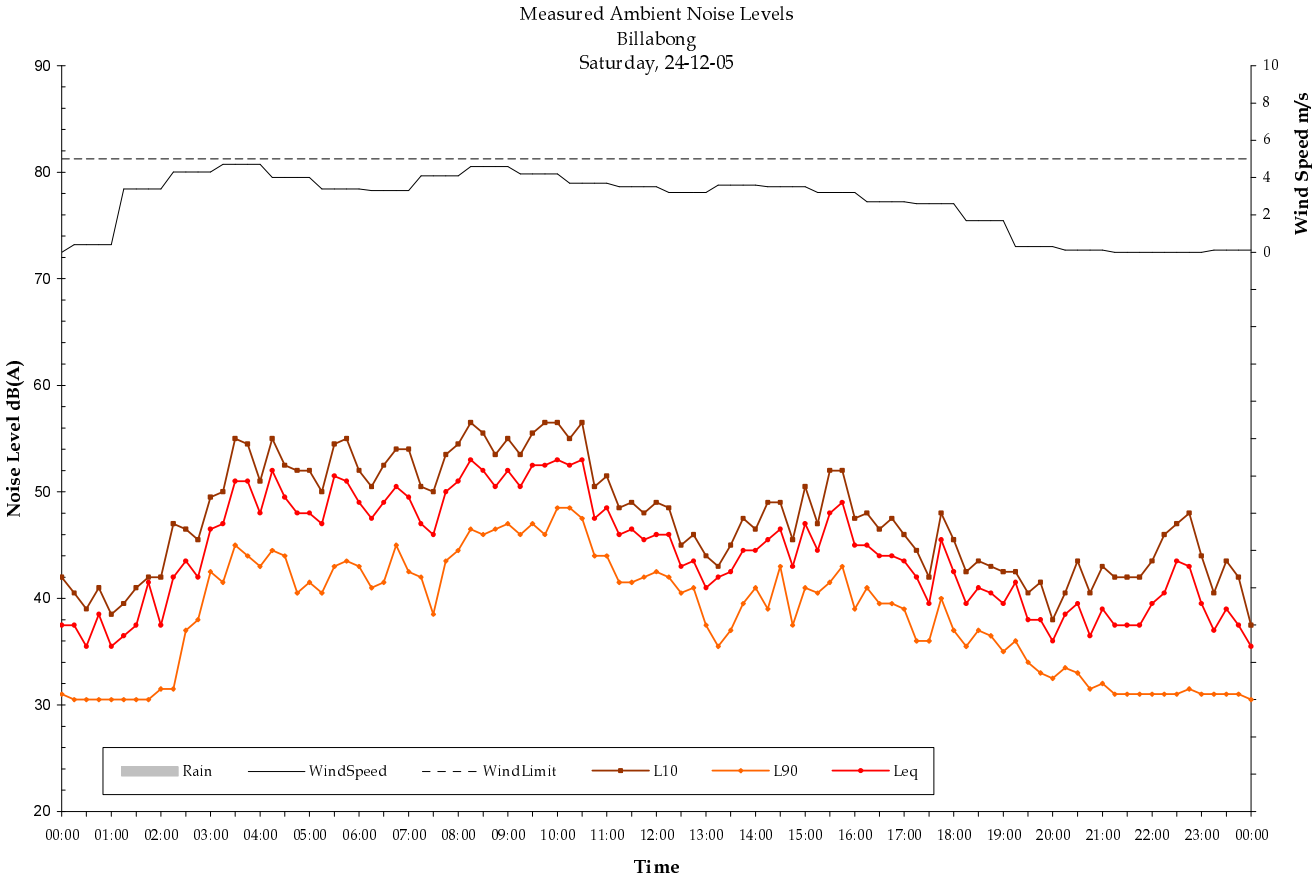
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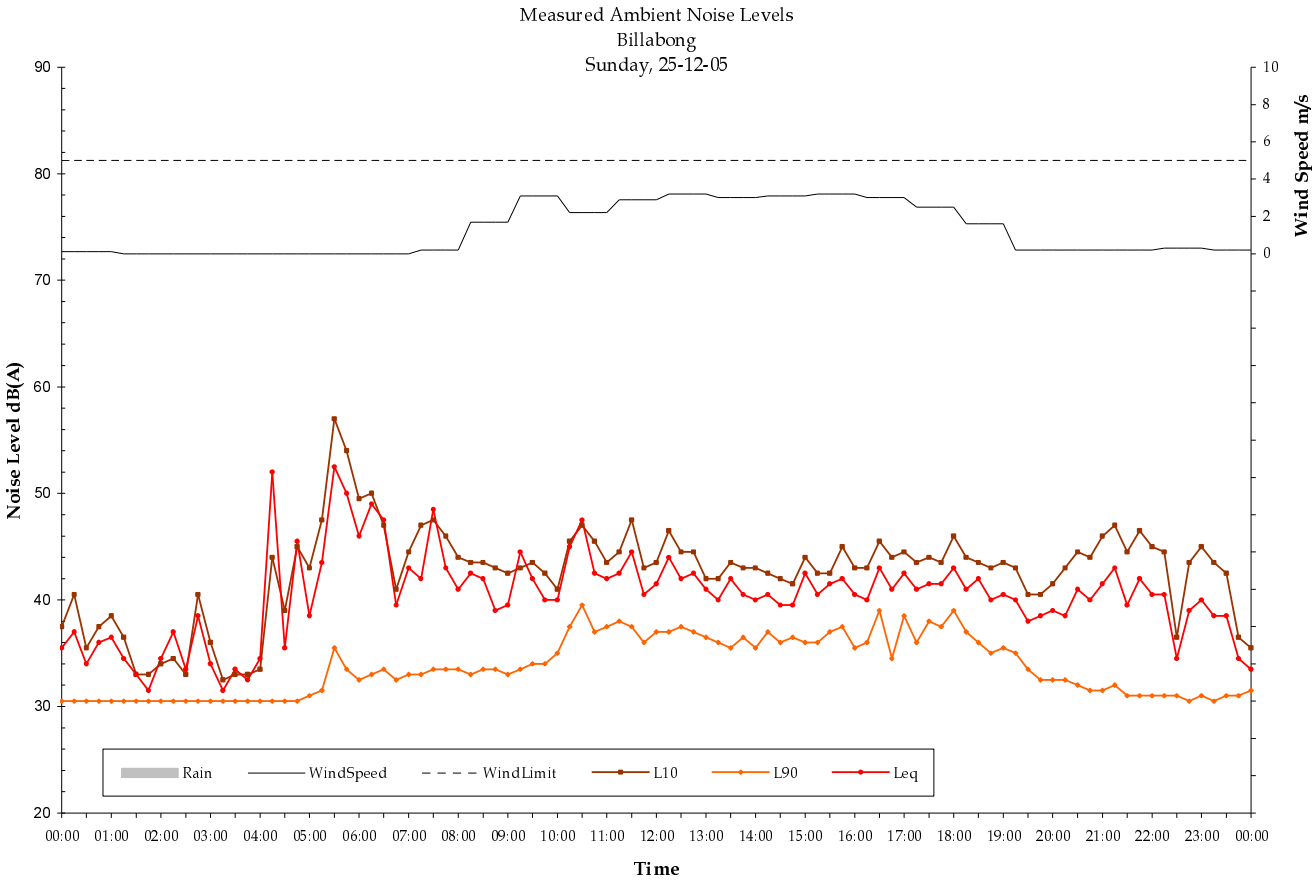
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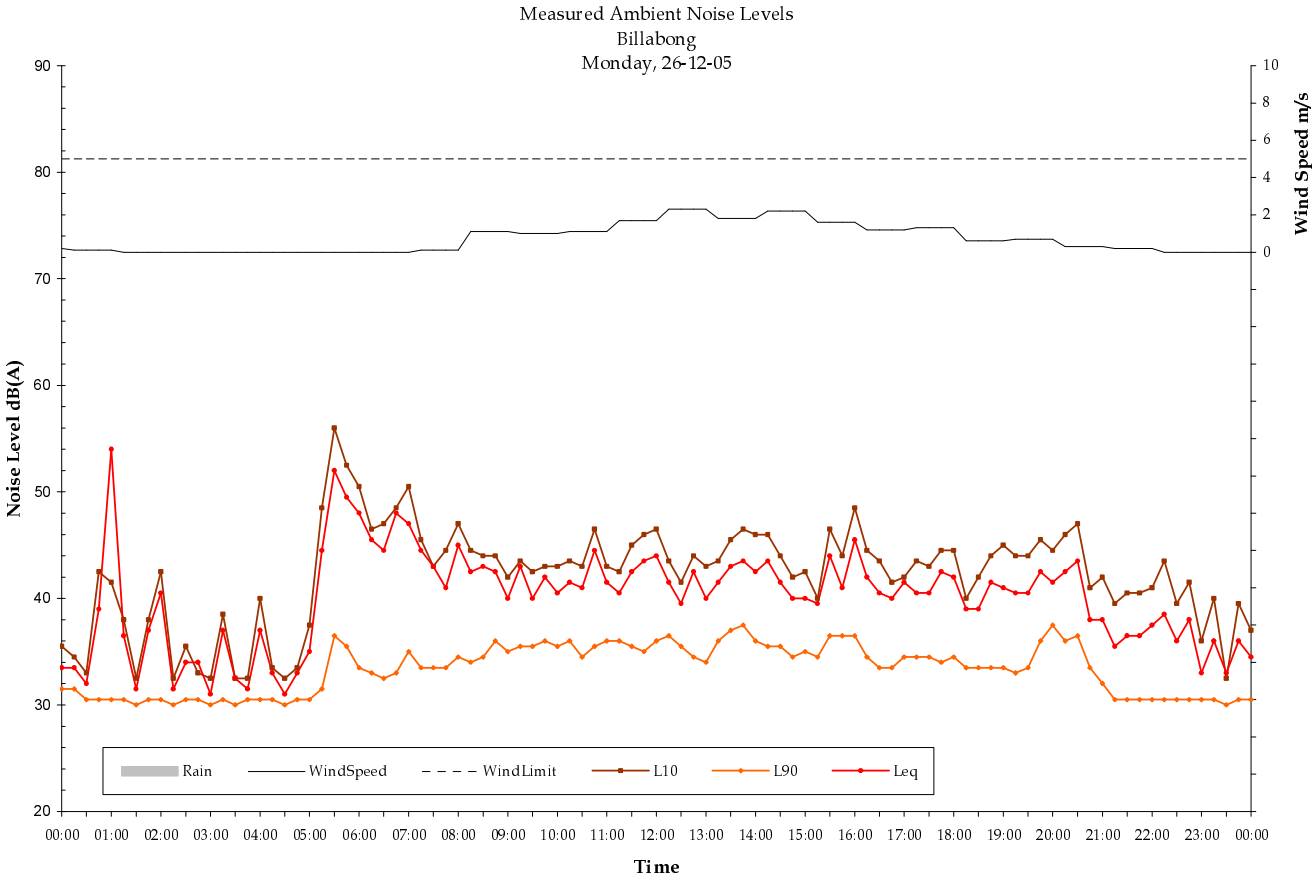
