

**Table A16 – Results of Noise Logging 12 Fewson Turn, Ellenbrook**

<b>Date</b>	<b>L<sub>A10,18hour</sub>, dB</b>	<b>L<sub>Aeq,24hour</sub>, dB</b>	<b>L<sub>Aeq(Day)</sub>, dB</b>	<b>L<sub>Aeq(Night)</sub>, dB</b>
20 November 2014	46.1	50.9	52.2	46.0
21 November 2014*	43.3	43.7	44.3	42.0
24 November 2014	45.3	48.7	50.1	42.5
25 November 2014	47.7	48.9	49.8	46.0
26 November 2014*	46.1	50.9	52.2	46.0
<b>Weekday Average</b>	<b>45.6</b>	<b>48.0</b>	<b>49.1</b>	<b>44.1</b>

\*Day excluded from the Average due to unacceptable weather conditions.



**Photograph A16 – Noise Logger at 12 Fewson Turn, Ellenbrook**

## Traffic Noise Measurement Data

Item	Details
<i>LOCATION</i>	
Project	Perth-Darwin Highway NorthlinkWA
Street address	No. 12 Fewson Turn
Locality	Ellenbrook
Occupier	Paul Miller, 0450 733 714
Dates	20/11/2014 to 27/11/2014.
Category	<i>Main Roads will provide this information if required.</i>
<i>SITE</i>	
Distance from the microphone to the kerb	Road yet to be constructed
Height of the road in relation to the ground	Road yet to be constructed
Road surface type	Road yet to be constructed
Speed zone	Road yet to be constructed
Absorbing ground	Road yet to be constructed
Angle of view	Road yet to be constructed
Road gradient	Road yet to be constructed
Traffic flow	Vehicles per day. Main Roads to provide this information
Heavy vehicles	Percentage. Main Roads to provide this information
House-Road orientation.	West
Carriageways & lanes.	Road yet to be constructed
<i>COMMENT</i>	
Comment	No major road traffic source currently nearby. Microphone placed on West façade at Rear of house. Noise is primarily weather related and local sources (eg. Pool). Large balcony at rear of property, to the south of logger position. Pool located near logger position.
<i>REFERENCES</i>	
AMG Z50 E/N	
Road name	Future Tonkin Highway
EXCEL file	12 Fewson Turn MRWA Logger Sheet.xlsx
Raw data file	12 Fewson_Sta.csv
<i>EQUIPMENT</i>	
Analyser number	16-707-041
Microphone number	16-707-041
Calibrator number	34883971
Calibrator values	94.3, 94.2
Operator	Lloyd George Acoustics Pty Ltd - Matt Moyle
<i>WEATHER</i>	
Wind	Wind acceptability based on Pearce RAAF Data 20/11/14 - Pos Winds >18 km/h for 12 hours of day, rest of day calm 21/11/14 - 4 hours neg Winds <11 km/h, rest of day Pos winds <24km/h 24/11/14 - Var Winds <18 km/h, 6 hours above 21 km/h 25/11/14 - Neg Winds; morning 15 to 33 km/h, Afternoon 13-40 km/h 26/11/14 - Neg high winds all day, over 18km/h, Evening Rain

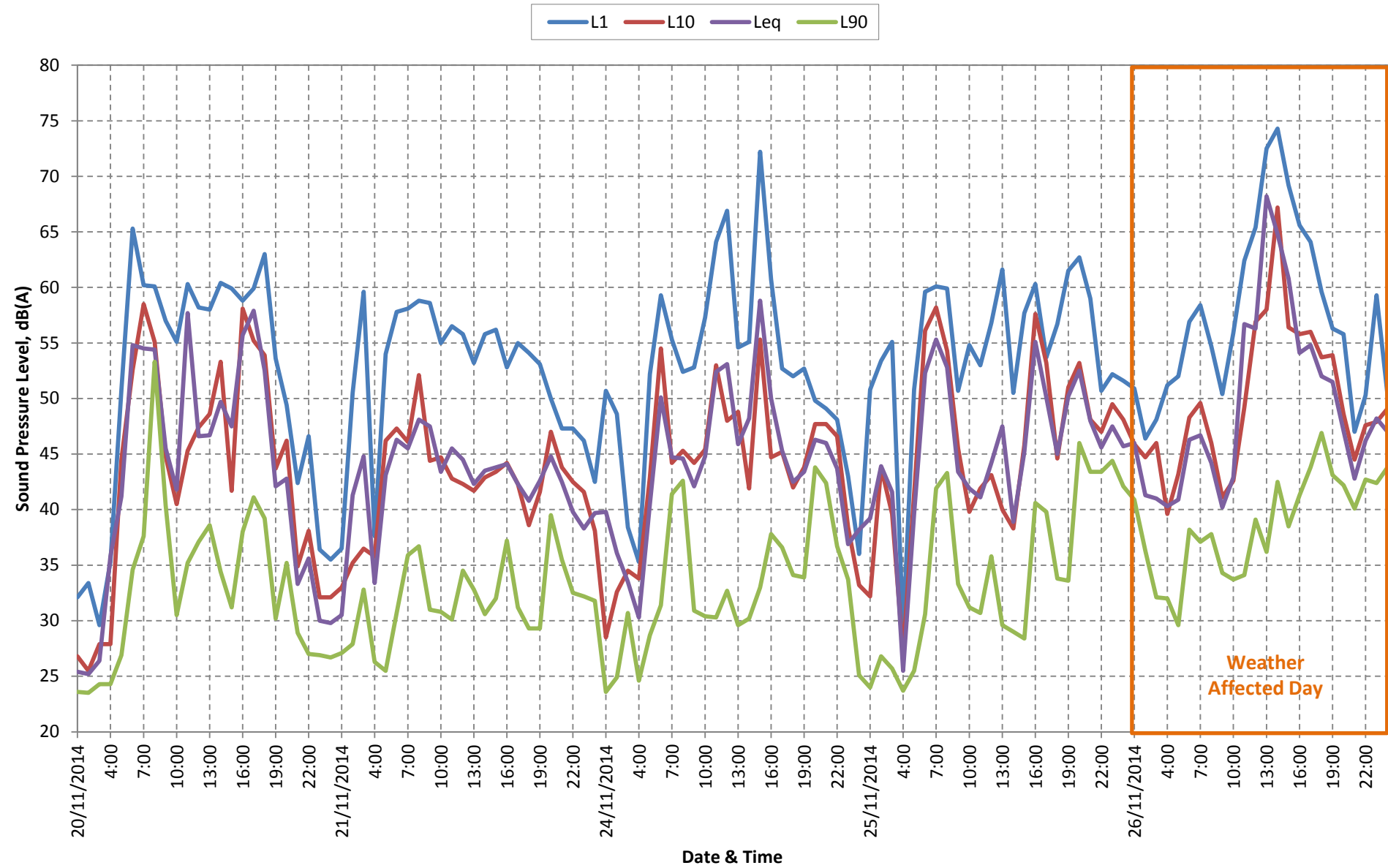
Hourly Noise Level Data  
12 Fewson Turn, Ellenbrook

Date	Time	L1	L10	Leq	L90	Rain mm	Wind degrees	Wind km/h
20/11/2014	20/11/2014	32.1	26.8	25.4	23.6	0	0	0
20/11/2014	2:00	33.4	25.5	25.2	23.5	0	350	4
20/11/2014	3:00	29.6	27.9	26.4	24.3	0	90	4
20/11/2014	4:00	35.3	27.9	35.8	24.3	0	350	5
20/11/2014	5:00	50.8	44.5	41.2	26.9	0	10	5
20/11/2014	6:00	65.3	52.6	54.8	34.6	0	0	0
20/11/2014	7:00	60.2	58.5	54.5	37.6	0	340	9
20/11/2014	8:00	60.1	55.1	54.4	53.3	0	340	17
20/11/2014	9:00	57	44.8	45.5	40.4	0	290	24
20/11/2014	10:00	55.1	40.5	41.8	30.5	0	310	28
20/11/2014	11:00	60.3	45.3	57.7	35.2	0	310	26
20/11/2014	12:00	58.2	47.4	46.6	37.1	0	300	31
20/11/2014	13:00	58	48.6	46.7	38.6	0	280	31
20/11/2014	14:00	60.4	53.3	49.7	34.4	0	260	35
20/11/2014	15:00	59.9	41.7	47.5	31.2	0	280	22
20/11/2014	16:00	58.8	58.1	55.7	38	0	280	28
20/11/2014	17:00	59.9	55.2	57.9	41.1	0	280	28
20/11/2014	18:00	63	53.9	52.5	39.2	0	260	26
20/11/2014	19:00	53.6	43.7	42.1	30.2	0	260	18
20/11/2014	20:00	49.4	46.2	42.8	35.2	0	320	9
20/11/2014	21:00	42.4	34.9	33.3	28.9	0	340	9
20/11/2014	22:00	46.6	38.1	35.6	27	0	360	11
20/11/2014	23:00	36.4	32.1	30	26.9	0	350	13
20/11/2014	0:00	35.5	32.1	29.8	26.7	0	340	8
21/11/2014	21/11/2014	36.5	33	30.5	27.1	0	350	13
21/11/2014	2:00	50.5	35.2	41.3	27.9	0	360	13
21/11/2014	3:00	59.6	36.5	44.8	32.8	0	10	11
21/11/2014	4:00	37.6	35.8	33.4	26.3	0	10	11
21/11/2014	5:00	54	46.2	43.1	25.5	0	10	11
21/11/2014	6:00	57.8	47.3	46.3	30.7	0	350	15
21/11/2014	7:00	58.1	46.1	45.5	35.9	0	340	17
21/11/2014	8:00	58.8	52.1	48.1	36.7	0	220	24
21/11/2014	9:00	58.6	44.4	47.5	31	0	230	24
21/11/2014	10:00	55	44.7	43.4	30.8	0	250	22
21/11/2014	11:00	56.5	42.8	45.5	30.1	0	250	21
21/11/2014	12:00	55.8	42.3	44.5	34.5	0	220	22
21/11/2014	13:00	53.2	41.7	42.3	32.8	0	230	21
21/11/2014	14:00	55.8	42.9	43.5	30.6	0	230	22
21/11/2014	15:00	56.2	43.4	43.8	32	0	230	21
21/11/2014	16:00	52.8	44.2	44.1	37.2	0	260	31
21/11/2014	17:00	55	42.3	42.3	31.2	0	220	22
21/11/2014	18:00	54.1	38.6	40.8	29.3	0	250	21
21/11/2014	19:00	53.1	41.6	42.6	29.3	0	240	17
21/11/2014	20:00	50	47	44.8	39.5	0	230	9
21/11/2014	21:00	47.3	43.8	42.5	35.5	0	270	8
21/11/2014	22:00	47.3	42.5	39.8	32.5	0	340	8
21/11/2014	23:00	46.2	41.6	38.3	32.2	0	350	5
21/11/2014	0:00	42.5	38.1	39.7	31.8	0	360	8
24/11/2014	24/11/2014	50.7	28.5	39.8	23.6	0	180	11
24/11/2014	2:00	48.6	32.6	36.1	24.9	0	180	13
24/11/2014	3:00	38.4	34.5	33.5	30.7	0	170	13
24/11/2014	4:00	35.3	33.8	30.3	24.6	0	170	15
24/11/2014	5:00	52.2	42.9	40.5	28.7	0	170	15
24/11/2014	6:00	59.3	54.5	50.1	31.4	0	200	8
24/11/2014	7:00	55.3	44.2	44.7	41.4	0	170	9
24/11/2014	8:00	52.4	45.3	44.6	42.6	0	120	11
24/11/2014	9:00	52.8	44.2	42.1	30.9	0	90	28
24/11/2014	10:00	57.3	45.4	44.8	30.4	0	70	13
24/11/2014	11:00	64.1	53	52.4	30.3	0	70	21
24/11/2014	12:00	66.9	48	53.1	32.7	0	70	21
24/11/2014	13:00	54.6	48.8	45.9	29.6	0	110	17
24/11/2014	14:00	55.1	41.9	48.2	30.2	0	90	18
24/11/2014	15:00	72.2	55.3	58.8	33	0	130	13
24/11/2014	16:00	60.7	44.7	50	37.8	0	140	9
24/11/2014	17:00	52.7	45.2	45.3	36.6	0	100	11
24/11/2014	18:00	52	42	42.5	34.1	0	200	30
24/11/2014	19:00	52.7	43.8	43.4	33.9	0	200	28
24/11/2014	20:00	49.8	47.7	46.3	43.8	0	200	21
24/11/2014	21:00	49.1	47.7	46	42.4	0	180	15
24/11/2014	22:00	48.1	46.6	43.7	36.7	0	170	13
24/11/2014	23:00	43	38.4	36.9	33.7	0	150	9
24/11/2014	0:00	36	33.2	38.2	25.1	0	150	9

