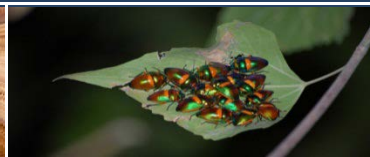




Appendix P Noise Report



Sherwin Iron (NT) Pty Ltd
Sherwin Creek Iron Ore Project
Environmental Impact Statement



2013





ECOZ ENVIRONMENTAL SERVICES

ENVIRONMENTAL NOISE DATA FOR THE PROPOSED MINE SITE
AND ACCOMMODATION CAMP

NORTHERN TERRITORY

HJ.203128.SAa

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16th September 2013

HJ.203128.SAa

Ms. Justine Shailes
Senior Consultant
EcOz Environmental Services
GPO Box 381
Darwin, NT 0801

Dear Justine,

Thank you for the opportunity to provide consultancy services to EcOz Environmental Services.

A report on the assessment of ambient environmental noise measurement data collected for the proposed mine development and accommodation camp is attached for your records.

Should you have any queries regarding this work, please contact me on receipt of this report.

Yours sincerely,



Jwalit Parikh
Senior Consultant
Occupational Hygiene and Environmental Risk Management

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1.0 INTRODUCTION

Health Safety Environment Australia was requested by Ms. Justine Shailes, Senior Consultant for EcOz Environmental Services to provide a report on ambient environmental noise measurement data for the proposed mine and accommodation camp sites located approximately 450 km SE of Darwin in Northern Territory.

The ambient noise measurement data for the following locations and time period were provided by EcOz Environmental Services on 4th September 2013.

Location	GPS Coordinates and Zone	Dates of Measured Noise Data
Top of Ridge	426999 S, 8372680 E Zone 53	17 th to 21 st July 2013 and 26 th to 31 st August 2013
Proposed Camp	422522 S, 8371839 E Zone 53	17 th to 31 st July 2013 and 26 th to 31 st August 2013

The assessment of the data was carried out by Jwalit Parikh, Senior Consultant for Health Safety Environment Australia on 12th and 13th September 2013.

2.0 METHODOLOGY

Environmental noise measurements are typically carried out with the microphone being directed towards the noise source and the locations being more than 3.5 metres from any walls, buildings or other reflecting surfaces. These un-attended environmental noise measurements were taken between the periods of 7.00 am and 7.00 pm on the same day giving a 'day' reading. Noise levels were also taken between the periods of 7.00 pm and 7.00 am giving a 'night' reading. Two instruments were programmed to accumulate environmental noise data continuously over sampling periods of 15 minutes for the entire monitoring period. The noise meters was set in the 'Fast' mode and an equivalent A- weighted sound pressure level $L_{Aeq,T}$ dB(A), $L_{A10,T}$ dB(A) $L_{A90,T}$ dB(A) and $L_{Amax,T}$ dB(A) were recorded.

Local weather observations, e.g. wind speed, during the monitoring periods in July and August were not available to Health Safety Environment Australia.

All available data was analysed and any invalid data was identified removed from the assessment. Invalid data refers to periods of time where when anomalous noise levels occurred. Overall $L_{Aeq,T}$ dB(A) levels were calculated as the median value of the valid data for each location and time period and compared against the environmental noise assessment criteria described in section 3 of this report.

All valid data is graphically presented in Appendix A and B of this report.

3.0 ENVIRONMENTAL NOISE ASSESSMENT CRITERIA

In January 2013, the Northern Territory Environment Protection Authority (EPA) provided following Noise Guidelines for Development Sites in the Northern Territory. The NT EPA recommends standard hours for construction activity.

Construction activities should be restricted to:

- a. between the hours of 7am and 7pm Monday to Saturday; and*
- b. between the hours of 9am and 6pm on a Sunday or public holiday.*

Construction noise levels should not exceed:

- | | |
|---|-----------------------------------|
| <i>a. in residential use areas</i> | <i>ambient noise plus 5 dB(A)</i> |
| <i>b. in mixed commercial/residential use areas</i> | <i>60 dB(A) total</i> |
| <i>c. in commercial use areas</i> | <i>65 dB(A) total</i> |
| <i>d. in industrial use areas</i> | <i>70 dB(A) total</i> |

within 15 metres of a Noise Sensitive Receptor (NSR) or at or on the boundary of the NSR (adjusted for tonality, impulsiveness, and/or modulation) during acceptable construction times.

The above measurements are measured as L_{Aeq} which is the equivalent continuous (energy average) level (A-weighted).

In order to objectively describe the acoustic environment at the proposed development sites, the measured ambient noise levels are compared with the appropriate criteria noise levels for the land use category. The following noise limit for construction noise levels at the proposed mine site and at the proposed accommodation camp, during standard hours for construction, are considered appropriate for the purpose of this assessment.

For accommodation camp (residential use areas) =	ambient noise plus 5 dB(A)
For proposed mine site (industrial use areas) =	70 dB(A) total

Additionally, in the absence of Northern Territory guidelines on night time criteria for noise, the South Australian Environment Protection (Noise) Policy 2007 recommended value of 40 dB L_{Aeq} for land use category of "rural living" was utilised for the purpose of this report in order to assess potential disturbance at the proposed camp site during the night period (7pm to 7am).

4.0 COMMENTS

It was stated by EcOz Environmental Services that approximately 8-15 truck movements for bulk sampling purpose was occurred at the proposed mine site area over the period of noise monitoring. It was also stated that the proposed accommodation camp is located approximately 2.5 km west of the proposed mine site.

