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REF: 15095

**Acoustic Assessment Report,
Amendment to Planning Permit,
15 Korumburra South Road,
Korumburra**

PREPARED BY:

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12th June 2015



**Acoustic Assessment Report,
Amendment to Planning Permit,
15 Korumburra South Road,
Korumburra**

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**Acoustic Assessment Report,
Amendment to Planning Permit,
15 Korumburra South Road,
Korumburra**

1. Introduction

1.1

I confirm my engagement by Andrew Crack and Associates to prepare an acoustic assessment report addressing an application for an amendment to an existing planning permit involving the change of use of the subject premises and extension of operating hours at 15 Korumburra South Road, Korumburra South.

1.2

This report particularly addresses the noise and vibration aspect of Item 2 of the South Gippsland Shire Council correspondence seeking additional information in respect to Application No.2006/541/C 'Amendment – Proposed buildings and works, changes to what the permit allows and permit conditions'.

If you still wish to apply to extend the operating hours, particularly outside of daylight hours, an amenity impact assessment including a comprehensive noise and vibration assessment will be required.

1.3

The acoustic assessment report provides information regarding the existing acoustic environment in proximity to the closest neighbouring dwelling based on the activities which are currently occurring. It should be also be borne in mind that there is a saw mill operation closer to this dwelling which shares a boundary with the subject site. In determining the existing acoustic amenity, noise level monitoring and earth vibration data took place over a seven day period.



1.4

Relevant noise data is set out in this report with reference to the EPA Noise from Industry in Regional Victoria (NIRV). Levels were recorded approximately 200 metres from the nearest dwelling, in a line of sight both to the dwelling and to the South Gippsland Highway.

1.5

Vibration measurements were recorded adjacent to the west boundary approximately 80 metres from the nearest dwelling to determine the magnitude of earth vibration generated by activities occurring at the site, particularly associated with heavy vehicle movements and loading/unloading of materials.

2. References

- Copy of correspondence from South Gippsland Shire Council to Andrew Crack & Associates dated 21 Jan. 2015.
- Guidelines: Noise from Industry in Regional Victoria (NIRV).
- NSW EPA Environmental criteria for sleep disturbance.
- State Environment Protection Policy (Control of noise from Commerce, Industry and Trade) No. N-1. (SEPP N-1).

3. General discussion

3.1

In undertaking the exercise of evaluating noise from the current use of the subject site, an ARL Type EL 316 noise logger continuously recorded noise level data over the period Thursday 16-4-15 to the following Thursday 23-4-15. This data, presented in average hourly levels, is set out in the Appendix tables. A Ngara sound logger was also adopted to record additional information where the vibration monitoring equipment was located.

3.2

This report uses the results of the analysis of the existing noise and vibration levels associated with the current activities occurring on the site to provide an estimated prediction of the noise and vibration impact on the amenity of the immediate area. This amenity impact is considered in terms of statutory environmental noise limits and an appropriate standard in respect to sleep disturbance if the hours of operation were to be extended into the evening and night periods.



3.3

The vibration monitoring equipment recorded vibration levels near the north end of the subject site continuously over the period Monday 20-4-15 to Thursday 24-4-15.

3.4

It is to be noted that the noise and vibration logging continued during the evening and night period beyond the daylight hours and on Sunday when the subject site was unattended.

3.5

Activities identified which currently occur on the site and/or may be included in any future operation which have the potential to generate significant environmental noise include the following.

- Truck and delivery vehicle ingress and egress from the site,
- Refrigerated vehicles domiciled overnight,
- Loading and unloading of products and bulk materials, crushed rocks and the like,
- Use of front end loaders, excavators, forklifts and the like,
- Mechanical services such as refrigeration and air conditioning compressors,
- Raised voices.

