TRUCK NOISE COMPLIANCE ASSESSMENT
VISY PULP AND PAPER PTY LIMITED
TUMUT

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1. INTRODUCTION

This report provides the details of the traffic noise assessment conducted for Visy Pulp and Paper as part of a Development Consent Condition 3.9. This is the second traffic noise assessment conducted and has been delayed until normal operating conditions of the mill existed.

The primary aims of this report are outlined as follows:

- To measure the existing road traffic noise at the residential locations along the major transport routes.
- To undertake traffic logging to ascertain the contribution to traffic noise levels from the mill.
- To calculate the noise contribution given by the heavy vehicles related with the Visy Pulp and Paper operations.
- To compare measured noise levels with the relevant RTA and NSW Environment Protection Authority (NSW EPA) criteria.
- To make recommendations for possible noise reduction techniques, where necessary.

Existing traffic noise levels have been measured using noise data loggers at seven (7) residential locations over a seven (7) day period.

Contemporaneously, traffic counting has been carried out by CFE Traffic Surveys at three (3) locations using road tube counters.

Visy Pulp and Paper weight bridge records have been provided and utilised in combination with noise loggers data and traffic counters data in order to calculate the Visy-related traffic noise contribution.

2. ROAD TRAFFIC NOISE CRITERIA

The applicable criteria for Visy Pulp and Paper road traffic noise were outlined by Benbow Environmental in 2007 (report n. 17001_Truck Noise) as part of the noise impact assessment for the site's operations and related generation of road traffic noise.

The traffic noise criteria were referenced from the NSW EPA document "Environmental Criteria for Road Traffic Noise" (ECRTN) ISBN 0 7313 0203 6 EPA 99/3.

From 1 July 2011 the ECRTN was replaced by the "NSW Road Noise Policy", therefore calculations for road traffic noise have been carried out in accordance with the new policy.

The current criteria examine two time periods (day and night) described by using the $L_{Aeq(period)}$ noise descriptor.

The applicable criteria are displayed below in Table 2-1 and explanation of the terminology is provided in Attachment 2.

Table 2-1: Road Traffic Noise Criteria

	Day (7:00am – 10:00pm)	Night (10:00pm – 7:00am)
$L_{Aeq\ (period)}$ [dB(A)]	$L_{Aeq\ (15\ hour)}$ = 60	$L_{Aeq\ (9\ hour)}$ = 55

Where the existing measured noise level is within 2dB of the above criterion, a 2dB allowance may be applied for the additional traffic. Where the existing measured noise level is already at the criteria and a further increase is predicted, then feasible and reasonable mitigation measures are needed.

Maximum noise levels generated at night time may result in sleep disturbance. There are guidelines provided for general reference in the Road Noise Policy document for maximum noise levels at the external façade of the residence.

The sleep disturbance assessment is more complex. The stationary industrial noise policy applied to sleep disturbance is readily exceeded by cars passing along roadways that have residences typically within 30m of the roadway and therefore cannot be effectively applied.

Trucks exceed this level further, so a voluntary management plan was presented in Attachment 3 of the 2007 Truck Noise report to reduce the L_{Amax} or $L_{A1\ (1\ min)}$ noise levels that may be experienced, as a part of best management practices.

3. ROAD NETWORK AND MONITORING LOCATIONS

All the heavy vehicles entering and leaving the Visy Pulp and Paper site would drive along the Snowy Mountains Highway either eastbound or westbound. Therefore, two traffic counters have been installed along the Snowy Mountain Highway approximately 100m before and 100m after the road that leads to the site.

Among the possible different routes that a vehicle can travel, only the following have been considered: Snowy Mountain Highway, Gocup Rd, Wee Jasper Rd (Yass Rd) and Batlow Tumut Rd. The third and last traffic counter has been installed on Gocup Rd within 100m from the 923 Gocup Rd residence's driveway.

The following figure shows the truck routes considered for this traffic noise study and they are indicated with a red line.

Figure 3-1: Considered Routes for Heavy Vehicles

Several residences located along the Snowy Mountains Hwy, Batlow Rd, Wee Jasper Rd and Gocup Rd are potentially affected by road traffic noise.

Noise monitoring has been carried out at seven (7) residences throughout a one week period by using type1 environmental noise loggers with 15 minute statistical intervals.

In the following Table 3-1 are listed the monitored residential locations. Noise monitoring and traffic counter locations are displayed in the remainder of this section.

Table 3-1: Noise Monitoring Residential Locations

Date	Address	Approx. distance from the road [m]
R1 – Brentwood	1518 Snowy Mountains Highway, Gadara, NSW	75
R2 – Glengarry	1393 Snowy Mountains Highway, Gadara, NSW	217
R3 – Beale	Snowy Mountains Highway, Gadara, NSW	50
R4 – Batlow	379 Batlow Road (corner Gadara Ln), Gilmore, NSW	30
R5 – Wee Jasper	214 Wee Jasper Rd, Bombowlee	7
R6 – Gocup Rd	923 Gocup Rd, Minjary	28
R7 - Minjary	1575 Gocup Rd, Minjary	36