5.0 NOISE DATA ASSESSMENT

The results of the ambient noise measurement data at the proposed camp site and at the mine site is summarised in the Tables 1-4 below.

Table 1: Summary of Noise Assessment Results for the Proposed Camp Site in July 2013

Measurement Dates	Ambient L_{Aeq} dB(A) <i>Day Time (7am to 7pm)</i>	Ambient L_{Aeq} dB(A) <i>Night Time (7pm to 7am)</i>
Wednesday, 17 th July 2013	46	45
Thursday, 18 th July 2013	36	31
Friday, 19 th July 2013	40	26
Saturday, 20 th July 2013	41	30
Sunday, 21 st July 2013	47	23
Monday, 22 nd July 2013	42	23
Tuesday, 23 rd July 2013	44	30
Wednesday, 24 th July 2013	42	31
Thursday, 25 th July 2013	42	23
Friday, 26 th July 2013	42	23
Saturday, 27 th July 2013	44	23
Sunday, 28 th July 2013	46	26
Monday, 29 th July 2013	47	35
Tuesday, 30 th July 2013	49	30
Wednesday, 31 st July 2013	43	22
Overall L_{Aeq} dB(A)	43	26

Table 2: Summary of Noise Assessment Results for the Proposed Camp Site in August 2013

Measurement Dates	Ambient L_{Aeq} dB(A) <i>Day Time (7am to 7pm)</i>	Ambient L_{Aeq} dB(A) <i>Night Time (7pm to 7am)</i>
Monday, 26 th August 2013	37	40
Tuesday, 27 th August 2013	39	24
Wednesday, 28 th August 2013	50	32
Thursday, 29 th August 2013	49	32
Friday, 30 th August 2013	47	45
Saturday, 31 st August 2013	N/A	37
Overall L_{Aeq} dB(A)	47	35

Table 3: Summary of Noise Assessment Results for the Top of Ridge in July 2013

Measurement Dates	Ambient L_{Aeq} dB(A) <i>Day Time (7am to 7pm)</i>	Ambient L_{Aeq} dB(A) <i>Night Time (7pm to 7am)</i>
Wednesday, 17 th July 2013	42	38
Thursday, 18 th July 2013	37	41
Friday, 19 th July 2013	37	41
Saturday, 20 th July 2013	38	41
Sunday, 21 st July 2013	N/A	41
Overall L_{Aeq} dB(A)	38	41

Table 4: Summary of Noise Assessment Results for the Top of Ridge in August 2013

Measurement Dates	Ambient L_{Aeq} dB(A) <i>Day Time (7am to 7pm)</i>	Ambient L_{Aeq} dB(A) <i>Night Time (7pm to 7am)</i>
Monday, 26 th August 2013	39	43
Tuesday, 27 th August 2013	38	33
Wednesday, 28 th August 2013	32	28
Thursday, 29 th August 2013	35	28
Friday, 30 th August 2013	31	30
Saturday, 31 st August 2013	32	30
Overall L_{Aeq} dB(A)	34	30

6.0 DISCUSSION OF RESULTS

The results of the ambient noise measurements at the proposed camp site suggest that:

- the day time noise levels in July 2013 were 43 L_{Aeq} dB(A)
- the day time noise levels in August 2013 were 47 L_{Aeq} dB(A)
- the night time noise levels in July 2013 were 26 L_{Aeq} dB(A)
- the night time noise levels in August 2013 were 35 L_{Aeq} dB(A)

The overall night time ambient noise levels for July and August 2013 at the camp site were L_{Aeq} 31 dB(A), which were the South Australian Environment Protection (Noise) Policy 2007 recommended value of 40 dB L_{Aeq} for land use category of “rural living”.

The results of the ambient noise measurements at the mine site (Top of Ridge) suggest that:

- the day time noise levels in July 2013 were 38 L_{Aeq} dB(A)
- the day time noise levels in August 2013 were 34 L_{Aeq} dB(A)
- the night time noise levels in July 2013 were 41 L_{Aeq} dB(A)
- the night time noise levels in August 2013 were 30 L_{Aeq} dB(A)

It should be noted that the night time ambient noise levels were higher than the day time noise levels at the mine site (Top of Ridge) in July 2013.

7.0 RECOMMENDATIONS

The project construction noise goal for standard working hours should be aimed at L_{Aeq} 50 dB(A) for day time and L_{Aeq} 35 dB(A) for night time based on the overall measured ambient noise levels at the camp site in July and August 2013.

In general, the NT EPA requires that, if noise resulting from a construction activity is to be emitted from a development site:

- a. outside the times 7am to 7pm Monday to Saturday; or
- b. outside the times 9am to 6pm on a Sunday or public holiday; or
- c. is likely to exceed the construction noise levels defined in these guidelines; AND
- d. the construction work is proposed, or taking place on, land within or directly adjacent to land zoned Commercial or Residential,

the party responsible for the development site must develop and register a Noise Management Plan (NMP) with the NT EPA. NMPs should comply with „AS 2436: Guide to Noise and Vibration Control on Construction, Maintenance and Demolition Sites“.