Hourly Noise Level Data  
12 Fewson Turn, Ellenbrook

Date	Time	L1	L10	Leq	L90	Rain mm	Wind degrees	Wind km/h
25/11/2014	25/11/2014	50.8	32.2	39.2	24	0	150	5
25/11/2014	2:00	53.4	43.8	43.9	26.8	0	150	15
25/11/2014	3:00	55.1	39.6	41.6	25.7	0	90	24
25/11/2014	4:00	29.1	27	25.5	23.7	0	90	24
25/11/2014	5:00	50.8	41.4	39.6	25.5	0	90	31
25/11/2014	6:00	59.6	56.1	52.3	30.6	0	90	30
25/11/2014	7:00	60.1	58.2	55.3	41.9	0	90	33
25/11/2014	8:00	59.9	54.3	52.8	43.3	0	90	33
25/11/2014	9:00	50.7	45.5	43.4	33.3	0	100	22
25/11/2014	10:00	54.8	39.8	41.9	31.2	0	100	17
25/11/2014	11:00	53	41.9	41.1	30.7	0	130	21
25/11/2014	12:00	56.8	43.1	44.2	35.8	0	90	18
25/11/2014	13:00	61.6	40	47.5	29.6	0	90	13
25/11/2014	14:00	50.5	38.3	38.9	29	0	130	26
25/11/2014	15:00	57.7	45.8	45.2	28.4	0	100	15
25/11/2014	16:00	60.3	57.6	55.1	40.6	0	70	15
25/11/2014	17:00	53.7	53.2	50.1	39.8	0	110	15
25/11/2014	18:00	56.7	44.6	45	33.8	0	130	21
25/11/2014	19:00	61.5	51	50.2	33.6	0	140	21
25/11/2014	20:00	62.7	53.2	52.5	46	0	150	17
25/11/2014	21:00	59	48.1	48	43.4	0	120	18
25/11/2014	22:00	50.7	47	45.6	43.4	0	110	30
25/11/2014	23:00	52.2	49.5	47.5	44.4	0	110	37
25/11/2014	0:00	51.6	48.1	45.7	42.1	0	110	41
26/11/2014	26/11/2014	50.9	45.9	46	40.9	0	100	35
26/11/2014	2:00	46.4	44.7	41.3	36.3	0	100	37
26/11/2014	3:00	48.1	46	41	32.1	0	90	35
26/11/2014	4:00	51.2	39.6	40.3	32	0	90	31
26/11/2014	5:00	52	43.2	40.9	29.6	0	90	26
26/11/2014	6:00	56.9	48.3	46.3	38.2	0	100	30
26/11/2014	7:00	58.4	49.6	46.7	37.1	0	90	31
26/11/2014	8:00	54.7	46	44.2	37.8	0	90	26
26/11/2014	9:00	50.4	41.1	40.2	34.3	0	90	28
26/11/2014	10:00	55.9	42.6	42.9	33.7	0	80	28
26/11/2014	11:00	62.4	49.2	56.7	34.1	0	90	28
26/11/2014	12:00	65.4	56.9	56.3	39.1	0	80	22
26/11/2014	13:00	72.5	58	68.2	36.2	0	50	18
26/11/2014	14:00	74.3	67.2	64.8	42.5	0	100	21
26/11/2014	15:00	69.2	56.4	60.8	38.5	2.4	210	30
26/11/2014	16:00	65.6	55.8	54.1	41.3	1.4	170	21
26/11/2014	17:00	64.1	56	54.8	43.8	2.4	60	18
26/11/2014	18:00	59.6	53.7	52	46.9	2.6	90	24
26/11/2014	19:00	56.3	53.9	51.5	43.1	2.8	80	21
26/11/2014	20:00	55.8	48.6	47.1	42.2	1.8	60	24
26/11/2014	21:00	47	44.5	42.8	40.1	0.6	110	22
26/11/2014	22:00	50.3	47.6	46.2	42.7	0	120	13
26/11/2014	23:00	59.3	47.9	48.2	42.4	0.2	100	31
26/11/2014	0:00	50.3	49.1	47	43.8	0	80	26

### Noise Logging - 12 Fewson Turn, Ellenbrook



**Table A17 – Results of Noise Logging 32 Stock Road West, Bullsbrook**

<b>Date</b>	<b>L<sub>A10,18hour</sub>, dB</b>	<b>L<sub>Aeq,24hour</sub>, dB</b>	<b>L<sub>Aeq(Day)</sub>, dB</b>	<b>L<sub>Aeq(Night)</sub>, dB</b>
20 November 2014	51.2	51.9	53.2	46.6
21 November 2014*	53.8	59.9	61.6	47.7
24 November 2014	50.5	52.6	53.8	47.8
25 November 2014	51.8	54.3	55.5	50.3
26 November 2014*	56.0	59.7	61.3	50.2
<b>Weekday Average</b>	<b>51.1</b>	<b>52.9</b>	<b>54.2</b>	<b>48.2</b>

\*Day excluded from the Average due to unacceptable weather conditions.

**Photograph A17 – Noise Logger at 32 Stock Road West, Bullsbrook**

## Traffic Noise Measurement Data

Item	Details
<i>LOCATION</i>	
Project	Perth-Darwin Highway NorthlinkWA
Street address	No. 32 Stock West Road
Locality	Bullsbrook
Occupier	Cody and Diane Lambert. 0448711330
Dates	20/11/2014 to 27/11/2014.
Category	<i>Main Roads will provide this information if required.</i>
<i>SITE</i>	
Distance from the microphone to the kerb	Road yet to be constructed
Height of the road in relation to the ground	Road yet to be constructed
Road surface type	Road yet to be constructed
Speed zone	Road yet to be constructed
Absorbing ground	Road yet to be constructed
Angle of view	Road yet to be constructed
Road gradient	Road yet to be constructed
Traffic flow	Vehicles per day. Main Roads to provide this information
Heavy vehicles	Percentage. Main Roads to provide this information
House-Road orientation.	West
Carriageways & lanes.	Road yet to be constructed
<i>COMMENT</i>	
Comment	No major road traffic source currently nearby. Microphone placed on West façade at side of house. Noise is primarily weather related and local sources (dogs).
<i>REFERENCES</i>	
AMG Z50 E/N	
Road name	Future Tonkin Highway
EXCEL file	32 Stock West Rd MRWA Logger Sheet.xlsx
Raw data file	32 Stock West Rd_Sta.csv
<i>EQUIPMENT</i>	
Analyser number	16-004-041
Microphone number	16-004-041
Calibrator number	34883971
Calibrator values	94.2, 94.2
Operator	Lloyd George Acoustics Pty Ltd - Matt Moyle
<i>WEATHER</i>	
Wind	Wind acceptability based on Pearce RAAF Data 20/11/14 - Pos Winds >18 km/h for 12 hours of day, rest of day calm 21/11/14 - 4 hours neg Winds <11 km/h, rest of day Pos winds <24km/h 24/11/14 - Var Winds <18 km/h, 6 hours above 21 km/h 25/11/14 - Neg Winds; morning 15 to 33 km/h, Afternoon 13-40 km/h 26/11/14 - Neg high winds all day, over 18km/h, Evening Rain