Figure 3-2: Aerial View - Residences and Traffic Monitoring Locations

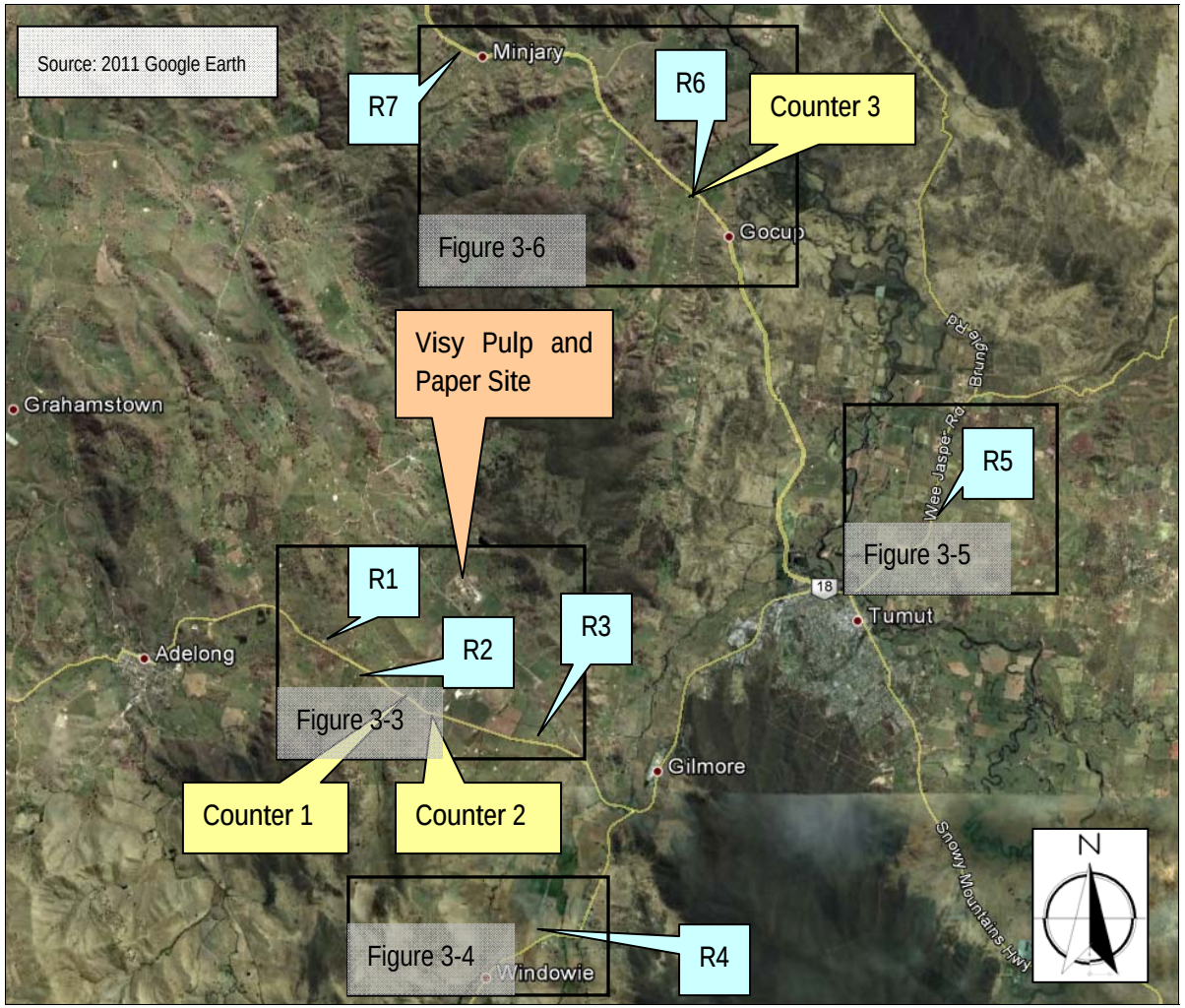

Figure 3-3: Snowy Mountain Hwy - Residences and Traffic Counter Locations

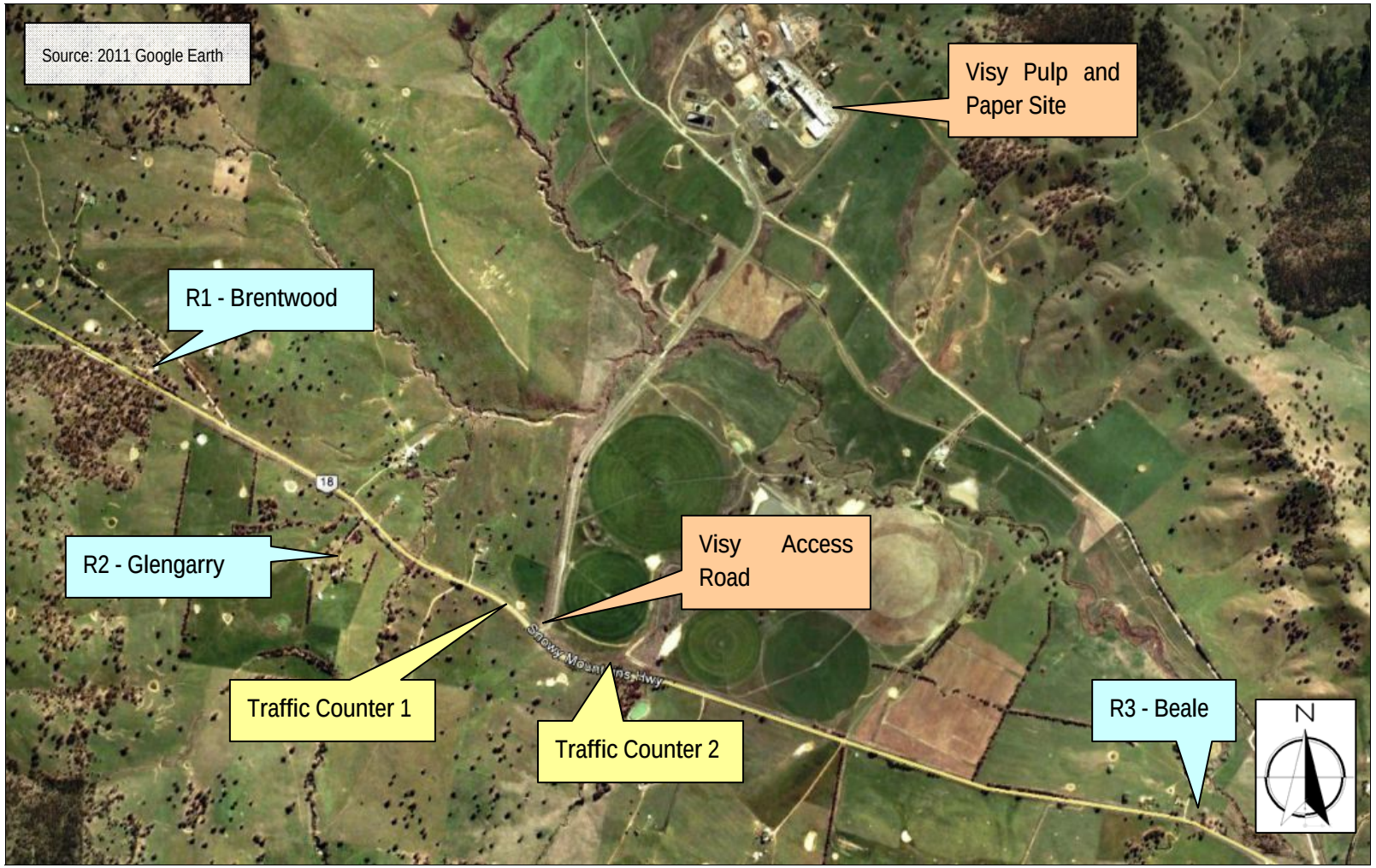

Figure 3-4: Batlow Rd - Residence Locations

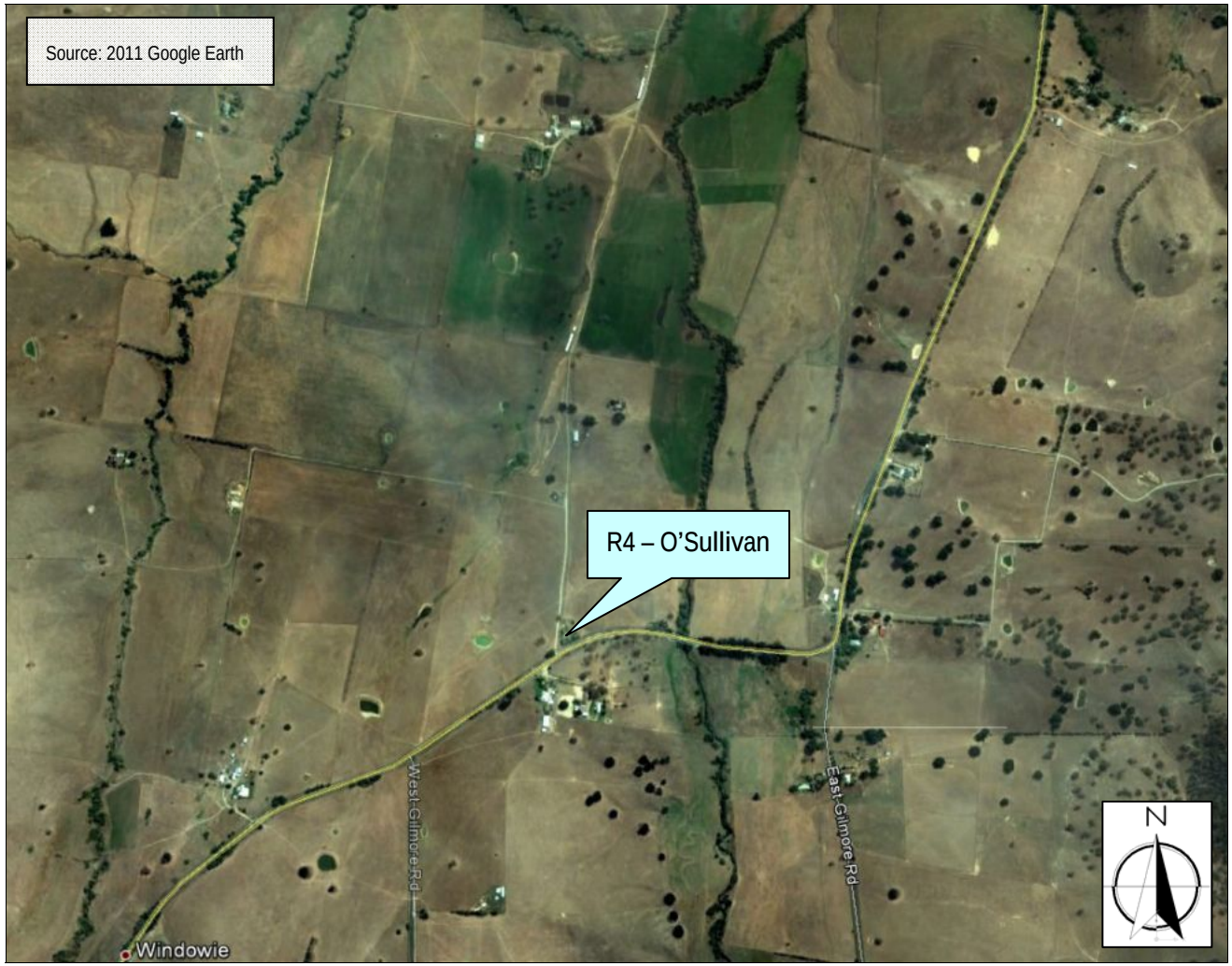

Figure 3-5: Wee Jasper - Residences and Traffic Counter Locations

Figure 3-6: Gocup Rd - Residence Locations

4. ROAD TRAFFIC NOISE LEVELS

4.1 EXISTING MEASURED TRAFFIC NOISE LEVELS

Noise levels have been monitored continuously from the 16/11/2011 to the 22/11/2011 by using environmental noise loggers with 15 minute statistical intervals.

The measured traffic noise levels are presented in Table 4-1. Noise loggers were located at the 7 aforementioned residential locations in line with the front facades of the residences.

The $L_{Aeq\ (9\ hour)}$ and $L_{Aeq\ (15\ hour)}$ descriptors have been calculated accordingly with the EPA's *NSW Road Noise Policy (Appendix B3)* and the noise levels have been rounded to the nearest integer.

Table 4-1: Measured Traffic Noise Levels

Location	$L_{Aeq\ (9\ hour)}$ Criteria 55 dB(A)	$L_{Aeq\ (15\ hour)}$ Criteria 60 dB(A)
R1 – Brentwood	54	53
R2 – Glengarry	46	50
R3 – Beale	53	57
R4 – Batlow	54	57
R5 – Wee Jasper	61	65
R6 – Gocup Rd *	55*	57*
R7 - Minjary	56	58

Note: shaded cells indicate that the level exceeds the noise criteria
* partial data

Comments

The noise logger installed at location R6 – Gocup Rd was found damaged when retrieved; only two days worth of data were recorded.

Compliance is achieved for locations R1, R2, R3, R4, R6 and R7 (daytime only).

Non-compliance has been recorded at location R5 during both daytime and night time periods. The compliance is not achieved for location R7 during night time only.

A thorough analysis has been carried out for locations R5 and R7 in order to characterise the noise contribution from Visy-related trucks and it is presented in section 4.3.

4.2 TRAFFIC VOLUME DATA

Traffic counting was undertaken by CFE Traffic Surveys at the locations shown in Figure 3-2, Figure 3-3 and Figure 3-6.

Traffic volume on Batlow Road and Wee Jasper Road has been obtained by subtracting the total number of heavy vehicles recorded by the Counter 2 (East Snowy Mountains Hwy) by the number of heavy vehicles counted on Counter 3 (Gocup Rd) and dividing the result by 2.

Visy Pulp and Paper provided Benbow Environmental with the following truck access data from the weight bridge:

- Entry Date and Time
- Exit Date and Time
- Access Route
- Return Route
- Weight (nett, gross, tare)
- Supplier and transported product

Entry and exit date and time as well as access and return route have been utilised in combination with traffic data provided by CFE Traffic Surveys.

Daily total count, number of heavy vehicles and proportion of Visy trucks and Non-Visy trucks are presented in the following tables. Data take into account both directions on each counter; one way data have been included in Attachments.

Raw data from the weight bridge and from traffic counters have been included in Attachments.