A NMP must include management and mitigation strategies to prevent an environmental nuisance caused by construction noise. The NMP is to include, as a minimum:

- justification for work on the development site, that is likely to be undertaken outside of the acceptable construction times (between the hours of 7am and 7pm Monday to Saturday and/or between the hours of 9am to 6pm on a Sunday or public holiday);
- details and the duration of the activities likely to cause noise emissions that may exceed the construction noise levels defined in the NT EPA noise guidelines for development sites
- details clearly demonstrating how site activity will comply with *AS 2436 Guide to Noise and Vibration Control on Construction, Maintenance and Demolition Sites*;
- documented complaint response procedures and how the procedures will be implemented;
- documentation of the verifiable consultation and feedback program with occupants of all affected premises, demonstrating that all occupants were provided with advice on dates, times and nature of any potentially noisy and disruptive activity including measures proposed to mitigate such activity as well as noise complaint contact details; and
- name of the onsite person who will be responsible for implementing the Noise Management Plan and the name and phone number of the person to whom a complaint may be made about noise emissions from the site.

Additionally, the following construction noise mitigation measures could be implemented:

- review the fixed and mobile equipment fleet and prefer more recent and silenced equipment whenever possible;
- all equipment used on site should be in good condition and good working order;
- use equipment which is fit for the required tasks in terms of power requirements;
- as far as possible, material drop heights into or out of trucks should be minimised;
- broadband reversing alarms (audible movement alarms) should be used for all site equipment, subject to meeting occupational health and safety requirements;
- all combustion engine plant, such as generators, compressors and welders should be checked to ensure they produce minimal noise with particular attention to residential grade exhaust silencers;
- all engine covers should be kept closed while equipment is operating;
- vehicles should be kept properly serviced and fitted with appropriate mufflers;
- use of exhaust brakes should be eliminated, where practicable;
- where practical, machines should be operated at low speed or power and should be switched off when not being used rather than left idling for prolonged periods;
- machines found to produce excessive noise should be removed from the site or stood down until repairs or modifications can be made; and

- haul roads will be kept smooth and free of potholes and bumps; and
- all site workers should be aware of the potential for noise impacts and encouraged to take practical and reasonable measures to minimise the impact during the course of their activities, including:
 - avoiding the use of loud radios;
 - avoiding shouting and slamming doors;
 - informing truck drivers of designated vehicle routes, parking locations and delivery hours;
 - minimising reversing;
 - avoiding metal to metal contact on material; and
 - closing engine covers while equipment is operating.



Jwalit Parikh

Senior Consultant

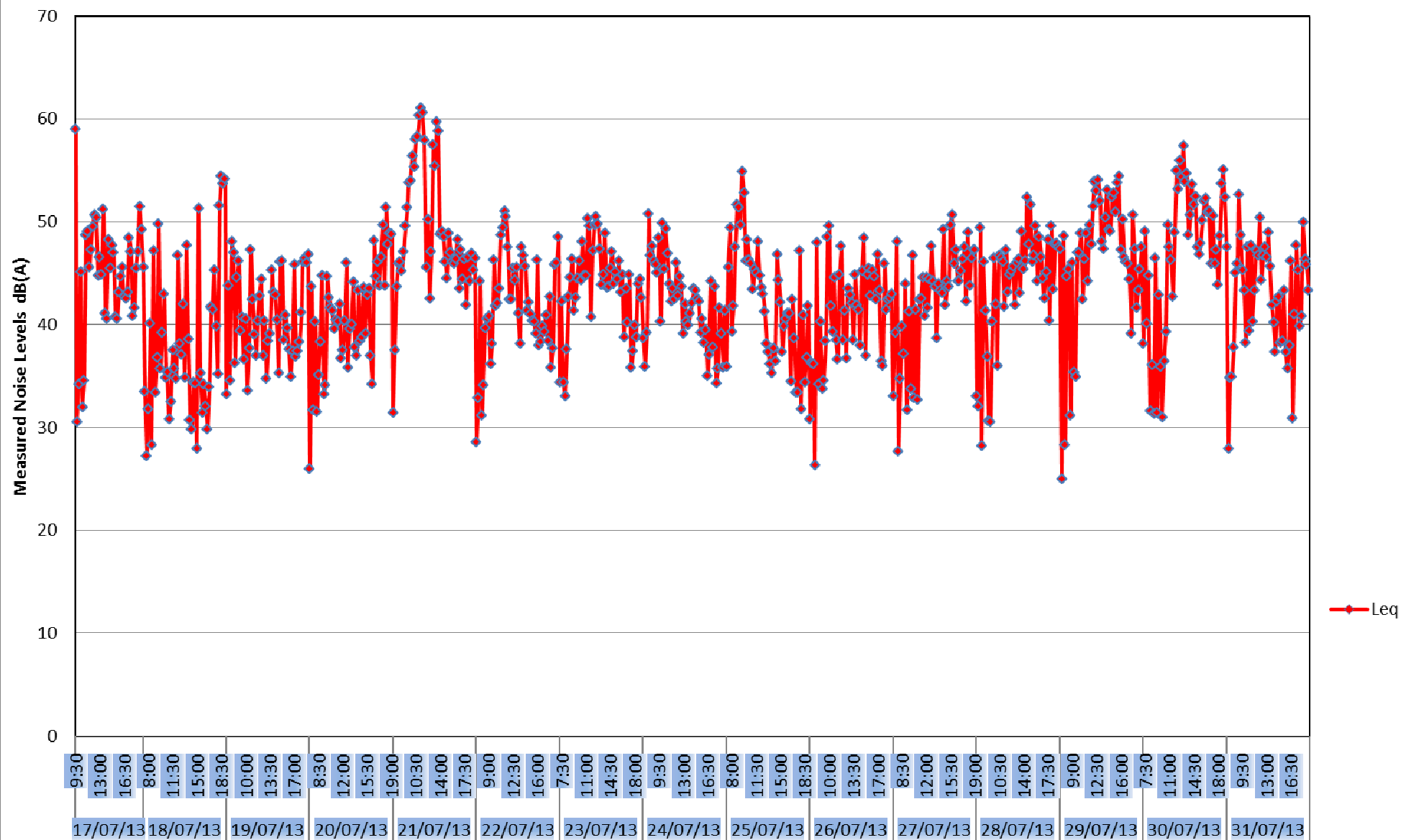
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8.0 LIMITATION OF LIABILITY