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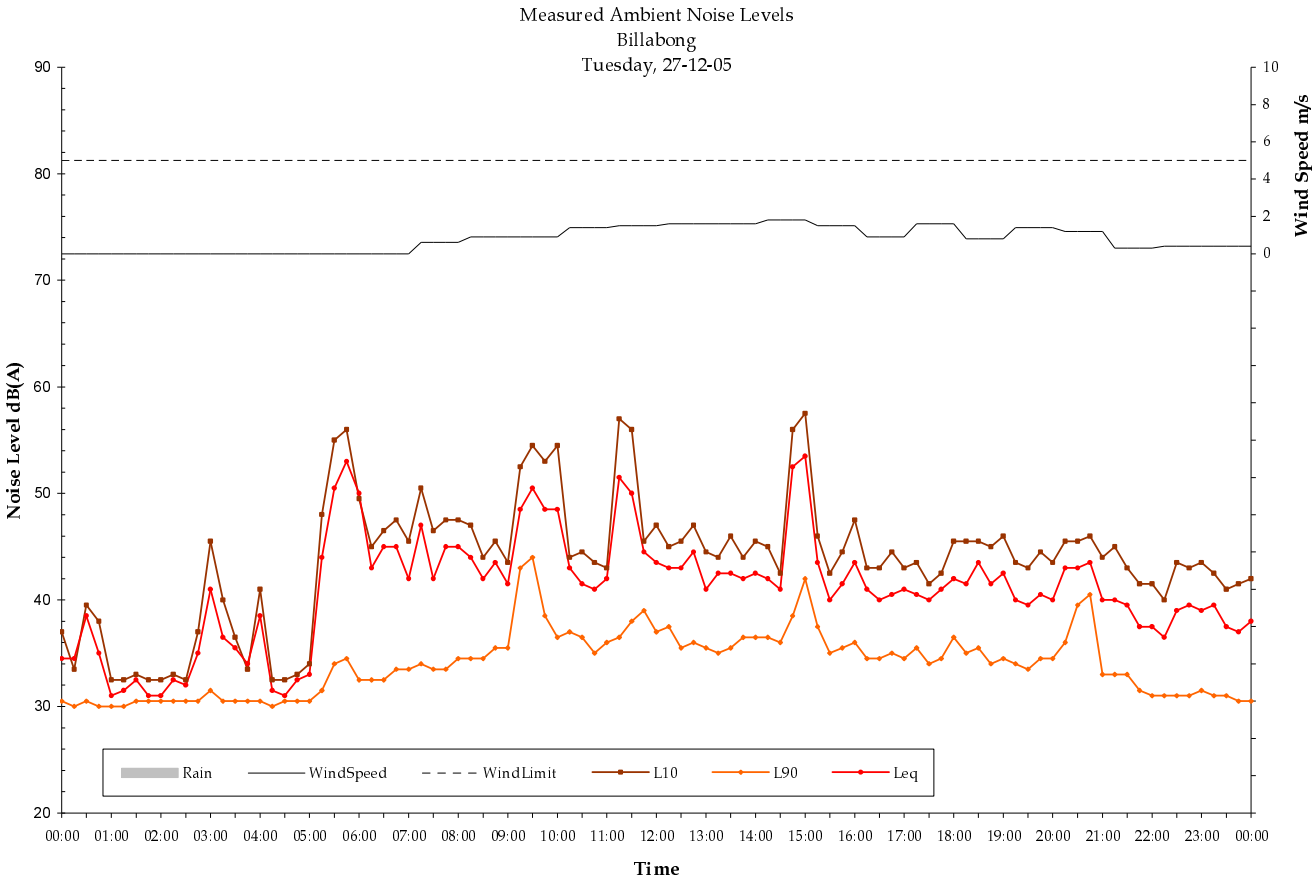
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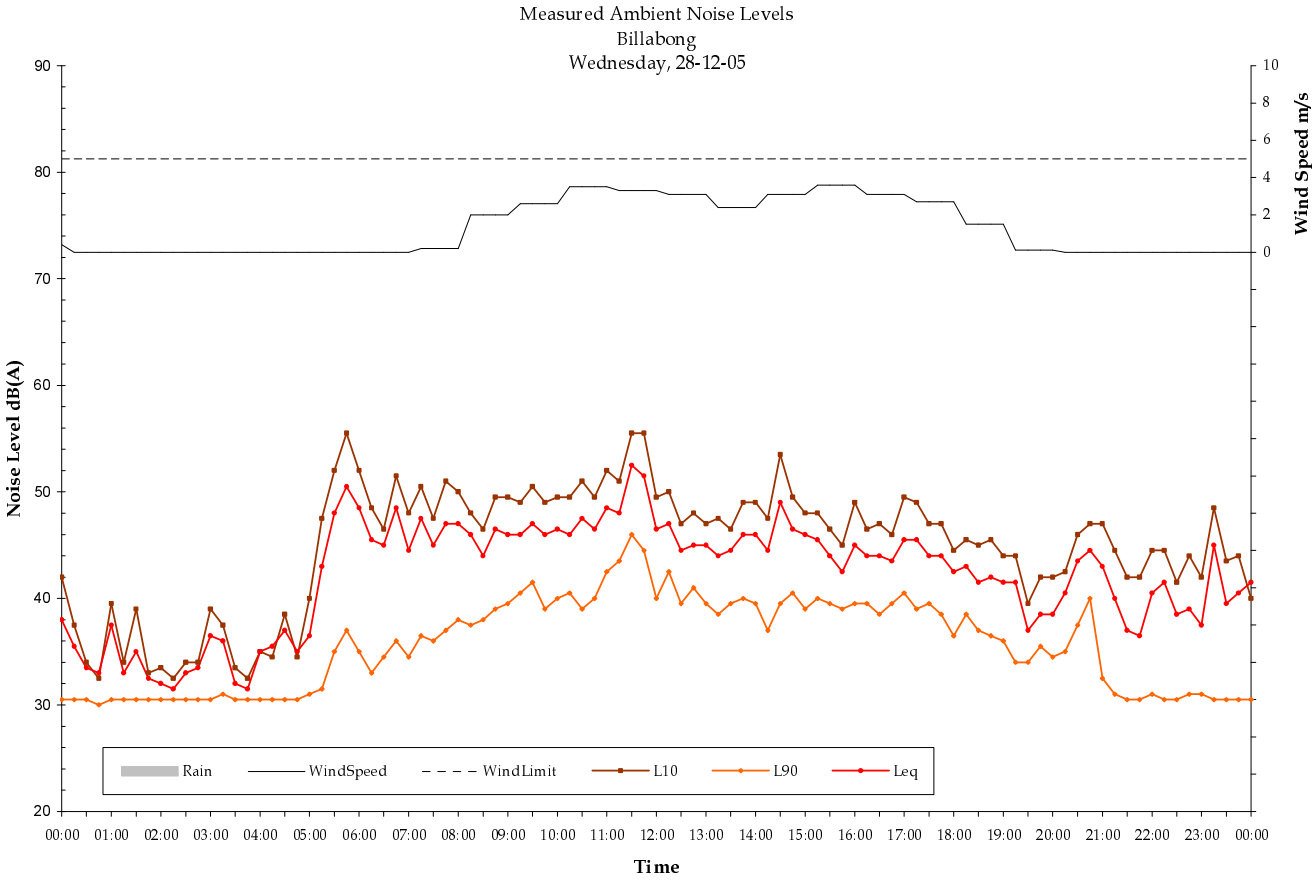
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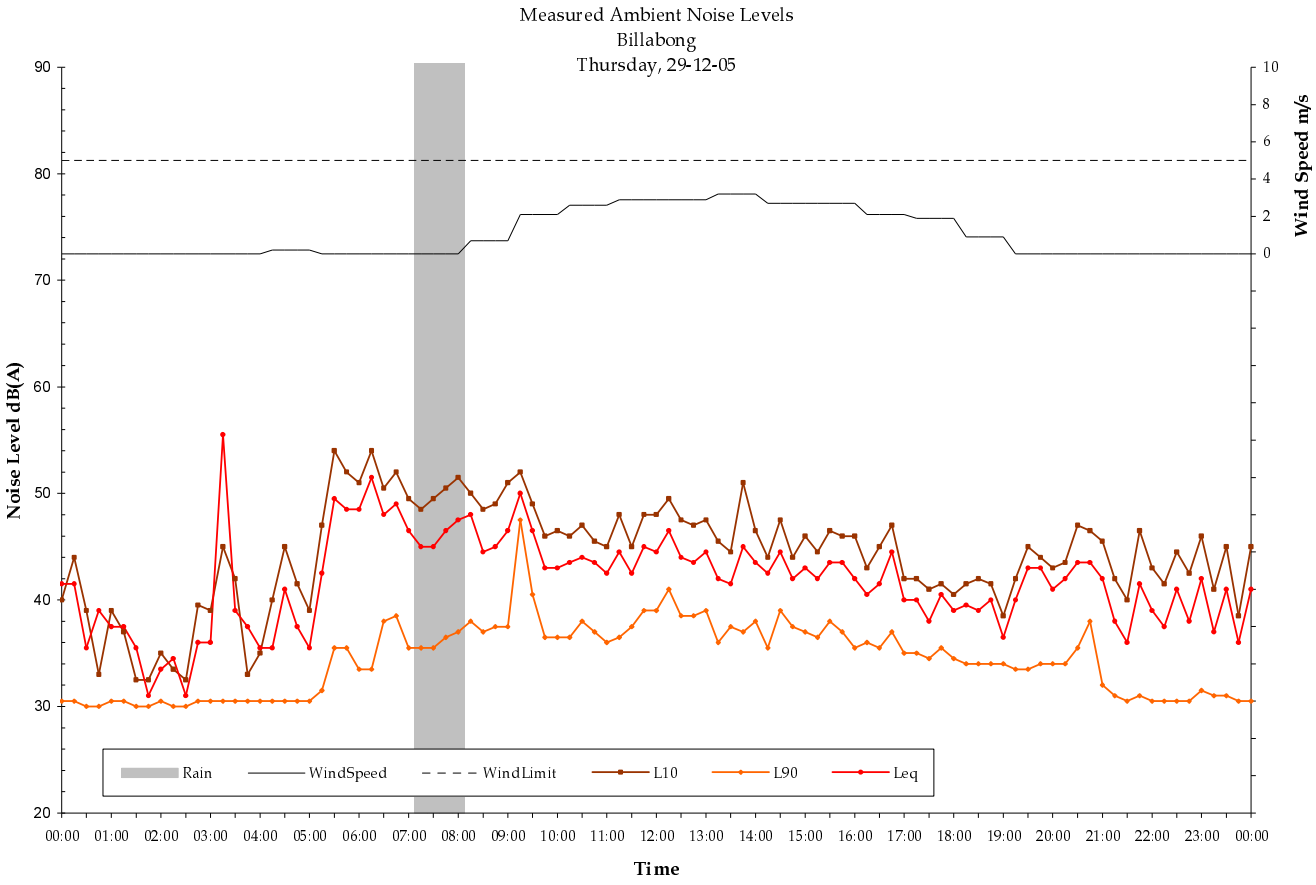
