Appendix 7

Noise Monitoring Report

BASELINE ENVIRONMENTAL NOISE SURVEY FOR ORGANIC GOLD

APRIL 2004

FOR
RPS-MCOS WASTE/ENERGY DEPARTMENT

Report Ref:	**MDE0242/NR01**
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1.0 Brief for Consultancy

RPS-MCOS requested RPS Group to measure noise levels at the Organic Gold facility in Wilkinstown, Co.Meath, as part of their application for a Waste licence.

2.0 Summary

A noise survey was conducted at the boundary of the Organic Gold site and at the nearest residential noise sensitive locations over a typical day and night time period.

The measured noise levels at the sites boundaries are dominated by a combination of site operations and external noise sources, in particular road traffic noise.

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3.0 Introduction

RPS were commissioned by RPS-MCOS to measure noise levels from the Organic Gold facility, located in Wilkinstown, Co. Meath.

An RPS Consultant subsequently visited the site on 21st April to conduct a nighttime noise survey between 22:30Hrs and 00:30Hrs and on the 11th May between 11:00 Hrs and 16:00 Hrs to conduct the daytime survey. The findings of the survey are summarised in this report (a summary of the terminology used in this report is given in Appendix C).

4.0 Site Description

The Organic Gold site is located at the northern end of Wilkinstown, Co.Meath. The site entrance is located along the R162 Navan to Kingscourt road. All site traffic enters and exits the site via this entrance. Agricultural lands surround the remainder of the site. The two nearest noise sensitive locations are situated on the R162, to the north of the site entrance. Measurements were made at both these locations.

The main on-site noise sources from the site are from Heavy Goods Vehicles entering and leaving the site and Tractors and Turning machinery operating on site. The site only operates during the daytime period between 08:00Hrs and 18:00Hrs..

The site consists of a large agricultural shed with an office attached. The Composting Windrows are located in the concrete yard to the west of the office. A five-foot high embankment surrounds the yard and earth and tree saplings are landscaped on top of the wall. There is agricultural land to the north and south of the site. The nearest receptor is located approximately 300 metres from the northern boundary of the composting slab.

5.0 Noise Survey Assessment Method

A noise survey was conducted at the site boundary and the neighbouring residential sites. Four of the monitoring locations are along the site boundary (Positions N1 to N4) and two of the monitoring locations are at adjacent residential areas (Positions NSL1 and NSL2).

A description of each monitoring location is included in Table 1 below.

Noise Monitoring Location	Description
Position N1	North western boundary of site at corner of Windrows Yard
Position N2	Northern boundary of site at corner of Windrows Yard
Position N3	South eastern boundary of site in Paddock
Position N4	At Site Entrance
Position NSL 1	Outside Filling Station to North of Site
Position NSL 2	Outside Residence to East of Site

Table 1: *Description of noise monitoring locations*

Noise measurements were made during the day and night time period at the locations described above between 11:30 and 01:30hrs. Measurements were 30 minutes during the day time period and 15 minutes during the night time period.

The following equipment was used for the noise survey:

- Brüel & Kjær Type 2260 Investigator Sound Level Meter
- Brüel & Kjær Type 4231 Sound Level Calibrator

Measurements were made at a height of 1.5m above ground level, and measurements were free-field, taken 1-2m from reflecting surfaces. The weather conditions were in accordance with the requirements of ISO 1996: *Acoustics – Description and Measurement of Environment Noise.*

The instrumentation was checked and calibrated before and after the survey period to ensure no drift in the instruments sensitivity had occurred.

6.0 Target Criteria

It is intended that the Organic Gold site will operate with a Waste Licence issued by the Environmental Protection Agency (EPA). In this instance, the EPA guidance notes with respect to noise from Scheduled activities, will apply to the site. This guidance sets a limit of 55dB L_{Aeq} for day time activities and 45dB L_{Aeq} for night time activities at noise sensitive locations. Day time is defined as 08:00-22:00 Hrs and night time is defined as 22:00-08:00 Hrs. No tonal or intermittent noise should be audible at the noise sensitive locations.