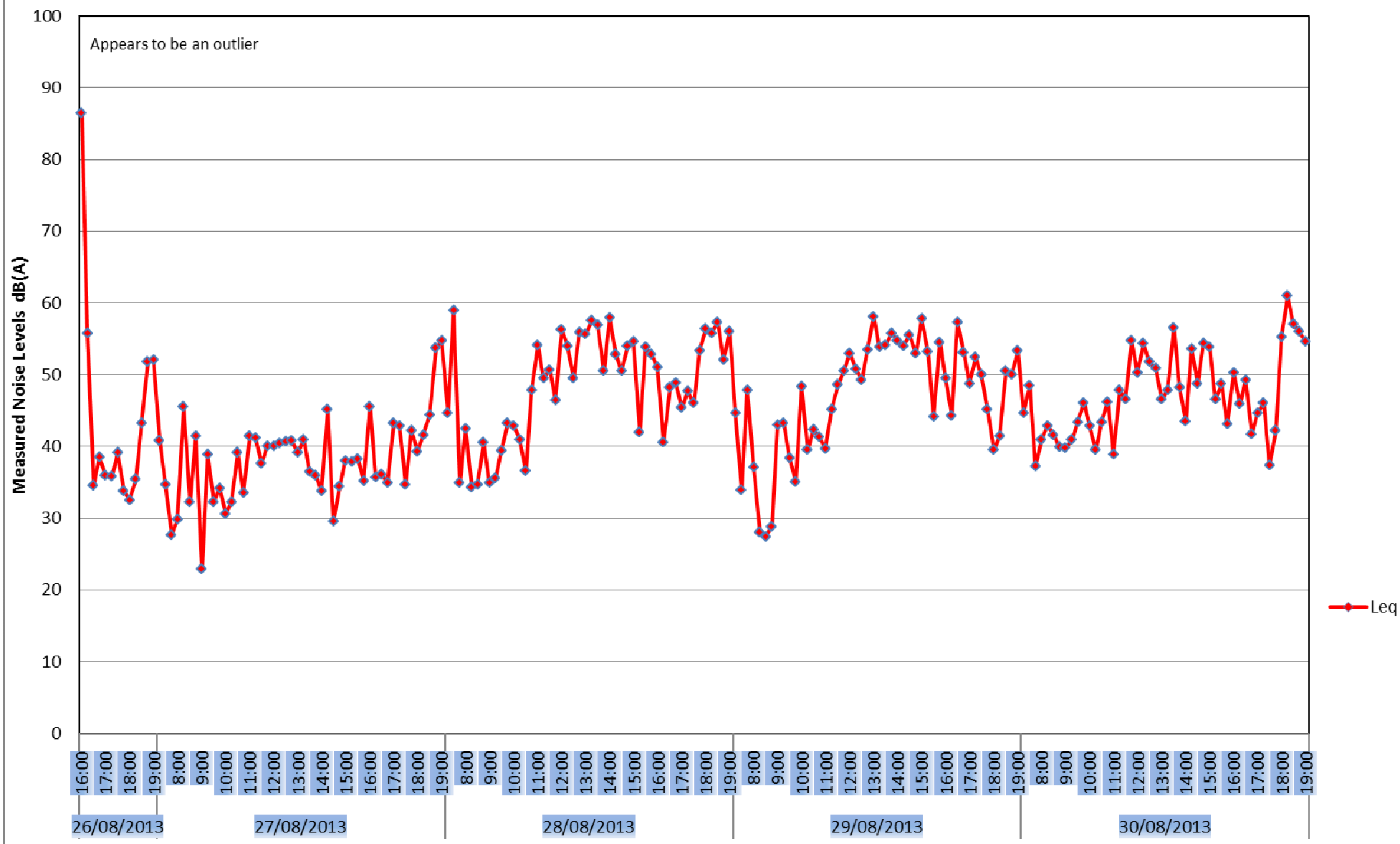
- 1 The Services provided to you by Health Safety Environment Australia Pty Ltd, which may include (but are not limited to) verbal or written advice, reports, data, laboratory test results, general findings or recommendations ("Services"). Those services have been provided to you subject to a number of limitations as set out in Clause 2 below.
- 2 You acknowledge that Services have been provided to you on the basis that:
 - 2.1 the Services provided are as set out in our offer or as discussed with you before we commenced the Services.
 - 2.2 the quality and efficiency of the Services provided are dependent on a number of factors that may have arisen whilst attending to and/or finalizing the Services, including but not limited to:
 - 2.2.1 the accuracy of your instructions at the time the Services are provided, and on the understanding that should any of your instructions have changed whilst we were preparing or finalizing the Services, that you notified us of any changes prior to Health Safety Environment Australia Pty Ltd finalizing the Services;
 - 2.2.2 the extent to which Health Safety Environment Australia Pty Ltd was able to have personal access to any site, machinery, plant, or any other access (including discussions with relevant persons) that may pertain to the Services;
 - 2.2.3 factors outside of our control, such as inclement weather, other 'acts of god' industrial action or close-downs;
 - 2.2.4 changes to any laws, rules of regulations that may apply directly or indirectly to the Services;
 - 2.2.5 that we rely on information provided by third-parties such as governmental agencies or other regulatory bodies in good faith, and any errors or inaccuracies in that information (unless brought to the attention of Health Safety Environment Australia Pty Ltd by that particular agency or body prior to finalising the Services) may affect the Services;
- 3 Although Health Safety Environment Australia Pty Ltd has made all reasonable attempts to ensure that any physical information we obtain whilst performing the Services, such as samples, photographs or any other form of data are representative, any non-homogenous or unrepresentative samples (of which we are unaware despite our best attempts) may affect the Services.
- 4 The Services were provided to meet your particular circumstances as at the time of your request, and should not be relied upon by any third party at any time, or by you if any circumstance (however described) relevant to the Services have changed since we provided the Services to you
- 5 To the extent permitted by law, Health Safety Environment Australia Pty Ltd is not responsible for any loss or damage (however defined, consequential or otherwise) that arises as a direct or indirect result of acts or omissions by you, your employees, servants, agents or any other third parties, whilst relying or acting on any advice provided as part of the Services. You acknowledge that Health Safety Environment Australia Pty Ltd will not be liable in any way whatsoever (whether in contract, tort or otherwise) for any loss or damage sustained by you arising from, or in connection with the Services.