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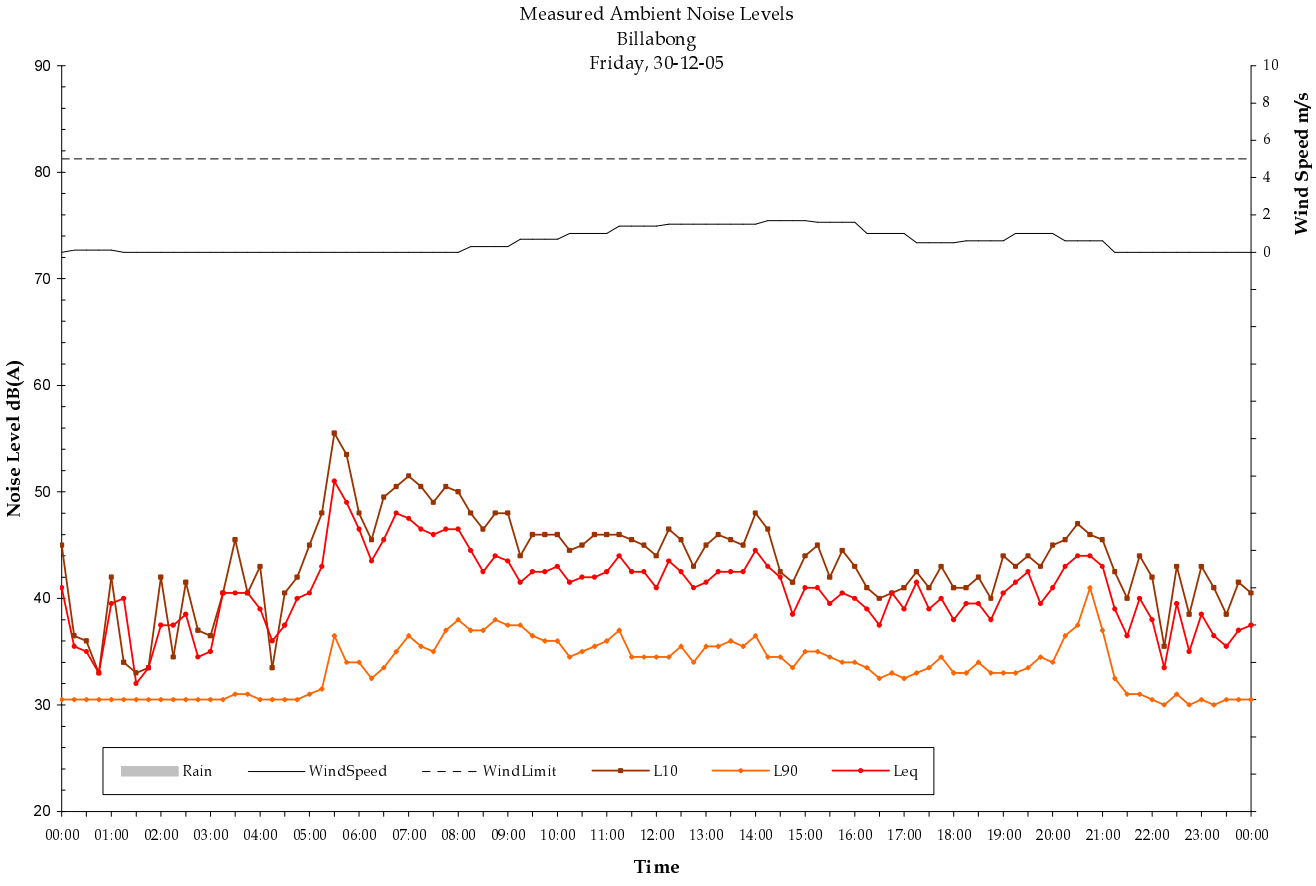
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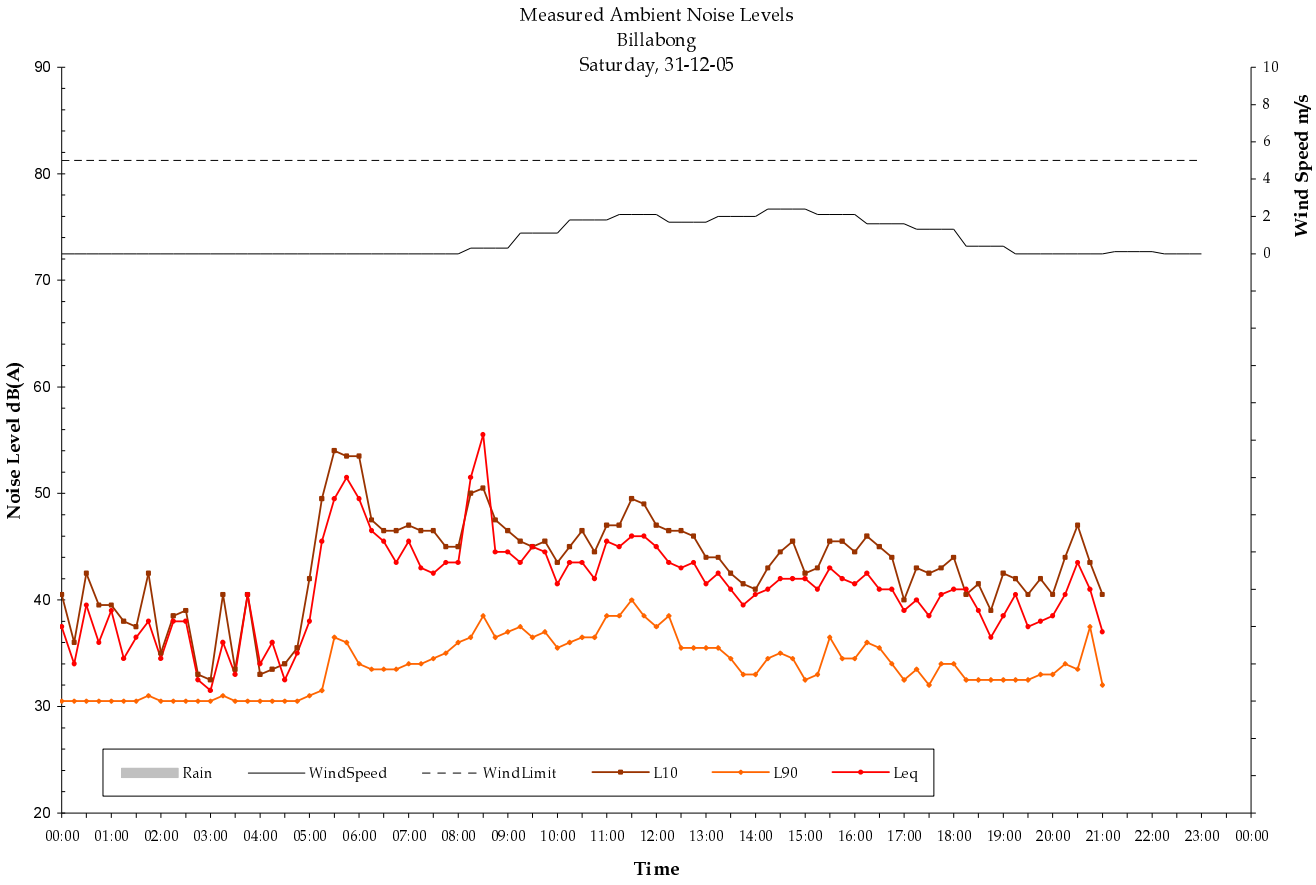
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