4. Weather details

4.1

Date	Wind Direction		Wind Speed		Rain 9am
	9am	3pm	9am	3pm	
Thus 16.4.15	SW	WSW	11m/s	15m/s	0.2mm
Fri 17.4.15	Calm	Calm	0m/s	0m/s	0.0mm
Sat 18.4.15	NW	NW	4m/s	4m/s	6.4mm
Sun 19.4.15	S	S	19m/s	19m/s	7.6mm
Mon 20.4.15	Calm	S		7m/s	0.2mm
Tues 21.4.15	Calm	SE	0m/s	19m/s	0.0mm
Wed 22.4.15	SE	SE	19m/s	19m/s	0.0mm
Thurs 23.4.15	SE	E	4m/s	15m/s	2.0mm



4.2

It is considered on the basis of the above statistics recorded for the nearest weather station in Wonthaggi that the weather in respect to wind direction and speed and with minimal rainfall did not influence the noise level data to any significant extent.

5. Noise Level information

5.1

In terms of the EPA NIRV Guidelines which are considered to apply in this situation, both the subject site and the closest rural dwelling which is approximately 80 metres to the north-west of the site are within a contiguous FZ Farming zone.

5.2

The applicable zone levels (L_{Aeq}) for this site are thus:

Day:	46
Evening:	41
Night:	36

5.3

This location is considered to be 'background-relevant' meaning a noise sensitive area where background levels may be higher than usual for a rural area. This is based on the noise sensitive area being in proximity to the South Gippsland Highway and the Korumburra South Road, both of which generate traffic noise which was audible at the boundary of the subject site.

5.4

The existing background levels (L_{A90}) during the noise assessment period were as follows:

Day:	44
Evening:	40
Night:	27

5.5

Based on the NIRV calculation the following recommended levels are to comply:

Day:	52
Evening:	46
Night:	36



5.6

The actual recorded levels L_{Aeq} at the subject site boundary during the day period when the site was operating and also during the evening and night period when the business was closed, excluding the weekend were as follows.

Day:	56	Business operating
Evening:	53	Business closed
Night:	44	Business closed

5.7

Based on the above determined levels, the noise level measured at the site boundary exceeded the recommended NIRV level by a margin of 4 dB(A) for the day period. This noise level included any noise generated by the nearby saw mill, traffic along both the South Gippsland Highway and the Korumburra South Road, natural rural environmental noise and occasional use of an off-road bike which was audible during the visit.

5.8

The existing noise levels during the evening period and the night period when the business would have been expected to be closed were actually 7 dB(A) and 8 dB(A) respectively above the NIRV distance adjusted levels.

6. Sleep disturbance

6.1

Sleep Disturbance Criteria

Description	Noise Levels
Maximum internal noise limit unlikely to cause awakening reaction	Below 50 -55 dB(A)
One or two noise events of maximum internal noise levels not likely to affect health & wellbeing significantly	65 - 70 dB(A)

6.2

Looking at the noise data in Table 1 for the short term L_{A1} levels during the whole measurement period for the day, evening and night periods, and including a distance and façade adjustment for the nearest rural dwelling, it is considered that noise levels inside the nearest dwelling with windows closed resulting from the present operation would not exceed the Sleep Disturbance Criteria levels as above.



7.1 Earth vibration information

7.1

Vibration levels were recorded in close proximity to the northern measurement location as detailed earlier. The equipment used was an Avanet 8487 instrument recording transverse, vertical and longitudinal vibrations simultaneously.

7.2

A vibration of 2mm/sec in any of the three axes was set as an appropriate limit for an earth vibration activity occurring on the site. It can be seen from the three graphs in the Appendix that no vibration was equal or exceeded this value during the course of the exercise.

8. Acoustic Assessment of present and future activities

8.1

With reference to the EPA – Noise from Industry in Regional Victoria (NIRV), - the Background levels of the area due to the location with its proximity to the South Gippsland Highway is considered to be a 'background – relevant area' which means a noise-sensitive area where background levels may be higher than usual for a rural area. This includes areas where highway traffic is a significant noise source.