APPENDIX A: NOISE RESULTS CHARTS FOR THE PROPOSED CAMP SITE

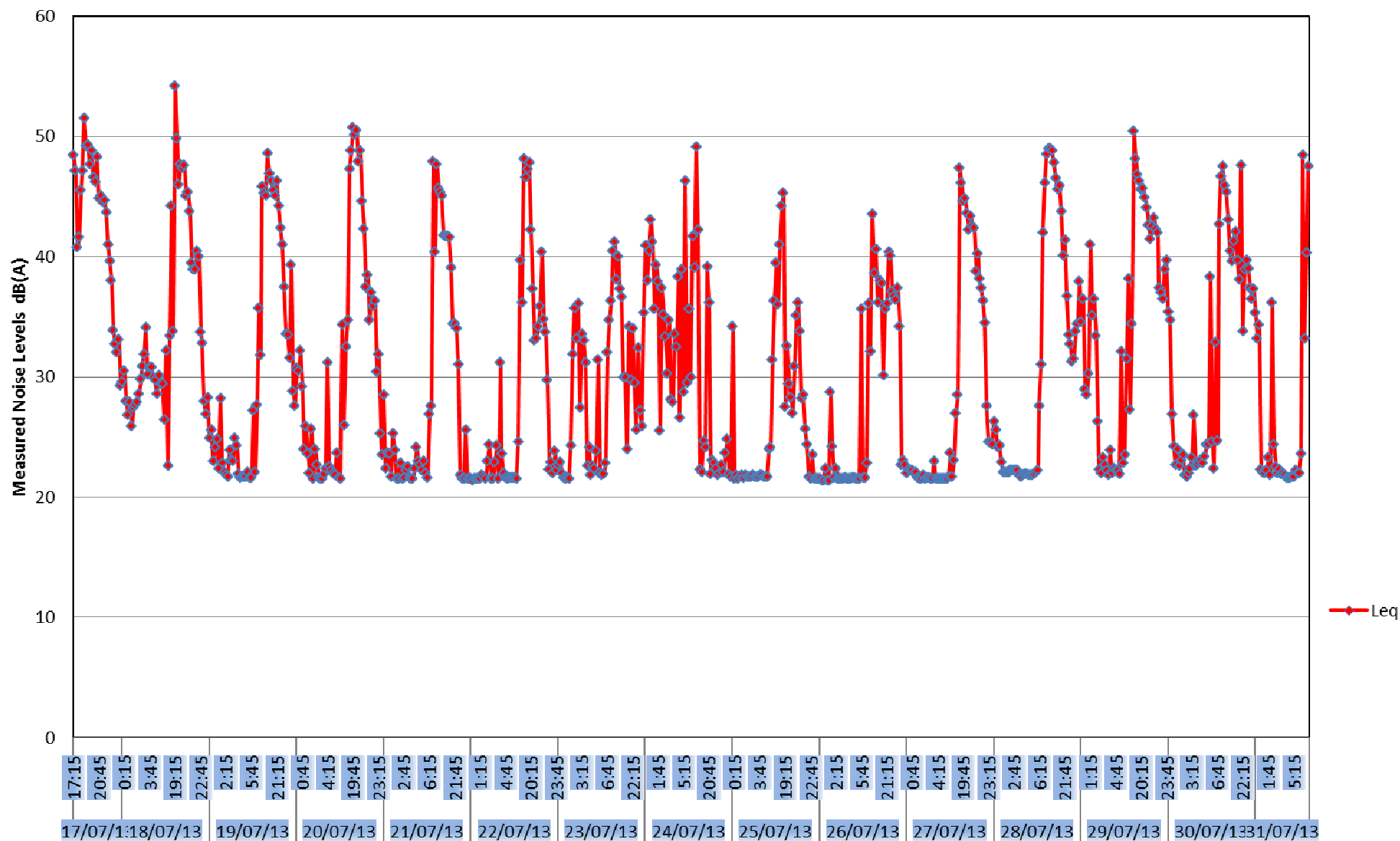
Ambient Day Time Noise Levels at Camp Site in July 2013