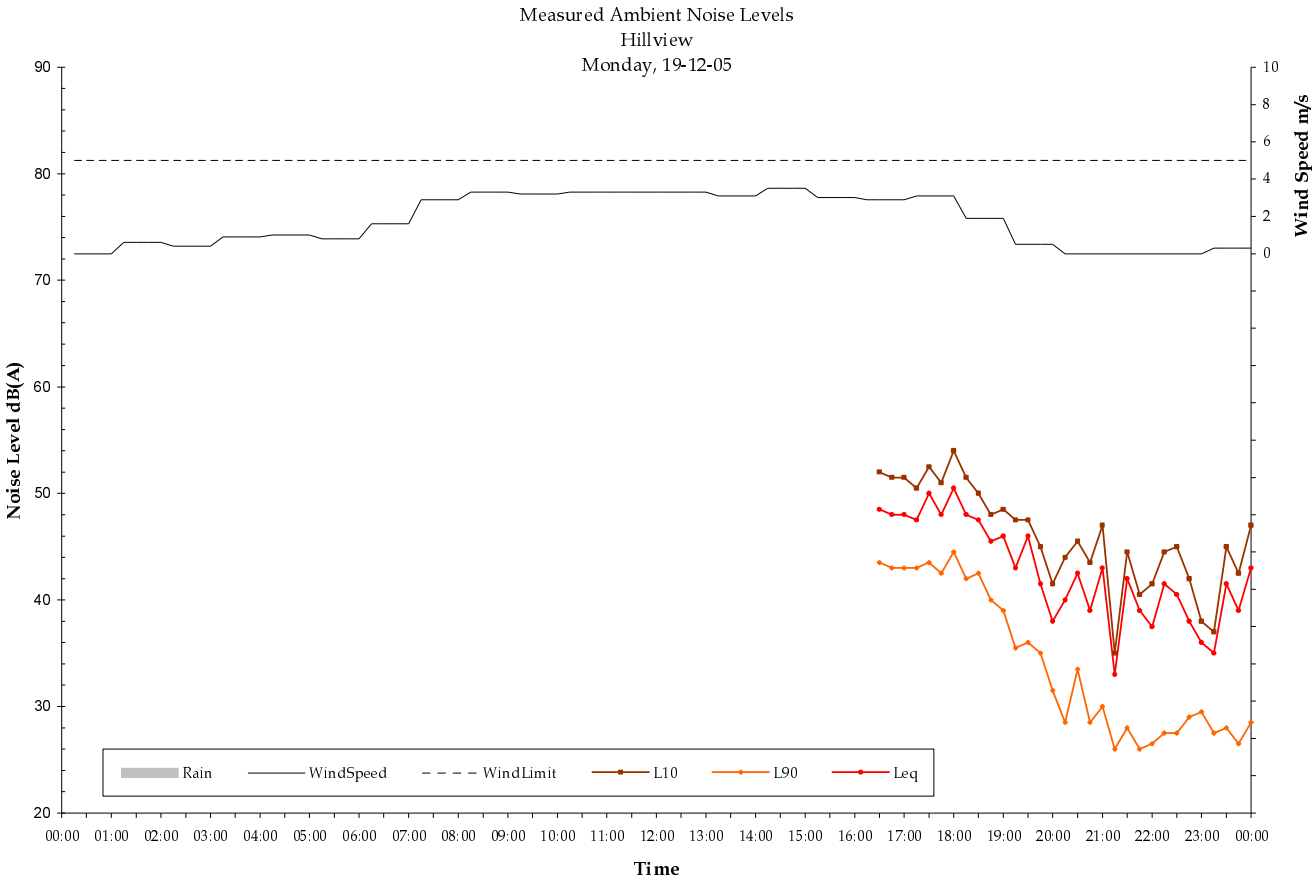
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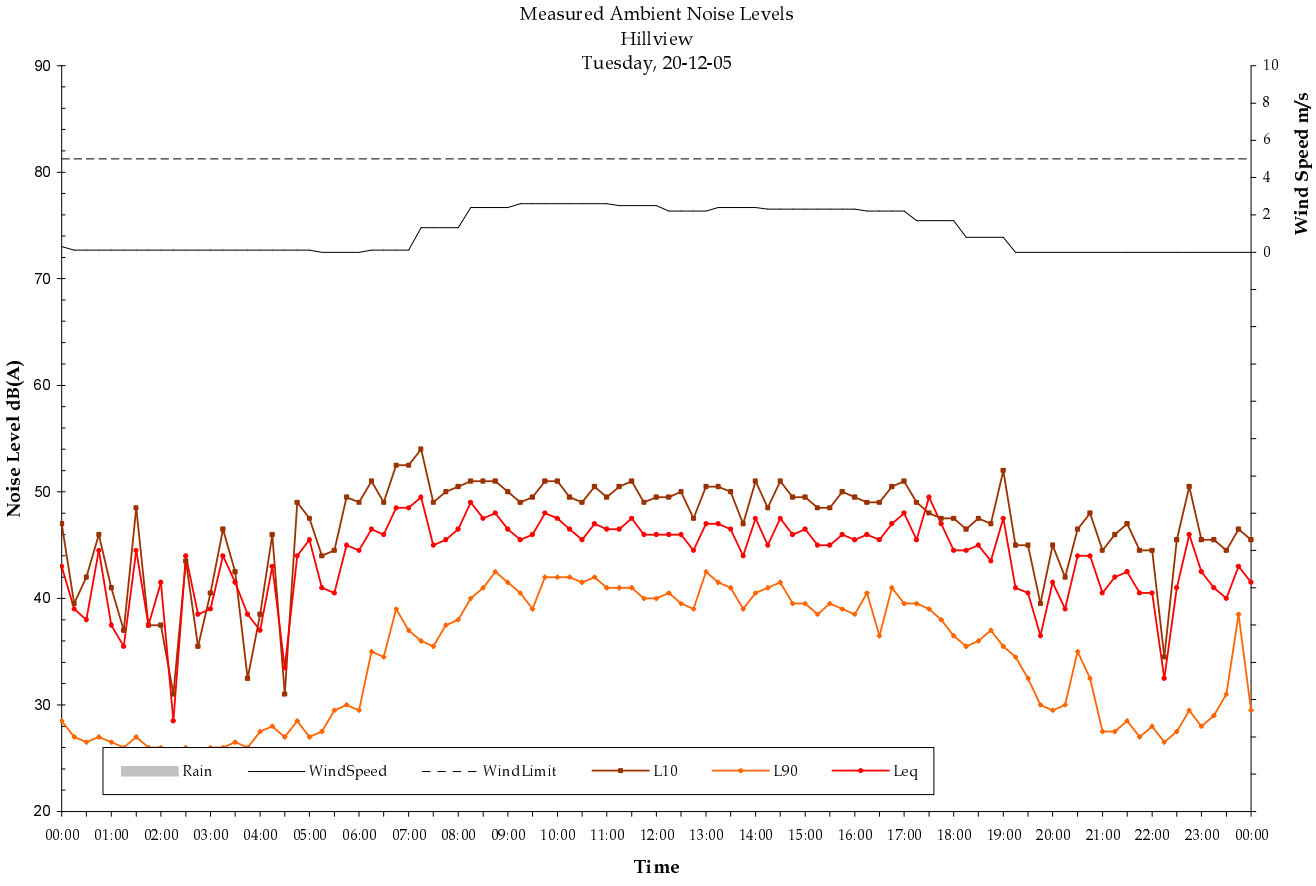
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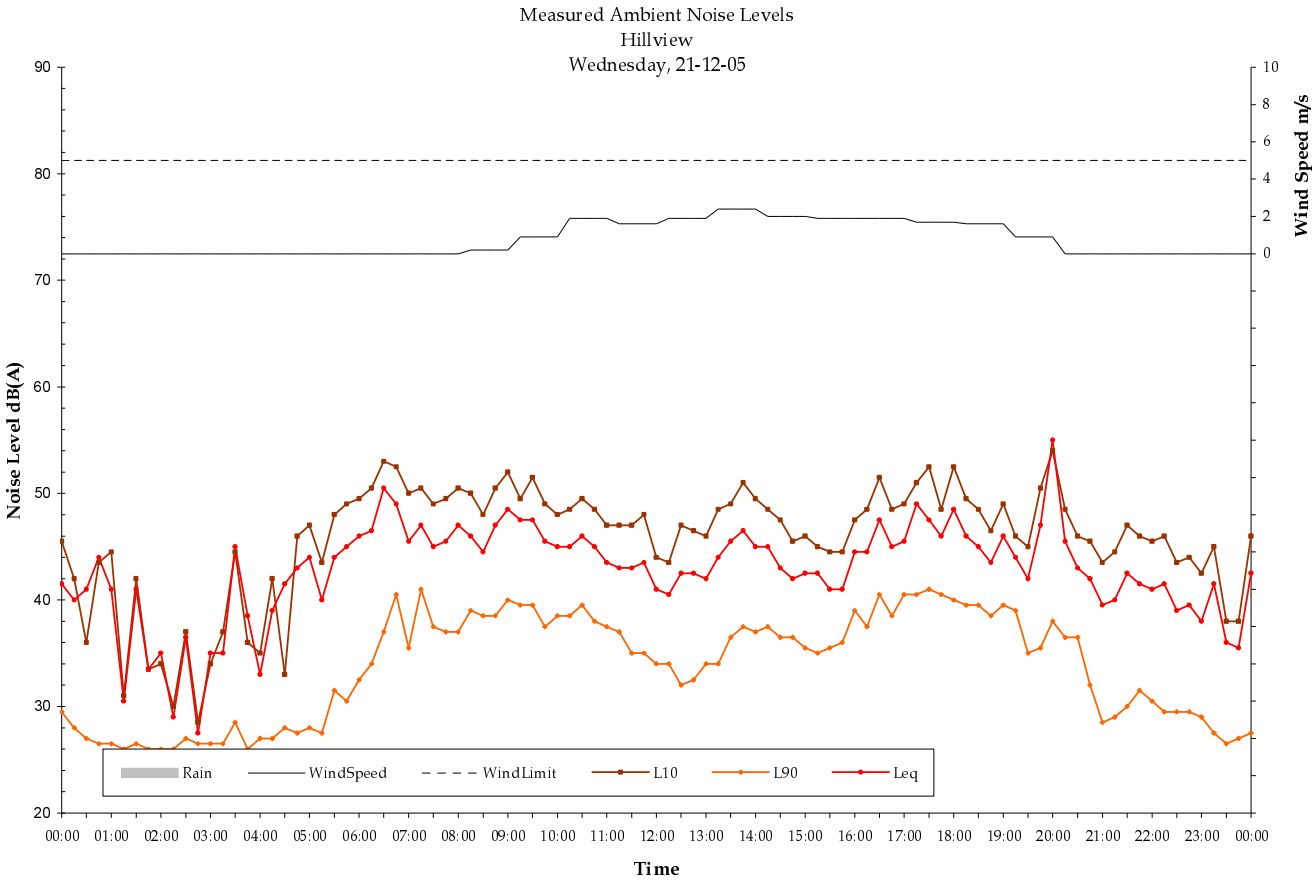
