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30-2369 LR002 Monitoring and Mitigation 20100113

AGL Energy Limited
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Attention: Siobhan Barry

Dear Siobhan

Windermere and Spring Mountain Exploration Drilling Noise Monitoring and Mitigation

1 Introduction

Heggies Pty Ltd (Heggies) has been requested by AGL Energy Limited (AGL) to provide advice in relation to noise monitoring and noise mitigation that would be required during the exploration drilling at the Spring Mountain and Windermere sites near Broke NSW.

To determine the monitoring and mitigation requirements for these sites reference has been made to Heggies report 30-2369 R1 *Exploration Drilling Spring Mountain and Windermere Proposal*.

2 Noise Monitoring Programme

The noise measurement procedures employed throughout the monitoring program shall be guided by the requirements of AS 1055-1997 "Acoustics - Description and Measurement of Environmental Noise" and with reference to the Interim Construction Noise Guideline and the NSW Industrial Noise Policy.

Noise monitoring should be conducted to establish agreement with the predicted noise levels at the start of each key hole identified as having the potential to cause disturbance. The operated attended noise monitoring should be conducted at the nearest affected residential receivers to the hole in question. The key holes identified are contained within **Table 1**.

Table 1 Key Exploration holes

Site	Exploration Hole	Residential Monitoring Location
Windermere	WD03	R8
Spring Mountain	MP02	R2,R3
	MP03	R2, R3
	MP04	R1

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Operator Attended Noise Measurements

It is recommended that operator attended noise measurements be conducted at the potentially most affected receiver locations relevant to the exploration operations, in order to quantify noise emissions and estimate the LAeq noise contribution from the exploration activity as well as the overall level of ambient noise.

The operator shall quantify and characterise the maximum (LAmax), the energy equivalent (LAeq), and background (LA90) noise levels from ambient noise sources and mining operations over a 15 minute measurement period.

During attended monitoring, digital recordings will be conducted to allow for additional post analysis of the contributed LAeq(15minute) and LA1(1minute) noise levels and source identification.

Acoustic Instrumentation

All acoustic instrumentation employed throughout the monitoring program shall meet with the requirements of AS 1259.2-1990, "Sound Level Meters".

Portable sound level meters used for operator attended noise monitoring should be capable of conducting real time third octave analysis.

Noise loggers shall be programmed to continuously record statistical noise level indices in 15 minute intervals which may include the LAmax, LA1, LA5, LA10, LA90, LA99, LAmin and the LAeq.

Instrument calibration shall be checked before and after each measurement survey, with the variation in calibrated levels not exceeding ± 0.5 dBA.

Meteorological Parameters

All noise measurements shall be accompanied by both qualitative description (including cloud cover) and quantitative measurements of prevailing local weather conditions throughout the survey period. The meteorological parameters to be measured are shown in **Table 2**.

Table 2 Meteorological Measurement Parameters

Measured Parameter	Unit	Sample Interval
Mean wind speed	m/s	15 minute
Mean wind direction	Degrees	15 minute
Aggregate rainfall	mm	15 minute
Mean air temperature	C°	15 minute



3 Noise Management

Selecting an appropriate noise management strategy for the proposed exploration drilling involves the following steps:

- Determining the noise reduction required to achieve the project-specific noise levels.
- Identifying the specific characteristics of the activity and the site that would indicate a preference for specified measures.
- Examining the mitigation strategy chosen by similar industries on similar sites with similar requirements for noise reduction; and considering that strategy's appropriateness for the subject development.
- Considering the range of noise-control measures available.
- Considering community preferences for particular strategies. This is especially important when the community has particular sensitivities to noise.

The preference ranking (from most preferred to least preferred) for noise mitigation strategies is as follows:

- **Land-use controls** - a long-term strategy preferable to other measures when such strategic decisions are possible in planning land use, as it separates noise-producing industries from sensitive areas and avoids more expensive short-term measures.
- **Control at the source** - Best Management Practice (BMP) and Best Available Technology Economically Achievable (BATEA) used in conjunction, these strategies are the best after land-use planning, as they serve to reduce the noise output of the source so that the surrounding environment is protected against noise.
- **Control in transmission** - the next best strategy to controlling noise at the source—it serves to reduce the noise level at the receiver but not necessarily the environment surrounding the source.
- **Receiver controls** - the least-preferred option, as it protects only the internal environment of the receiver and not the external noise environment.

Proponents will take into account the cost-effectiveness of strategies in determining how much noise reduction is affordable. A proponent's choice of a particular strategy is likely to have unique features due to the economics of the industry and site specific technical considerations.

The above steps and the range of measures described in this chapter can be used as a guide in assessing the strength of the proponent's mitigation proposals. Where a proposed mitigation strategy will not achieve the desired noise reduction and leaves a remaining noise impact, the problem needs to be solved by negotiation.

Recommended Noise Mitigation

In order to achieve the appropriate noise mitigation at each site the following measures should be employed:

- Construction of temporary noise barriers. In particular noise barriers should be erected when drilling at WD03, MP02, MP03 and MP04. The barriers should be a minimum of 2 m in height and shall have no gaps and shall be located to shield the nearest affected residential receivers.
- Noise emissions of the drill rig and other equipment is directional in nature, so it could be oriented in such a way that the 'high-noise' side is directed away from the noise sensitive receivers where possible.
- Locate generators away from nearest residences.



- Use silenced 20 kVA generators.
- Educate operators with regard to potential noise issues and encourage the implementation of quiet work practises.

Management responses to potential noise issues include the following:

- Consultation with potentially-affected residences.
- Consider staggering the sequence of the drilling program.
- Ensure a prompt response to any complaint with regard to noise.

4 Conclusion

Heggies have provide guidelines for noise monitoring and recommendation for noise mitigation in relation to the exploration drilling at the Windermere and Spring Mountain sites near Broke, NSW.

I trust the preceding meets your current requirements. If you have any questions or would like any further information please do not hesitate to contact me on (02) 4908 4500 or email john.cotterill@heggies.com.

Regards

John Cotterill
SE Region General Manager
Heggies Pty Ltd

Submission Details
Place: As addressed
Time and Date: 14/01/10
Special Requirements: N/A
Reviewed by: Nathan Archer