Traffic Counter 1 – Snowy Mountains Highway (West of Visy Access Road)

Table 4-2: Daily Traffic Volume – Counter 1 – Snowy Mountains Hwy (Bidirectional)

Date	Total vehicles	Heavy Vehicles	Visy Trucks	Non Visy Trucks
16/11/2011	2159	318	101	217
17/11/2011	2164	344	88	256
18/11/2011	2496	343	93	250
19/11/2011	1768	173	54	119
20/11/2011	1386	121	47	74
21/11/2011	2111	370	88	282
22/11/2011	2142	351	63	294
Total	14226	2020	534	1492

Traffic Counter 2 – Snowy Mountains Highway (East of Visy Access Road)

Table 4-3: Daily Traffic Volume – Counter 2 – Snowy Mountains Hwy (Bidirectional)

Date	Total vehicles	Heavy Vehicles	Visy Trucks	Non Visy Trucks
16/11/2011	3035	845	500	345
17/11/2011	3021	872	576	296
18/11/2011	3201	824	547	277
19/11/2011	1917	244	154	90
20/11/2011	1474	191	110	81
21/11/2011	2809	817	536	281
22/11/2011	3026	929	644	285
Total	18483	4722	3067	1655

Traffic Counter 3 – Gocup Rd

Table 4-4: Daily Traffic Volume– Counter 3 – Gocup Rd (Bidirectional)

Date	Total vehicles	Heavy Vehicles	Visy Trucks	Non Visy Trucks
16/11/2011	1422	336	174	162
17/11/2011	1652	385	192	193
18/11/2011	1739	330	172	158
19/11/2011	1255	157	71	86
20/11/2011	1120	141	60	81
21/11/2011	1460	369	179	190
22/11/2011	1486	383	188	195
Total	10134	2101	1036	1065

Batlow Rd – Estimated Traffic Volume

Table 4-5: Daily Traffic Volume – Batlow Road (Bidirectional)

Date	Total vehicles	Heavy Vehicles	Visy Trucks	Non Visy Trucks
16/11/2011	807	255	156	99
17/11/2011	685	244	144	100
18/11/2011	731	247	175	72
19/11/2011	331	44	27	17
20/11/2011	177	25	4	21
21/11/2011	675	224	153	71
22/11/2011	770	273	192	81
Total	4175	1311	851	461

Wee Jasper Road – Estimated Traffic Volume

Table 4-6: Daily Traffic Volume – Wee Jasper Road (Bidirectional)

Date	Total vehicles	Heavy Vehicles	Visy Trucks	Non Visy Trucks
16/11/2011	807	255	79	176
17/11/2011	685	244	100	144
18/11/2011	731	247	91	156
19/11/2011	331	44	19	25
20/11/2011	177	25	4	21
21/11/2011	675	224	72	152
22/11/2011	770	273	86	187
Total	4175	1311	451	861

4.3 VISY TRUCKS NOISE LEVELS

As the recorded noise levels are not only representative of the noise generated by heavy vehicles but also include car movements and wildlife (e.g. birds and crickets), the traffic noise contribution from Visy-related trucks is expected to be lower than the actual LAeq measured.

Locations R1, R2, R3, R4, R6 and R7 achieved compliance even including extraneous noise sources and therefore further analyses are unnecessary.

The CoRTN model (Calculation of Road Traffic Noise) algorithms are not valid for low traffic volumes and therefore are not suitable for this study.

Calculation of road traffic noise contribution from Visy trucks has been made by using a method that takes into account the sound exposure levels and calculates the L_{Aeq} due to the time of exposure to the truck noise.

The following noise descriptors have been calculated:

- $L_{Aeq\ (15\ hour)}$; and
- $L_{Aeq\ (9\ hour)}$.

The method used to calculate sound exposure levels is explained below and is based on procedures referenced in AS 1055.1, AS 2363 and reference texts on assessing the environmental impact of roads and traffic.

AS 1055.1 Clause 3.6 defines L_{AE} as being:

> *"the sound exposure level of a discrete noise event is the instantaneous A-weighted sound pressure integrated over the specified time duration at the noise event and referenced to a duration of 1 sec".*

AS 1055.1 Clause 6.4.5 explains how the sound exposure level can be used:

> *"where a noise environment is the result of a number of identifiable noise events, the time weighted average A-weighted sound pressure level may be calculated from the sound exposure levels of the individual events occurring within a time period from the following equation:"*

$$L_{Aeq,T} = 10\log_{10}\frac{1}{T}\sum_{n=1}^{n}10^{0.1L_{AE}}$$

The sound exposure level has been obtained from attended noise measurement carried out by Benbow Environmental in 2007 during a Road Traffic Noise Study for Visy Pulp and Paper (reference rep.17001_Truck Noise).

The results of the truck noise calculations are shown in the following table:

Table 4-7: Calculated Visy Trucks Noise Contribution Levels

Location	$L_{Aeq\ (9\ hour)}$ Criteria 55 dB(A)	$L_{Aeq\ (15\ hour)}$ Criteria 60 dB(A)
Wee Jasper	55	57
Minjary	45	58*

* Noise level has not been calculated as the $L_{Aeq\ (15\ hour)}$ already complied with the noise criteria.

Comments

Contribution from Visy trucks has been calculated to comply with the criteria.

4.3.1 Further Analysis of Existing Traffic Noise Contribution

A further analysis has been carried out by using a conservative approximation of existing noise levels, in particular, the contribution from both Visy and non-Visy trucks was first determined from the traffic counting.

Presented in Attachment 4 are the hourly data and daily graphs showing the $L_{Aeq(1hour)}$ and a conservative approximation of the noise contribution for both Visy and Non-Visy trucks. Conservative approximation of noise contribution was calculated by considering the total recorded $L_{Aeq(1hour)}$ given by the trucks passing on the road, while in reality cars and other vehicles, wildlife and domestic activities affected the measurements.

The following relation has been utilised to determine the conservative contribution from Visy and non-Visy trucks.

$$L_{Aeq(1hour)(contribution)} = L_{Aeq(1hour)} + 10\log\left(\frac{ratio(\%)}{100}\right)$$

(As this ratio is <1, the percentage contribution will be a negative value)

The ratio (%) represents the percentage of Visy or Non-Visy trucks in a specific hour.

For location R5, the analysis outlined that the L_{Aeq} generally exceeded the criteria most of the time when no Visy trucks were passing through Wee Jasper Road or Gocup Road.

For location R7, this method highlighted that the contribution from Visy trucks complies with the noise criteria even considering the contribution from extraneous noise sources (e.g. cars, wildlife).

5. CONCLUSIONS

The traffic noise study was conducted at seven (7) residential locations.

Compliance is readily achieved for locations R1, R2, R3, R4, R6 and R7 (daytime only).

At locations R5 and R7, traffic noise contribution from Visy was calculated and found to comply with the traffic criteria.

Noise levels in location R5 were found to be higher than the noise limits even when there were no trucks from Visy passing through Wee Jasper Rd.

For the next quarterly traffic noise study the additional installation of one bidirectional traffic counter on Wee Jasper Road is recommended in order to carry out a more detailed analysis for location R5.

Additionally, the use of a noise logger equipped with sound card and recording audio data would allow the characterisation of the nature of the noise environment and to identify extraneous noise sources that would possibly contribute to increased noise levels.

The potential impact of truck noise from Visy Pulp and Paper is not considered to be extensive or excessive.

This concludes the report.

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6. LIMITATIONS

Our services for this project are carried out in accordance with our current professional standards for site assessment investigations. No guarantees are either expressed or implied.

This report has been prepared solely for the use by Visy Pulp and Paper Pty Ltd, as per our agreement for providing environmental assessment services. Although all due care has been taken in the preparation of this study, no warranty is given, nor liability accepted (except that required by law) in relation to the information contained within this document.

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Opinions and judgements expressed herein, which are based on our understanding and interpretation of current regulatory standards, should not be construed as legal opinions.

ATTACHMENTS

Terminology

This section provides an explanation of the terms used throughout the report. In order to characterise the noise levels measured over a period of time the following noise descriptors are used:

- L_{A1}
  The L_{A1} is the level of noise exceeded for 1% of the time and is, therefore, the average peak level of noise experienced during the measurement period.
- L_{A10}
  The L_{A10} is the level of noise exceeded for 10% of the time and is, therefore, the maximum level of noise experienced during the measurement period.
- L_{Aeq}
  The L_{Aeq} is the equivalent continuous level of noise and is a single number that is equivalent to the fluctuations of noise level that are occurring based on the energy contained within the noise signal. The L_{Aeq} is determined by an integration of the noise level with respect to time.
- L_{A90}
  The L_{A90} is the level of noise exceeded for 90% of the sample time and is therefore the minimum level of noise experienced during the measurement period. The L_{A90} is referred to as the background noise level.
- Daytime and Night Time Periods
  For the criteria outlined in the NSW EPA Environmental Noise Control Manual, daytime is defined as from 7.00am to 10.00pm, Monday to Saturday, and 8am to 10pm on Sunday and Public Holidays. Night time is defined as 10pm to 7am, Monday to Friday, and 10pm to 8am on Sundays and Public Holidays.
- Sound Pressure Level (abbreviated SPL)
  Is the instantaneous measurement of pressure variations in the ambient air compared to a reference pressure. A precision sound level meter measures SPL and measurements are expressed as dB(A).
- Tonal Noise
  Noise containing a prominent frequency and characterised by a definite pitch.
- Low frequency noise
  Containing major components within the low frequency range (20Hz – 250 Hz) of the frequency spectrum.
- Impulsive noise
  Noise having a high peak of short duration or a sequence of such peaks. A sequence of impulses in rapid succession is termed repetitive impulsive noise.
- Fluctuating noise
  Noise that varies continuously and to an appreciable extent over the period of observation.
- Intermittent noise
  The level suddenly drops to that of the background noise several times during the period of observation.
- Adjustment for duration
  Applied where a single – event noise is continuous for a period of less than two and a half hours in any 24-hour period.

