Rocpower

Yorkshire Generation Scheme Barnsley

Noise Assessment

June 2009

REPORT CONTROL

Document:	Issue 2
Project:	Yorkshire Generation Scheme, Baseline Noise Surveys
Client:	Rocpower
Job Number:	A052596
File Origin:	N:\Projects\A052001-A053000\A052596\Reports\Barnsley\Issue 2

Document Checking:

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Issue	Date	Status	Checked for Issue
1	Jan 2009	Final	SM
2	June 2009	Final	
3			
4			

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1 INTRODUCTION

A noise assessment was commissioned by Rocpower with regard to the provision of renewable energy generation plant at a number of sites in Yorkshire. This report relates to a site within an existing YEDL substation compound located on Whaley Road, Barnsley.

The findings and conclusions of this assessment are presented below with Report Conditions presented in Appendix A.

2 METHODOLOGY

The guidance provided within BS 4142[1] will form the basis for this report. BS 4142 describes a method of determining the level of a noise of an industrial nature, together with procedures for assessing whether the noise in question is likely to give rise to complaints. The potential for complaints is based on the rating of a noise and the margin by which it exceeds the existing background noise level ($L_{A90,T}$[2]). The standard specifies the following criteria for the likelihood of complaint:

- A difference of around +10dB or more indicates that complaints are likely
- A difference of around +5dB is of marginal significance
- If the rating level is more than 10dB below the measured background noise level then this is a positive indication that complaints are unlikely.

BS 4142 states that night-time L_{A90} measurements should be taken over a 5 minute period whilst daytime measurements should be carried out for a 1 hour period. Following the guidance of PPG 24[3], the day and night-time periods are taken to be 07:00 - 23:00 hrs and 23:00 - 07:00 hrs respectively.

We have discussed the proposed noise assessment with Sarah Newman, Senior Environmental Health Officer (EHO), Barnsley Metropolitan Borough Council.

[1] BS 4142: Method for rating industrial noise affecting mixed residential and industrial areas (1997)
[2] $L_{A90,T}$- Sound level exceeded for 90% of the time period 'T'
[3] Planning Policy Guidance 24: Planning and Noise (1994)

3 BASELINE ENVIRONMENT

3.1 SITE DESCRIPTION

Rocpower has proposed to install renewable energy generating equipment in the south-eastern part of an existing electricity sub-station compound, located to the north of Whaley Road.

The proposed development site is surrounded by industrial and commercial premises to the north, south and west, with a railway line and fields beyond to the north-east and east. The nearest noise sensitive receptors to the site, in this case residential premises, are located approximately 415m to the south-west of the site on Claycliffe Road and approximately 380m to the north-west of the site on the small cul-de-sac located on the south-eastern side of Dearne Hall Road. A small number of residential premises are located on Swallow Hill Road at a distance of approximately 780m to the east / north east of the site. It is considered that given the light industrial / commercial nature of the surrounding area there are no non-residential noise sensitive receptors located within proximity to the site.

The daytime noise climate in the vicinity of the site is dominated by constant vehicle movement along Claycliffe Road (A637) and industrial noise from the existing operational premises within the industrial estate. The night-time noise climate at the site is dominated by a drone emanating from operations within the industrial estate.

3.2 NOISE MONITORING

A baseline noise survey was undertaken by Rich Hinton of WYG Environment (WYG) in order to obtain ambient daytime and night-time noise level data at the site and details of the monitoring are as follows.

The daytime noise survey was undertaken on 20th January 2009 between the periods of 12:55 – 15:24 hours whilst the night-time noise survey was undertaken on 21st January between the periods of 01:00 – 02:56 hours. The noise monitoring was undertaken in order to obtain ambient noise level data at representative locations around the site and capture data during the quietest daytime and night-time periods.

This survey, for the purpose of this report, comprised monitoring at the following locations:

- Location 1 – on the northern edge of Medina Way, approximately 18m from Claycliffe Road.
- Location 2 – on a dirt track running parallel to, and to the north-east of, the railway line, approximately 90m from Dearne Hall Road. Due to access restrictions we were unable to collect measurements in the field to the rear of the dwellings which face the site on Dearne Hall Road. It was considered, however, that data representative of these premises would be collected at this location;
- Location 3 – off Dearne Hall Road on the grassed area in front of no. 90 Dearne Hall Road, approximately 9m from the main road.

The monitoring positions are illustrated in Appendix B.