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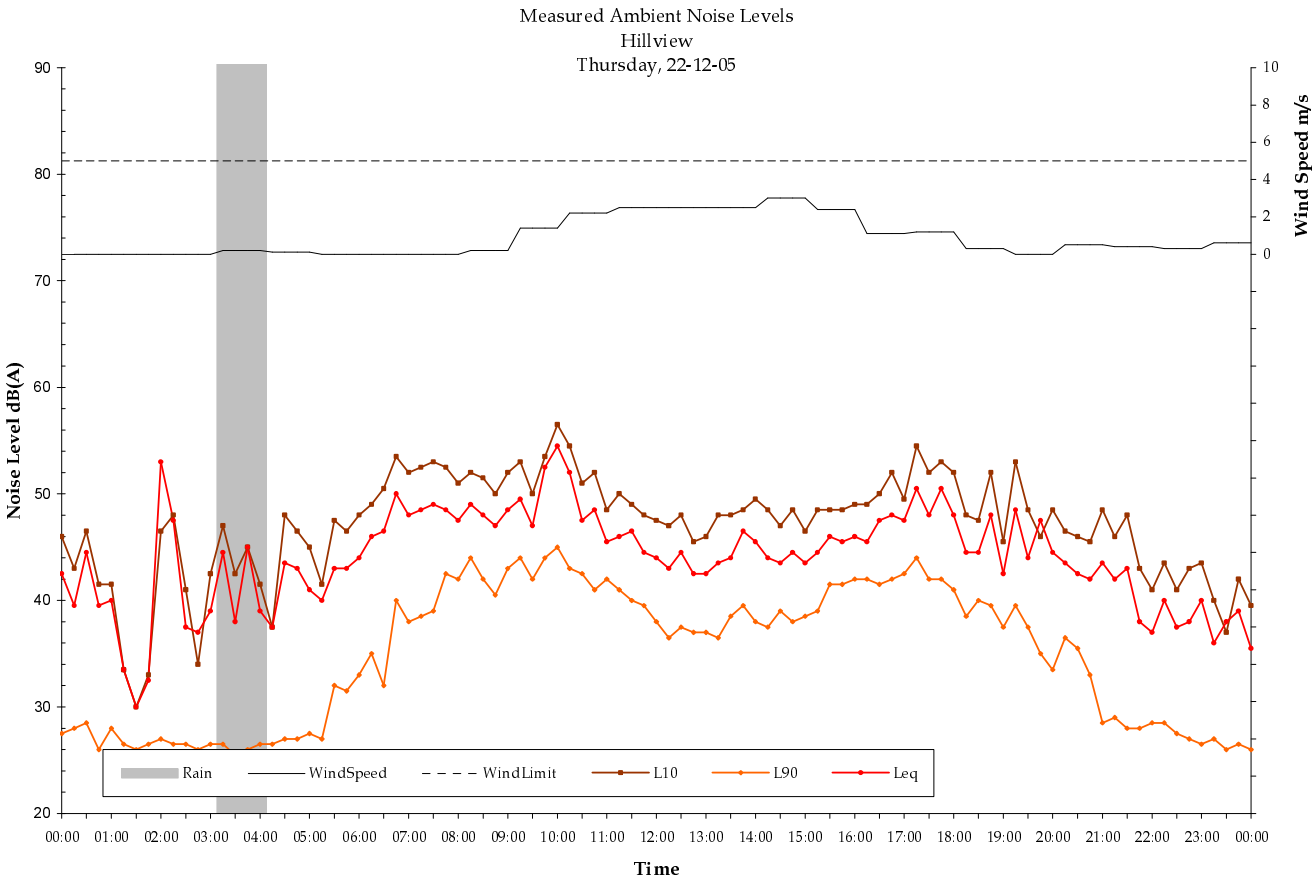
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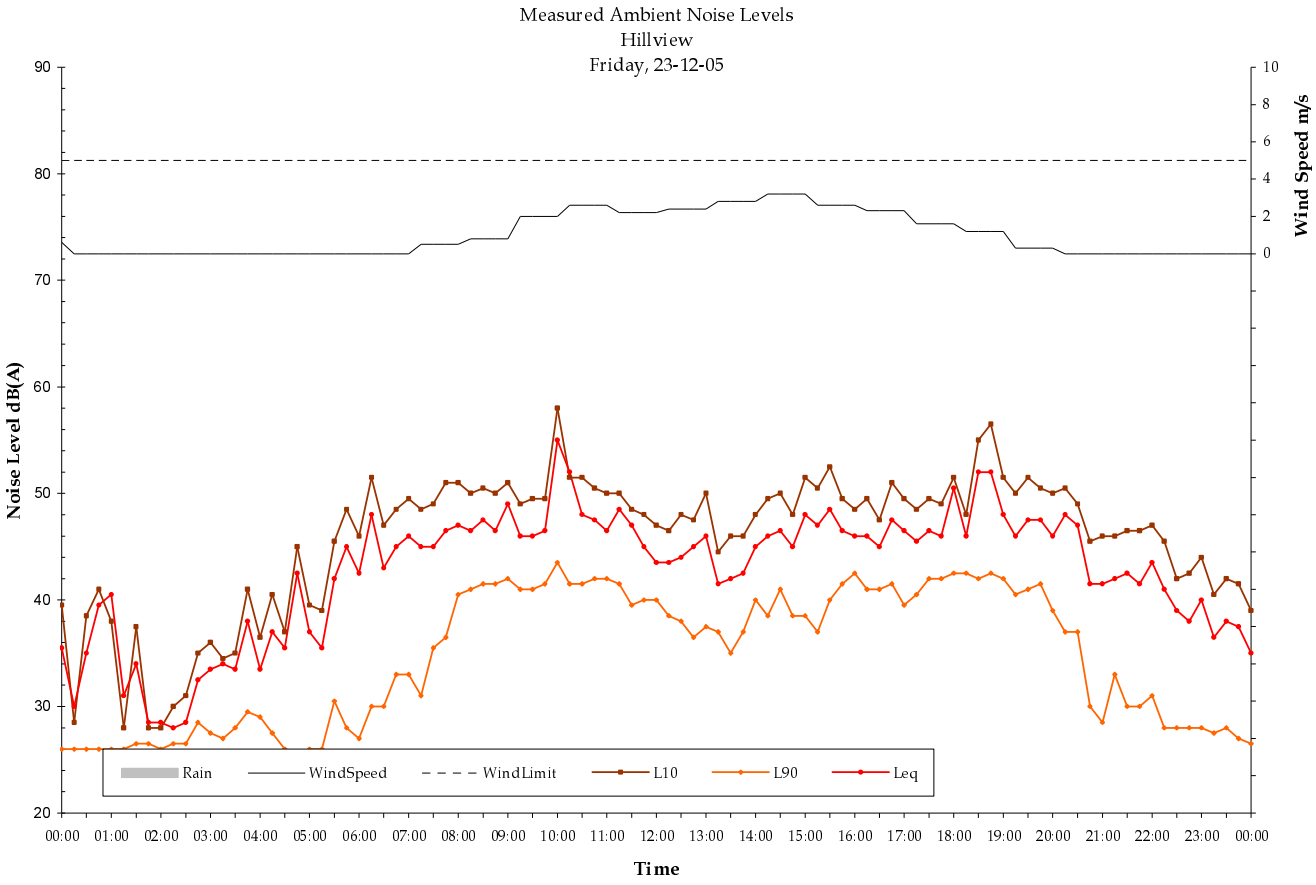
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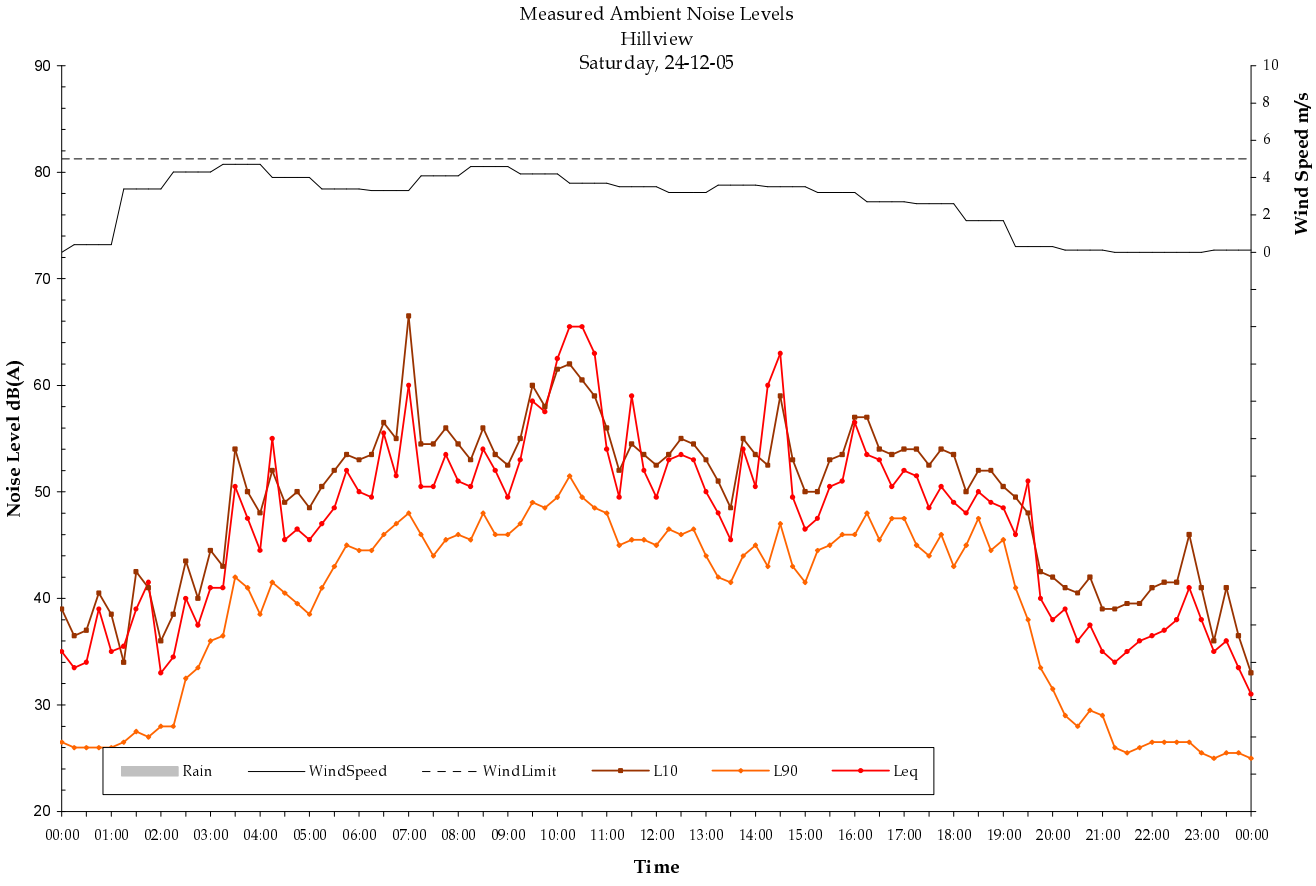