Counter 1: Snowy Mountains Highway – One way traffic count data

Daily Traffic Volume– Counter 1 – Snowy Mountains Hwy (Eastbound, from Adelong to Tumut)				
Date	Total vehicles	Heavy Vehicles	Visy Trucks	Non Visy Trucks
16/11/2011	1055	143	49	94
17/11/2011	1078	151	39	112
18/11/2011	1269	168	45	123
19/11/2011	929	86	26	60
20/11/2011	643	59	24	35
21/11/2011	1052	183	41	142
22/11/2011	1049	170	32	138
Total	7075	960	256	704

Daily Traffic Volume – Counter 1 – Snowy Mountains Hwy (Westbound, from Tumut to Adelong)				
Date	Total vehicles	Heavy Vehicles	Visy Trucks	Non Visy Trucks
16/11/2011	1104	175	52	123
17/11/2011	1086	193	49	144
18/11/2011	1227	175	48	127
19/11/2011	839	87	28	59
20/11/2011	743	62	23	39
21/11/2011	1059	187	47	140
22/11/2011	1093	181	31	156
Total	7151	1060	278	788

Counter 2: Snowy Mountains Highway – One way traffic count data

Daily Traffic Volume – Counter 2 – Snowy Mountains Hwy (Eastbound, from Adelong to Tumut)				
Date	Total vehicles	Heavy Vehicles	Visy Trucks	Non Visy Trucks
16/11/2011	1538	395	212	183
17/11/2011	1540	403	289	114
18/11/2011	1668	400	275	125
19/11/2011	1024	107	78	29
20/11/2011	720	83	55	28
21/11/2011	1428	389	265	124
22/11/2011	1559	448	322	126
Total	9477	2225	1496	729

Daily Traffic Volume – Counter 2 – Snowy Mountains Hwy (Westbound, from Tumut to Adelong)				
Date	Total vehicles	Heavy Vehicles	Visy Trucks	Non Visy Trucks
16/11/2011	1497	450	288	162
17/11/2011	1481	469	287	182
18/11/2011	1533	424	272	152
19/11/2011	893	137	76	61
20/11/2011	754	108	55	53
21/11/2011	1381	428	271	157
22/11/2011	1467	481	322	159
Total	9006	2497	1571	926

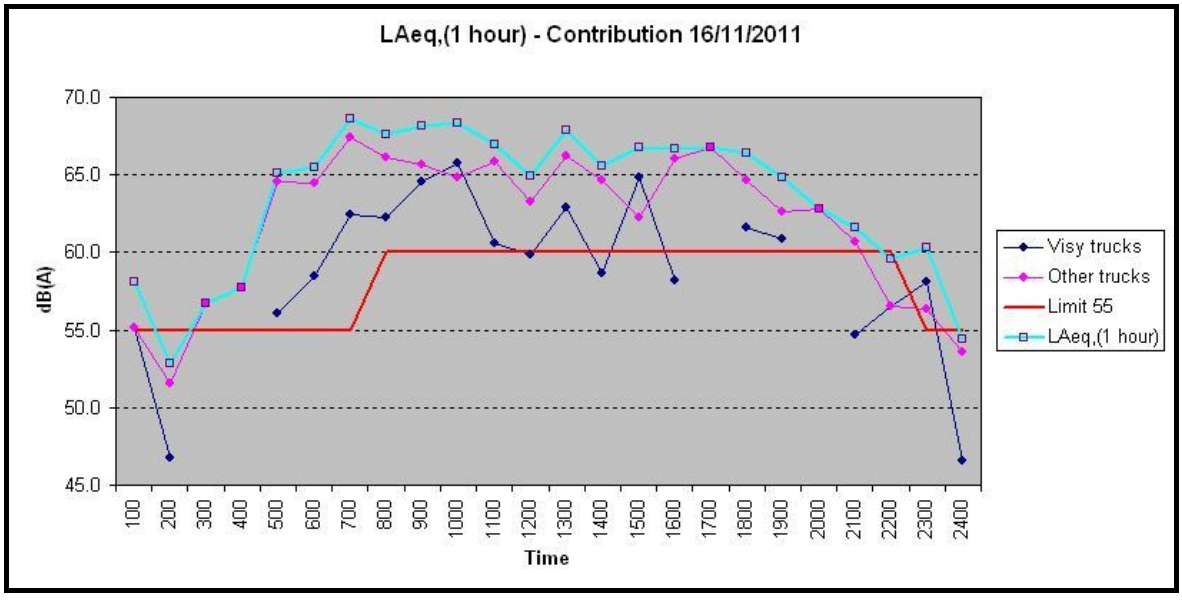
Counter 3: Gocup Rd – One way traffic count data

Daily Traffic Volume – Counter 3 – Gocup Rd (Westbound, from Edwardstown Road to Snowy Mountains Hwy)				
Date	Total vehicles	Heavy Vehicles	Visy Trucks	Non Visy Trucks
16/11/2011	701	154	91	63
17/11/2011	816	189	96	93
18/11/2011	857	159	85	74
19/11/2011	609	76	35	41
20/11/2011	607	72	30	42
21/11/2011	726	183	91	92
22/11/2011	738	187	93	94
Total	5054	1020	521	499

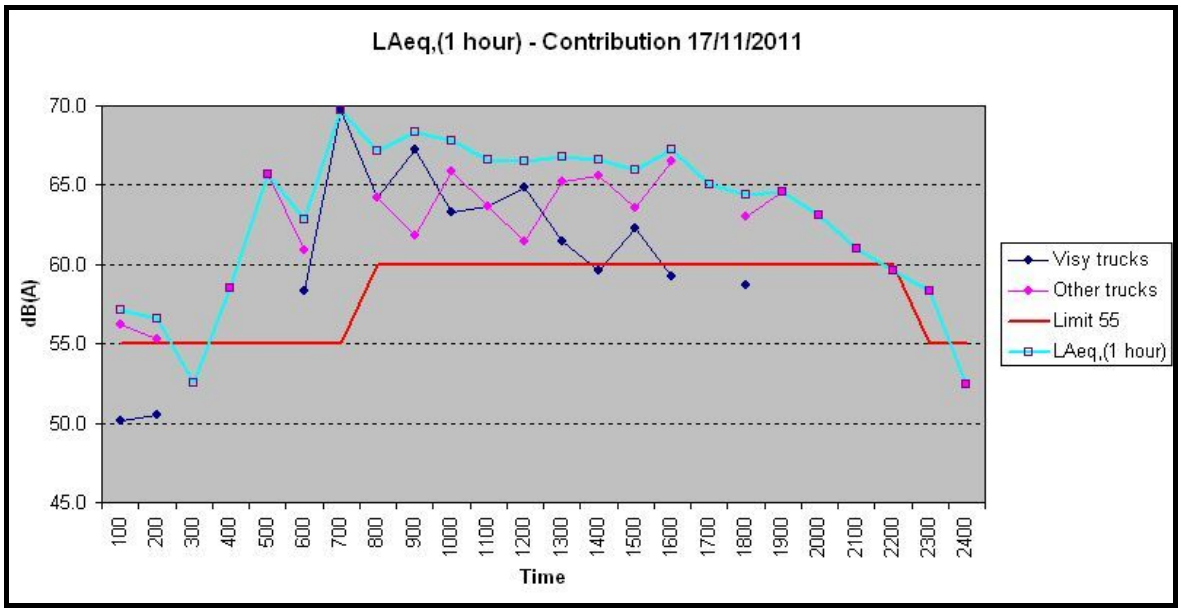
Daily Traffic Volume– Counter 3 – Gocup Rd (Eastbound, from Snowy Mountains Hwy to Edwardstown Road)				
Date	Total vehicles	Heavy Vehicles	Visy Trucks	Non Visy Trucks
16/11/2011	721	182	83	99
17/11/2011	836	196	96	100
18/11/2011	882	171	87	84
19/11/2011	646	81	36	45
20/11/2011	513	69	30	39
21/11/2011	734	186	88	98
22/11/2011	748	196	95	101
Total	5080	1081	515	566

R5 – Wee Jasper Road

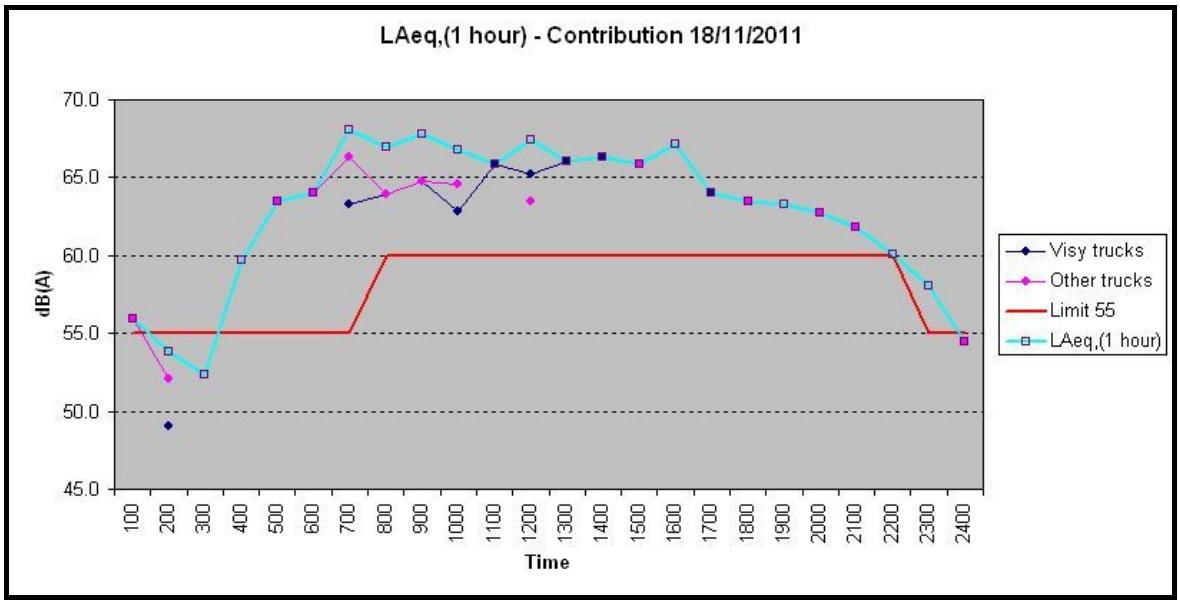
DATE	TIME	LEQ 1 HOUR	TOTAL TRUCKS	% VISY TRUCK	VISY CONTRIBUTION	NON VISY TRUCKS CONTRIBUTION
16/11/2011	0100	58.1	6	50.00	55.1	55.1
16/11/2011	0200	52.8	4	25.00	46.8	51.6
16/11/2011	0300	56.7	4	0.00	-	56.7
16/11/2011	0400	57.7	4	0.00	-	57.7
16/11/2011	0500	65.1	8	12.50	56.1	64.6
16/11/2011	0600	65.5	10	20.00	58.5	64.5
16/11/2011	0700	68.6	25	24.00	62.4	67.4
16/11/2011	0800	67.6	17	29.41	62.3	66.1
16/11/2011	0900	68.2	16	43.75	64.6	65.7
16/11/2011	1000	68.3	18	55.56	65.8	64.8
16/11/2011	1100	67.0	13	23.08	60.6	65.8
16/11/2011	1200	64.9	16	31.25	59.8	63.3
16/11/2011	1300	67.9	19	31.58	62.9	66.2
16/11/2011	1400	65.6	20	20.00	58.6	64.6
16/11/2011	1500	66.7	14	64.29	64.8	62.3
16/11/2011	1600	66.7	14	14.29	58.2	66.0
16/11/2011	1700	66.8	9	0.00	-	66.8
16/11/2011	1800	66.4	6	33.33	61.6	64.6
16/11/2011	1900	64.8	10	40.00	60.8	62.6
16/11/2011	2000	62.8	4	0.00	-	62.8
16/11/2011	2100	61.6	5	20.00	54.7	60.7
16/11/2011	2200	59.5	8	50.00	56.5	56.5
16/11/2011	2300	60.3	5	60.00	58.1	56.3
16/11/2011	2400	54.4	6	16.67	46.6	53.6