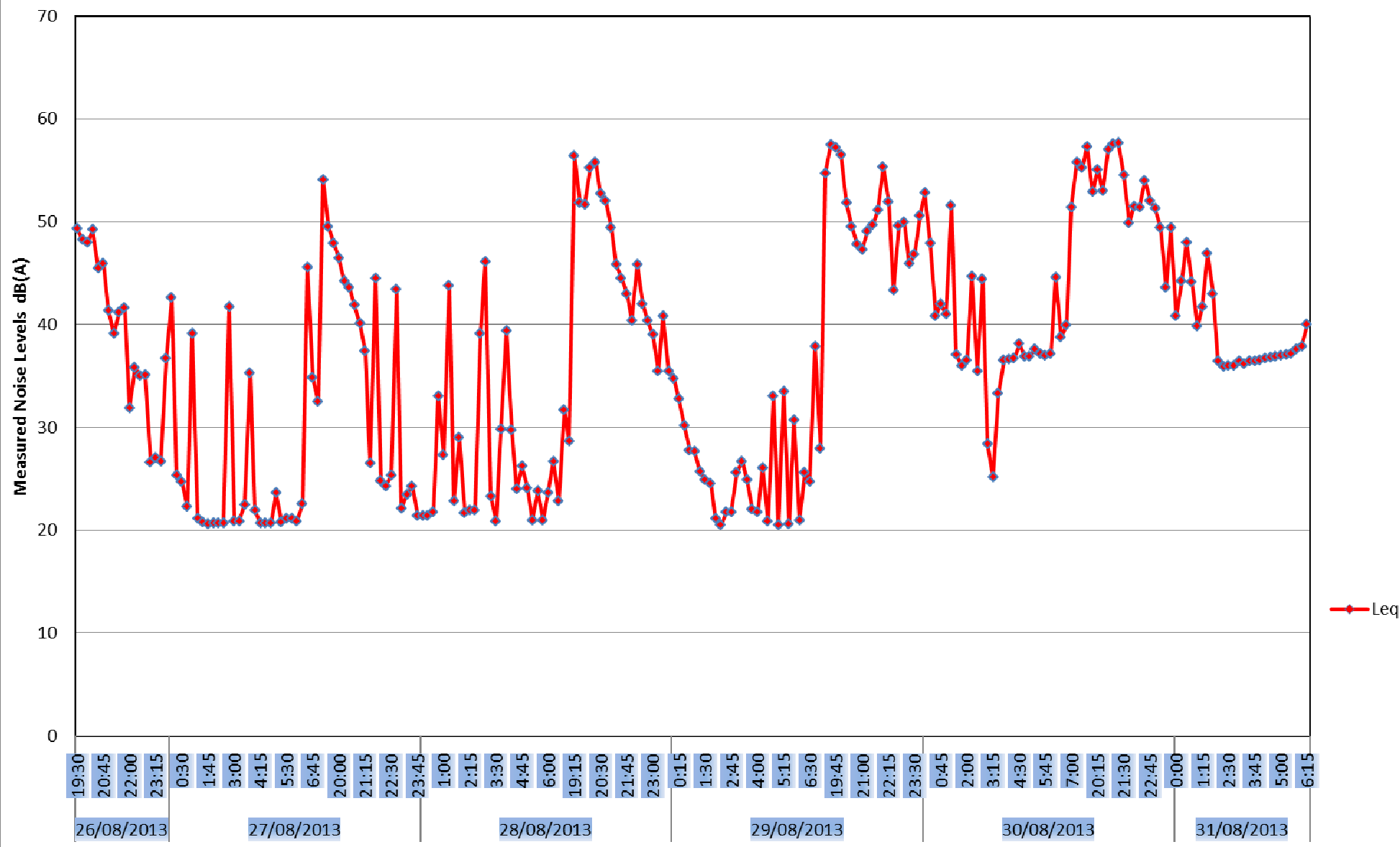
Ambient Day Time Noise Levels at Camp Site in August 2013