During the daytime monitoring exercise the existing noise sources were identified as follows:

- Constant road traffic on Claycliffe Road (A637) was audible at Location 1 only;
- Infrequent road traffic noise from Medina Way was audible at Location 1 only;
- Intermittent road traffic along Dearne Hall Road was audible at Locations 2 only;
- Infrequent dogs barking were audible at Location 1 only;
- Trees and bushes rustling in the wind;
- General industrial noise including vehicle reversing warnings and metallic bangs from operations within the industrial estate audible at Location 2 only;
- Intermittent railway traffic noise audible at Location 2 only;
- Birdsong; and
- Infrequent aircraft overhead was audible at Location 2 only.

During the night-time monitoring exercise the existing noise sources were identified as follows:

- Continuous low frequency drone from an unidentified area within the industrial estate was just audible at all locations;
- Intermittent mid-high frequency squealing from an unidentified area within the industrial estate was audible at Location 1 only;
- Intermittent metallic banging and clattering from the industrial estate was audible at all locations;
- Distant vehicle movement within the industrial estate;
- Infrequent distant car alarms were audible at Location 1 only;
- Distant road traffic noise was audible at Locations 2 and 3; and
- Infrequent road traffic on Dearne Hall Road was audible at Locations 2 and 3 only.

During the daytime noise survey weather conditions comprised dry conditions with wind speeds of up to 5m/s measured. During the night-time noise survey conditions were dry and calm.

3.3 INSTRUMENTATION

Measurements were obtained using a Norsonic Class 1 Integrating Sound Level Meter (Type 140 – Serial Number 1402989) and GRAS Type 41AL microphone (Serial Number 16179). The sound level meter was appropriately calibrated using a Norsonic Type 1251 calibrator - Serial Number 31291. Calibration was undertaken before and after the survey with 0.1 dB sensitivity drift recorded during both the daytime and night-time surveys. The microphone was mounted on a tripod which was extended to approximately 1.5m above ground level and was positioned in freefield conditions. The sound level meter was configured with the time response set to fast. Measurements were obtained with 'A' weighting during the monitoring period for $L_{Aeq,T}$[4], $L_{A1,T}$[5], $L_{A10,T}$[6], $L_{A90,T}$ and L_{Amax}[7]. Calibration certificates are available upon request.

[4] $L_{Aeq,T}$ - Average sound pressure level over the time period 'T'
[5] $L_{A1,T}$ – Sound level exceeded for 1% of the time period 'T'
[6] $L_{A10,T}$ – Sound level exceeded for 10% of the time period 'T'
[7] L_{Amax} – The maximum noise level during the monitoring period

4 RESULTS

A summary of the noise results can be seen in Tables 1 and 2 below. The full monitoring data is shown in Appendix C.

Table 1: Measured noise levels during the daytime

Location	Time (T)	Average Measured Noise Level $L_{Aeq,T}$ (dB)	Average Measured Background Noise Level $L_{A90,1\ hour}$ (dB)
1	12:55 – 13:55	64.4	55.6
2	14:24 – 15:24	54.3	47.1

Table 2: Measured noise levels during the night-time

Location	Time (T)	Average Measured Noise Level $L_{Aeq,T}$ (dB)	Average Measured Noise Level $L_{A90,T}$ (dB)	Lowest measured background noise level $L_{A90,\ 5mins}$ (dB)
1	01:00– 01:36	50.4	43.8	42.1
2	02:36 – 02:56	43.3	36.3	35.9
3	01:51 – 02:26	47.7	38.8	37.8

Noise level data which was recorded during the night-time period at locations 2 and 3 are relatively comparable. It is considered therefore, that this provides a strong indication that the data collected at location 2 is representative of noise levels at the rear of residential premises on Dearne Hall Road which face the site.

5 ASSESSMENT

Noise associated with the proposed operation of the plant will be generated by the following sources:

- Up to 7No. engines proposed to be located within a housed building;
- Exhaust providing exhaust ventilation to the building housing the engines; and
- Up to 7No. coolings fans will be located externally.

Ancillary equipment including transformer and pumps are also proposed, however, it is considered reasonable to assume that noise associated with these sources will be insignificant in comparison to the engines.

As the engines specified above are proposed to be second hand engines from the 1970's, the accompanying specific noise data is unreliable and it is not possible to undertake a robust noise assessment to verify the potential impact of the proposed process. It is considered, therefore, that the most appropriate way to support the planning application is to provide a report which presents noise levels at identified receptors from which the validity of any complaints can be assessed once the process is operational. Alternatively the baseline noise data could be used to formulate a planning condition.

Based on the proposed 24 hour operation of the process, Table 3 indicates the night-time noise level at the nearest identified sensitive receptors which would result in a positive indication of complaints being unlikely in accordance with the criteria specified in BS 4142. The assessment also takes into consideration the potential for a tonal correction[8]. Information with in the 'Location' column represents a single or group of receptors. The data collected at location 2 has been used as reference for all receptors located to the north and north east of the site.