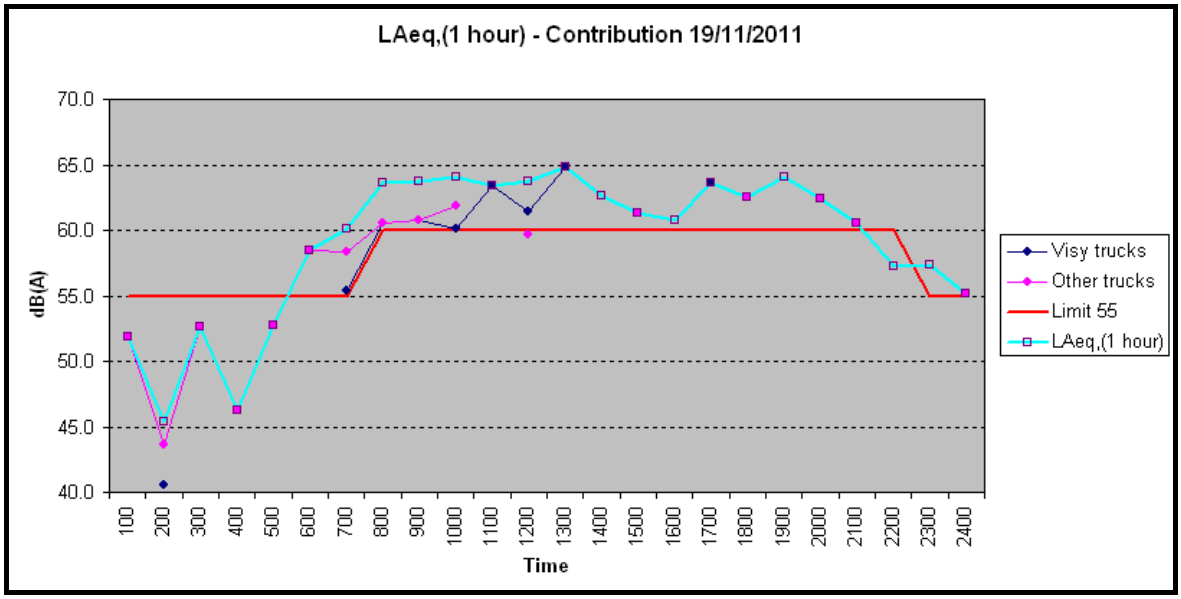
DATE	TIME	LEQ 1 HOUR	TOTAL TRUCKS	% VISY TRUCK	VISY CONTRIBUTION	NON VISY TRUCKS CONTRIBUTION
17/11/2011	0100	57.2	5	20.00	50.2	56.2
17/11/2011	0200	56.6	4	25.00	50.5	55.3
17/11/2011	0300	52.6	0	0.00	-	-
17/11/2011	0400	58.5	4	0.00	-	58.5
17/11/2011	0500	65.6	11	0.00	-	65.6
17/11/2011	0600	62.8	14	35.71	58.3	60.9
17/11/2011	0700	69.7	11	100.00	69.7	-
17/11/2011	0800	67.2	16	50.00	64.2	64.2
17/11/2011	0900	68.3	18	77.78	67.3	61.8
17/11/2011	1000	67.8	17	35.29	63.3	65.9
17/11/2011	1100	66.6	14	50.00	63.6	63.6
17/11/2011	1200	66.5	16	68.75	64.8	61.4
17/11/2011	1300	66.8	17	29.41	61.5	65.3
17/11/2011	1400	66.6	10	20.00	59.6	65.6
17/11/2011	1500	66.0	14	42.86	62.3	63.5
17/11/2011	1600	67.2	19	15.79	59.2	66.5
17/11/2011	1700	65.0	11	45.45	-	-
17/11/2011	1800	64.4	11	27.27	58.7	63.0
17/11/2011	1900	64.6	10	0.00	-	64.6
17/11/2011	2000	63.1	9	0.00	-	63.1
17/11/2011	2100	61.0	5	0.00	-	61.0
17/11/2011	2200	59.6	8	0.00	-	59.6
17/11/2011	2300	58.4	6	0.00	-	58.4
17/11/2011	2400	52.4	3	0.00	-	52.4



DATE	TIME	LEQ 1 HOUR	TOTAL TRUCKS	% VISY TRUCK	VISY CONTRIBUTION	NON VISY TRUCKS CONTRIBUTION
18/11/2011	0100	56.0	3	0.00	-	56.0
18/11/2011	0200	53.8	3	33.33	49.0	52.0
18/11/2011	0300	52.3	0	0.00	-	-
18/11/2011	0400	59.7	0	0.00	-	-
18/11/2011	0500	63.5	2	0.00	-	63.5
18/11/2011	0600	64.0	4	0.00	-	64.0
18/11/2011	0700	68.0	3	33.33	63.3	66.3
18/11/2011	0800	66.9	8	50.00	63.9	63.9
18/11/2011	0900	67.8	2	50.00	64.8	64.8
18/11/2011	1000	66.8	5	40.00	62.8	64.6
18/11/2011	1100	65.9	2	100.00	65.9	-
18/11/2011	1200	67.4	5	60.00	65.2	63.4
18/11/2011	1300	66.1	1	100.00	66.1	-
18/11/2011	1400	66.4	2	100.00	66.4	-
18/11/2011	1500	65.9	1	0.00	-	65.9
18/11/2011	1600	67.2	0	0.00	-	-
18/11/2011	1700	64.0	1	100.00	64.0	-
18/11/2011	1800	63.5	4	0.00	-	63.5
18/11/2011	1900	63.3	0	0.00	-	-
18/11/2011	2000	62.7	4	0.00	-	62.7
18/11/2011	2100	61.8	3	0.00	-	61.8
18/11/2011	2200	60.1	0	0.00	-	-
18/11/2011	2300	58.0	0	0.00	-	-
18/11/2011	2400	54.5	1	0.00	-	54.5

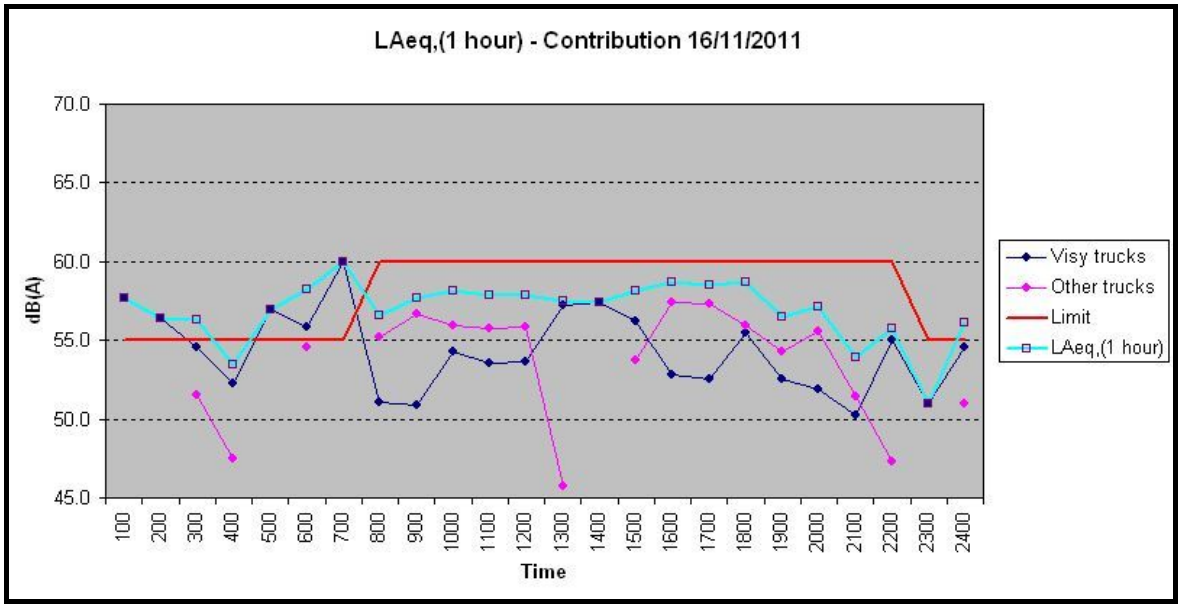


DATE	TIME	LEQ 1 HOUR	TOTAL TRUCKS	% VISY TRUCK	VISY CONTRIBUTION	NON VISY TRUCKS CONTRIBUTION
19/11/2011	0100	51.9	3	0.00	-	51.9
19/11/2011	0200	45.3	3	33.33	40.6	43.6
19/11/2011	0300	52.6	0	0.00	-	52.6
19/11/2011	0400	46.3	0	0.00	-	46.3
19/11/2011	0500	52.8	2	0.00	-	52.8
19/11/2011	0600	58.4	4	0.00	-	58.4
19/11/2011	0700	60.1	3	33.33	55.3	58.3
19/11/2011	0800	63.6	8	50.00	60.6	60.6
19/11/2011	0900	63.8	2	50.00	60.8	60.8
19/11/2011	1000	64.0	5	40.00	60.1	61.8
19/11/2011	1100	63.4	2	100.00	63.4	-
19/11/2011	1200	63.7	5	60.00	61.5	59.7
19/11/2011	1300	64.8	1	100.00	64.8	-
19/11/2011	1400	62.6	2	100.00	-	-
19/11/2011	1500	61.3	1	0.00	-	61.3
19/11/2011	1600	60.8	0	0.00	-	-
19/11/2011	1700	63.6	1	100.00	63.6	-
19/11/2011	1800	62.5	4	0.00	-	62.5
19/11/2011	1900	64.0	0	0.00	-	-
19/11/2011	2000	62.4	4	0.00	-	62.4
19/11/2011	2100	60.6	3	0.00	-	60.6
19/11/2011	2200	57.2	0	0.00	-	-
19/11/2011	2300	57.4	0	0.00	-	-
19/11/2011	2400	55.2	1	0.00	-	55.2

