

**Proposed Drilling Operations at;
Llandow Industrial Estate
Llandow
CF71**

**Noise Impact Assessment
2594/ENS1**

20th May 2011

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1.0 Introduction

Coastal Oil and Gas Ltd is proposing to drill at a site located on Llandow Industrial Estate, Llandow to look for natural gas. The proposed drilling will take place 24hours a day for approximately 6 weeks.

Hunter Acoustics have been commissioned to monitor background noise levels prior to the drilling taking place, in order to propose noise limits at critical Noise Sensitive Premises (NSPs).

Appendix A explains acoustic terminology used in this report.

2.0 Planning Guidance

BS 4142: 1997 'Method for Rating Industrial Noise Affecting Mixed Residential and Industrial Areas'

When assessing noise emissions from fixed industrial sources near residential development, local authorities refer to BS4142: 1997. This standard describes a rating method comparing L_{Aeq} noise levels from the industrial source with pre-existing background L_{A90} levels at the residential receiver. It advises at a difference (industrial noise - background) of:

- +10dB or higher, complaints are likely;
- -10dB or lower - complaints are unlikely;
- A difference of + 5dB is of marginal significance.

A + 5dB penalty is applied to the industrial noise level if it exhibits a distinguishable discrete continuous note (whine, hiss, screech, hum, etc.), distinct impulses (bangs, clicks, clatters or thumps), or the noise is irregular enough to attract attention.

Before assessing implications from the above guidance, it is necessary to define the existing noise climate on site.

3.0 Environmental Noise Survey

3.1 Procedure

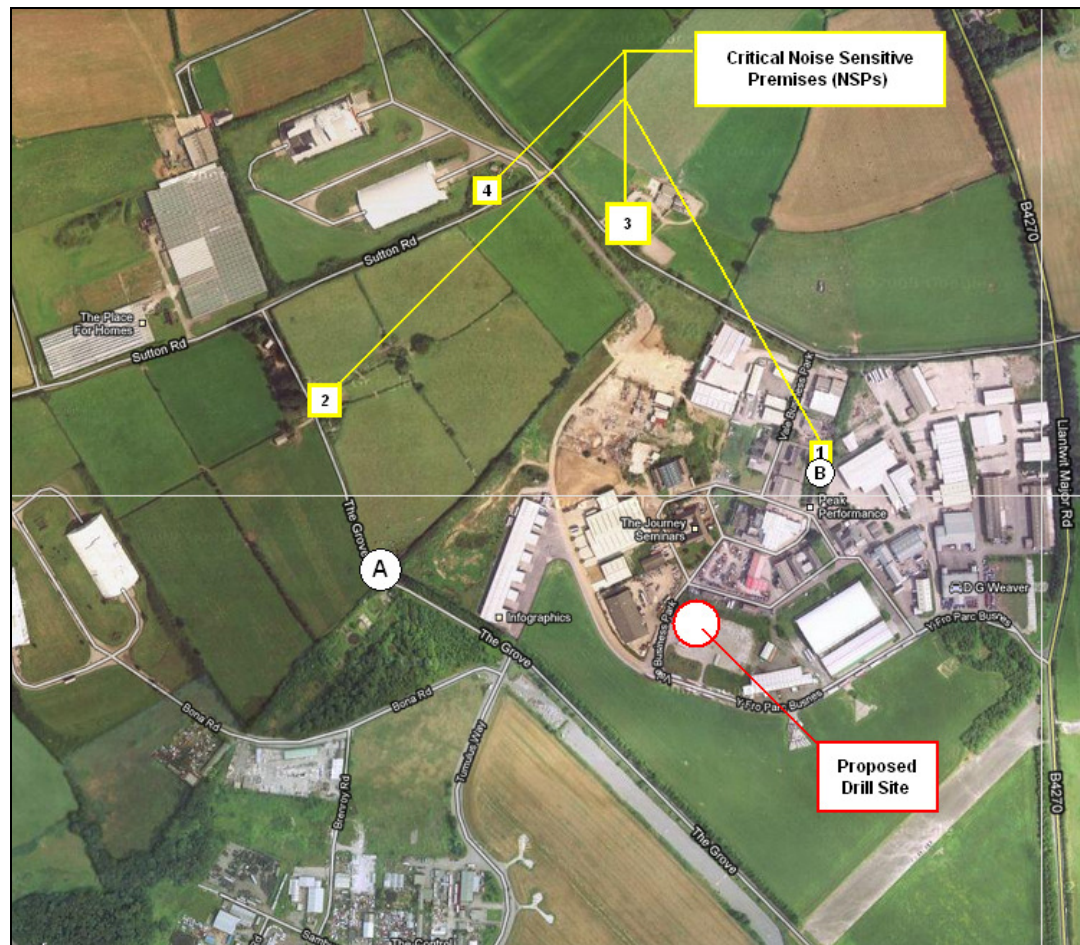
Continuous noise monitoring was carried out from 1600hrs on 19th May 2011 to determine the existing minimum consistent background noise levels. Data including L_{max} , L_{eq} & L_{90} was logged at 5minute intervals over the monitoring period.