Hourly Noise Level Data  
32 Stock West Road, Bullsbrook

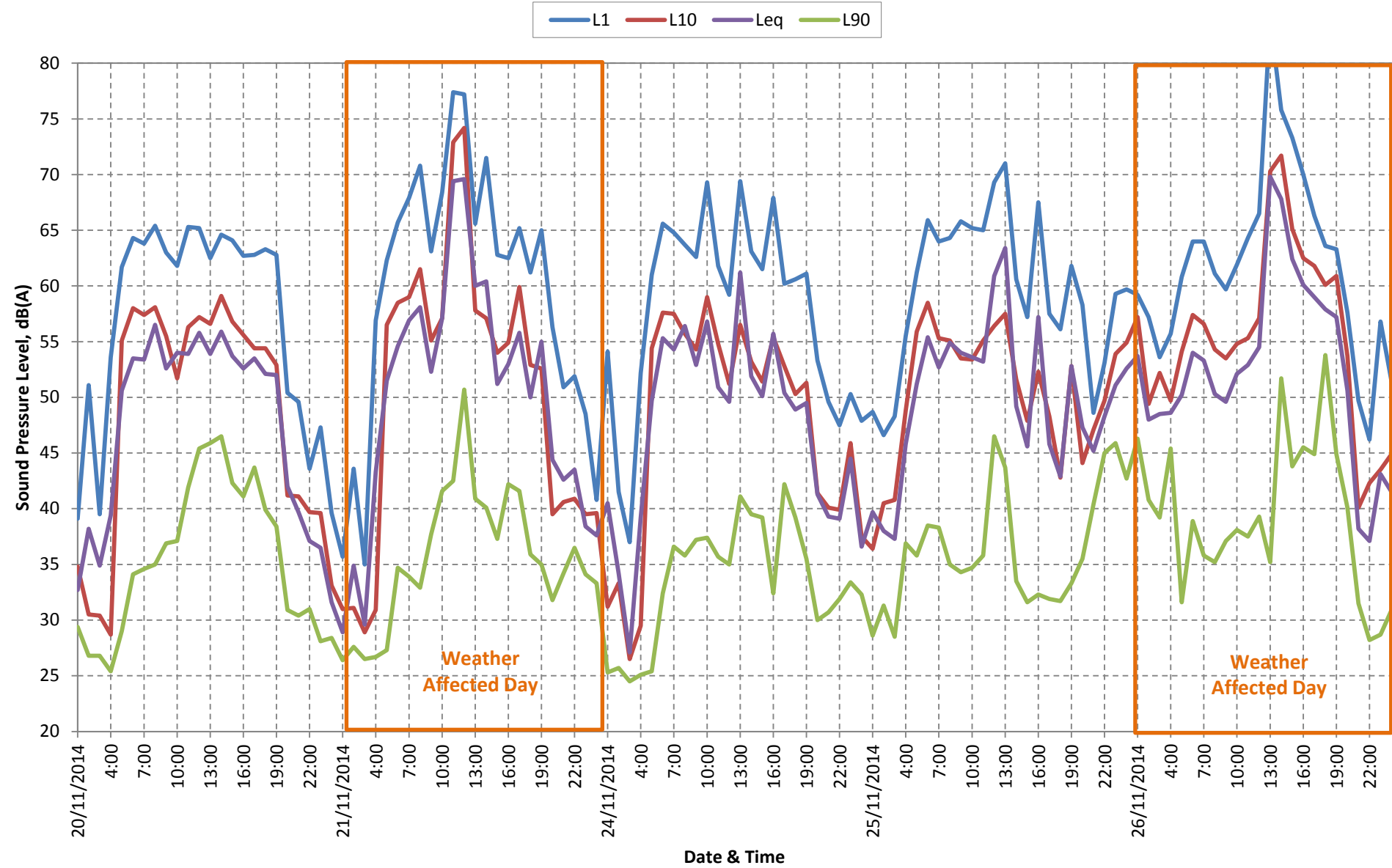
Date	Time	L1	L10	Leq	L90	Rain mm	Wind degrees	Wind km/h
20/11/2014	20/11/2014	39.1	34.8	32.7	29.4	0	0	0
20/11/2014	2:00	51.1	30.5	38.2	26.8	0	350	4
20/11/2014	3:00	39.5	30.4	34.9	26.8	0	90	4
20/11/2014	4:00	53.6	28.7	39.4	25.4	0	350	5
20/11/2014	5:00	61.7	55.1	50.6	29	0	10	5
20/11/2014	6:00	64.3	58	53.5	34.1	0	0	0
20/11/2014	7:00	63.8	57.4	53.4	34.6	0	340	9
20/11/2014	8:00	65.4	58.1	56.5	35	0	340	17
20/11/2014	9:00	63	55.5	52.6	36.9	0	290	24
20/11/2014	10:00	61.8	51.7	54	37.1	0	310	28
20/11/2014	11:00	65.3	56.3	53.9	41.9	0	310	26
20/11/2014	12:00	65.2	57.2	55.8	45.4	0	300	31
20/11/2014	13:00	62.5	56.6	53.9	45.9	0	280	31
20/11/2014	14:00	64.6	59.1	55.9	46.5	0	260	35
20/11/2014	15:00	64.1	56.8	53.7	42.3	0	280	22
20/11/2014	16:00	62.7	55.6	52.6	41.1	0	280	28
20/11/2014	17:00	62.8	54.4	53.5	43.7	0	280	28
20/11/2014	18:00	63.3	54.4	52.1	39.9	0	260	26
20/11/2014	19:00	62.8	52.9	52	38.4	0	260	18
20/11/2014	20:00	50.4	41.2	42	30.9	0	320	9
20/11/2014	21:00	49.6	41.1	39.7	30.4	0	340	9
20/11/2014	22:00	43.6	39.7	37.1	31	0	360	11
20/11/2014	23:00	47.3	39.6	36.5	28.1	0	350	13
20/11/2014	0:00	39.6	33.1	31.6	28.4	0	340	8
21/11/2014	21/11/2014	35.7	31	28.9	26.4	0	350	13
21/11/2014	2:00	43.6	31.1	34.9	27.6	0	360	13
21/11/2014	3:00	35	28.9	29.6	26.5	0	10	11
21/11/2014	4:00	56.9	30.9	43.3	26.7	0	10	11
21/11/2014	5:00	62.3	56.5	51.5	27.3	0	10	11
21/11/2014	6:00	65.7	58.5	54.6	34.7	0	350	15
21/11/2014	7:00	67.9	59	56.9	33.9	0	340	17
21/11/2014	8:00	70.8	61.5	58.1	32.9	0	220	24
21/11/2014	9:00	63.1	55.1	52.3	37.7	0	230	24
21/11/2014	10:00	68.4	57.1	57.1	41.6	0	250	22
21/11/2014	11:00	77.4	72.9	69.4	42.5	0	250	21
21/11/2014	12:00	77.2	74.2	69.6	50.7	0	220	22
21/11/2014	13:00	65.6	57.8	60	40.9	0	230	21
21/11/2014	14:00	71.5	57.1	60.4	40.1	0	230	22
21/11/2014	15:00	62.8	54	51.2	37.3	0	230	21
21/11/2014	16:00	62.5	54.9	53	42.2	0	260	31
21/11/2014	17:00	65.2	59.9	55.8	41.6	0	220	22
21/11/2014	18:00	61.2	52.9	50	35.9	0	250	21
21/11/2014	19:00	65	52.6	55	35	0	240	17
21/11/2014	20:00	56.3	39.5	44.4	31.8	0	230	9
21/11/2014	21:00	50.9	40.6	42.6	34.2	0	270	8
21/11/2014	22:00	51.9	40.9	43.5	36.5	0	340	8
21/11/2014	23:00	48.5	39.5	38.4	34.1	0	350	5
21/11/2014	0:00	40.8	39.6	37.6	33.3	0	360	8
24/11/2014	24/11/2014	54.1	31.2	40.5	25.3	0	180	11
24/11/2014	2:00	41.5	33.3	34.2	25.7	0	180	13
24/11/2014	3:00	37	26.5	27.1	24.5	0	170	13
24/11/2014	4:00	52.2	29.5	39.2	25.1	0	170	15
24/11/2014	5:00	61	54.4	49.7	25.4	0	170	15
24/11/2014	6:00	65.6	57.6	55.3	32.4	0	200	8
24/11/2014	7:00	64.8	57.5	54.3	36.6	0	170	9
24/11/2014	8:00	63.7	55.7	56.4	35.8	0	120	11
24/11/2014	9:00	62.6	54.3	52.9	37.2	0	90	28
24/11/2014	10:00	69.3	59	56.8	37.4	0	70	13
24/11/2014	11:00	61.8	54.8	50.9	35.7	0	70	21
24/11/2014	12:00	59.2	51.2	49.6	35	0	70	21
24/11/2014	13:00	69.4	56.5	61.2	41.1	0	110	17
24/11/2014	14:00	63.1	53.2	51.9	39.5	0	90	18
24/11/2014	15:00	61.5	51.4	50.1	39.2	0	130	13
24/11/2014	16:00	67.9	55.4	55.7	32.4	0	140	9
24/11/2014	17:00	60.2	52.8	50.4	42.2	0	100	11
24/11/2014	18:00	60.6	50.3	48.9	39.2	0	200	30
24/11/2014	19:00	61.1	51.3	49.5	35.5	0	200	28
24/11/2014	20:00	53.3	41.4	41.3	30	0	200	21
24/11/2014	21:00	49.6	40.1	39.3	30.7	0	180	15
24/11/2014	22:00	47.5	39.9	39.1	31.9	0	170	13
24/11/2014	23:00	50.3	45.9	44.5	33.4	0	150	9
24/11/2014	0:00	47.9	37.5	36.6	32.3	0	150	9



Hourly Noise Level Data  
32 Stock West Road, Bullsbrook

Date	Time	L1	L10	Leq	L90	Rain mm	Wind degrees	Wind km/h
25/11/2014	25/11/2014	48.7	36.4	39.7	28.6	0	150	5
25/11/2014	2:00	46.6	40.5	38	31.3	0	150	15
25/11/2014	3:00	48.3	40.8	37.3	28.5	0	90	24
25/11/2014	4:00	55.5	48.8	45.8	36.9	0	90	24
25/11/2014	5:00	61.2	55.9	51.2	35.8	0	90	31
25/11/2014	6:00	65.9	58.5	55.4	38.5	0	90	30
25/11/2014	7:00	64	55.3	52.7	38.3	0	90	33
25/11/2014	8:00	64.3	55.1	54.9	35	0	90	33
25/11/2014	9:00	65.8	53.5	54	34.3	0	100	22
25/11/2014	10:00	65.2	53.4	53.6	34.7	0	100	17
25/11/2014	11:00	65	55.1	53.2	35.8	0	130	21
25/11/2014	12:00	69.3	56.4	60.9	46.5	0	90	18
25/11/2014	13:00	71	57.5	63.4	43.7	0	90	13
25/11/2014	14:00	60.6	51.6	49.2	33.5	0	130	26
25/11/2014	15:00	57.2	47.9	45.6	31.6	0	100	15
25/11/2014	16:00	67.5	52.3	57.2	32.3	0	70	15
25/11/2014	17:00	57.5	48.3	45.8	31.9	0	110	15
25/11/2014	18:00	56.1	42.8	42.9	31.7	0	130	21
25/11/2014	19:00	61.8	52.8	52.8	33.3	0	140	21
25/11/2014	20:00	58.3	44.1	47.3	35.5	0	150	17
25/11/2014	21:00	48.6	47.1	45.2	40.4	0	120	18
25/11/2014	22:00	53.1	49.7	48.3	45	0	110	30
25/11/2014	23:00	59.3	53.9	51.1	45.9	0	110	37
25/11/2014	0:00	59.7	54.9	52.6	42.7	0	110	41
26/11/2014	26/11/2014	59.2	57.2	53.7	46.3	0	100	35
26/11/2014	2:00	57.2	49.4	48	40.8	0	100	37
26/11/2014	3:00	53.6	52.2	48.5	39.2	0	90	35
26/11/2014	4:00	55.7	49.7	48.6	45.4	0	90	31
26/11/2014	5:00	60.8	54.1	50.2	31.6	0	90	26
26/11/2014	6:00	64	57.4	54	38.9	0	100	30
26/11/2014	7:00	64	56.6	53.3	35.8	0	90	31
26/11/2014	8:00	61.1	54.3	50.3	35.2	0	90	26
26/11/2014	9:00	59.7	53.5	49.6	37.1	0	90	28
26/11/2014	10:00	61.9	54.8	52.1	38.1	0	80	28
26/11/2014	11:00	64.3	55.3	52.9	37.5	0	90	28
26/11/2014	12:00	66.5	57.1	54.5	39.3	0	80	22
26/11/2014	13:00	84	70.3	69.8	35.2	0	50	18
26/11/2014	14:00	75.8	71.7	67.8	51.7	0	100	21
26/11/2014	15:00	73.3	65.1	62.4	43.8	2.4	210	30
26/11/2014	16:00	70	62.5	60.1	45.5	1.4	170	21
26/11/2014	17:00	66.3	61.8	59	44.9	2.4	60	18
26/11/2014	18:00	63.6	60.1	57.9	53.8	2.6	90	24
26/11/2014	19:00	63.3	60.9	57.2	44.9	2.8	80	21
26/11/2014	20:00	57.6	53.7	50.6	40.1	1.8	60	24
26/11/2014	21:00	49.7	40.1	38.2	31.5	0.6	110	22
26/11/2014	22:00	46.2	42.3	37.1	28.2	0	120	13
26/11/2014	23:00	56.8	43.5	43.1	28.7	0.2	100	31
26/11/2014	0:00	51.4	44.9	41.5	30.9	0	80	26

### Noise Logging - 32 Stock West Road, Bullsbrook



**Table A18 – Results of Noise Logging 144 Strachan Road, Bullsbrook**

<b>Date</b>	<b>L<sub>A10,18hour</sub>, dB</b>	<b>L<sub>Aeq,24hour</sub>, dB</b>	<b>L<sub>Aeq(Day)</sub>, dB</b>	<b>L<sub>Aeq(Night)</sub>, dB</b>
20 November 2014	45.3	47.6	48.4	45.2
21 November 2014	44.6	45.3	46.8	37.4
24 November 2014	45.4	47.8	48.0	47.5
25 November 2014	47.0	46.4	47.5	42.6
26 November 2014*	54.5	59.6	61.4	44.2
<b>Weekday Average</b>	<b>45.6</b>	<b>46.8</b>	<b>47.7</b>	<b>43.2</b>

\*Day excluded from the Average due to unacceptable weather conditions.