[8] 5dB(A) tonal correction has been added in line with BS 4142

Table 3: Night-time noise level permitted from proposed plant

Location	Distance to Location	Lowest Measured Background Noise Level $L_{A90,5mins}$ (dBA)	Required noise level (L_{Aeq}) at receptor for 'complaints unlikely' (dB)
1	415	42.1	27.1
2	380	35.9	20.9

Once the process is operational and the actual cumulative noise level associated with the process can be established, consultation should be undertaken with the SEHO. Further to the indicative noise level criteria presented in Table 3, following discussions with the SEHO, it is considered likely that there would be some flexibility with regard to acceptable noise levels. Additionally, the SEHO was concerned about the potential noise impact with respect to residential properties located off Swallow Hill Road due to complaints being previously received from noise emanating from sources within the industrial estate during the night-time period. It is considered that due to the large separation distance of dwellings on Swallow Hill Road from the site, the potential noise impact associated with the process at these receptors will be addressed by ensuring that an adverse noise impact does not occur at properties located closer to the site.

Please note that Rocpower are taking a pro-active approach to the potential impact of noise associated with the proposed process. The process design team are aware that noise needs to be taken into consideration in the inherent design of the building and are aware of the baseline noise data collected at the specified receptors. As such there is a commitment that there will be an increased sound insulation performance of the building housing whilst noise associated with the cooling fans and exhaust is also proposed to be minimised through the use of attenuators / silencers.

There is the potential that when maintenance work occurs, the doors affording access to the area housing the engines will be open, in particular, due to the heat which maintenance workers would be subject to inside the building. This will result in a reduction in the sound performance of the building. However, to minimise the potential impact, Rocpower are committed to ensuring that, exclusive of emergency works, all maintenance works are undertaken on a weekday between 09:00 – 17:00 when background noise levels are higher and the likelihood for complaint will be significantly reduced.

It is considered reasonable to assume, given the above and large distances between the sensitive receptors and the site, that there will be no resultant adverse noise impact. If there is an adverse impact, where justified, Rocpower are committed to resolving any noise issues with the

implementation of further acoustic design solutions. Verification should be presented to the Local Authority to verify that acceptable criteria can be achieved.

6 CONCLUSION

Consideration has been given to breakout noise and external noise generating sources associated with the design of a proposed bio generation process at an existing Yorkshire Electricity sub station at Whaley Road, Barnsley.

As specific noise data attributable to elements of the proposed process is unreliable a robust noise assessment cannot be undertaken. Rocpower, however, have considered noise control solutions within the inherent design of the proposed process to minimise the risk of an adverse impact occurring at identified sensitive receptors. Given the large distances between the sensitive receptors and the site and provision of noise control techniques within the design, it is considered that noise associated with the proposed process will not result in an adverse impact at the identified receptors. If, however, any complaints do arise, noise levels have been presented within this report from which the validity of such complaints can be assessed once the process is operational. Alternatively the baseline noise data could be used to formulate a planning condition.

Appendix A – Report Conditions

WYG Environment Planning Transport Ltd

Report Conditions

Yorkshire Generation Scheme, Barnsley – Noise Assessment

This report is produced solely for the benefit of Rocpower and no liability is accepted for any reliance placed on it by any other party unless specifically agreed in writing otherwise.

This report is prepared for the proposed uses stated in the report and should not be used in a different context without reference to WYG. In time improved practices, fresh information or amended legislation may necessitate a re-assessment. Opinions and information provided in this report are on the basis of WYG using due skill and care in the preparation of the report.

This report refers, within the limitations stated, to the environment of the site in the context of the surrounding area at the time of the inspections. Environmental conditions can vary and no warranty is given as to the possibility of changes in the environment of the site and surrounding area at differing times.

This report is limited to those aspects reported on, within the scope and limits agreed with the client under our appointment. It is necessarily restricted and no liability is accepted for any other aspect. It is based on the information sources indicated in the report. Some of the opinions are based on unconfirmed data and information and are presented as the best obtained within the scope for this report.

Reliance has been placed on the documents and information supplied to WYG by others but no independent verification of these has been made and no warranty is given on them. No liability is accepted or warranty given in relation to the performance, reliability, standing etc of any products, services, organisations or companies referred to in this report.

Whilst skill and care have been used, no investigative method can eliminate the possibility of obtaining partially imprecise, incomplete or not fully representative information. Any monitoring or survey work undertaken as part of the commission will have been subject to limitations, including for example timescale, seasonal and weather related conditions.