Site plan 2594/SP1 shows the development site and the measurement position used;

Position A Located west of proposed drilling site, approximately 1.2 - 1.5m above local ground level. Background noise levels at this location deemed representative of those at the nearest NSPs (except house located on Ind. Est.)

Position B Located in garden of Six Wells Cottage on Llandow Industrial Estate, approximately 1.5m above local ground level.

2594/SP1 - Site Plan Showing Monitoring Locations



3.2 Equipment Used

The following equipment was used:

Larson Davis 820 Sound Level Meter	(Type 1)	Position A
Rion NL32 Sound Level Meter	(Type 1)	Position B
Norsonic Acoustic Calibrator Type 1251		
Windshields		

The measurement systems were calibrated before and after the survey, no variation occurred.

3.3 Weather Conditions

Weather conditions were mainly dry throughout the monitoring period with no significant winds.

4.0 Results

Time history graphs 2594/TH1 and 2594/TH2 show L_{max} , L_{eq} & L_{90} sound pressure levels measured over consecutive 5minute periods at position A and B respectively.

As the drill rig is to operate continuously for the 6 week period, noise limits at the NSPs should be based on the minimum consistent background noise level (L_{A90}) acquired during the survey.

Position A; Minimum consistent L_{A90} = 21dB (occurred 2300-0000hrs)

Position B; Minimum consistent L_{A90} = 20dB (occurred 0200-0300hrs)

4.1 World Health Organisation Guidance

BS 4142:1997 advises;

“The method is not suitable for assessing the noise measured in buildings or when the background and rating noise levels are both very low.

NOTE: For the purposes of this standard, background noise levels below about 30dB and rating levels below about 35dB are considered to be very low.”

Minimum consistent background noise levels measured are therefore considered to be very low.

The World Health Organisation (WHO) ‘Guidelines for Community Noise – 1999’ quotes sleep disturbance limits in bedrooms at night of $L_{Aeq,8hr}$ 30dB(A).

5.0 Noise Predictions

5.1 Noise Sensitive Properties

Locations of critical NSPs are shown in site plan 2594/SP1 (highlighted with yellow squares).

- 1). Six Wells Cottage on Llandow Ind. Est, approximately 260m north of proposed drill site
- 2). Farm house on The Grove, approximately 530m west of proposed drill site
- 3). Sheepleys Guest House, approximately 530m north of proposed drill site
- 4). House on Sutton Road, approximately 620m north of proposed drill site

Note: Locations of NSPs should be confirmed with the Local Environmental Health Officer.

5.2 Predicted Noise Levels

The proposed drill rig has a typical noise level of 74 dB(A) at 1m – as advised in email from Oliver Taylor dated 21/01/2011 with manufacturer's specs for a similar drill rig.

Taking into account the distance and screening losses, the noise level of the drill rig at each NSP is predicted to be as follows;

NSP 1	25dB(A) L_{Aeq}	(30dB(A) $L_{Ar,Tr}$ rating level)
NSP 2	19dB(A) L_{Aeq}	(24dB(A) $L_{Ar,Tr}$ rating level)
NSP 3	19dB(A) L_{Aeq}	(24dB(A) $L_{Ar,Tr}$ rating level)
NSP 4	18dB(A) L_{Aeq}	(23dB(A) $L_{Ar,Tr}$ rating level)

Note: Predictions do not account for any soft ground absorption that is likely to occur to NSP 2 and NSP 4 and these can therefore be classed as worst case predictions.

When allowing for a 15dB loss through a partially open window, noise levels would fall well below the 30dB(A) internal WHO sleep disturbance guidance limit at all NSPs.

6.0 Good Practice Guide

The following advice is given with the aim of reducing noise associated with the drilling operations by means of good practice.

A summary of the practical measures in the choice and use of plant to reduce noise is given below:

- Avoid unnecessary revving of engines and switch off equipment when not required.
- Ensure plant and vehicles are properly maintained, check silencers and bearings.
- If the noise is directional, point the source away from noise-sensitive locations.
- Limit the use of particularly noisy plant or vehicles.
- Start up plant sequentially rather than together.
- Ensure the plant is operated with noise control hoods closed.
- Ensure doors to units (including roller shutter door) remain closed when undertaking noisy operations.

7.0 Conclusion

Coastal Oil and Gas Ltd is proposing to drill on a site at Llandow Industrial Estate to look for natural gas. The proposed drilling will take place 24hours a day for approximately 6 weeks.