**Photograph A18 – Noise Logger at 144 Strachan Road, Bullsbrook**

## Traffic Noise Measurement Data

Item	Details
<i>LOCATION</i>	
Project	Perth-Darwin Highway NorthlinkWA
Street address	No. 144 Strachan Road
Locality	Bullsbrook
Occupier	Bill Hayes 0407 443 856
Dates	20/11/2014 to 27/11/2014.
Category	<i>Main Roads will provide this information if required.</i>
<i>SITE</i>	
Distance from the microphone to the kerb	Road yet to be constructed
Height of the road in relation to the ground	Road yet to be constructed
Road surface type	Road yet to be constructed
Speed zone	Road yet to be constructed
Absorbing ground	Road yet to be constructed
Angle of view	Road yet to be constructed
Road gradient	Road yet to be constructed
Traffic flow	Vehicles per day. Main Roads to provide this information
Heavy vehicles	Percentage. Main Roads to provide this information
House-Road orientation.	West
Carriageways & lanes.	Road yet to be constructed
<i>COMMENT</i>	
Comment	No major road traffic source nearby. Microphone placed on West façade at Side of house. Noise is primarily weather related and ambient/livestock. Solid verandah wraps around entire dwelling. Microphone placed under verandah.
<i>REFERENCES</i>	
AMG Z50 E/N	
Road name	Future Tonkin Highway
EXCEL file	144 Strachan Rd MRWA Logger Sheet.xlsx
Raw data file	144 Stachan Rd Bullsbrook_Sta.csv
<i>EQUIPMENT</i>	
Analyser number	15-203-505
Microphone number	15-203-505
Calibrator number	34883971
Calibrator values	94.1, 94.0
Operator	Lloyd George Acoustics Pty Ltd - Matt Moyle
<i>WEATHER</i>	
Wind	Wind acceptability based on Pearce RAAF Data 20/11/14 - Pos Winds >18 km/h for 12 hours of day, rest of day calm 21/11/14 - 4 hours neg Winds <11 km/h, rest of day Pos winds <24km/h 24/11/14 - Var Winds <18 km/h, 6 hours above 21 km/h 25/11/14 - Neg Winds; morning 15 to 33 km/h, Afternoon 13-40 km/h 26/11/14 - Neg high winds all day, over 18km/h, Evening Rain

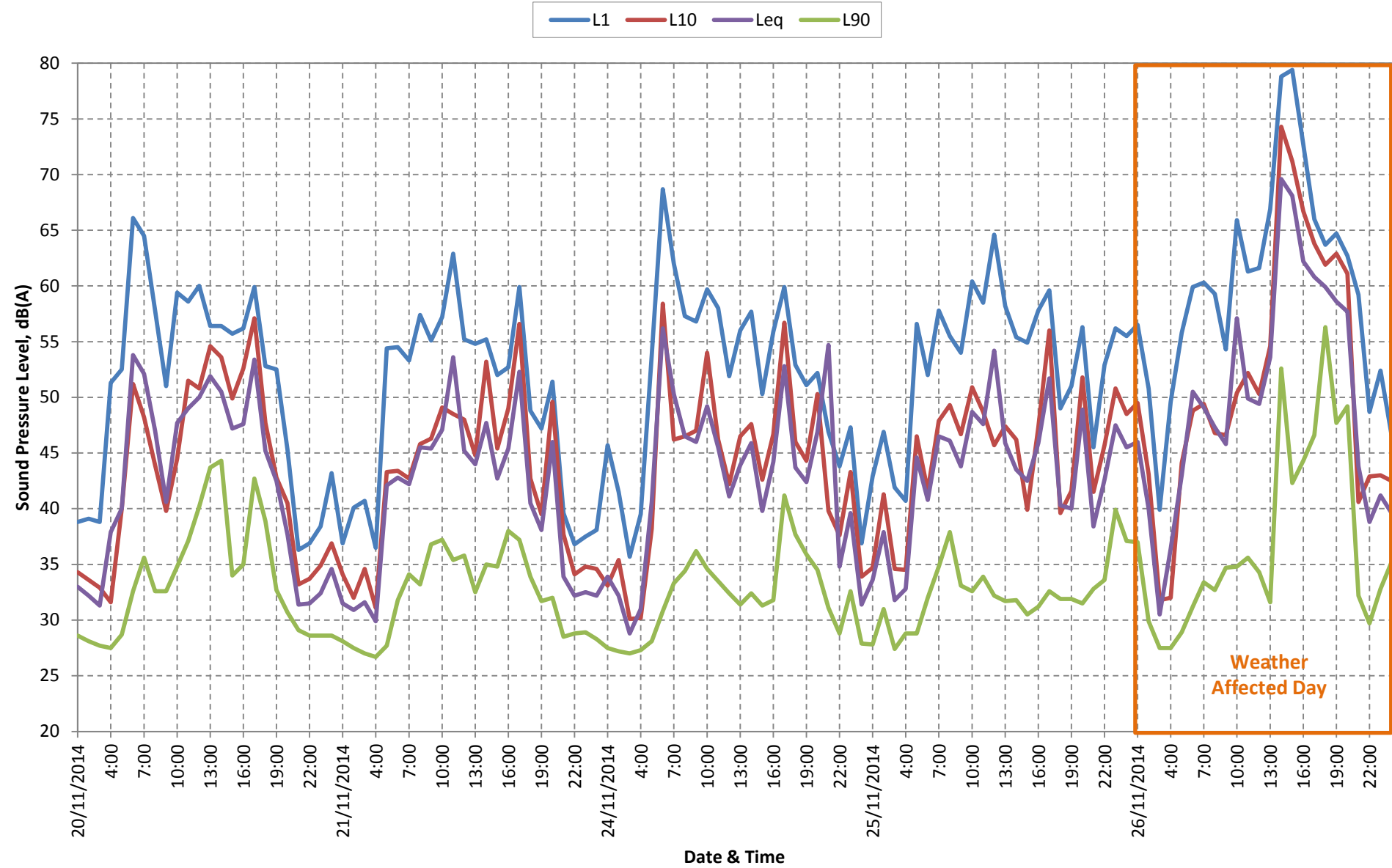
Hourly Noise Level Data  
144 Strachan Road, Bullsbrook

Date	Time	L1	L10	Leq	L90	Rain mm	Wind degrees	Wind km/h
20/11/2014	20/11/2014	38.8	34.3	33	28.6	0	0	0
20/11/2014	2:00	39.1	33.6	32.2	28.1	0	350	4
20/11/2014	3:00	38.8	32.9	31.3	27.7	0	90	4
20/11/2014	4:00	51.3	31.6	37.9	27.5	0	350	5
20/11/2014	5:00	52.5	40	40	28.7	0	10	5
20/11/2014	6:00	66.1	51.2	53.8	32.6	0	0	0
20/11/2014	7:00	64.5	48.2	52.1	35.6	0	340	9
20/11/2014	8:00	57.8	43.9	47	32.6	0	340	17
20/11/2014	9:00	51	39.8	40.6	32.6	0	290	24
20/11/2014	10:00	59.4	44.5	47.7	34.8	0	310	28
20/11/2014	11:00	58.6	51.5	49	37.1	0	310	26
20/11/2014	12:00	60	50.8	50	40.2	0	300	31
20/11/2014	13:00	56.4	54.6	51.9	43.7	0	280	31
20/11/2014	14:00	56.4	53.6	50.5	44.3	0	260	35
20/11/2014	15:00	55.7	49.9	47.2	34	0	280	22
20/11/2014	16:00	56.2	52.6	47.6	35	0	280	28
20/11/2014	17:00	59.9	57.1	53.4	42.7	0	280	28
20/11/2014	18:00	52.8	47.7	45.2	38.9	0	260	26
20/11/2014	19:00	52.5	42.8	42.5	32.7	0	260	18
20/11/2014	20:00	45.3	40.5	37.7	30.7	0	320	9
20/11/2014	21:00	36.3	33.2	31.4	29.1	0	340	9
20/11/2014	22:00	36.9	33.7	31.5	28.6	0	360	11
20/11/2014	23:00	38.4	34.9	32.4	28.6	0	350	13
20/11/2014	0:00	43.2	36.9	34.6	28.6	0	340	8
21/11/2014	21/11/2014	36.9	34.1	31.5	28.1	0	350	13
21/11/2014	2:00	40.1	32	30.9	27.5	0	360	13
21/11/2014	3:00	40.7	34.6	31.6	27	0	10	11
21/11/2014	4:00	36.5	31.1	29.9	26.7	0	10	11
21/11/2014	5:00	54.4	43.3	42.1	27.7	0	10	11
21/11/2014	6:00	54.5	43.4	42.8	31.8	0	350	15
21/11/2014	7:00	53.3	42.7	42.2	34.1	0	340	17
21/11/2014	8:00	57.4	45.8	45.5	33.2	0	220	24
21/11/2014	9:00	55.1	46.3	45.4	36.8	0	230	24
21/11/2014	10:00	57.2	49.1	47.1	37.2	0	250	22
21/11/2014	11:00	62.9	48.5	53.6	35.4	0	250	21
21/11/2014	12:00	55.2	48	45.2	35.8	0	220	22
21/11/2014	13:00	54.8	44.8	44	32.5	0	230	21
21/11/2014	14:00	55.2	53.2	47.7	35	0	230	22
21/11/2014	15:00	52	45.4	42.7	34.8	0	230	21
21/11/2014	16:00	52.7	49	45.4	38	0	260	31
21/11/2014	17:00	59.9	56.6	52.3	37.2	0	220	22
21/11/2014	18:00	48.8	42.7	40.5	33.9	0	250	21
21/11/2014	19:00	47.2	39.5	38.1	31.7	0	240	17
21/11/2014	20:00	51.4	49.6	46	32	0	230	9
21/11/2014	21:00	39.6	37.7	33.9	28.5	0	270	8
21/11/2014	22:00	36.8	34.1	32.2	28.8	0	340	8
21/11/2014	23:00	37.5	34.8	32.5	28.9	0	350	5
21/11/2014	0:00	38.1	34.6	32.2	28.3	0	360	8
24/11/2014	24/11/2014	45.7	33.1	33.9	27.5	0	180	11
24/11/2014	2:00	41.5	35.4	32.2	27.2	0	180	13
24/11/2014	3:00	35.7	30.1	28.8	27	0	170	13
24/11/2014	4:00	39.5	30.2	31	27.3	0	170	15
24/11/2014	5:00	53.8	38.2	40.6	28.1	0	170	15
24/11/2014	6:00	68.7	58.4	56.2	30.8	0	200	8
24/11/2014	7:00	62	46.2	50.3	33.3	0	170	9
24/11/2014	8:00	57.3	46.5	46.5	34.4	0	120	11
24/11/2014	9:00	56.8	47	46	36.2	0	90	28
24/11/2014	10:00	59.7	54	49.2	34.6	0	70	13
24/11/2014	11:00	58	46.2	45.5	33.5	0	70	21
24/11/2014	12:00	51.9	42.2	41.1	32.4	0	70	21
24/11/2014	13:00	56	46.5	43.9	31.4	0	110	17
24/11/2014	14:00	57.7	47.6	45.9	32.4	0	90	18
24/11/2014	15:00	50.3	42.6	39.8	31.3	0	130	13
24/11/2014	16:00	55.9	46.7	44.2	31.8	0	140	9
24/11/2014	17:00	59.9	56.7	52.8	41.2	0	100	11
24/11/2014	18:00	52.9	46	43.7	37.7	0	200	30
24/11/2014	19:00	51.1	44.3	42.4	35.9	0	200	28
24/11/2014	20:00	52.2	50.3	46.9	34.5	0	200	21
24/11/2014	21:00	46.9	39.8	54.7	31.1	0	180	15
24/11/2014	22:00	43.8	37.6	34.8	28.8	0	170	13
24/11/2014	23:00	47.3	43.3	39.6	32.6	0	150	9
24/11/2014	0:00	36.9	33.9	31.4	27.9	0	150	9