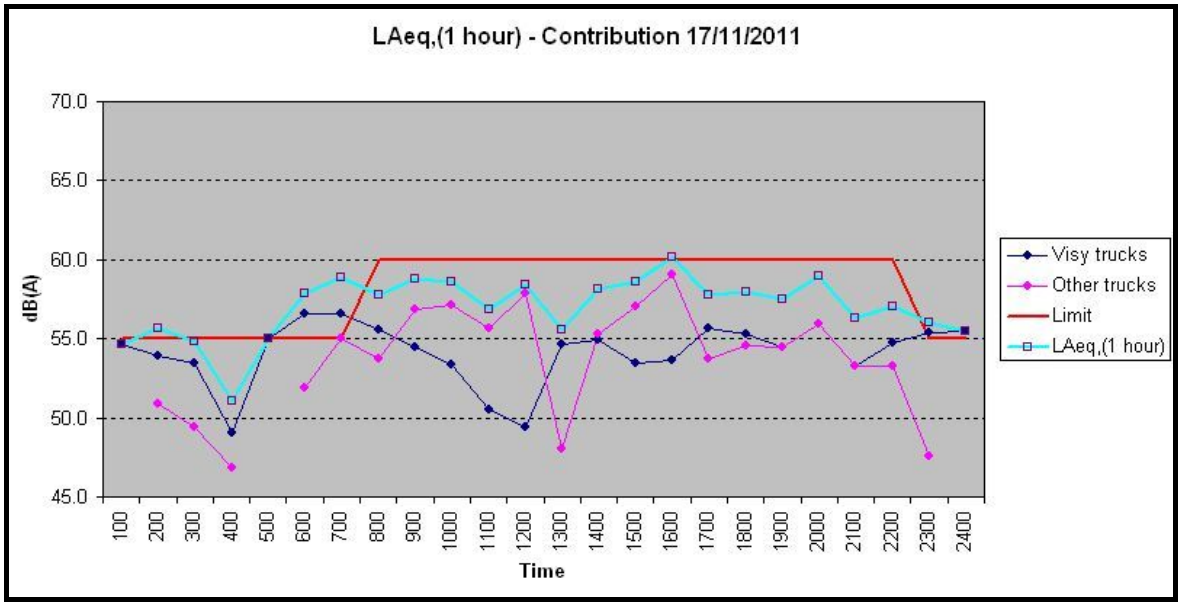


R7 – Minjary - Gocup Road

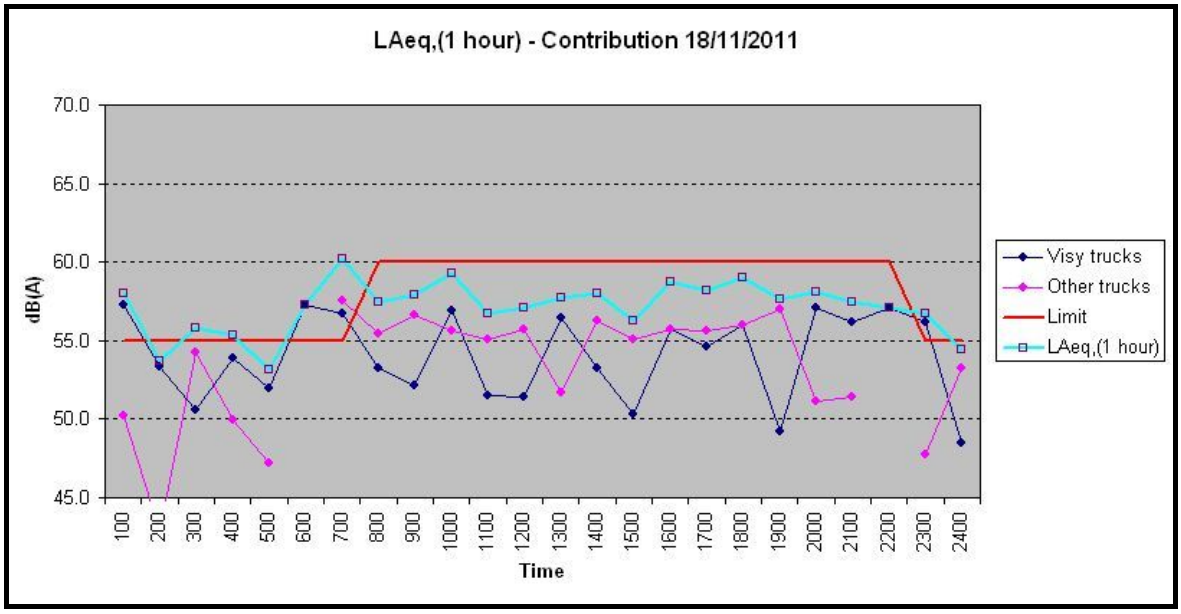
DATE	TIME	LEQ 1 HOUR	TOTAL TRUCKS	% VISY TRUCK	VISY CONTRIBUTION	NON VISY TRUCKS CONTRIBUTION
16/11/2011	0100	57.7	6	100	57.7	-
16/11/2011	0200	56.4	3	100	56.4	-
16/11/2011	0300	56.3	9	66.67	54.5	51.5
16/11/2011	0400	53.5	8	75.00	52.2	47.5
16/11/2011	0500	56.9	10	100	56.9	-
16/11/2011	0600	58.2	14	57.14	55.8	54.6
16/11/2011	0700	60.0	6	100	60.0	-
16/11/2011	0800	56.6	25	28.00	51.1	55.2
16/11/2011	0900	57.7	29	20.69	50.8	56.7
16/11/2011	1000	58.2	22	40.91	54.3	55.9
16/11/2011	1100	57.8	24	37.50	53.6	55.8
16/11/2011	1200	57.9	29	37.93	53.7	55.8
16/11/2011	1300	57.5	15	93.33	57.2	45.8
16/11/2011	1400	57.4	3	100	57.4	-
16/11/2011	1500	58.2	14	64.29	56.2	53.7
16/11/2011	1600	58.7	27	25.93	52.8	57.4
16/11/2011	1700	58.5	24	25.00	52.5	57.3
16/11/2011	1800	58.7	19	47.37	55.5	55.9
16/11/2011	1900	56.5	10	40.00	52.5	54.3
16/11/2011	2000	57.1	10	30.00	51.9	55.6
16/11/2011	2100	53.9	7	42.86	50.2	51.5
16/11/2011	2200	55.7	7	85.71	55.0	47.3
16/11/2011	2300	50.9	2	100	50.9	-
16/11/2011	2400	56.1	13	69.23	54.5	51.0



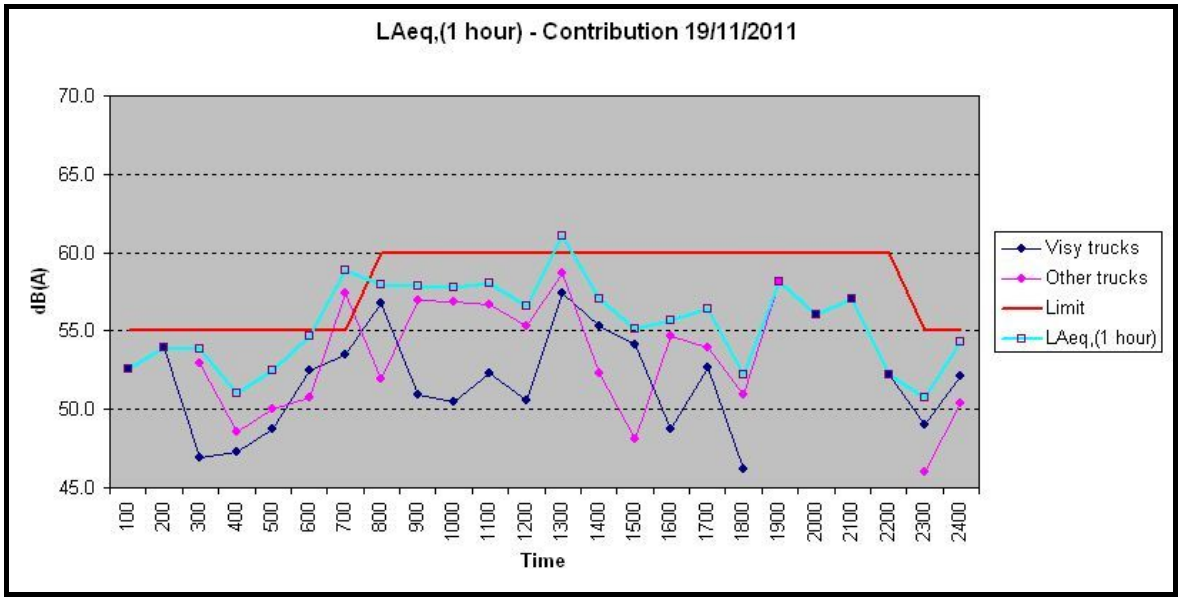
DATE	TIME	LEQ 1 HOUR	TOTAL TRUCKS	% VISY TRUCK	VISY CONTRIBUTION	NON VISY TRUCKS CONTRIBUTION
17/11/2011	0100	54.6	13	100	54.6	-
17/11/2011	0200	55.7	9	66.67	53.9	50.9
17/11/2011	0300	54.9	7	71.43	53.4	49.4
17/11/2011	0400	51.1	8	62.50	49.1	46.8
17/11/2011	0500	55.0	6	100	55.0	-
17/11/2011	0600	57.9	16	75.00	56.6	51.9
17/11/2011	0700	58.8	17	58.82	56.5	55.0
17/11/2011	0800	57.7	15	60.00	55.5	53.8
17/11/2011	0900	58.8	30	36.67	54.5	56.8
17/11/2011	1000	58.6	27	29.63	53.3	57.1
17/11/2011	1100	56.8	17	23.53	50.5	55.7
17/11/2011	1200	58.4	32	12.50	49.4	57.8
17/11/2011	1300	55.5	17	82.35	54.7	48.0
17/11/2011	1400	58.1	23	47.83	54.9	55.3
17/11/2011	1500	58.6	26	30.77	53.5	57.0
17/11/2011	1600	60.2	27	22.22	53.7	59.1
17/11/2011	1700	57.8	18	61.11	55.7	53.7
17/11/2011	1800	57.9	13	53.85	55.3	54.6
17/11/2011	1900	57.5	18	50.00	54.5	54.5
17/11/2011	2000	58.9	14	50.00	55.9	55.9
17/11/2011	2100	56.3	6	50.00	53.3	53.3
17/11/2011	2200	57.1	12	58.33	54.7	53.3
17/11/2011	2300	56.1	7	85.71	55.4	47.6
17/11/2011	2400	55.4	7	100	55.4	-



