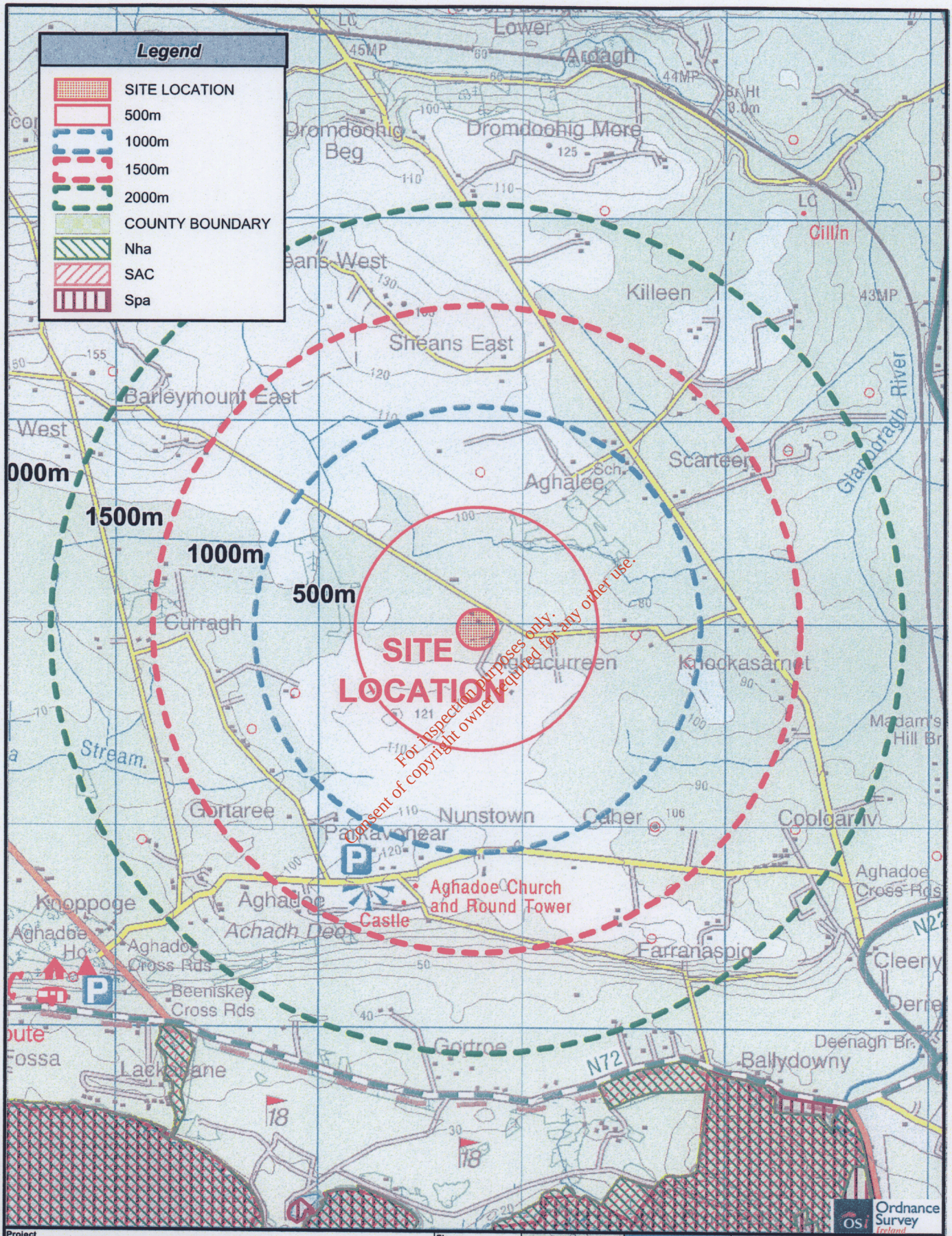

Project: KILLARNEY WASTE DISPOSAL WLA

Figure: 1.1

Title: REGIONAL CONTEXT & SITE LOCATION

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Biospheric Engineering Ltd.

NOISE

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RPS mcos

Killarney Waste Disposal Ltd.

Report on Noise levels

Report Ref: - 497-2004

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Report on Noise levels at

Killarney Waste Disposal Ltd.

For Waste Licence application to the EPA

Report Ref: - 497/2004

Confidential Report To:

Mr. Sean Murphy
Killarney Waste Disposal Ltd.
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1 INTRODUCTION

This Report was prepared by Biospheric Engineering Ltd as part of a waste licence application to the Environmental Protection Agency.

It is anticipated that the following conditions may be imposed as part of a licence:

Noise Limits

There shall be no clearly audible tonal component or impulsive component in the noise emissions from the activity at the noise sensitive locations.

Noise Emissions:

Day dB (A) L_{Aeq} (30 minutes)	Night dB(A) L_{Aeq} (15 minutes)
55	45

Monitoring Locations

Monitoring locations are generally required at the site boundary and at a nearby noise sensitive location. This site is located remote from any significant residential development in a farmland setting. The two nearest residences are located to the northeast and southwest of the site, with a number of houses in a ribbon development on the nearby county road.