8.2

Using NIRV as the guide for determining the appropriate acceptable planning zone levels for the nearest sensitive receptor being the nearest dwelling, taking into consideration these higher than usual background levels, the following values for the NIRV planning zone level has been determined to be 52 dB(A) for the day period, 46 dB(A) for the evening period, 36 dB(A) for the night period as shown earlier.

8.3

In the event that the operation is planned to operate beyond daylight hours in the future, ie during the evening and possible night period in the early morning, the guidelines require the noise to comply with these planning zone levels.

8.4

Bearing in mind that the environmental noise levels already exceed these planning zone levels, most probably due to traffic noise and/or other environmental noise sources, a strategy is to be put in place in the event of a change in operational hours it is to be ensured that the following average noise levels (L_{Aeq}) do not increase above the following levels as a result of the change in hours.



Day period:	56 dB(A)
Evening period:	53 dB(A)
Night period:	44 dB(A)

9 Summary

9.1

This report gives consideration solely to environmental acoustic issues as recorded and observed during the noise assessment exercise which took place from Thursday 16th April to Thursday 24th April 2015.

9.2

The results of the measurement exercise indicate that the existing background level in proximity to the subject site exceeds the background determined NIRV planning zone for the noise receiving location being the rural residential dwelling to the north east of the site.

9.3

On this basis, and with reference to the noise level data, the existing operation is considered to be operating within the NIRV parameters in that the recorded Sunday day period levels when the operation is closed are almost identical with those recorded during the day period throughout the week.

9.4

It is our considered opinion that any extension in operating hours may be carried out on the basis that the existing noise levels remain at a very similar value to those currently assessed as set out in this report.

9.5

Please make contact with the writer of this report if you need to discuss any aspect of this report seeking clarification or requiring additional information.

Geoffrey Barnes
Senior Acoustic Consultant,
ACOUSTICAL ADVISORY & CONSULTING SERVICES
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Appendix

- 1. Terminology**
- 2. Table of recorded noise levels**
- 3. Graphs of vibration recordings**



1. Terminology

Day period means 0700 – 1800 hours Monday to Friday
0700 – 1300 hours Saturday

Evening period means 1800 – 2200 hours Monday to Friday
1300 – 2200 hours Saturday
0700 – 2200 hours Sundays & Public Holidays

Night period means 2200 – 0700 hours for each day of the week

L_{Aeq} means equivalent continuous A-weighted sound pressure level.

L_{A10} means A-weighted sound pressure level which is exceeded 10% of the time interval considered, and is adopted as the background level.

L_{A90} means A-weighted sound pressure level which is exceeded 90% of the time interval considered, and is adopted as the background level.

L_{Amax} means the maximum A-weighted sound pressure level which was recorded during the measurement period.

L_{Amin} means the minimum A-weighted sound pressure level which was recorded during the measurement period.



2. Table of recorded noise levels

Date	Time (hours)	Noise level measurement data				
		L _{Aeq}	L _{Amax}	L _{Amin}	L _{A1}	L _{A90}
16.4.15 Thursday	18.00	56	75	41	69	45
	19.00	55	76	37	68	44
	20.00	56	74	32	70	41
	21.00	51	71	27	61	37
	22.00	49	65	26	58	36
	23.00	48	66	24	56	30
Day period		56	75	41	69	45
Evening period		54	74	32	66	41
Night period		48	66	24	56	30