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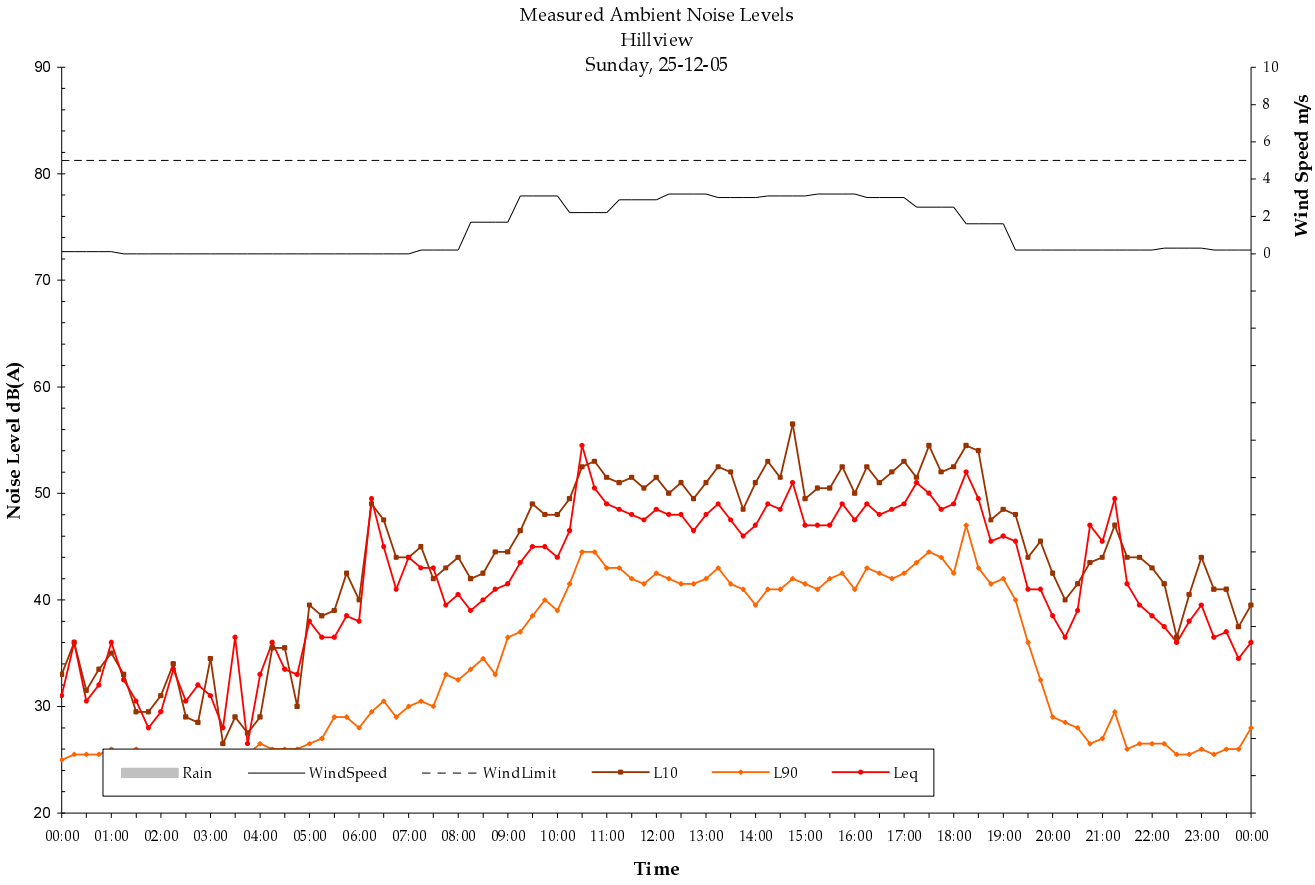
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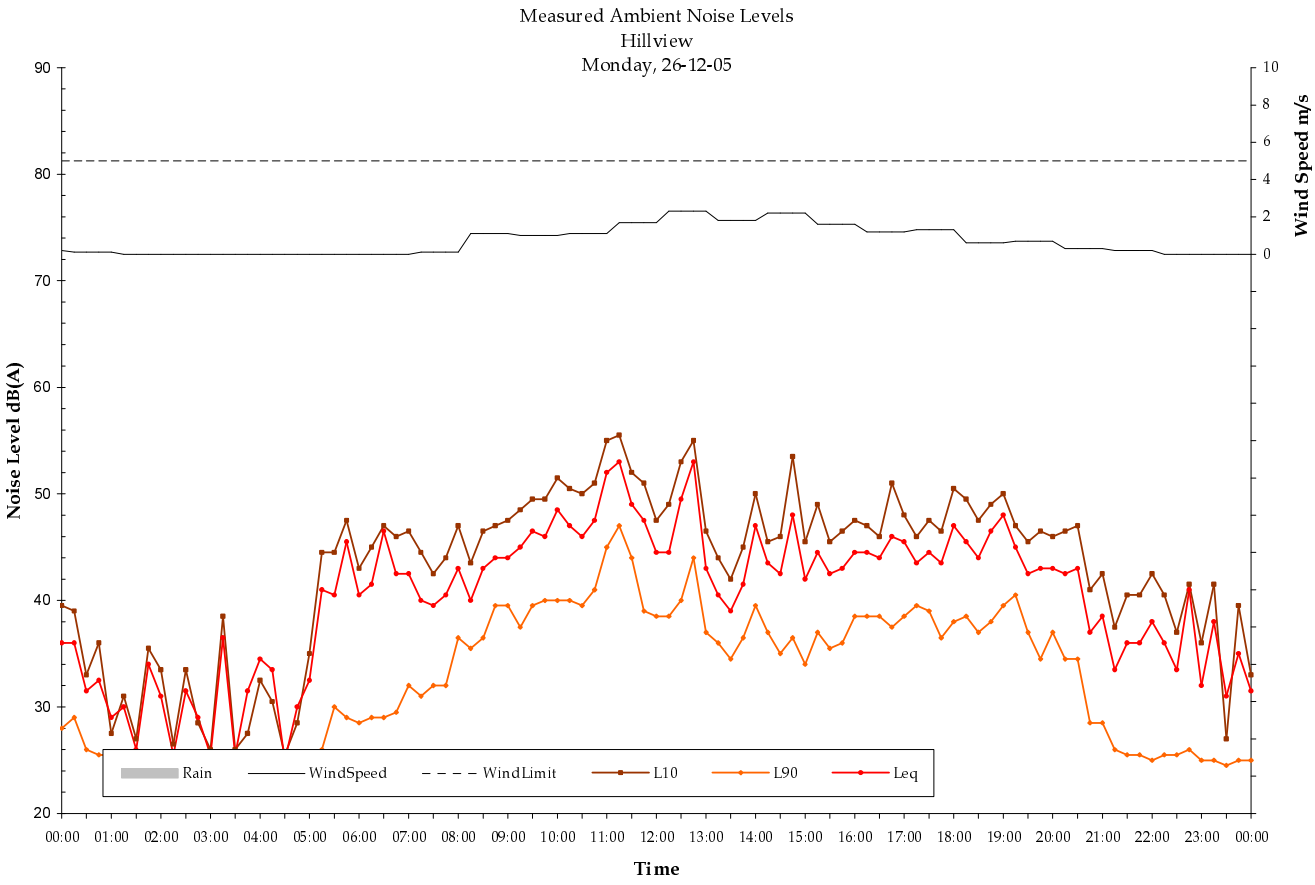