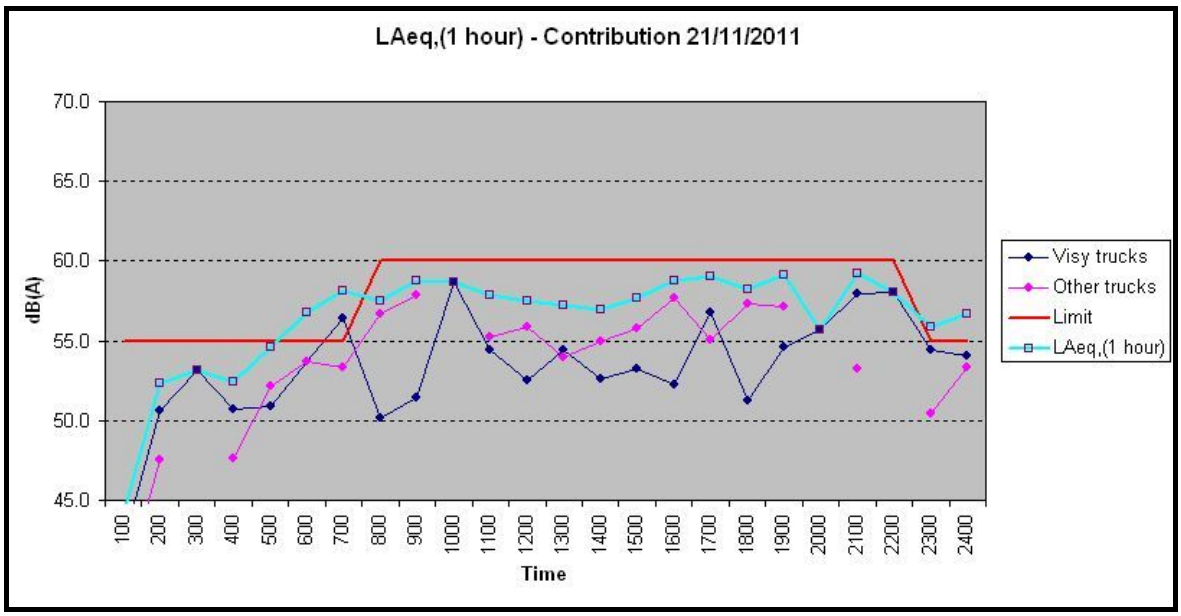
DATE	TIME	LEQ 1 HOUR	TOTAL TRUCKS	% VISY TRUCK	VISY CONTRIBUTION	NON VISY TRUCKS CONTRIBUTION
18/11/2011	0100	58.0	12	83.33	57.3	50.3
18/11/2011	0200	53.7	12	91.67	53.3	42.9
18/11/2011	0300	55.8	10	30.00	50.6	54.3
18/11/2011	0400	55.4	7	71.43	53.9	49.9
18/11/2011	0500	53.2	8	75.00	51.9	47.2
18/11/2011	0600	57.3	15	100	57.3	-
18/11/2011	0700	60.2	22	45.45	56.8	57.5
18/11/2011	0800	57.5	8	37.50	53.2	55.4
18/11/2011	0900	57.9	19	26.32	52.1	56.6
18/11/2011	1000	59.3	21	57.14	56.9	55.6
18/11/2011	1100	56.7	23	30.43	51.5	55.1
18/11/2011	1200	57.1	26	26.92	51.4	55.7
18/11/2011	1300	57.7	20	75.00	56.4	51.7
18/11/2011	1400	58.0	18	33.33	53.2	56.2
18/11/2011	1500	56.3	12	25.00	50.3	55.1
18/11/2011	1600	58.7	18	50.00	55.7	55.7
18/11/2011	1700	58.2	18	44.44	54.6	55.6
18/11/2011	1800	59.0	16	50.00	56.0	56.0
18/11/2011	1900	57.6	14	14.29	49.2	57.0
18/11/2011	2000	58.1	5	80.00	57.1	51.1
18/11/2011	2100	57.4	4	75.00	56.2	51.4
18/11/2011	2200	57.1	6	100	57.1	-
18/11/2011	2300	56.8	8	87.50	56.2	47.7
18/11/2011	2400	54.5	8	25.00	48.5	53.2



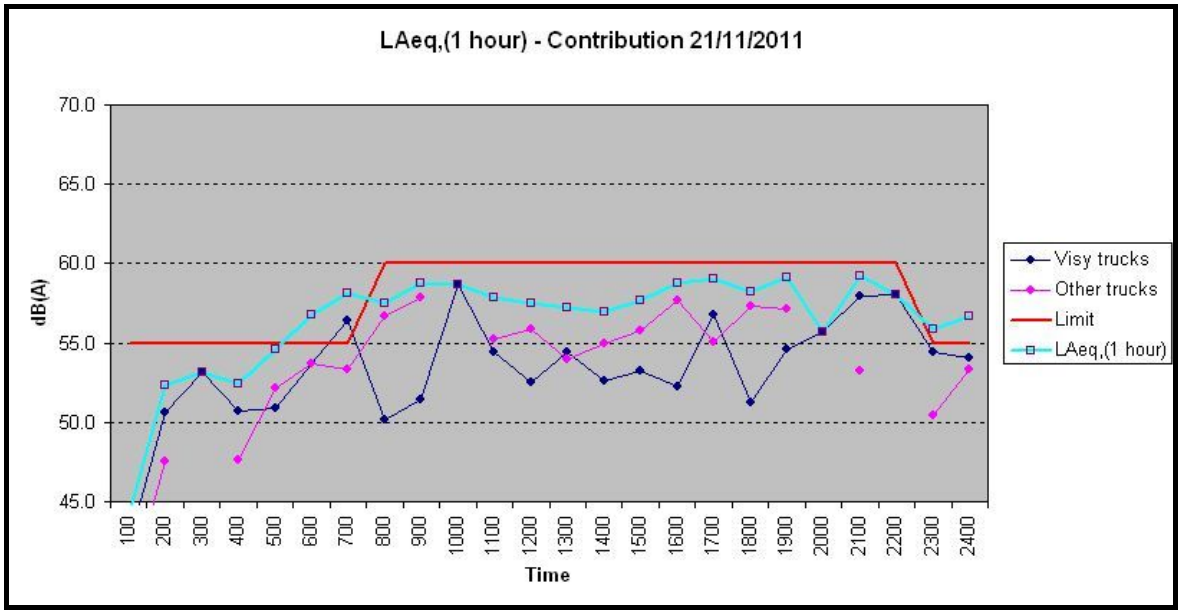
DATE	TIME	LEQ 1 HOUR	TOTAL TRUCKS	% VISY TRUCK	VISY CONTRIBUTION	NON VISY TRUCKS CONTRIBUTION
19/11/2011	0100	52.5	5	100	52.5	-
19/11/2011	0200	53.9	3	100	53.9	-
19/11/2011	0300	53.9	5	20.00	46.9	52.9
19/11/2011	0400	51.0	7	42.86	47.3	48.6
19/11/2011	0500	52.4	7	42.86	48.8	50.0
19/11/2011	0600	54.7	5	60.00	52.5	50.7
19/11/2011	0700	58.9	7	28.57	53.5	57.4
19/11/2011	0800	58.0	8	75.00	56.7	52.0
19/11/2011	0900	57.9	10	20.00	50.9	56.9
19/11/2011	1000	57.7	16	18.75	50.5	56.8
19/11/2011	1100	58.0	15	26.67	52.3	56.7
19/11/2011	1200	56.6	8	25.00	50.6	55.3
19/11/2011	1300	61.1	7	42.86	57.4	58.6
19/11/2011	1400	57.0	6	66.67	55.3	52.3
19/11/2011	1500	55.1	5	80.00	54.1	48.1
19/11/2011	1600	55.7	10	20.00	48.7	54.7
19/11/2011	1700	56.4	7	42.86	52.7	54.0
19/11/2011	1800	52.2	4	25.00	46.1	50.9
19/11/2011	1900	58.1	7	0.00	-	58.1
19/11/2011	2000	56.1	4	100	56.1	-
19/11/2011	2100	57.1	1	100	57.1	-
19/11/2011	2200	52.3	2	100	52.3	-
19/11/2011	2300	50.7	3	66.67	49.0	46.0
19/11/2011	2400	54.3	5	60.00	52.1	50.4