Critical Noise Sensitive Premises (NSPs) have been identified.

Daytime noise levels are not indicated to be an issue.

Exceptionally low background night time noise levels have been measured, well below the level at which a BS 4142:1997 assessment would be appropriate. We have therefore referred to the World Health Organisation (WHO) sleep disturbance limits to assess noise levels at NSPs at night.

Levels of around 10dB(A) are predicted in bedrooms when allowing for a 15dB loss through a partially open window. This is well below the WHO sleep disturbance guidance figure of 30dB(A).

We would not therefore assess noise from the drilling works to be an issue on this site.

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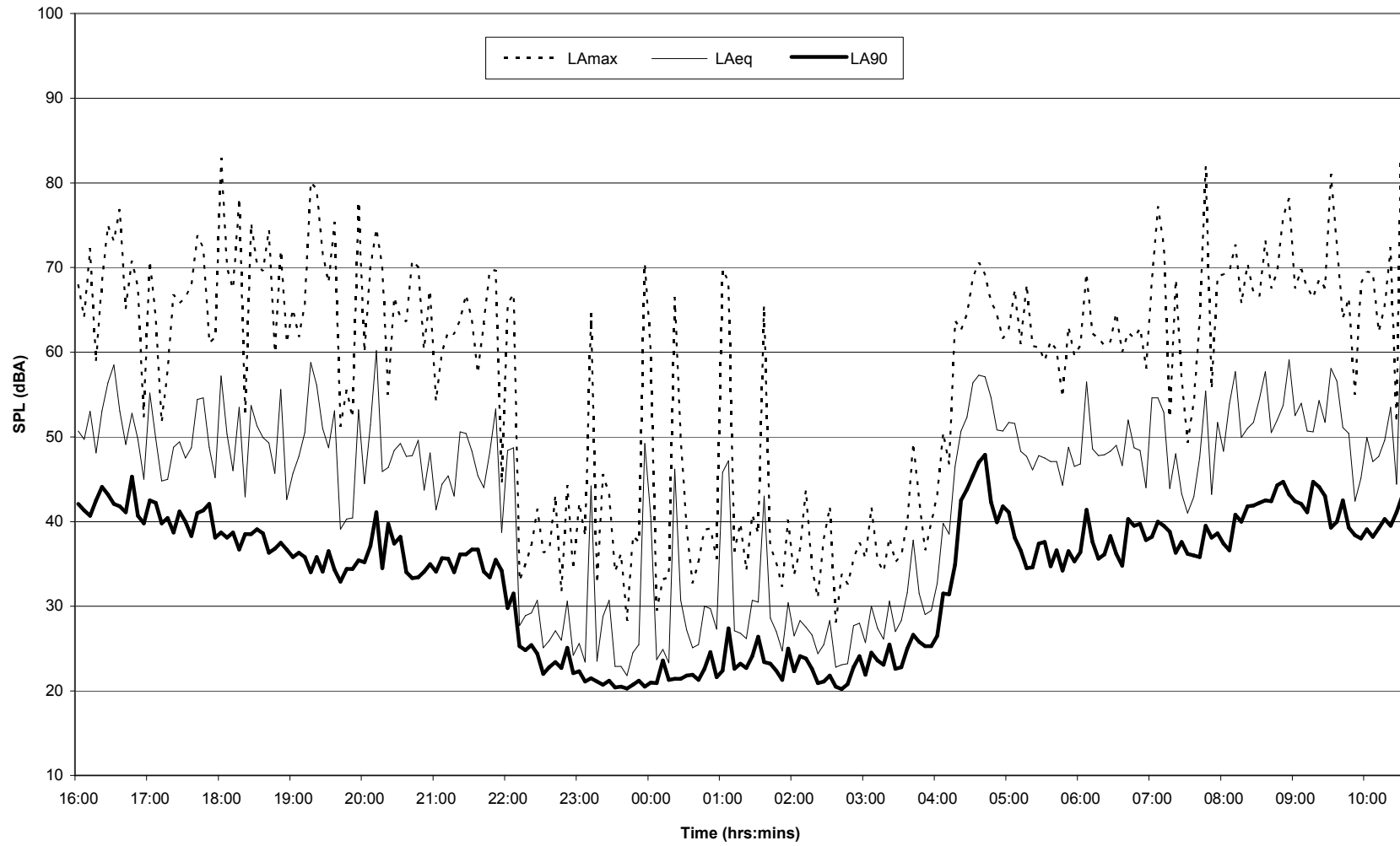
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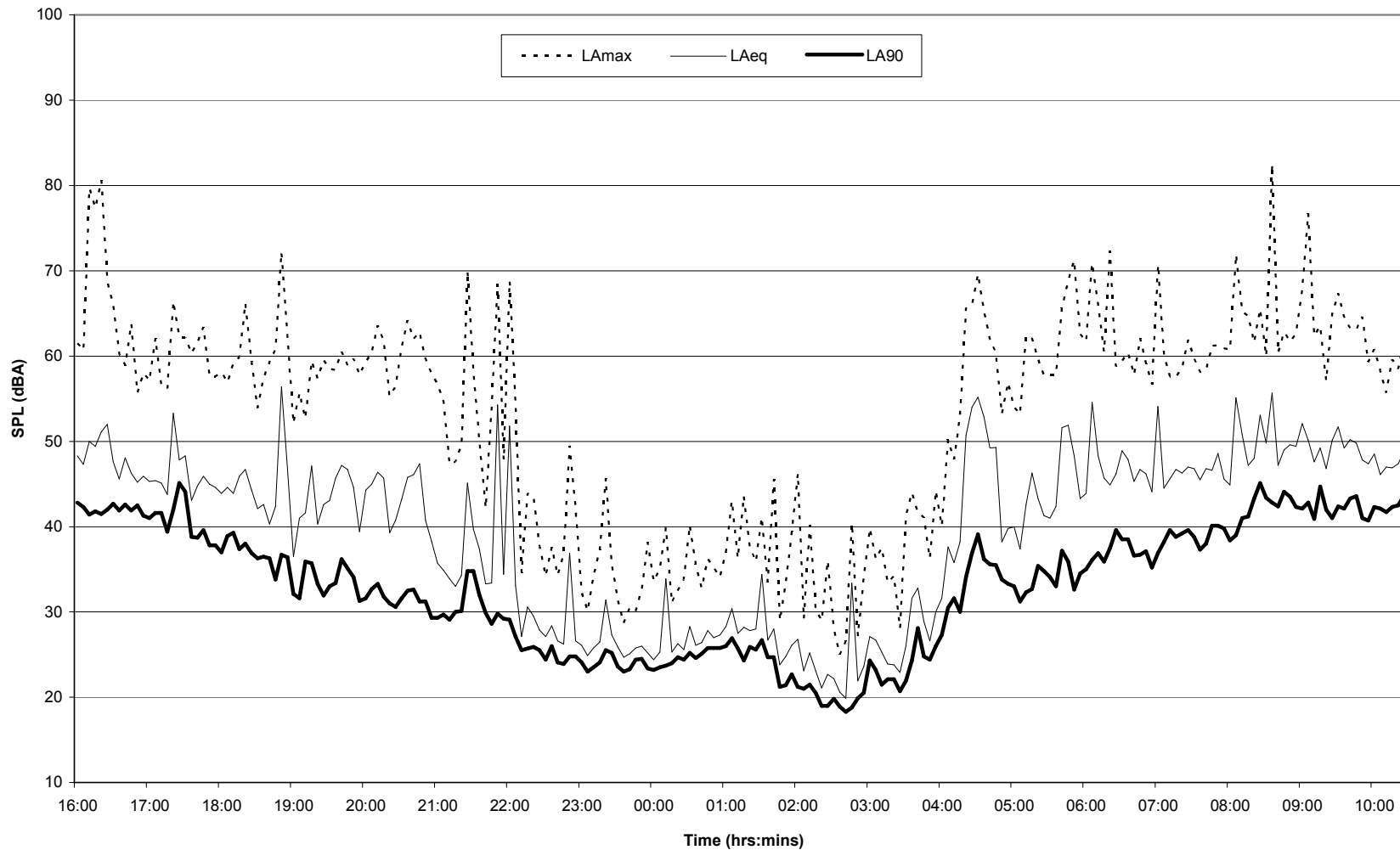


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2594/TH1 - Continuous Monitoring Time History: Position A



2594/TH2 - Continuous Monitoring Time History: Position B



Appendix A

Acoustic Terminology

Human response to noise depends on a number of factors including; Loudness, Frequency content, and variations in level with time. Various frequency weightings and statistical indices have been developed in order to objectively quantify 'annoyance'. The following units have been used in this report:

dB(A): The sound pressure level weighted to correspond with the frequency response of the human ear, and therefore a persons subjective response to frequency content.

L_{eq}: The equivalent continuous sound level is a notional steady state level which over a quoted time period would have the same acoustic energy content as the actual fluctuating noise measured over that period.

L₉₀: The sound level which is exceeded for 90% of the measurement period. i.e. The level exceeded for 54 minutes of a 1-hour measurement. It is often used to define the background noise level.

L₁₀: The sound level which is exceeded for 10% of the measurement period. i.e. The level exceeded for 6 minutes of a 1-hour measurement

L_{Ar,Tr}: Rating noise level is the specific noise level plus any adjustment for the characteristic features of the noise