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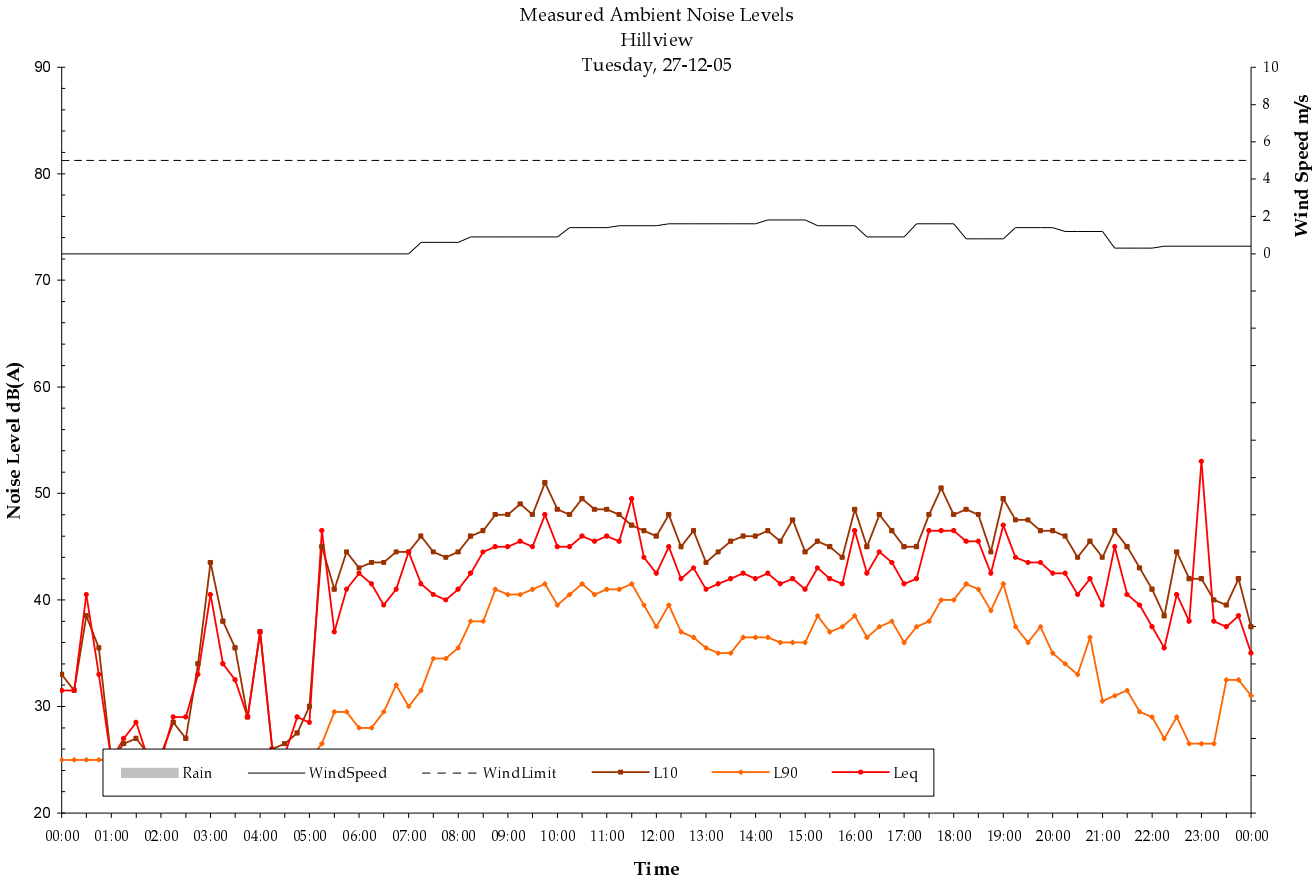
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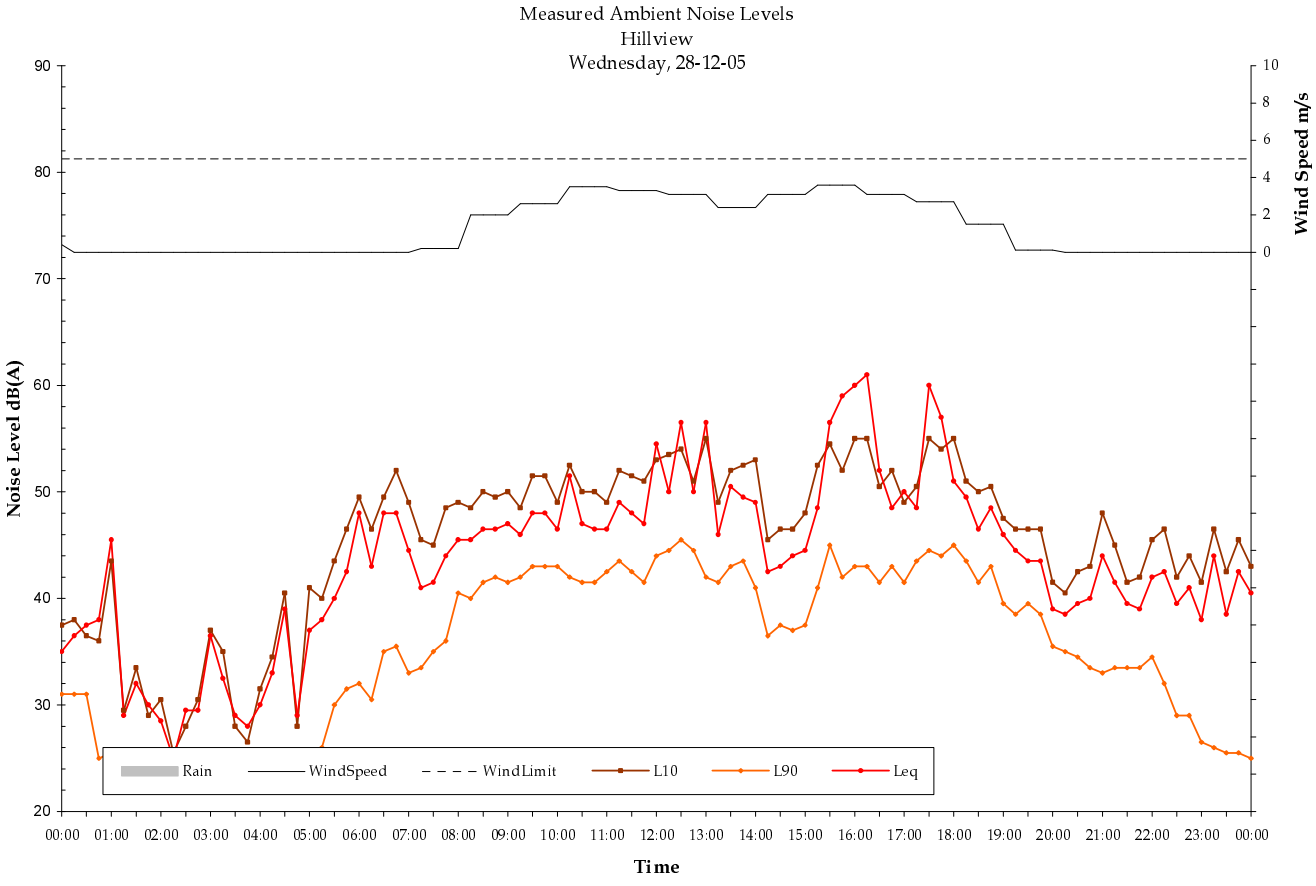
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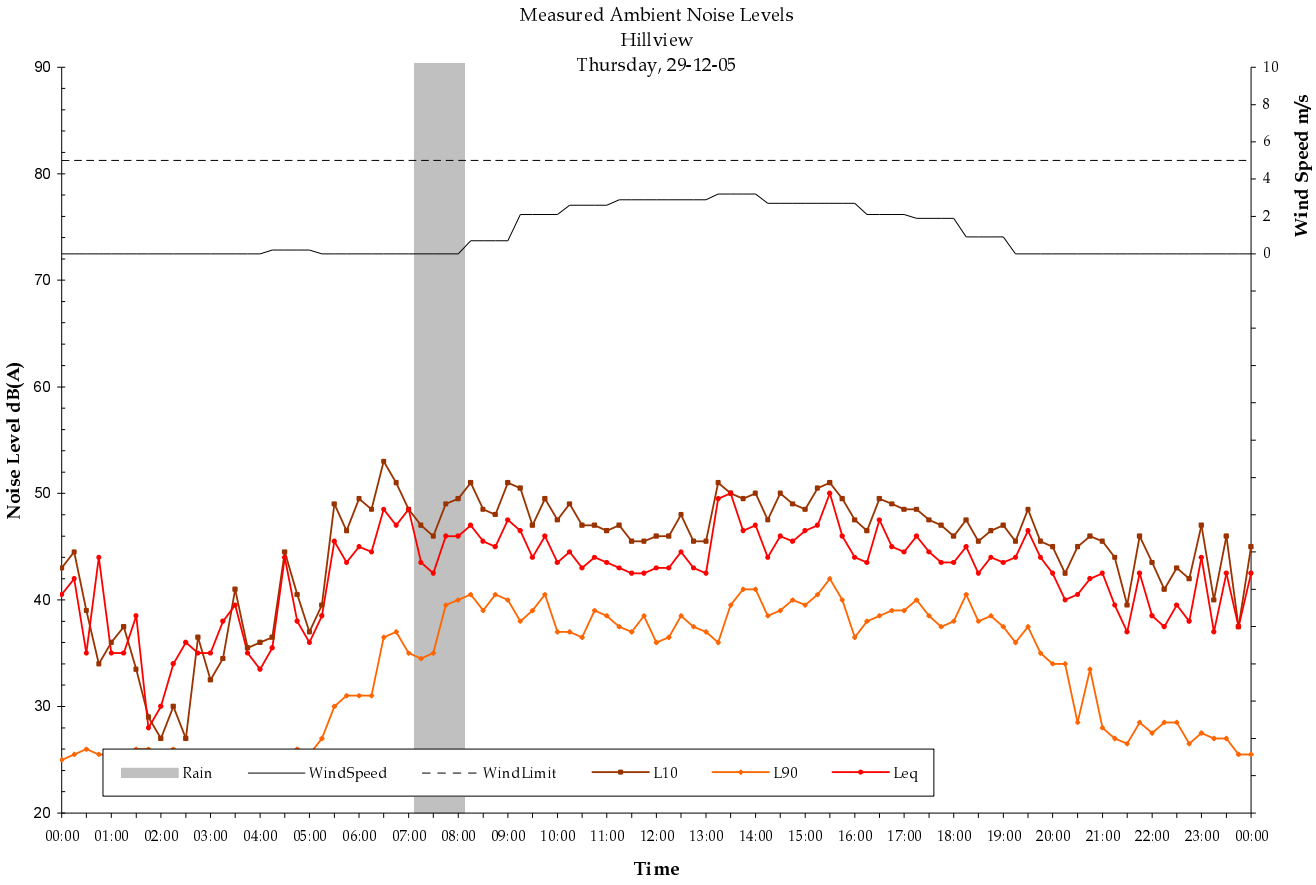