DATE	TIME	LEQ 1 HOUR	TOTAL TRUCKS	% VISY TRUCK	VISY CONTRIBUTION	NON VISY TRUCKS CONTRIBUTION
21/11/2011	0100	44.2	3	66.67	42.5	39.5
21/11/2011	0200	52.3	6	66.67	50.6	47.6
21/11/2011	0300	53.2	3	100	53.2	
21/11/2011	0400	52.4	6	66.67	50.7	47.7
21/11/2011	0500	54.6	7	42.86	50.9	52.2
21/11/2011	0600	56.7	18	50.00	53.7	53.7
21/11/2011	0700	58.1	12	66.67	56.4	53.4
21/11/2011	0800	57.5	11	18.18	50.1	56.7
21/11/2011	0900	58.8	27	18.52	51.5	57.9
21/11/2011	1000	58.7	15	100	58.7	
21/11/2011	1100	57.8	22	45.45	54.4	55.2
21/11/2011	1200	57.5	25	32.00	52.6	55.8
21/11/2011	1300	57.2	21	52.38	54.4	54.0
21/11/2011	1400	57.0	30	36.67	52.6	55.0
21/11/2011	1500	57.7	28	35.71	53.2	55.8
21/11/2011	1600	58.8	27	22.22	52.3	57.7
21/11/2011	1700	59.0	20	60.00	56.8	55.1
21/11/2011	1800	58.3	15	20.00	51.3	57.3
21/11/2011	1900	59.1	14	35.71	54.6	57.2
21/11/2011	2000	55.7	6	100	55.7	
21/11/2011	2100	59.2	16	75.00	58.0	53.2
21/11/2011	2200	58.1	10	100	58.1	
21/11/2011	2300	55.9	14	71.43	54.4	50.4
21/11/2011	2400	56.7	13	53.85	54.0	53.4



DATE	TIME	LEQ 1 HOUR	TOTAL TRUCKS	% VISY TRUCK	VISY CONTRIBUTION	NON VISY TRUCKS CONTRIBUTION
22/11/2011	0100	57.5	5	100	57.5	-
22/11/2011	0200	55.0	8	100	55.0	-
22/11/2011	0300	53.6	11	72.73	52.2	48.0
22/11/2011	0400	54.0	3	100	54.0	-
22/11/2011	0500	53.7	12	41.67	49.9	51.4
22/11/2011	0600	57.4	21	80.95	56.5	50.2
22/11/2011	0700	61.1	15	53.33	58.3	57.7
22/11/2011	0800	62.2	14	35.71	57.7	60.3
22/11/2011	0900	57.4	24	37.50	53.1	55.4
22/11/2011	1000	58.5	18	44.44	55.0	56.0
22/11/2011	1100	57.0	18	16.67	49.2	56.2
22/11/2011	1200	56.8	25	32.00	51.9	55.1
22/11/2011	1300	58.8	17	58.82	56.5	54.9
22/11/2011	1400	58.7	21	28.57	53.2	57.2
22/11/2011	1500	58.6	29	27.59	53.0	57.2
22/11/2011	1600	59.7	26	30.77	54.6	58.1
22/11/2011	1700	60.4	21	38.10	56.2	58.4
22/11/2011	1800	61.7	21	47.62	58.5	58.9
22/11/2011	1900	58.9	7	57.14	56.5	55.3
22/11/2011	2000	61.2	23	56.52	58.8	57.6
22/11/2011	2100	58.7	17	29.41	53.4	57.2
22/11/2011	2200	56.7	10	50.00	53.7	53.7
22/11/2011	2300	56.8	7	100	56.8	-
22/11/2011	2400	53.7	10	50.00	50.7	50.7



CERTIFICATE OF CALIBRATION

CERTIFICATE NO.: **SLM 38287**

Equipment Description:	Noise Logger		
Manufacturer:	ARL		
Model No:	EL-215	**Serial No:**	194552
Microphone Type:	Electret	**Serial No:**	194552
Filter Type:	-	**Serial No:**	-
Comments:	All tests passed for type 2.		
Owner:	Benbow Environmental 13 Daking Street North Parramatta NSW 2151		
Ambient Pressure:	1013 hPa ±1.5 hPa		
Temperature:	23 °C ±2° C	**Relative Humidity:**	31 %RH ±5% RH
Date of Calibration:	14/07/2011	**Issue Date:**	15/07/2011

Acu-Vib Test Procedure: AVP05 (SLM) & AVP06 (Filters) if applicable

CHECKED BY: AM **AUTHORISED SIGNATORY:** .....

Jack Rielt

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Accredited for compliance with ISO/IEC 17025
The results of the tests, calibration and/or measurements included in this document are traceable to Australian/national standards.

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Accredited Lab. No. 9262
Acoustic and Vibration Measurements

ACU-VIB ELECTRONICS

HEAD OFFICE
Unit 14, 22 Hudson Ave. Castle Hill NSW 2154
Tel: (02) 96808133 Fax: (02)96808233
Mobile: 0413 809806
web site: www.acu-vib.com.au

CERTIFICATE OF CALIBRATION

CERTIFICATE NO.: SLM 38290

Equipment Description:	Noise Logger		
Manufacturer:	ARL		
Model No:	EL-215	**Serial No:**	194593
Microphone Type:	Electret	**Serial No:**	194593
Filter Type:	-	**Serial No:**	-
Comments:	All tests passed for type 2.		
Owner:	Benbow Environmental 13 Daking Street North Parramatta NSW 2151		
Ambient Pressure:	1013 hPa ±1.5 hPa		
Temperature:	23 °C ±2° C	**Relative Humidity:**	31 %RH ±5% RH
Date of Calibration:	14/07/2011	**Issue Date:**	15/07/2011

Acu-Vib Test Procedure: AVP05 (SLM) & AVP06 (Filters) if applicable

CHECKED BY: AM **AUTHORISED SIGNATORY:** .....

Jack Kidd

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Mobile: 0413 809806
web site: www.acu-vib.com.au

CERTIFICATE OF CALIBRATION

CERTIFICATE NO.: SLM 38288

Equipment Description:	Noise Logger		
Manufacturer:	ARL		
Model No:	EL-215	**Serial No:**	194702
Microphone Type:	Electret	**Serial No:**	194702
Filter Type:	-	**Serial No:**	-
Comments:	All tests passed for type 2.		
Owner:	Benbow Environmental 13 Daking Street North Parramatta NSW 2151		
Ambient Pressure:	1013 hPa ±1.5 hPa		
Temperature:	23 °C ±2° C	**Relative Humidity:**	31 %RH ±5% RH
Date of Calibration:	14/07/2011	**Issue Date:**	15/07/2011

Acu-Vib Test Procedure: AVP05 (SLM) & AVP06 (Filters) if applicable

CHECKED BY: ..... **AUTHORISED SIGNATORY:** .....

Jack Kielt

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Acoustic Research Laboratories
Proprietary Limited A.B.N. 47 050 100 804
Noise and Vibration Monitoring Instrumentation for Industry and the Environment

Sound Level Meter Test Report

Report Number : 10023

Date of Test : 18/01/2010

Report Issue Date : 19/01/2010

Equipment Tested/ Model Number: **ARL Environmental Noise Logger**

Instrument Serial Number: 194438

Client Name : Benbow Environmental

13 Daking Street

North Parramatta NSW 2151

Contact Name : Ilco Naumoski

Tested by : Michelle Youssef

Approved Signatory :

Date : **19 January 2010**

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Acoustic Research Laboratories
Proprietary Limited A.B.N. 47 050 100 804
Noise and Vibration Monitoring Instrumentation for Industry and the Environment

Sound Level Meter Test Report

Report Number : 10300

Date of Test : 25/06/2010

Report Issue Date : 25/06/2010

Equipment Tested/ Model Number: **EL-215 Environmenal Noise Logger**

Instrument Serial Number: 194540

Client Name : Benbow Environmental

13 Daking Street

North Parramatta NSW 2151

Contact Name : Ilco Naumoski

Tested by : Michelle Youssef

Approved Signatory :

Date : **25 June 2010**

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CERTIFICATE OF CALIBRATION

CERTIFICATE NO.: **SLM 38389**

Equipment Description:	Noise Logger		
Manufacturer:	ARL		
Model No:	EL-215	**Serial No:**	194682
Microphone Type:	Electret	**Serial No:**	194593
Filter Type:	-	**Serial No:**	-
Comments:	All tests passed for type 2.		
Owner:	Benbow Environmental 13 Daking Street North Parramatta NSW 2151		
Ambient Pressure:	1007 hPa ±1.5 hPa		
Temperature:	23 °C ±2° C	**Relative Humidity:**	67 %RH ±5% RH
Date of Calibration:	29/08/2011	**Issue Date:**	29/08/2011

Acu-Vib Test Procedure: AVP05 (SLM) & AVP06 (Filters) if applicable

CHECKED BY: ..... **AUTHORISED SIGNATORY:** .....

Jack Kielt

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Accredited Lab. No. 9262
Acoustic and Vibration Measurements

ACU-VIB
ELECTRONICS

HEAD OFFICE
Unit 14, 22 Hudson Ave. Castle Hill NSW 2154
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CERTIFICATE OF CALIBRATION

CERTIFICATE NO: 11838

EQUIPMENT TESTED: Sound Level Calibrator

Manufacturer: Rion
Type No: NC-73 **Serial No:** 10186522
Owner: Benbow Environmental
13 Daking Street
North Parramatta NSW 2151

Tests Performed: Measured output sound pressure level was found to be:
Before adiustment: 93.97 dB re 20 uPa at 994.7 Hz THD< 1%.
After adiustment: 93.97 dB re 20 uPa at 994.7 Hz THD< 1%.

Uncertainty (at 95% c.l.) k=2: Output ±0.11dB
Freq. ±0.05 Hz

CONDITION OF TEST:

Ambient Pressure: 993 hPa ±1.5 hPa **Relative Humidity:** 66 % RH ±5% RH
Temperature: 23 °C ±2° C
Date of Calibration: 18/01/2011 **Issue Date:** 18/01/2011
Acu-Vib Test Procedure: AVP02 (Calibrators)
Test Method: AS IEC 60942 - 2004
CHECKED BY: ..... **AUTHORISED SIGNATORY:** .....
Jack Rielt

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