Date	Time (hours)	Noise level measurement data				
		L _{Aeq}	L _{Amax}	L _{Amin}	L _{A1}	L _{A90}
17.4.15 Friday	0.00	47	65	23	57	27
	1.00	41	57	21	52	22
	2.00	42	59	20	53	22
	3.00	40	58	20	51	22
	4.00	43	61	20	54	21
	5.00	43	61	20	54	22
	6.00	46	62	20	56	22
	7.00	52	72	25	64	35
	8.00	53	69	34	63	44
	9.00	56	76	41	68	47
	10.00	57	76	41	70	45
	11.00	57	76	37	70	44
	12.00	55	73	39	67	46
	13.00	57	75	41	70	47
	14.00	56	74	40	69	44
	15.00	55	75	40	68	44
	16.00	56	74	39	70	44
	17.00	58	76	42	71	46
	18.00	58	77	45	70	49
	19.00	58	79	41	71	46
	20.00	55	74	36	67	42
	21.00	54	73	30	67	37
	22.00	50	69	28	60	34
23.00	47	64	24	57	29	
Day period		56	75	40	69	45
Evening period		54	74	34	66	40
Night period		44	62	21	55	24



Date	Time (hours)	Noise level measurement data				
		L _{Aeq}	L _{Amax}	L _{Amin}	L _{A1}	L _{A90}
18.4.15 Saturday	0.00	46	61	26	56	33
	1.00	42	56	26	51	28
	2.00	44	59	28	55	30
	3.00	40	54	29	50	31
	4.00	38	56	23	49	25
	5.00	40	58	23	51	25
	6.00	43	59	23	54	25
	7.00	45	61	24	55	27
	8.00	52	71	29	65	37
	9.00	53	74	33	63	41
	10.00	55	72	37	66	44
	11.00	56	74	41	69	47
	12.00	58	76	42	69	48
	13.00	58	74	44	70	48
	14.00	57	74	44	69	48
	15.00	56	75	45	67	49
	16.00	57	76	43	68	48
	17.00	56	74	44	67	48
	18.00	56	75	41	67	46
	19.00	54	73	40	67	46
	20.00	54	71	43	64	48
	21.00	54	72	40	65	45
	22.00	51	69	40	60	43
	23.00	47	60	34	55	38
Day period		55	73	38	67	44
Evening period		55	73	42	66	47
Night period		42	58	25	52	28



Date	Time (hours)	Noise level measurement data				
		L _{Aeq}	L _{Amax}	L _{Amiti}	L _{A1}	L _{A90}
19.4.15	0.00	49	65	37	57	41
Sunday	1.00	49	68	37	57	39
	2.00	46	63	31	56	33
	3.00	44	62	25	55	27
	4.00	40	58	24	51	26
	5.00	39	57	24	51	26
	6.00	40	58	27	51	30
	7.00	48	67	30	57	33
	8.00	51	74	27	64	31
	9.00	50	71	28	61	34
	10.00	52	70	30	64	37
	11.00	55	74	32	67	40
	12.00	54	73	40	68	44
	13.00	54	73	42	66	45
	14.00	56	77	42	69	45
	15.00	56	76	40	69	45
	16.00	56	75	41	67	45
	17.00	59	79	41	72	45
	18.00	58	79	39	71	44
	19.00	53	73	35	66	40
	20.00	54	74	32	66	38
	21.00	48	66	25	59	31
	22.00	48	66	24	59	29
	23.00	43	60	24	53	26
Day period		n/a	n/a	n/a	n/a	n/a
Evening period		54	73	35	66	40
Night period		45	62	29	54	32



Date	Time (hours)	Noise level measurement data				
		L _{Aeq}	L _{Amax}	L _{Amin}	L _{A1}	L _{A90}
20.4.15 Monday	0.00	43	62	23	54	25
	1.00	37	55	23	48	24
	2.00	40	61	23	52	24
	3.00	38	58	22	50	24
	4.00	40	59	24	52	27
	5.00	43	61	24	54	26
	6.00	43	59	24	53	27
	7.00	51	71	25	64	29
	8.00	54	74	29	65	35
	9.00	57	77	36	69	43
	10.00	58	74	38	69	45
	11.00	59	76	38	71	44
	12.00	55	73	37	67	44
	13.00	55	75	37	68	42
	14.00	55	74	36	69	41
	15.00	55	76	38	69	44
	16.00	56	75	38	69	43
	17.00	59	77	41	71	46
	18.00	59	77	42	71	47
	19.00	60	79	36	72	46
	20.00	56	76	32	68	39
	21.00	52	73	29	61	33
	22.00	49	67	26	60	32
23.00	50	69	26	61	33	
Day period		57	75	37	69	43
Evening period		54	74	31	65	38
Night period		42	61	23	53	26