Although care is taken to select monitoring and survey periods that are typical of the environmental conditions being measured, within the overall reporting programme constraints, measured conditions may not be fully representative of the actual conditions. Any predictive or modelling work, undertaken as part of the commission will be subject to limitations including the representativeness of data used by the model and the assumptions inherent within the approach used. Actual environmental conditions are typically more complex and variable than the investigative, predictive and modelling approaches indicate in practice, and the output of such approaches cannot be relied upon as a comprehensive or accurate indicator of future conditions.

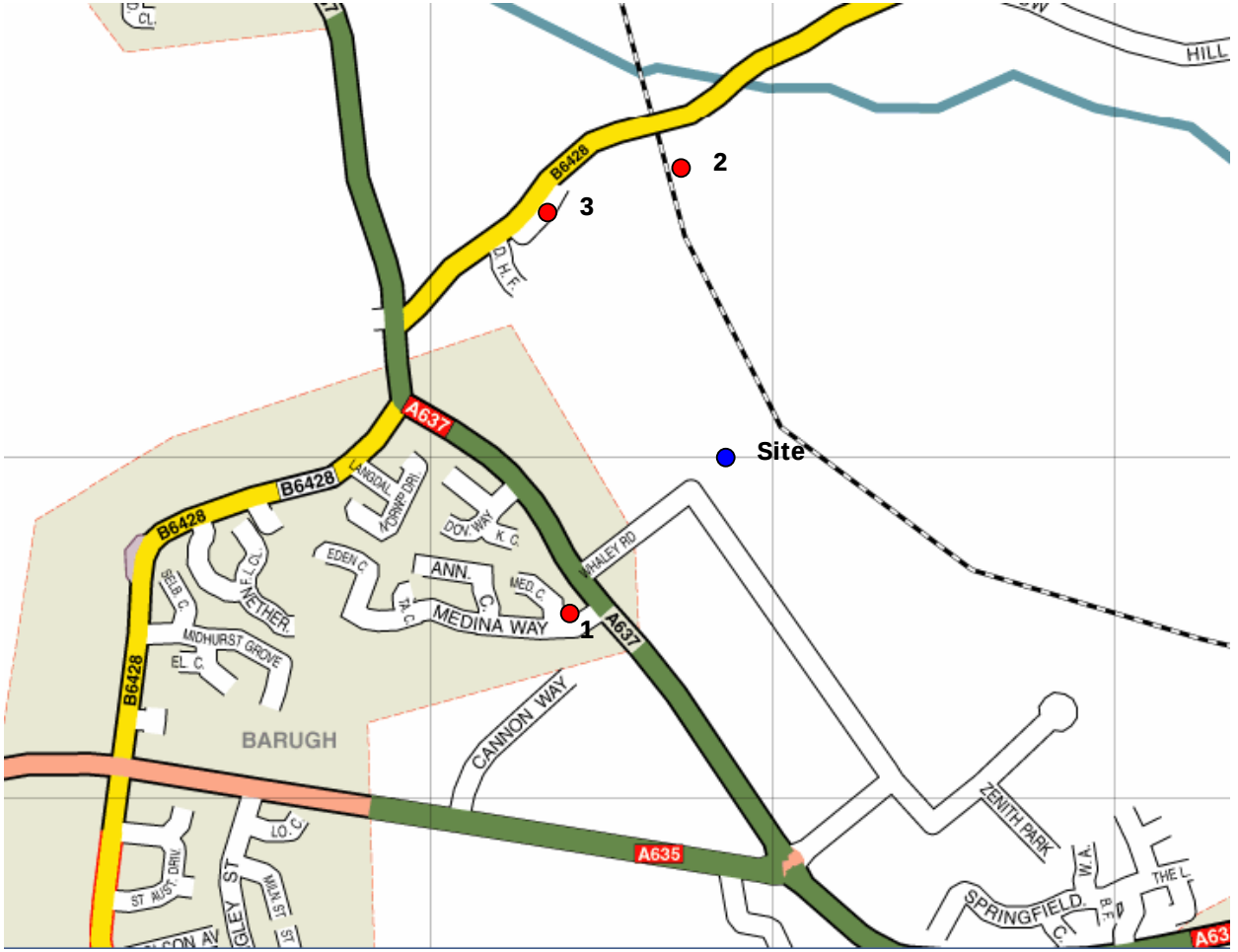
The potential influence of our assessment and report on other aspects of any development or future planning requires evaluation by other involved parties.