Hourly Noise Level Data  
144 Strachan Road, Bullsbrook

Date	Time	L1	L10	Leq	L90	Rain mm	Wind degrees	Wind km/h
25/11/2014	25/11/2014	42.9	34.7	33.6	27.8	0	150	5
25/11/2014	2:00	46.9	41.3	37.9	31	0	150	15
25/11/2014	3:00	41.9	34.6	31.8	27.4	0	90	24
25/11/2014	4:00	40.7	34.5	32.8	28.8	0	90	24
25/11/2014	5:00	56.6	46.5	44.6	28.8	0	90	31
25/11/2014	6:00	52	41.6	40.8	32	0	90	30
25/11/2014	7:00	57.8	47.9	46.5	34.8	0	90	33
25/11/2014	8:00	55.5	49.3	46.1	37.9	0	90	33
25/11/2014	9:00	54	46.7	43.8	33.1	0	100	22
25/11/2014	10:00	60.4	50.9	48.7	32.6	0	100	17
25/11/2014	11:00	58.5	48.7	47.6	33.9	0	130	21
25/11/2014	12:00	64.6	45.7	54.2	32.2	0	90	18
25/11/2014	13:00	58.2	47.4	45.9	31.7	0	90	13
25/11/2014	14:00	55.4	46.2	43.5	31.8	0	130	26
25/11/2014	15:00	54.9	39.9	42.5	30.5	0	100	15
25/11/2014	16:00	57.8	47.3	45.9	31.2	0	70	15
25/11/2014	17:00	59.6	56	51.7	32.6	0	110	15
25/11/2014	18:00	49	39.6	40.3	31.9	0	130	21
25/11/2014	19:00	51	41.6	40	31.9	0	140	21
25/11/2014	20:00	56.3	51.8	48.9	31.5	0	150	17
25/11/2014	21:00	45.5	41.5	38.4	32.8	0	120	18
25/11/2014	22:00	52.9	45.7	42.6	33.6	0	110	30
25/11/2014	23:00	56.2	50.8	47.5	39.9	0	110	37
25/11/2014	0:00	55.5	48.5	45.5	37.1	0	110	41
26/11/2014	26/11/2014	56.5	49.5	46	37	0	100	35
26/11/2014	2:00	50.8	43.1	40	29.9	0	100	37
26/11/2014	3:00	39.9	31.8	30.5	27.5	0	90	35
26/11/2014	4:00	49.6	32	36.4	27.5	0	90	31
26/11/2014	5:00	55.8	44.1	43	28.9	0	90	26
26/11/2014	6:00	59.9	48.8	50.5	31.2	0	100	30
26/11/2014	7:00	60.3	49.4	49.1	33.4	0	90	31
26/11/2014	8:00	59.3	46.8	47.3	32.7	0	90	26
26/11/2014	9:00	54.3	46.6	45.8	34.7	0	90	28
26/11/2014	10:00	65.9	50.4	57.1	34.8	0	80	28
26/11/2014	11:00	61.3	52.2	49.9	35.6	0	90	28
26/11/2014	12:00	61.6	50.3	49.4	34.3	0	80	22
26/11/2014	13:00	66.9	54.6	53.6	31.6	0	50	18
26/11/2014	14:00	78.8	74.3	69.6	52.6	0	100	21
26/11/2014	15:00	79.4	71.2	68.1	42.3	2.4	210	30
26/11/2014	16:00	72.7	66.7	62.2	44.3	1.4	170	21
26/11/2014	17:00	66	63.8	60.8	46.6	2.4	60	18
26/11/2014	18:00	63.7	61.9	59.9	56.3	2.6	90	24
26/11/2014	19:00	64.7	62.9	58.6	47.7	2.8	80	21
26/11/2014	20:00	62.7	61.1	57.7	49.2	1.8	60	24
26/11/2014	21:00	59.2	40.6	43.8	32.2	0.6	110	22
26/11/2014	22:00	48.7	42.9	38.8	29.7	0	120	13
26/11/2014	23:00	52.4	43	41.2	32.8	0.2	100	31
26/11/2014	0:00	46.6	42.5	39.6	35.2	0	80	26

### Noise Logging - 144 Strachan Road, Bullsbrook



**Table A19 – Results of Noise Logging 591 Muchea South Road, Muchea**

<b>Date</b>	<b>L<sub>A10,18hour</sub>, dB</b>	<b>L<sub>Aeq,24hour</sub>, dB</b>	<b>L<sub>Aeq(Day)</sub>, dB</b>	<b>L<sub>Aeq(Night)</sub>, dB</b>
20 November 2014	51.6	50.3	51.3	46.8
21 November 2014*	49.9	55.3	56.8	48.2
24 November 2014	51.1	49.8	49.9	49.6
25 November 2014	53.6	51.1	51.0	51.3
26 November 2014*	55.6	55.0	55.3	54.3
<b>Weekday Average</b>	<b>52.1</b>	<b>50.4</b>	<b>50.7</b>	<b>49.3</b>

\*Day excluded from the Average due to unacceptable weather conditions.



**Photograph A19 – Noise Logger at 591 Muchea South Road, Muchea**



## Traffic Noise Measurement Data

Item	Details
<i>LOCATION</i>	
Project	Perth-Darwin Highway NorthlinkWA
Street address	No. 591 Muchea South Road
Locality	Ballajura
Occupier	Pam and Ian Taylor, 0418480117 & 0409480117
Dates	20/11/2014 to 27/11/2014.
Category	<i>Main Roads will provide this information if required.</i>
<i>SITE</i>	
Distance from the microphone to the kerb	125m to Muchea South Road
Height of the road in relation to the ground	+0m
Road surface type	DGA
Speed zone	60 km/h
Absorbing ground	80%
Angle of view	170
Road gradient	Flat
Traffic flow	Vehicles per day. Main Roads to provide this information
Heavy vehicles	Percentage. Main Roads to provide this information
House-Road orientation.	East
Carriageways & lanes.	2,5
<i>COMMENT</i>	
Comment	Microphone placed on East façade at Front of house Freight Rail line is at 160m from Microphone (in same direction as road) Rail movements are audible from microphone.
<i>REFERENCES</i>	
AMG Z50 E/N	
Road name	Muchea South Road
EXCEL file	591 Muchea Rd MRWA Logger Sheet.xlsx
Raw data file	591 Muchea Rd_Sta.csv
<i>EQUIPMENT</i>	
Analyser number	16-707-043
Microphone number	16-707-043
Calibrator number	34883971
Calibrator values	94.0,94.1
Operator	Lloyd George Acoustics Pty Ltd - Matt Moyle
<i>WEATHER</i>	
Wind	Wind acceptability based on Pearce RAAF Data 20/11/14 - Neg Winds >18 km/h for 12 hours of day, rest of day calm 21/11/14 - 4 hours pos Winds <11 km/h, rest of day Neg winds <24km/h 24/11/14 - Var Winds <18 km/h, 6 hours above 21 km/h 25/11/14 - Pos Winds; morning 15 to 33 km/h, Afternoon 13-40 km/h 26/11/14 - Pos high winds all day, over 18km/h, Evening Rain

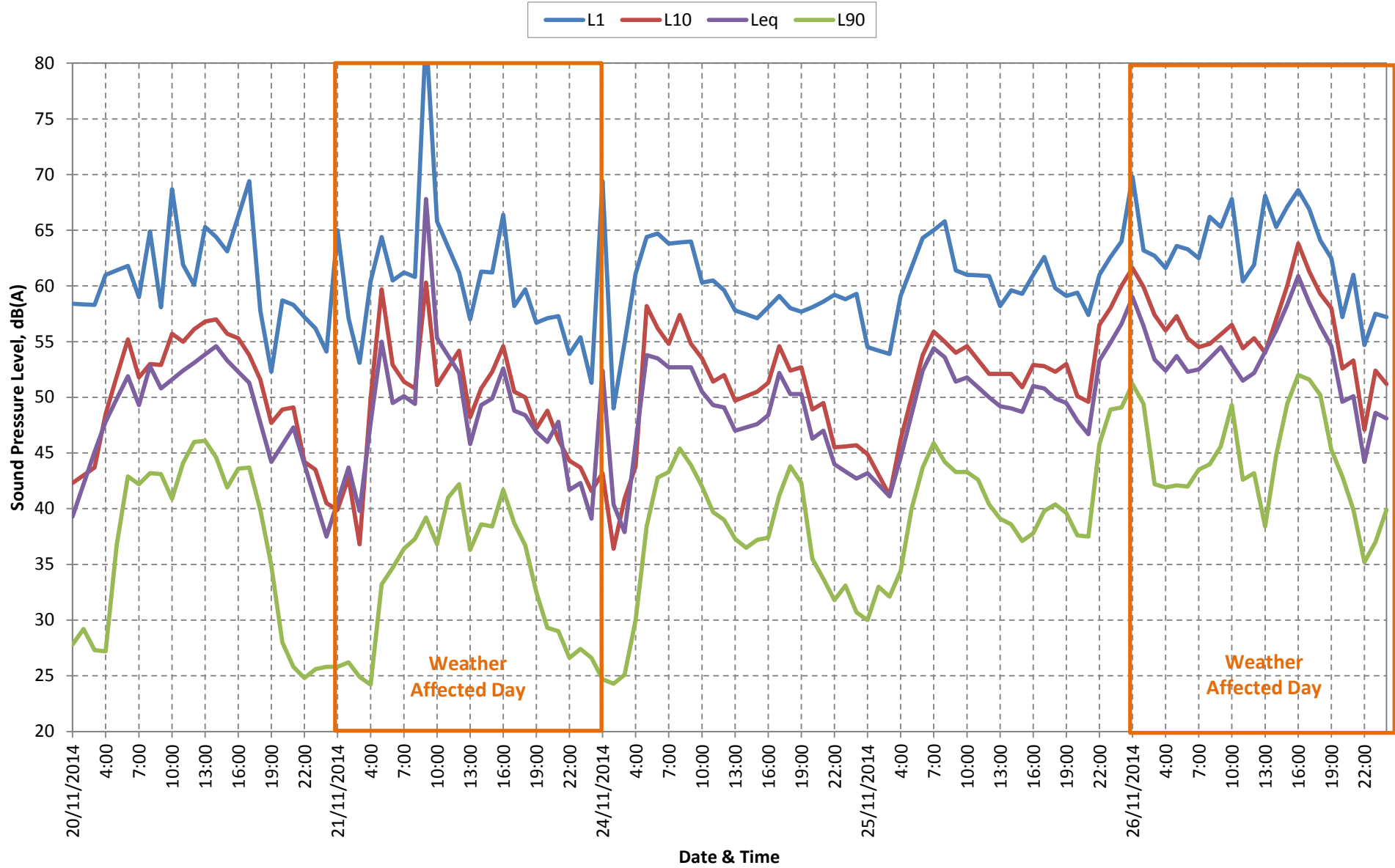
Hourly Noise Level Data  
591 Muchea South Road, Muchea