7.0 Survey Results and Discussion

The noise survey was carried out to gain a profile of the noise emissions from Organic Gold's site over the day and nighttime periods. The results of noise measurements made at the boundary and noise sensitive locations are presented in Table 2 below. One-third octave band data is presented in Appendix A.

7.1 Survey Results

Location	Time	L_{Aeq}	L_{Amax}	L_{Amin}	L_{A10}	L_{A90}	Notes
N1	11:00	62	88	28	67	42	Site vehicles & bird song
N2	12:30	63	81	29	68	35	Site vehicles and road traffic
N3	13:00	52	67	34	55	42	Distant site noise, traffic on main road, birdsong
N4	14:00	64	88	34	64	43	Road traffic and some site noise
NSL 1	22:15	69	88	31	72	35	Site closed. Road traffic only noise source
	14:30	67	93	30	68	39	Road traffic main noise source
NSL 2	22:45	65	90	24	64	27	Site closed. Road traffic main noise source
	15:00	71	91	33	74	47	Road traffic, birdsong and some plant noise from site

Table 2: Results of noise levels measured at boundary and noise sensitive locations

7.2 *Boundary Locations*

The noise levels measured along the Organic Gold site boundary vary depending on the proximity to the main noise sources. Locations N1 and N2 are located in the Windrows yard. The dominant noise source here is the plant equipment. The highest noise level recorded here was 63dB $L_{Aeq.}$ The distant road does not have a significant effect on noise levels in the yard.

Location N4 is at the entrance to the site and is close to the main road. The highest level recorded here was 64dB L_{Aeq}. The dominant source here is traffic on the main road and vehicles entering and exiting the site.

Location N3 is located in the paddock away from the main operations and main road. The main noise source is the road traffic. The highest noise level recorded here was 52dB L_{Aeq}

7.3 *Noise Sensitive Locations*

Measurements were made at the entrance of two nearest receptors to the site boundary (NSL1 &NSL 2), over the day and night time period.

The noise levels measured at NSL 1 were as a result of passing road traffic along the R162 Navan to Kingscourt Road. The daytime ambient noise level was 67dB L_{Aeq}, Road traffic noise measured 68dB L_{A10} during this period. The background noise level measured during this time period was 39dB L_{A90}. During the nighttime period the L_{Aeq} level measured was 69dB. This level is 2dB above the level measured with the site in operation. This indicates that the site does not contribute to any significant levels at this location. Background noise levels measured 35dB $L_{A90.}$ These results indicate that the main source of noise at NSL1 is road traffic on the R162. The operations on the site have little effect on the noise levels recorded here.

Noise levels measured at NSL 2 were again dominated by noise from traffic on the R162 road along with some birdsong and distant noise from the site. The daytime level measured was 71 dB L_{Aeq}. This value was dominated by road traffic noise.
The background L_{A90} value measured at this location may provide a greater indication of noise from the operating plant. During the nighttime period, while the site was closed, the level measured here was 27dB L_{A90}. During the daytime period during normal operation of the plant the level measured was 47dB L_{A90}. This would suggest that noise from the operation of the site does not contribute to elevated daytime levels.

In order to assess the presence of tonal noise, 1/3 Octave band data was measured at each location. A peak at 63 Hz was noted during the day and night time period at NSL 1 and NSL2. On assessment of the 1/3 Octave band analysis measured within the site, no peak at 63Hz was detected at any of the boundary locations. Additionally, as the site is not operational at night, the measured peak at 63Hz is as a result of an external noise source not associated with the site. Common sources of energy peaks at this frequency are electricity cables/transformers. (Refer to Appendix A and B for complete results of tonal noise assessment)

7.4 Noise sources

A walk around the site was conducted to identify the main noise sources from on site operations.

The main noise sources noted in the Windrows yard were the Turner, JCB and trucks. Additional noise sources from the weighbridge area were also noted. There are no noise sensitive locations immediately to the rear of this area where these locations are situated. Location N1 is the nearest position measured to these noise sources. At this location the steady noise from the plant was measured at 42 dB L_{A90}.

7.5 Abatement

From the recorded results, at current operation levels it is not thought that it will be necessary to carry out any abatement measures. The wall surrounding the Windrows yard already acts as a noise screen for the nearest sensitive locations. The entrance road should be properly maintained and vehicles using it should travel at low speeds in order to reduce noise when entering and exiting the site.