Ambient Night Time Noise Levels at Camp Site in July 2013

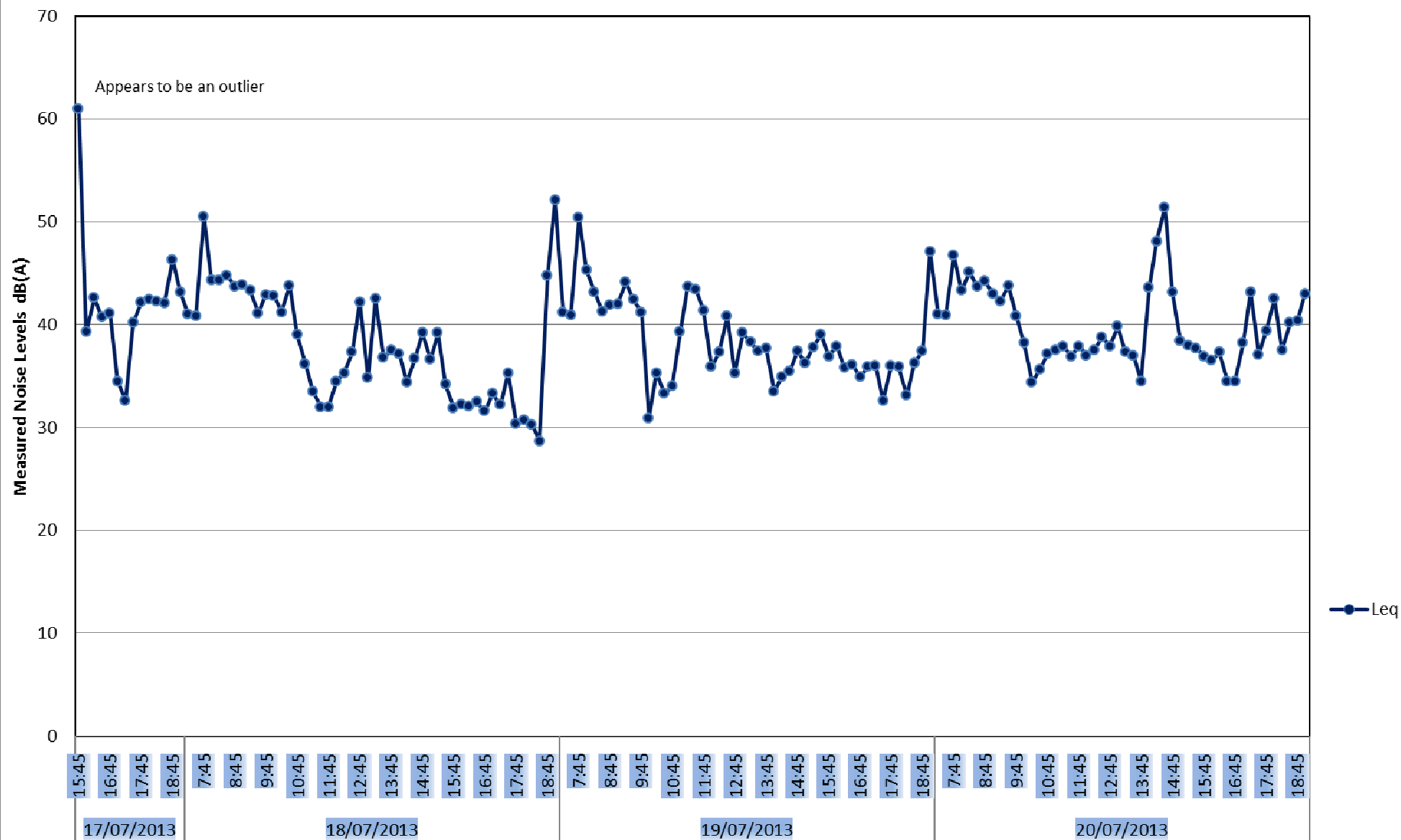


Ambient Night Time Noise Levels at Camp Site in August 2013

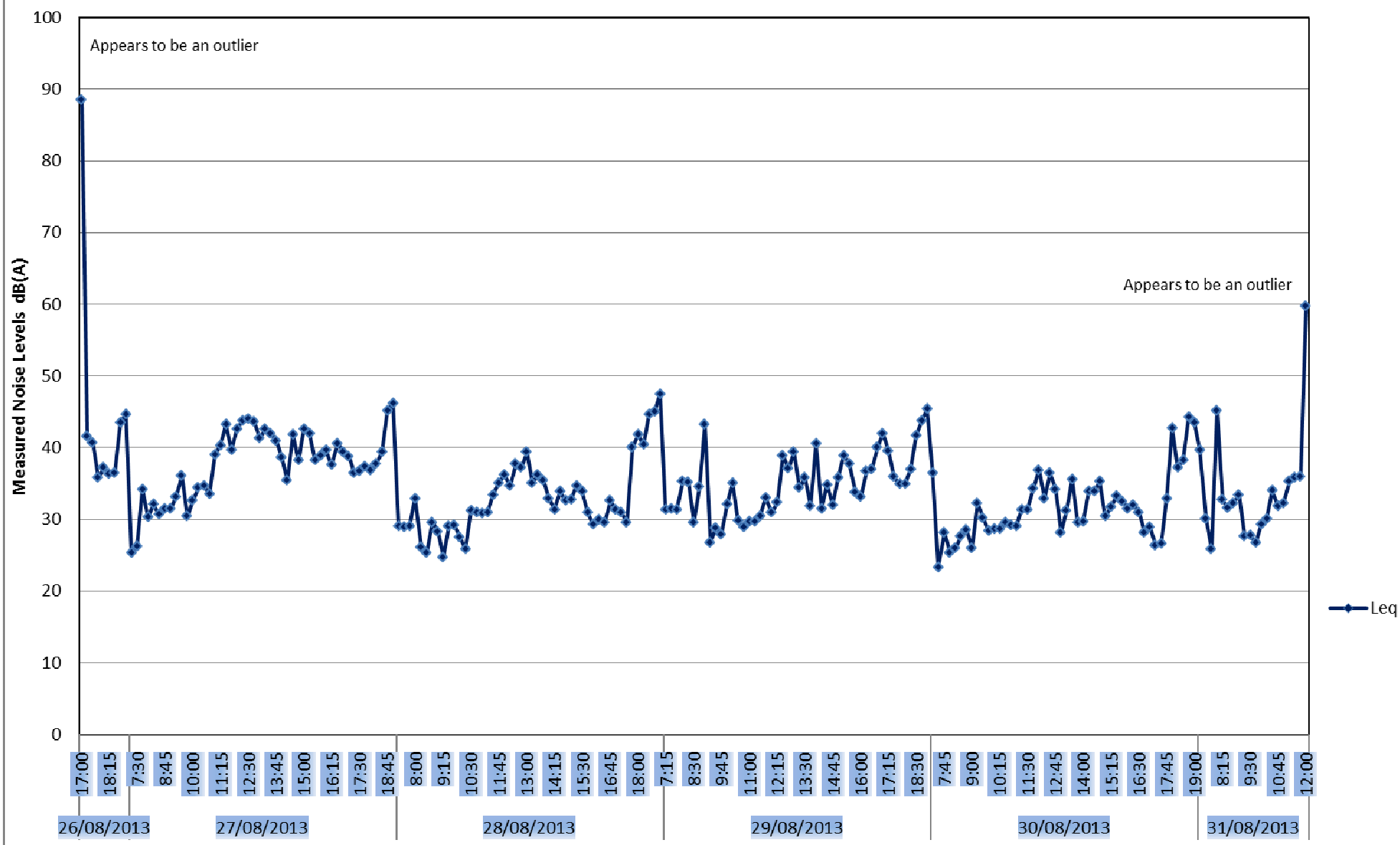


APPENDIX B: NOISE RESULTS CHARTS FOR TOP OF RIDGE (MINE SITE)