Date	Time	L1	L10	Leq	L90	Rain mm	Wind degrees	Wind km/h
20/11/2014	20/11/2014	58.4	42.3	<b>39.3</b>	27.8	0	0	0
20/11/2014	2:00	<b>58.4</b>	<b>43.0</b>	<b>42.2</b>	29.2	0	350	4
20/11/2014	3:00	58.3	43.7	45.1	27.3	0	90	4
20/11/2014	4:00	61	48.5	47.8	27.2	0	350	5
20/11/2014	5:00	<b>61.4</b>	<b>51.9</b>	<b>49.9</b>	36.7	0	10	5
20/11/2014	6:00	61.8	55.2	51.9	42.9	0	0	0
20/11/2014	7:00	59	51.8	49.3	42.2	0	340	9
20/11/2014	8:00	64.9	53	52.8	43.2	0	340	17
20/11/2014	9:00	58.1	52.9	50.8	43.1	0	290	24
20/11/2014	10:00	68.7	55.7	<b>51.6</b>	40.9	0	310	28
20/11/2014	11:00	61.9	55	52.4	44.1	0	310	26
20/11/2014	12:00	60.1	56.1	53.1	46	0	300	31
20/11/2014	13:00	65.3	56.8	<b>53.9</b>	46.1	0	280	31
20/11/2014	14:00	64.4	57	54.6	44.6	0	260	35
20/11/2014	15:00	63.1	55.7	53.3	41.9	0	280	22
20/11/2014	16:00	<b>66.3</b>	55.3	<b>52.3</b>	43.6	0	280	28
20/11/2014	17:00	69.4	53.8	<b>51.3</b>	43.7	0	280	28
20/11/2014	18:00	57.8	51.6	<b>47.8</b>	39.9	0	260	26
20/11/2014	19:00	52.3	47.7	44.2	34.9	0	260	18
20/11/2014	20:00	58.7	48.9	<b>45.8</b>	28	0	320	9
20/11/2014	21:00	58.3	49.1	47.3	25.8	0	340	9
20/11/2014	22:00	57.2	44.2	44	24.8	0	360	11
20/11/2014	23:00	56.2	43.5	<b>40.8</b>	25.6	0	350	13
20/11/2014	0:00	54.1	40.5	37.5	25.8	0	340	8
21/11/2014	21/11/2014	65	39.9	<b>40.6</b>	25.8	0	350	13
21/11/2014	2:00	57.1	42.8	43.7	26.2	0	360	13
21/11/2014	3:00	53.1	36.8	39.8	24.9	0	10	11
21/11/2014	4:00	60.4	49.9	47.7	24.2	0	10	11
21/11/2014	5:00	64.4	59.7	55	33.2	0	10	11
21/11/2014	6:00	60.5	52.9	49.5	34.7	0	350	15
21/11/2014	7:00	61.2	51.4	50.1	36.4	0	340	17
21/11/2014	8:00	60.8	50.8	49.4	37.3	0	220	24
21/11/2014	9:00	82.7	60.3	67.8	39.2	0	230	24
21/11/2014	10:00	65.8	51.1	55.3	36.8	0	250	22
21/11/2014	11:00	<b>63.5</b>	<b>52.7</b>	<b>53.8</b>	41	0	250	21
21/11/2014	12:00	61.2	54.2	52.2	42.2	0	220	22
21/11/2014	13:00	57	48.2	45.8	36.3	0	230	21
21/11/2014	14:00	61.3	50.8	49.3	38.6	0	230	22
21/11/2014	15:00	61.2	52.3	49.9	38.4	0	230	21
21/11/2014	16:00	66.4	54.6	<b>52.6</b>	41.7	0	260	31
21/11/2014	17:00	58.2	50.5	48.8	38.7	0	220	22
21/11/2014	18:00	59.7	50	48.4	36.7	0	250	21
21/11/2014	19:00	56.7	47.2	46.9	32.5	0	240	17
21/11/2014	20:00	57.1	48.8	46	29.3	0	230	9
21/11/2014	21:00	57.3	46.2	47.8	29	0	270	8
21/11/2014	22:00	53.9	44.3	41.7	26.6	0	340	8
21/11/2014	23:00	55.4	43.7	42.3	27.4	0	350	5
21/11/2014	0:00	51.3	41.6	39.1	26.6	0	360	8
24/11/2014	24/11/2014	69.4	43.2	52.4	24.7	0	180	11
24/11/2014	2:00	49	36.4	40.4	24.3	0	180	13
24/11/2014	3:00	54.9	40.9	37.9	25.1	0	170	13
24/11/2014	4:00	61.1	43.8	<b>45.9</b>	30	0	170	15
24/11/2014	5:00	64.4	58.2	53.8	38.4	0	170	15
24/11/2014	6:00	64.7	56.2	53.5	42.8	0	200	8
24/11/2014	7:00	63.8	54.8	52.7	43.3	0	170	9
24/11/2014	8:00	<b>63.9</b>	57.4	<b>52.7</b>	45.4	0	120	11
24/11/2014	9:00	64	54.8	52.7	43.9	0	90	28
24/11/2014	10:00	60.3	53.5	50.5	42	0	70	13
24/11/2014	11:00	60.5	51.4	49.3	39.7	0	70	21
24/11/2014	12:00	59.6	52	49.1	39	0	70	21
24/11/2014	13:00	57.8	49.7	47	37.3	0	110	17
24/11/2014	14:00	<b>57.5</b>	<b>50.1</b>	<b>47.3</b>	36.5	0	90	18
24/11/2014	15:00	57.1	50.5	47.6	37.2	0	130	13
24/11/2014	16:00	58.1	51.3	48.4	37.4	0	140	9
24/11/2014	17:00	59.1	54.6	52.2	41.2	0	100	11
24/11/2014	18:00	58	52.4	50.3	43.8	0	200	30
24/11/2014	19:00	57.7	52.7	50.3	42.3	0	200	28
24/11/2014	20:00	58.1	48.9	46.3	35.5	0	200	21
24/11/2014	21:00	58.6	49.5	47	33.7	0	180	15
24/11/2014	22:00	59.2	45.5	<b>44</b>	31.8	0	170	13
24/11/2014	23:00	58.8	<b>45.6</b>	<b>43.4</b>	33.1	0	150	9
24/11/2014	0:00	59.3	45.7	<b>42.7</b>	30.7	0	150	9

Hourly Noise Level Data  
591 Muchea South Road, Muchea

Date	Time	L1	L10	Leq	L90	Rain mm	Wind degrees	Wind km/h
25/11/2014	25/11/2014	54.5	44.9	43.2	30	0	150	5
25/11/2014	2:00	<b>54.2</b>	<b>43.1</b>	<b>42.2</b>	33	0	150	15
25/11/2014	3:00	53.9	41.2	41.1	32.1	0	90	24
25/11/2014	4:00	59.1	46.2	<b>44.6</b>	34.4	0	90	24
25/11/2014	5:00	<b>61.7</b>	<b>50.0</b>	<b>48.5</b>	40	0	90	31
25/11/2014	6:00	64.3	53.8	52.4	43.7	0	90	30
25/11/2014	7:00	65	55.9	54.4	45.9	0	90	33
25/11/2014	8:00	65.8	55	53.6	44.2	0	90	33
25/11/2014	9:00	61.4	54	51.4	43.3	0	100	22
25/11/2014	10:00	61	54.6	51.8	43.3	0	100	17
25/11/2014	11:00	<b>61.0</b>	<b>53.4</b>	<b>50.9</b>	42.6	0	130	21
25/11/2014	12:00	60.9	52.1	50	40.4	0	90	18
25/11/2014	13:00	58.2	52.1	49.2	39.1	0	90	13
25/11/2014	14:00	59.6	52.1	49	38.6	0	130	26
25/11/2014	15:00	59.3	50.9	48.7	37.1	0	100	15
25/11/2014	16:00	61	52.9	51	37.8	0	70	15
25/11/2014	17:00	62.6	52.8	50.8	39.8	0	110	15
25/11/2014	18:00	59.8	52.3	49.9	40.4	0	130	21
25/11/2014	19:00	59.1	53	49.5	39.6	0	140	21
25/11/2014	20:00	59.4	50.1	47.9	37.6	0	150	17
25/11/2014	21:00	57.4	49.6	46.7	37.5	0	120	18
25/11/2014	22:00	61	56.5	53.3	45.8	0	110	30
25/11/2014	23:00	62.6	58	54.9	48.9	0	110	37
25/11/2014	0:00	64	60	56.6	49.1	0	110	41
26/11/2014	26/11/2014	69.8	61.6	59	51.2	0	100	35
26/11/2014	2:00	63.2	59.9	56.4	49.4	0	100	37
26/11/2014	3:00	62.7	57.4	53.4	42.2	0	90	35
26/11/2014	4:00	61.6	56	52.4	41.9	0	90	31
26/11/2014	5:00	63.6	57.3	53.7	42.1	0	90	26
26/11/2014	6:00	63.3	55.3	52.3	42	0	100	30
26/11/2014	7:00	62.5	54.5	52.5	43.5	0	90	31
26/11/2014	8:00	66.2	54.8	<b>53.5</b>	44	0	90	26
26/11/2014	9:00	65.3	<b>55.7</b>	<b>54.5</b>	45.6	0	90	28
26/11/2014	10:00	67.8	56.5	<b>53.0</b>	49.3	0	80	28
26/11/2014	11:00	60.4	54.4	51.5	42.6	0	90	28
26/11/2014	12:00	61.9	55.3	52.2	43.2	0	80	22
26/11/2014	13:00	68.1	54	<b>54.1</b>	38.4	0	50	18
26/11/2014	14:00	65.3	<b>57.0</b>	<b>56</b>	44.8	0	100	21
26/11/2014	15:00	67.1	60	58.3	49.4	2.4	210	30
26/11/2014	16:00	68.6	63.8	60.9	52	1.4	170	21
26/11/2014	17:00	66.9	61.3	58.5	51.6	2.4	60	18
26/11/2014	18:00	64.1	59.3	56.4	50.2	2.6	90	24
26/11/2014	19:00	62.5	58	54.6	45.3	2.8	80	21
26/11/2014	20:00	57.2	52.6	49.6	42.9	1.8	60	24
26/11/2014	21:00	61	53.3	50.1	39.9	0.6	110	22
26/11/2014	22:00	54.7	47.1	44.2	35.2	0	120	13
26/11/2014	23:00	57.5	52.4	48.6	37	0.2	100	31
26/11/2014	0:00	57.2	51.2	48.1	39.9	0	80	26