8.0 Conclusions

A noise survey was conducted between 11:30 and 01:30hrs, in the vicinity of Organic Gold site over a typical day and night time period. The noise levels measured were as a result of a combination of external noise source surrounding the site and from the more occasional steady plant noise within the site.

Noise levels measured at boundary locations vary depending on their proximity to on–site noise sources and external sources. The main noise source at the nearest receptors is from the R162 road.

There was no tonal noise detected at the site boundary or the noise sensitive locations.

APPENDIX A
Display of Frequency Analysis measured at Noise Sensitive Locations

Figure A1: 1/3 Octave Band Analysis Measured at Location NSL 1

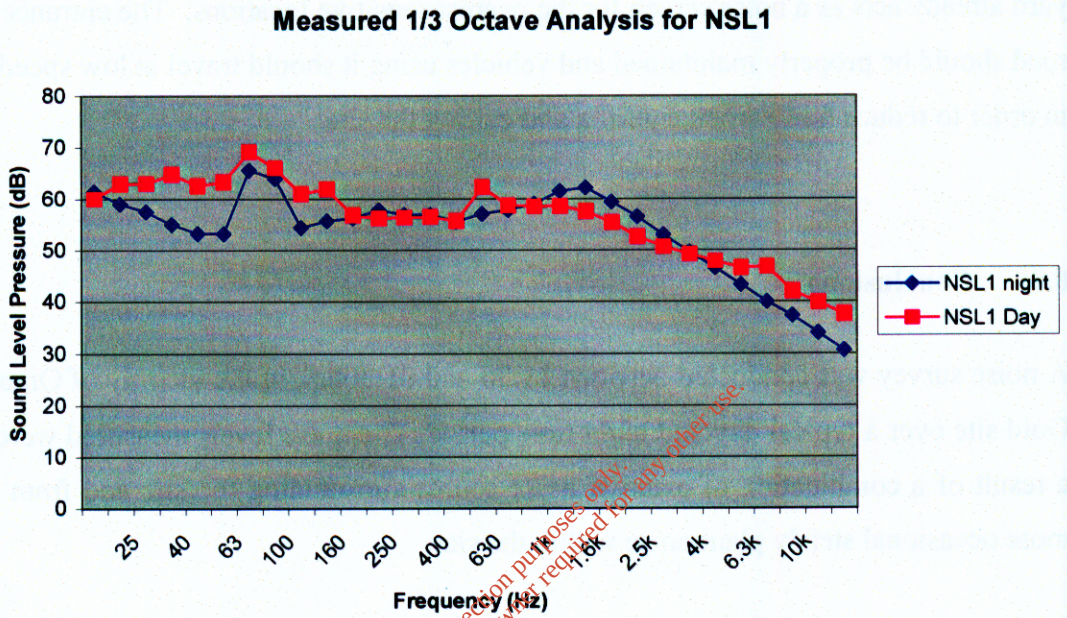
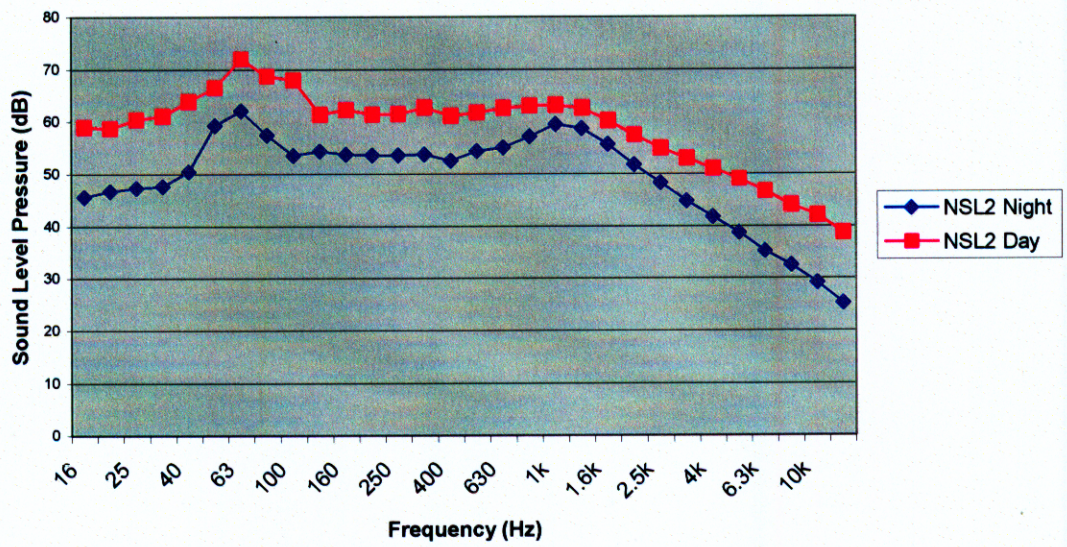