Date	Time (hours)	Noise level measurement data				
		L _{Aeq}	L _{Amax}	L _{Amin}	L _{A1}	L _{A90}
21.4.15 Tuesday	0.00	47	63	23	56	26
	1.00	45	61	22	55	24
	2.00	43	62	21	54	23
	3.00	42	60	21	53	22
	4.00	44	60	21	54	23
	5.00	44	60	22	55	24
	6.00	46	61	24	55	29
	7.00	51	69	29	61	38
	8.00	55	72	35	65	43
	9.00	59	78	44	71	49
	10.00	61	80	41	73	48
	11.00	56	76	38	69	45
	12.00	56	74	36	67	42
	13.00	55	75	36	68	41
	14.00	53	70	38	65	42
	15.00	55	77	40	68	43
	16.00	55	73	40	68	43
	17.00	58	76	41	71	45
	18.00	59	78	40	73	46
	19.00	56	74	37	69	42
	20.00	54	75	32	67	38
	21.00	51	72	30	61	35
	22.00	48	65	26	59	31
23.00	47	64	24	58	28	
Day period		57	75	39	69	44
Evening period		52	71	31	64	37
Night period		45	62	23	56	26



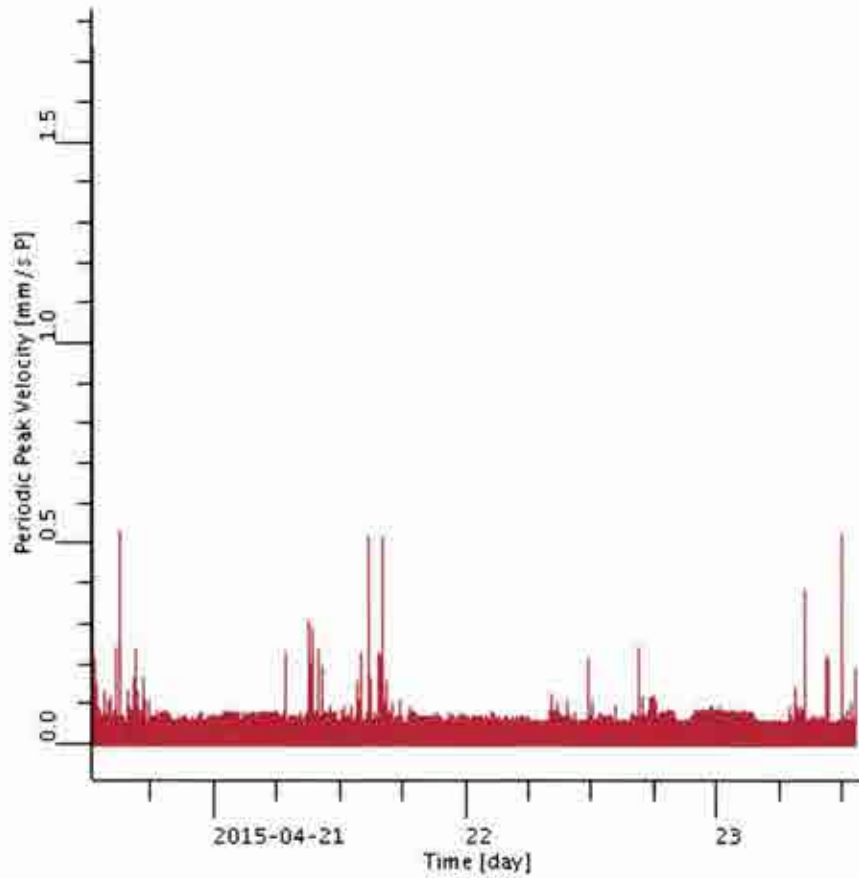
Date	Time (hours)	Noise level measurement data				
		L _{Aeq}	L _{Amax}	L _{Amin}	L _{A1}	L _{A90}
22.4.15	0.00	47	65	25	58	30
Wednesday	1.00	46	64	22	57	24
	2.00	38	57	21	51	22
	3.00	40	60	20	52	21
	4.00	40	58	20	52	21
	5.00	43	61	21	56	23
	6.00	42	58	22	53	24
	7.00	50	67	24	61	29
	8.00	53	73	30	65	35
	9.00	54	74	36	65	42
	10.00	60	78	40	73	45
	11.00	56	76	40	68	44
	12.00	56	74	36	68	43
	13.00	55	75	38	69	43
	14.00	54	72	40	67	44
	15.00	54	73	40	67	44
	16.00	55	76	38	68	43
	17.00	57	74	38	70	44
	18.00	58	76	39	70	46
	19.00	57	76	39	70	44
	20.00	53	74	33	65	39
	21.00	50	69	29	61	35
	22.00	46	63	26	55	30
	23.00	45	63	23	55	27
Day period		56	75	38	68	43
Evening period		52	70	32	63	37
Night period		43	61	22	55	24