### Noise Logging - 591 Muchea South Road, Muchea



**Table A20 – Results of Noise Logging 3362 Great Northern Hwy, Muchea**

<b>Date</b>	<b>L<sub>A10,18hour</sub> dB</b>	<b>L<sub>Aeq,24hour</sub> dB</b>	<b>L<sub>Aeq(Day)</sub> dB</b>	<b>L<sub>Aeq(Night)</sub> dB</b>
4 November 2015	51.2	49.2	50.3	45.7
5 November 2015	51.7	49.3	50.7	44.0
6 November 2015	57.5	55.2	56.7	48.1
<b>Weekday Average</b>	<b>64.5</b>	<b>60.7</b>	<b>61.5</b>	<b>58.2</b>

**Photograph A20 – Noise Logger at 3362 Great Northern Hwy, Muchea**



## Traffic Noise Measurement Data

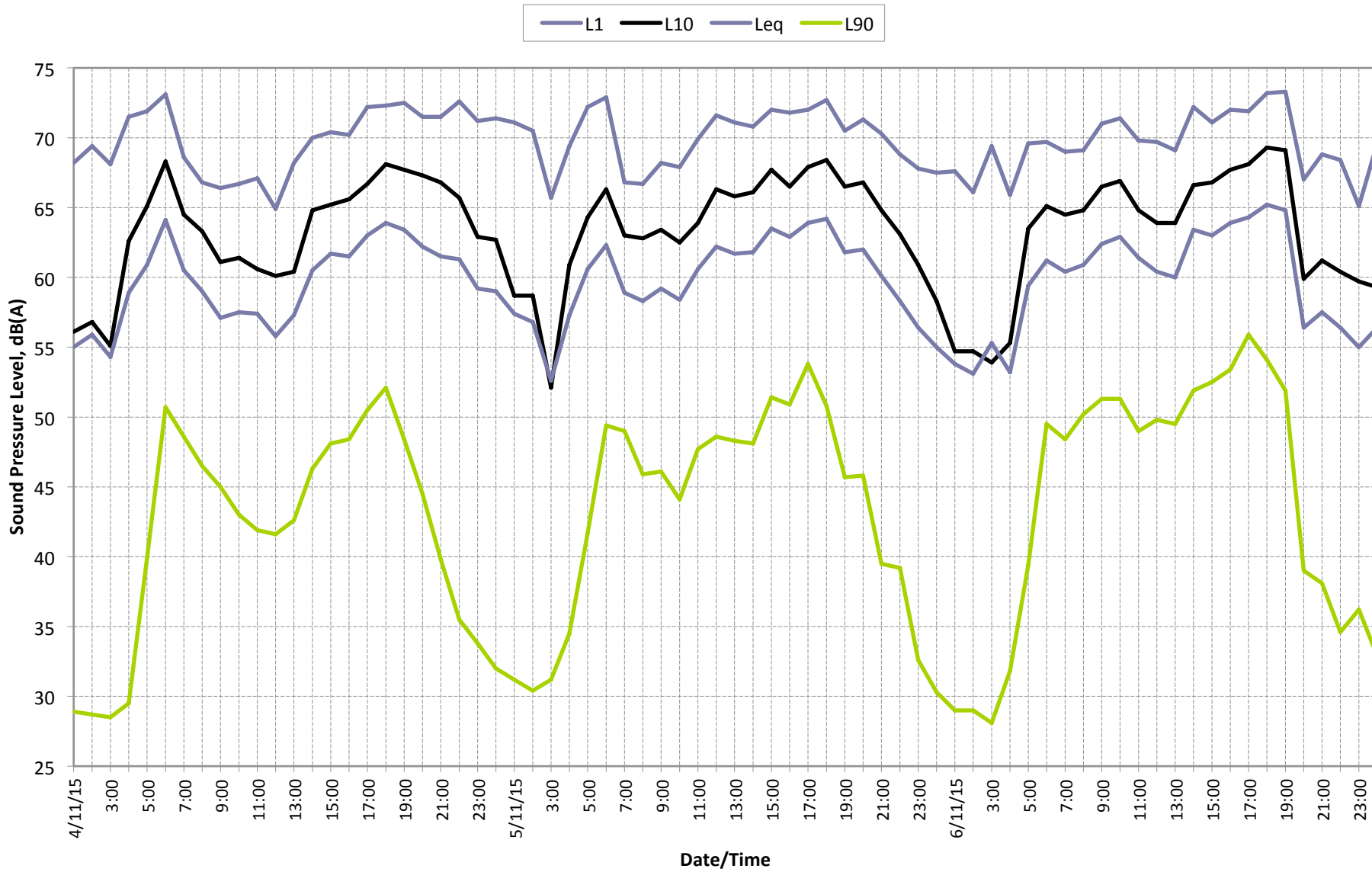
Item	Details
<b>LOCATION</b>	
Project	Perth Darwin National Hwy
Street address	3362 Great Northern Hwy
Locality	Muchea
Occupier	Commercial
Dates	4 to 6 Novemeber 2015
Category	<i>Main Roads to provide this information</i>
<b>SITE</b>	
Distance from the microphone to the kerb	113m to Reid Hwy and 160m to Malaga Dve
Height of the road in relation to the ground	level
Road surface type	Chip
Speed zone	110 km/hr
Absorbing ground	100%
Angle of view	160
Road gradient	flat
Traffic flow	
Heavy vehicles	
House-Road orientation.	West
Carriageways & lanes.	1cwys, 2lns
<b>COMMENT</b>	
Comment	Microphone located at façade of dwelling. Microphone height 1.4m above ground level
<b>REFERENCES</b>	
AMG Z50 E/N	<i>Main Roads to provide this information</i>
Road name	Great Northern Hwy
EXCEL file	3362 GNH
Raw data file	3362 GNH_sta
<b>EQUIPMENT</b>	
Analyser number	15-301-467
Microphone number	15-301-467
Calibrator number	34883971
Calibrator values	93.8 / 93.4
Operator	Lloyd George Acoustics Pty Ltd - Matthew Moyle
<b>WEATHER</b>	
Wind	Wind acceptability based on Peirce BoM data  Speed slightly exceeded in afternoons

Hourly Noise Level Data								
3362 Great Northern Hwy, Muchea								
Date	Time	L1	L10	Leq	L90	Rain mm	Wind degrees	Wind km/h
4-Nov-15	1:00	68.2	56.1	55	28.9	0	190	8
4-Nov-15	2:00	69.4	56.8	55.9	28.7	0	190	4
4-Nov-15	3:00	68.1	55.1	54.3	28.5	0	0	0
4-Nov-15	4:00	71.5	62.6	58.9	29.5	0	0	0
4-Nov-15	5:00	71.9	65.1	60.9	39.9	0	190	2
4-Nov-15	6:00	73.1	68.3	64.1	50.7	0	0	0
4-Nov-15	7:00	68.6	64.5	60.5	48.6	0	190	5
4-Nov-15	8:00	66.8	63.3	59	46.5	0	170	8
4-Nov-15	9:00	66.4	61.1	57.1	45	0	180	5
4-Nov-15	10:00	66.7	61.4	57.5	43	0	310	8
4-Nov-15	11:00	67.1	60.6	57.4	41.9	0	250	9
4-Nov-15	12:00	64.9	60.1	55.8	41.6	0	330	9
4-Nov-15	13:00	68.2	60.4	57.3	42.6	0	240	13
4-Nov-15	14:00	70	64.8	60.5	46.3	0	230	24
4-Nov-15	15:00	70.4	65.2	61.7	48.1	0	230	22
4-Nov-15	16:00	70.2	65.6	61.5	48.4	0	230	21
4-Nov-15	17:00	72.2	66.7	63	50.5	0	220	22
4-Nov-15	18:00	72.3	68.1	63.9	52.1	0	210	22
4-Nov-15	19:00	72.5	67.7	63.4	48.4	0	220	17
4-Nov-15	20:00	71.5	67.3	62.2	44.5	0	220	9
4-Nov-15	21:00	71.5	66.8	61.5	39.8	0	230	9
4-Nov-15	22:00	72.6	65.7	61.3	35.5	0	180	8
4-Nov-15	23:00	71.2	62.9	59.2	33.8	0	160	8
4-Nov-15	0:00	71.4	62.7	59	32	0	150	5
5-Nov-15	1:00	71.1	58.7	57.4	31.2	0	30	9
5-Nov-15	2:00	70.5	58.7	56.8	30.4	0	330	8
5-Nov-15	3:00	65.7	52.1	52.6	31.2	0	30	8
5-Nov-15	4:00	69.4	60.9	57.3	34.5	0	350	8
5-Nov-15	5:00	72.2	64.3	60.6	41.7	0	330	9
5-Nov-15	6:00	72.9	66.3	62.3	49.4	0	360	8
5-Nov-15	7:00	66.8	63	58.9	49	0	360	11
5-Nov-15	8:00	66.7	62.8	58.3	45.9	0	240	4
5-Nov-15	9:00	68.2	63.4	59.2	46.1	0	230	9
5-Nov-15	10:00	67.9	62.5	58.4	44.1	0	240	17
5-Nov-15	11:00	69.9	63.9	60.6	47.7	0	290	15
5-Nov-15	12:00	71.6	66.3	62.2	48.6	0	270	21
5-Nov-15	13:00	71.1	65.8	61.7	48.3	0	250	22
5-Nov-15	14:00	70.8	66.1	61.8	48.1	0	230	22
5-Nov-15	15:00	72	67.7	63.5	51.4	0	260	21
5-Nov-15	16:00	71.8	66.5	62.9	50.9	0	240	24
5-Nov-15	17:00	72	67.9	63.9	53.8	0	240	24
5-Nov-15	18:00	72.7	68.4	64.2	50.8	0	240	18
5-Nov-15	19:00	70.5	66.5	61.8	45.7	0	230	9
5-Nov-15	20:00	71.3	66.8	62	45.8	0	250	11
5-Nov-15	21:00	70.3	64.8	60.1	39.5	0	230	11
5-Nov-15	22:00	68.8	63.1	58.3	39.2	0	210	9
5-Nov-15	23:00	67.8	60.9	56.4	32.6	0	170	8
5-Nov-15	0:00	67.5	58.3	55	30.3	0	160	9