Figure A2: 1/3 Octave Band Analysis Measured at Location NSL 2



APPENDIX B

Frequency Analysis Measured at All Locations

Frequency (Hz)	NSL1 22:15	NSL1 14:30	NSL2 22:45	NSL2 15:00	N1	N2	N3	N4
	61.4	60	45.6	59	65.3	51.5	51.2	64.2
20	59	62.9	46.7	58.8	67.5	54.7	50.7	63.5
25	57.5	63	47.3	60.4	63.9	58.2	50.5	64.9
31.5	55	64.8	47.6	61.1	63.2	59.9	50.9	66.2
40	53.3	62.6	50.5	63.9	67.2	60.9	53.5	65.6
50	53.2	63.3	59.3	66.5	61.3	65	61.3	73.3
63	65.6	69.2	62.1	72	62.4	66.1	63	69.3
80	64	66	57.5	68.7	68.3	70.4	57.6	62.9
100	54.4	61	53.6	68	70.7	68	51.9	60.7
125	55.7	61.9	54.4	61.4	64.9	64.9	47.3	56.4
160	56.3	56.8	53.8	62.3	63.6	60.9	44.9	55.3
200	57.8	56.2	53.6	61.4	57.9	60.6	42.9	54.7
250	56.9	56.4	53.6	61.5	55.9	61.5	39.5	54.3
315	56.9	56.5	53.8	62.7	54.2	58.6	34.7	54.3
400	55.6	55.7	52.6	61.1	58.6	56.2	36.5	54.3
500	57.1	62.3	54.4	61.7	52.7	53.4	37.3	56.3
630	57.8	58.7	55.1	62.6	49.1	53.1	38.5	57.8
800	59	58.5	57.2	63	48.1	51.5	40.7	54.8
1k	61.5	58.6	59.5	63.1	48.3	53.1	42.7	54.4
1.25k	62.2	57.5	58.7	62.6	50.7	52.4	43	53.7
1.6k	59.4	55.4	55.7	60.2	51	50.6	42.2	52.5
2k	56.5	52.6	51.8	57.5	49.3	48.7	40.4	50.9
2.5k	53	50.7	48.3	55	47.5	46.9	39.7	49.5
3.15k	49.6	49.2	44.8	53	44.9	45.5	41	47.8
4k	46.5	47.8	41.8	51	42.7	43.2	37.9	45.2
5k	43.3	46.6	38.8	49	40.1	41	34.1	42.7
6.3k	40	46.8	35.3	46.6	36.4	37.4	29.1	42
8k	37.3	42	32.6	44	32.8	34.2	26.1	38.9
10k	34	39.9	29.2	42.1		29.6		35.8
12.5k	30.6	37.6	25.3	38.8		26		42.6

Table B1: *1/3 Octave Band Analysis Measured at Boundary and Noise Sensitive Locations*

APPENDIX C
Summary of terms

L_{Aeq}	The continuous equivalent A-weighted sound pressure level. This is an "average" of the sound pressure level.
L_{A90}	The noise level exceeded for 90% of the measurement period. This is normally used to measure background noise.
L_{A10}	The noise level exceeded for 10% of the measurement period. This is normally used to measure road traffic noise.
A-weightings	The human ear is sensitive to different frequencies of sound. The A-weighting represents the response of human ear to sound.

Octave band analysis

This is measured to determine whether there are any dominant tonal fluctuations over the monitoring period, as required by the EPA Guidelines.