The performance of environmental protection measures and of buildings and other structures in relation to acoustics, vibration, noise mitigation and other environmental issues is influenced to a large extent by the degree to which the relevant environmental considerations are incorporated into the final design and specifications and the quality of workmanship and compliance with the specifications on site during construction. WYG accept no liability for issues with performance arising from such factors

November 2008
WYG Environment Planning Transport Ltd

Appendix B – Monitoring Location Plan

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Key

1 Approximate Noise Monitoring Location

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Project
Yorkshire Generation Scheme

Client
Rocpower

Site Address
Whaley Road

Drawing Title
Noise Monitoring Location Plan

Figure No.
001

Project No. A052596

Scale at A4: NTS

Checked By: RH

Approved By: SM

Office 4104 | Type Env | Approval ☐ Information

Appendix C – Noise Monitoring Data

Daytime Noise Monitoring Data, Barnsley, 20/1/09

Location 1

Date / Time	L_{Aeq} (dB)	L_{Amax} (dB)	L_{A1} (dB)	L_{A10} (dB)	L_{A90} (dB)
(2009/01/20 12:55:06.00)	64.0	77.7	71.7	67.4	55.0
(2009/01/20 13:10:10.00)	64.0	75.1	70.6	67.4	55.5
(2009/01/20 13:25:13.00)	64.7	75.9	71.1	67.8	56.0
(2009/01/20 13:40:17.00)	64.7	84.7	71.1	67.6	55.8
Average	**64.4**		**71.1**	**67.6**	**55.6**

Location 2

Date / Time	L_{Aeq} (dB)	L_{Amax} (dB)	L_{A1} (dB)	L_{A10} (dB)	L_{A90} (dB)
(2009/01/20 14:24:18.00)	55.8	81.1	64.3	51.9	46.2
(2009/01/20 14:39:22.00)	50.8	72.3	56.7	51.4	47.1
(2009/01/20 14:54:25.00)	52.8	76.0	59.4	52.7	47.1
(2009/01/20 15:09:29.00)	55.9	80.8	59.6	52.5	47.5
Average	**54.3**		**60.0**	**52.1**	**47.0**

Data from Nor-review v4.4

	$L_{A90,1Hr}$ (dB)
Location 1	55.6
Location 2	47.1

Night-time Noise Monitoring Data, Barnsley, 21/1/09

Location 1

Date / Time	L_{Aeq} (dB)	L_{Amax} (dB)	L_{A1} (dB)	L_{A10} (dB)	L_{A90} (dB)
(2009/01/21 01:00:56.00)	52.6	79.1	64.6	53.2	42.1
(2009/01/21 01:06:00.00)	46.3	61.4	58.0	46.2	43.0
(2009/01/21 01:11:04.00)	52.9	69.3	67.3	50.2	43.2
(2009/01/21 01:16:07.00)	50.6	67.3	63.2	50.8	43.4
(2009/01/21 01:21:11.00)	50.1	70.1	62.9	48.7	45.0
(2009/01/21 01:26:14.00)	49.5	68.9	62.2	47.9	44.5
(2009/01/21 01:31:18.00)	46.6	52.2	49.3	47.8	45.4
Average	**50.4**		**61.1**	**49.3**	**43.8**

Location 2

Date / Time	L_{Aeq} (dB)	L_{Amax} (dB)	L_{A1} (dB)	L_{A10} (dB)	L_{A90} (dB)
(2009/01/21 02:36:34.00)	48.4	77.4	55.3	44.3	35.9
(2009/01/21 02:41:37.00)	37.4	60.6	38.4	37.6	36.1
(2009/01/21 02:46:41.00)	37.5	40.3	39.2	38.5	36.4
(2009/01/21 02:51:45.00)	37.7	41.5	39.3	38.6	36.8
Average	**43.3**		**43.1**	**39.8**	**36.3**

Location 3

Date / Time	L_{Aeq} (dB)	L_{Amax} (dB)	L_{A1} (dB)	L_{A10} (dB)	L_{A90} (dB)
(2009/01/21 01:51:10.00)	41.8	57.6	46.1	43.2	39.7
(2009/01/21 01:56:13.00)	46.2	64.7	59.8	43.5	39.8
(2009/01/21 02:01:17.00)	40.0	44.7	43.0	41.5	38.3
(2009/01/21 02:06:21.00)	50.3	67.0	65.2	46.0	39.4
(2009/01/21 02:11:24.00)	47.6	67.1	62.5	43.2	38.2
(2009/01/21 02:16:28.00)	50.9	67.1	64.2	52.4	38.1
(2009/01/21 02:21:32.00)	47.6	68.2	61.6	43.9	37.8
Average	**47.7**		**57.5**	**44.8**	**38.8**