Hourly Noise Level Data								
3362 Great Northern Hwy, Muchea								
Date	Time	L1	L10	Leq	L90	Rain mm	Wind degrees	Wind km/h
6-Nov-15	1:00	67.6	54.7	53.8	29	0	230	8
6-Nov-15	2:00	66.1	54.7	53.1	29	0	220	8
6-Nov-15	3:00	69.4	53.9	55.3	28.1	0	220	5
6-Nov-15	4:00	65.9	55.3	53.2	31.8	0	330	5
6-Nov-15	5:00	69.6	63.5	59.4	39.4	0	140	4
6-Nov-15	6:00	69.7	65.1	61.2	49.5	0	150	8
6-Nov-15	7:00	69	64.5	60.4	48.4	0	180	15
6-Nov-15	8:00	69.1	64.8	60.9	50.2	0	150	15
6-Nov-15	9:00	71	66.5	62.4	51.3	0	180	21
6-Nov-15	10:00	71.4	66.9	62.9	51.3	0.4	170	13
6-Nov-15	11:00	69.8	64.8	61.4	49	0	190	15
6-Nov-15	12:00	69.7	63.9	60.4	49.8	0	190	15
6-Nov-15	13:00	69.1	63.9	60	49.5	0	190	18
6-Nov-15	14:00	72.2	66.6	63.4	51.9	0	200	26
6-Nov-15	15:00	71.1	66.8	63	52.5	0	210	31
6-Nov-15	16:00	72	67.7	63.9	53.4	0	200	26
6-Nov-15	17:00	71.9	68.1	64.3	55.9	0	230	26
6-Nov-15	18:00	73.2	69.3	65.2	54.1	0	240	24
6-Nov-15	19:00	73.3	69.1	64.8	51.9	0	230	21
6-Nov-15	20:00	67	59.9	56.4	39	0	70	11
6-Nov-15	21:00	68.8	61.2	57.5	38.1	0	330	9
6-Nov-15	22:00	68.4	60.4	56.4	34.6	0	360	8
6-Nov-15	23:00	65.1	59.7	55	36.2	0	30	5
6-Nov-15	0:00	69.6	59.3	56.4	32.9	0	160	17



### Noise Logging - 3362 Great Northern Hwy, Muchea






Appendix C

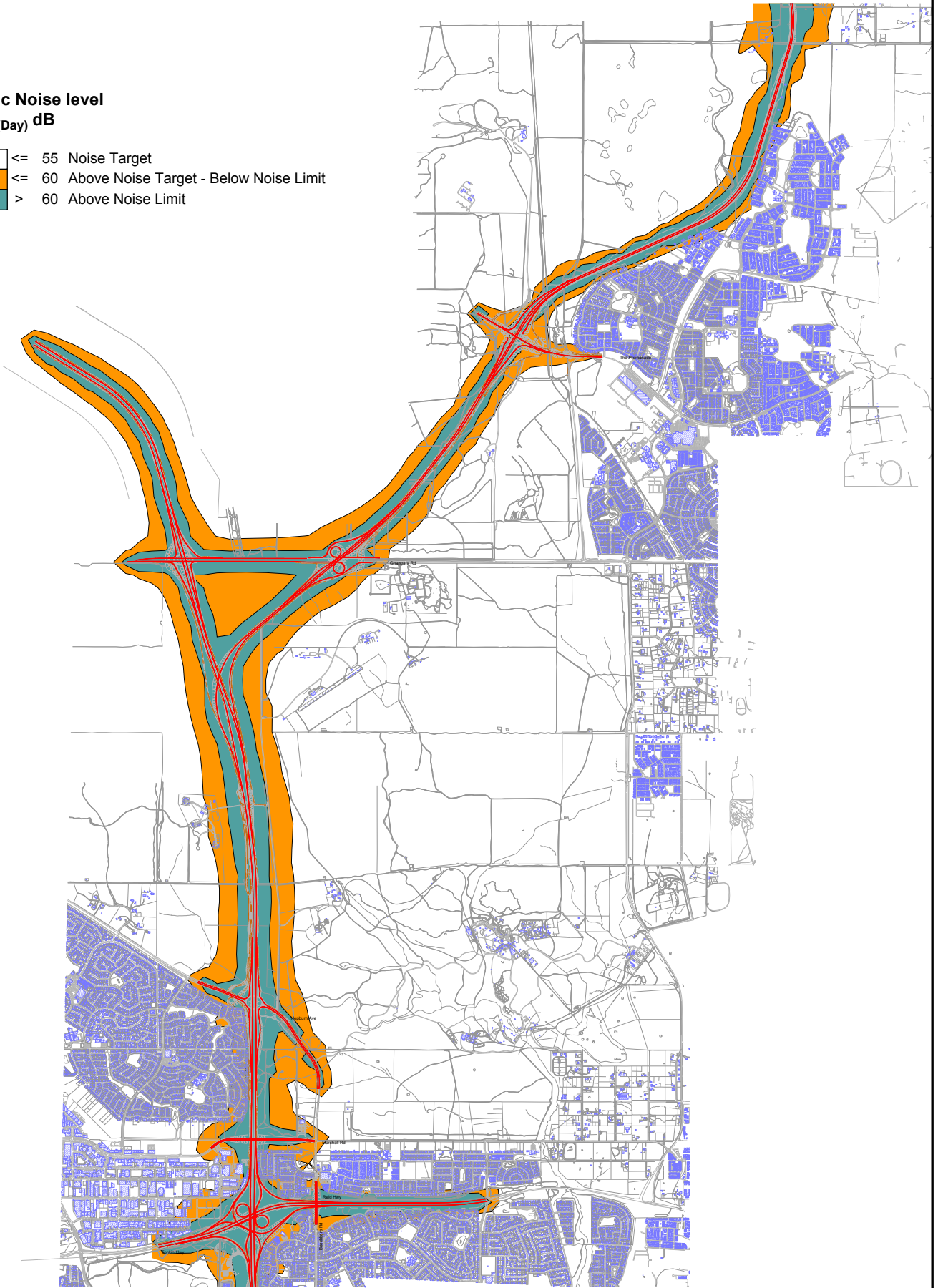
## Predicted Noise Levels Without Noise Barriers

# Perth Darwin National Highway Project

$L_{Aeq,Day}$  Noise Level Contours - Without Noise Mitigation

## Traffic Noise level $L_{Aeq,(Day)}$ dB

	$\leq$ 55	Noise Target
	$\leq$ 60	Above Noise Target - Below Noise Limit
	$>$ 60	Above Noise Limit



Appendix D

## Terminology

The following is an explanation of the terminology used throughout this report.

### **Decibel (dB)**

The decibel is the unit that describes the sound pressure and sound power levels of a noise source. It is a logarithmic scale referenced to the threshold of hearing.

### **A-Weighting**

An A-weighted noise level has been filtered in such a way as to represent the way in which the human ear perceives sound. This weighting reflects the fact that the human ear is not as sensitive to lower frequencies as it is to higher frequencies. An A-weighted sound level is described as  $L_A$  dB.

### **$L_1$**

An  $L_1$  level is the noise level which is exceeded for 1 per cent of the measurement period and is considered to represent the average of the maximum noise levels measured.

### **$L_{10}$**

An  $L_{10}$  level is the noise level which is exceeded for 10 per cent of the measurement period and is considered to represent the “intrusive” noise level.

### **$L_{90}$**

An  $L_{90}$  level is the noise level which is exceeded for 90 per cent of the measurement period and is considered to represent the “background” noise level.

### **$L_{eq}$**

The  $L_{eq}$  level represents the average noise energy during a measurement period.

### **$L_{A10,18hour}$**

The  $L_{A10,18hour}$  level is the arithmetic average of the hourly  $L_{A10}$  levels between 6.00 am and midnight. The *CoRTN* algorithms were developed to calculate this parameter.

### **$L_{Aeq,24hour}$**

The  $L_{Aeq,24hour}$  level is the logarithmic average of the hourly  $L_{Aeq}$  levels for a full day (from midnight to midnight).

### **$L_{Aeq,8hour} / L_{Aeq} (Night)$**

The  $L_{Aeq} (Night)$  level is the logarithmic average of the hourly  $L_{Aeq}$  levels from 10.00 pm to 6.00 am on the same day.

### **$L_{Aeq,16hour} / L_{Aeq} (Day)$**

The  $L_{Aeq} (Day)$  level is the logarithmic average of the hourly  $L_{Aeq}$  levels from 6.00 am to 10.00 pm on the same day. This value is typically 1-3 dB less than the  $L_{A10,18hour}$ .

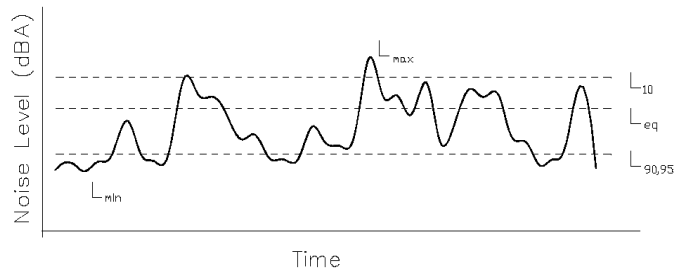
### **Satisfactory Design Sound Level**

The level of noise that has been found to be acceptable by most people for the environment in question and also to be not intrusive.

### **Maximum Design Sound Level**

The level of noise above which most people occupying the space start to become dissatisfied with the level of noise.

**Chart of Noise Level Descriptors**



**Austrads Vehicle Class**

**AUSTROADS Vehicle Classification System**

Level 1 Length Category	Level 2 Axles and Axle Groups	Level 3 Vehicle Type	AUSTROADS Classification		
Type	Axis / Groups	Typical Description	Class	Parameters	Typical Configuration
Short up to 5.5m	1 or 2	Short Sedan, Van, 4WD Utility, Light van, Motorcycle, etc.	1	d(1) + 3.2m and axles = 2	
	3, 4 or 5	Short - Towing Trailer, Caravan, Boat, etc.	2	groups = 3 d(1) + 2.1m, d(1) + 3.2m, d(2) + 2.1m and axles = 3, 4 or 5	
Medium 5.5m to 14.5m	2 or 2	Two Axle Truck or Bus	3	d(1) + 3.2m and axles = 2	
	3 or 2	Three Axle Truck or Bus	4	axles = 3 and groups = 2	
	>3	Four Axle Truck	5	axles = 3 and groups = 2	
Long 11.5m to 19.5m	3 or 3	Three Axle Articulated Three axle articulated vehicle, or Rigid vehicle and trailer	6	d(1) + 3.2m, axles = 3 and groups = 3	
	4 or 2	Four Axle Articulated Four axle articulated vehicle, or Rigid vehicle and trailer	7	d(2) + 2.1m or d(1) + 2.1m or d(1) + 3.2m axles = 4 and groups = 2	
	5 or 2	Five Axle Articulated Five axle articulated vehicle, or Rigid vehicle and trailer	8	d(2) + 3.1m or d(1) + 2.1m or d(1) + 3.2m axles = 5 and groups = 2	
	>5	Six Axle Articulated Six axle articulated vehicle, or Rigid vehicle and trailer	9	axles = 6 and groups = 2 or axles = 6 and groups = 3	
Medium Combination 17.5m to 36.5m	>5	8 Double 8 Double, or Heavy truck and trailer	10	groups = 4 and axles = 6	
	>5	3 or 6 Double road train, or Medium articulated vehicle and one slip trailer (M.A.T.)	11	groups = 5 or 6 and axles = 6	
Large Combination Over 33.5m	>5	Triple Road Train Triple road train, or Heavy train and three trailers	12	groups = 6 and axles = 6	

Definitions:  
Group: Axle group, where adjacent axles are less than 2.1m apart  
Groups: Number of axle groups  
Axles: Number of axles (maximum axle spacing of 10.5m)

d(1): Distance between first and second axle  
d(2): Distance between second and third axle

**Typical Noise Levels**