Date	Time (hours)	Noise level measurement data				
		L _{Aeq}	L _{Amax}	L _{Amin}	L _{A1}	L _{A90}
23.4.15 Thursday	0.00	45	63	23	56	26
	1.00	38	54	22	49	23
	2.00	37	54	21	49	22
	3.00	37	54	21	49	23
	4.00	43	60	21	56	22
	5.00	39	56	21	51	22
	6.00	42	58	21	52	23
	7.00	49	70	25	61	29
	8.00	52	71	29	63	35
	9.00	58	78	35	71	42
	10.00	58	76	42	71	47
	11.00	57	76	35	70	42
	12.00	56	74	35	70	41
	13.00	54	73	36	68	41
	14.00	53	75	38	66	43
15.00	57	79	36	69	42	
Day period		56	75	36	69	42
Evening period		n/a	n/a	n/a	n/a	n/a
Night period		41	59	22	53	24



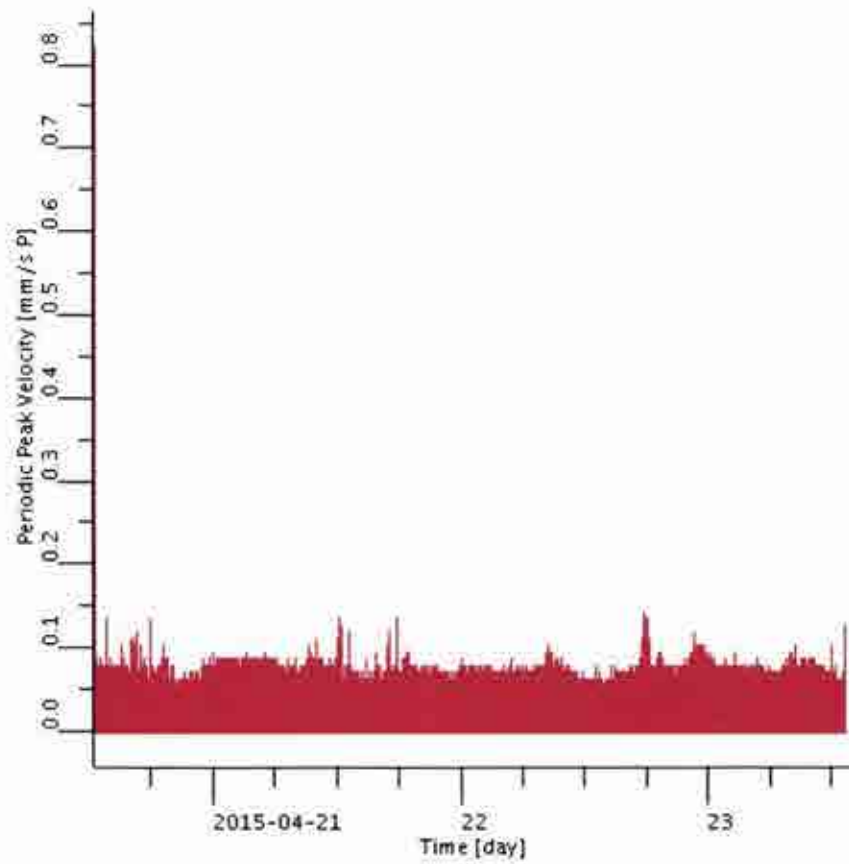
3A Graphs of vibration recordings - Transverse