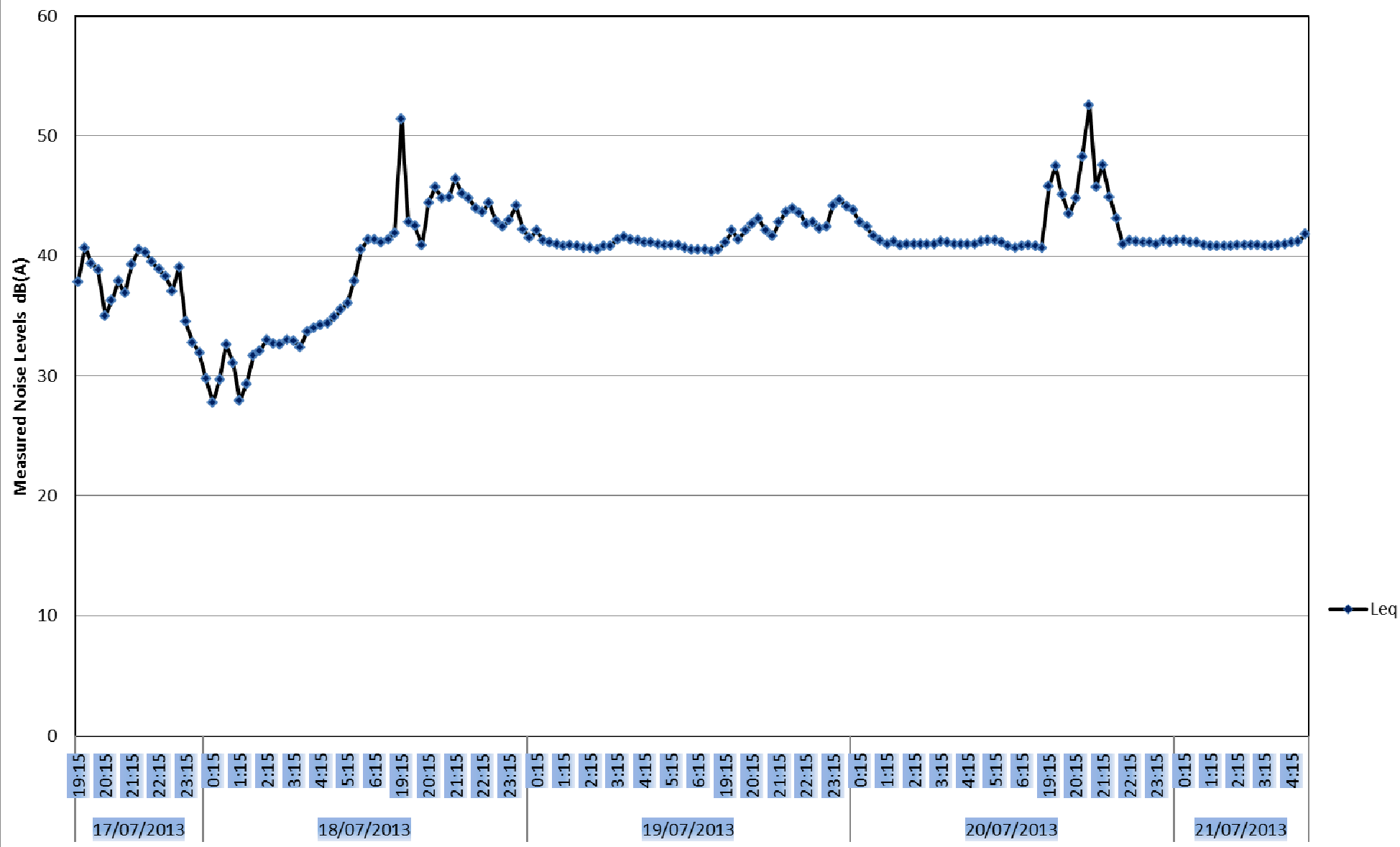
Ambient Day Time Noise Levels at Top of Ridge in July 2013



Ambient Day Time Noise Levels at Top of Ridge in August 2013



Ambient Night Time Noise Levels at Top of Ridge in July 2013



Ambient Night Time Noise Levels at Top of Ridge in August 2013