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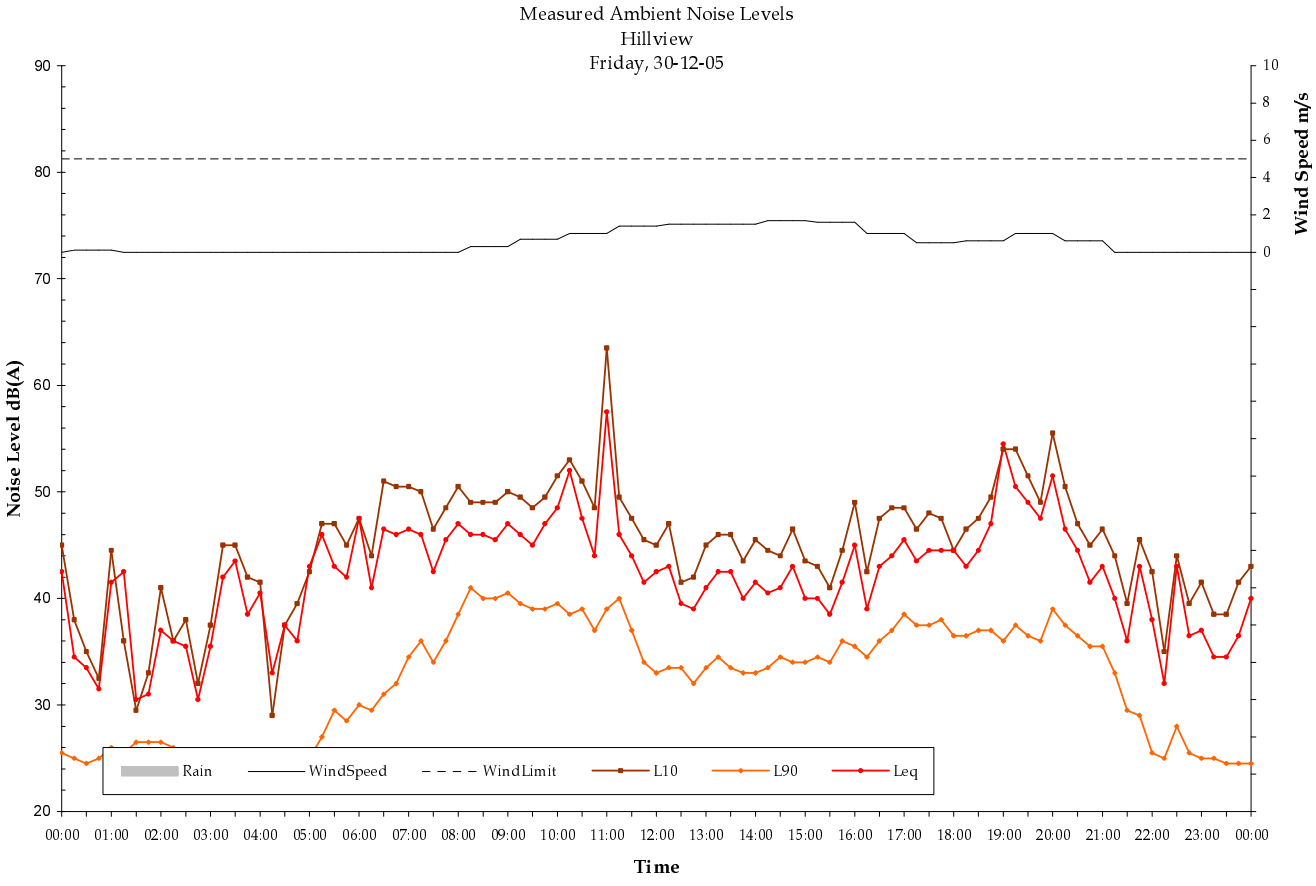
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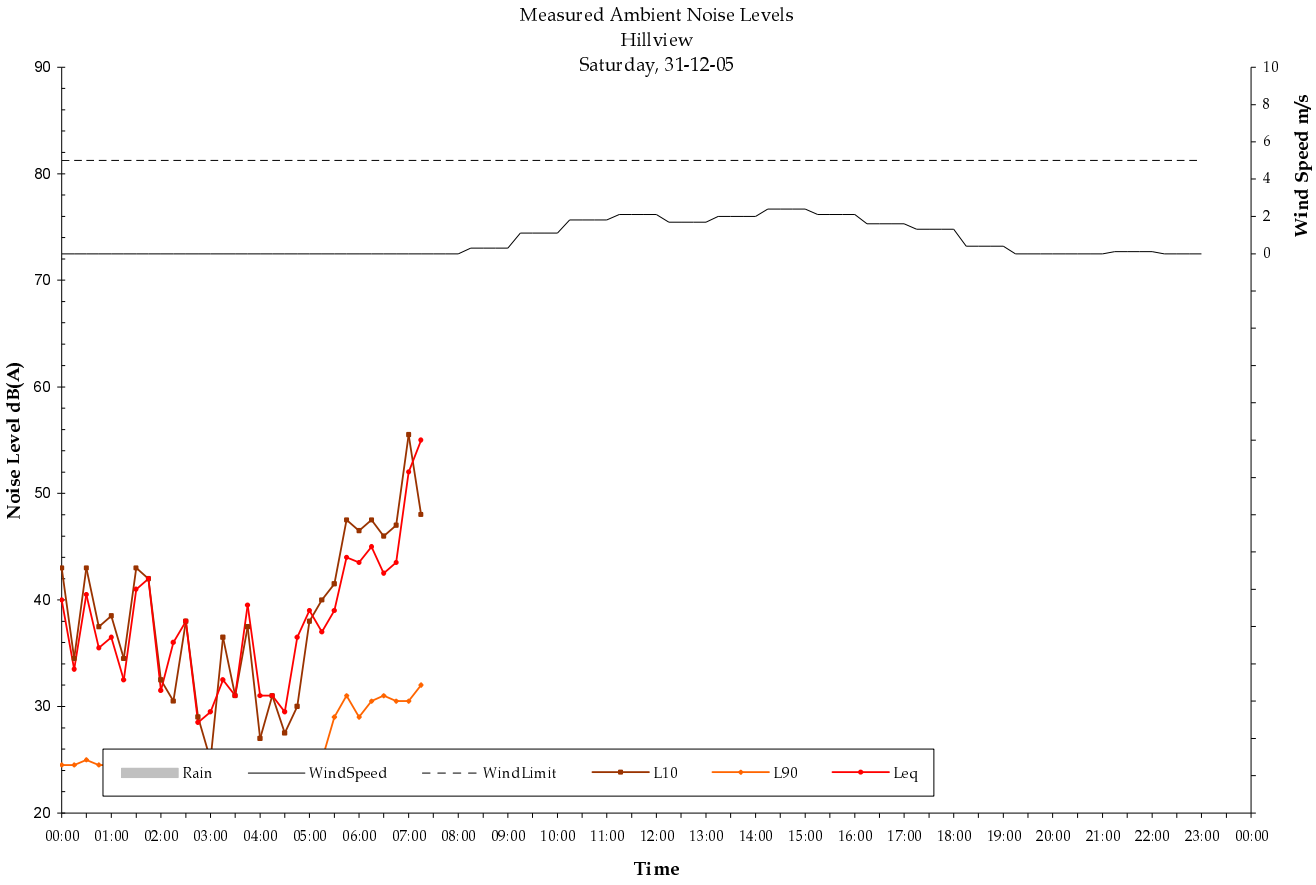
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