Source: Acoustical Design korumburra yards-tran
Color: Mark: 1/dX
dX: 04/20/2015 12:33:00 PM
dY: 04/23/2015 2:01:28 PM



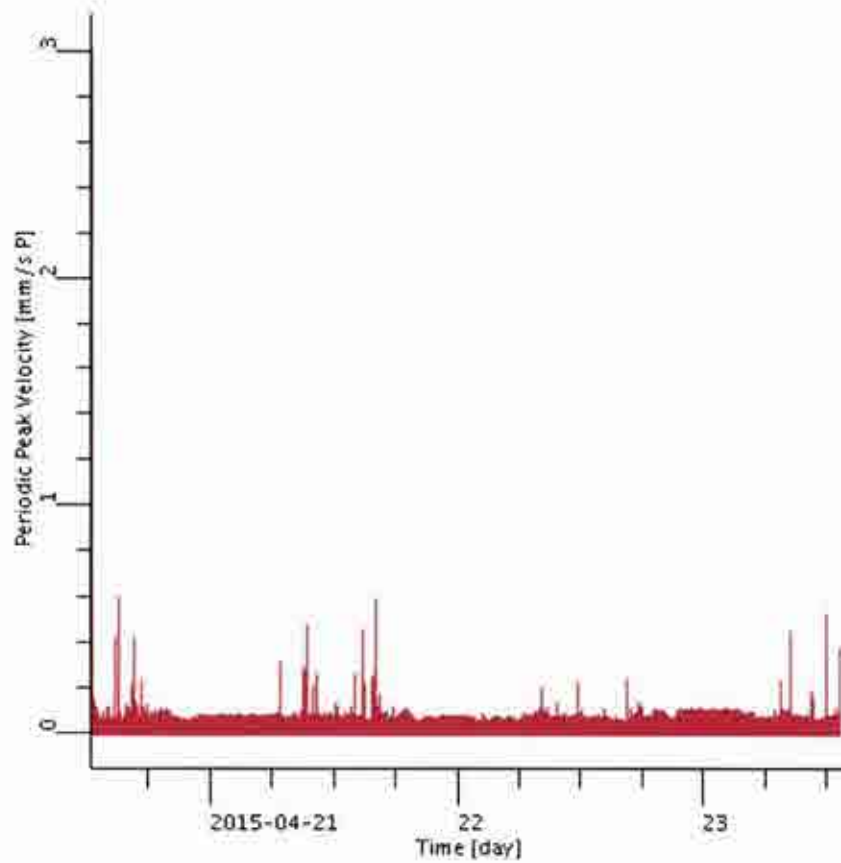
3B Graphs of vibration recordings - Vertical



Source: Acoustical Design korumburra yards-vert
Color: Red
Mark: Solid
1/dX: 1
dX: 04/20/2015 12:33:00 PM
dY: 04/23/2015 2:01:26 PM



3C Graphs of vibration recordings - Longitudinal



Source: Acoustical Design korumburra yards-long
Color: Mark
1/dX
dx: 04/20/2015 12:33:00 PM
dy: 04/23/2015 2:01:28 PM