Noise Monitoring

It is anticipated that noise monitoring will be required on an annual frequency with the following parameters to be reported:

Parameter	Monitoring Frequency	Analysis Method [see note]
$L(A)_{EQ}$ [30 minutes]	Annual	Standard Note 1
$L(A)_{10}$ [30 minutes]	Annual	Standard Note 1
$L(A)_{90}$ [30 minutes]	Annual	Standard Note 1
Frequency Analysis (1/3 Octave band analysis)	Annual	Standard Note 1

Note 1: "International Standards Organisation. ISO 1996. Acoustics – description and Measurement of Environmental noise. Parts 1, 2 and 3".

2 MEASUREMENT METHODOLOGY

Measurements were taken using a Bruel & Kjaer model 2260 and a Bruel & Kjaer type 2238 type 1 sound level meters with modular real-time analysis using BZ7210 noise analysis module. The instruments were calibrated using a Bruel & Kjaer model 4231 sound level calibrator. No drift in calibration was evident during the monitoring period. Post Measurement analysis was carried out using Bruel & Kjaer Noise Explorer software. During measurement the height of the microphone was 1.3 metres above ground at the sampling location.

Weather data was compiled using Prosser model Weathertrend digital barometer, Rotronic model A1 Hygrometer and Silva digital anemometer.

Noise measurements were taken in accordance with International Standards Organisation ISO 1996 – Acoustics – Description and Measurement of environmental noise.

Noise measurements were taken at the site entrance and the two nearest noise sensitive locations. Measurements were also taken close to all the noise sources operating on the site. The Noise monitoring locations are outlined on drawing No. DG0001-05.

The noise climate is influenced by traffic movements in the area in addition to activities on site. For this reason an extended monitoring period was used and the log of the monitoring data at each of the noise sensitive locations is reproduced.

3 NOISE CLIMATE – Current and Future

The area in which the Materials Recovery Facility is located is a rural area. Noise sources noted during the course of the survey included: Noise emanating from site activities, traffic noise, agricultural activity including traffic and farm animal noise, domestic activity including gardening, lawnmowers etc.

Noise levels in the area can generally be regarded as "low" with occasional peaks due to specific activities as outlined above. The generally acceptable noise levels for such an area are outlined in Environmental Protection Agency and National Roads Authority Policy.

The Environmental Protection Agency noise guidelines for on site activities are outlined in Section 1 and it is expected that the noise limits of 55dB(A) and 45dB(A) will be applied for the day and night periods respectively.

Current National Roads Authority design criteria for new road schemes is to limit the $L_{10\ 18\ hour}$ to 68[1] dB(A). This is an equivalent to an L_{eq} value of 65[2] dB(A). This noise level is the design level at the nearest noise sensitive location, in this case the nearest residences.

The appropriate noise limits therefore for the activity when measured on a L_{Aeq} index are as follows:

Noise from site related activities	55 dB(A)
Noise from traffic	65 dB(A)

The extension to the facility will comprise a large building, which will completely envelope the current structure. This will have the effect of enclosing the loading and unloading operations which currently take place in the open yard. Enclosing these activities will further reduce noise emissions in gross terms. However the equipment is likely to be required to operate for longer periods and at a greater level of throughput so that the reductions due to enclosure will be offset by increases due to activity levels.

With regard to traffic levels peak hourly HCV traffic will increase from 10 to 17 movements – less than doubling of the traffic. This will result in an increase of about 3 dB due to traffic noise to and from the site on the adjacent roads network.

It is not anticipated that noise levels will change significantly as a result of the increased activity.

[1] N6 Galway- East Ballinasloe road Scheme. Environmental Impact Statement, August 2004

[2] Converting the UK traffic noise index LA10,18h to EU indices for noise mapping, Abbott & Nelson, TRL Limited, 2002

4 WEATHER DATA

4th August, 2004	Weather Conditions	Temperature °C	Relative Humidity %	Wind speed & Direction
12.35 hrs	Hazy sunshine	22	62	Calm

5 NOISE EMISSIONS AT SITE BOUNDARY AND NOISE SENSITIVE LOCATIONS

Emission point reference No.	Location	Octave bands (Hz) Sound Pressure Levels dB (unweighted) per band									Impulsive or tonal qualities	Periods of Emission
		31.5	63	125	250	500	1K	2K	4K	8K		
N 1	Entrance Gate	16	29	33	34	44	48	46	35	27	No	Working hours
N 2	NSL North east of site	23	39	39	44	48	52	51	46	40	No	Working hours
N 3	NSL South west of site	17	25	33	31	43	47	46	38	38	No	Working hours

Note:

Normal Working Hours

07:00 to 20:00 Monday to Saturday

Identification of Tones

A prominent tonal component can be identified by one-third-octave band analysis, where the level of a one-third-octave band exceeds the levels of the adjacent bands by 5 dB or more.

Identification of impulsive characteristics

An impulsive characteristic can be determined by measuring the difference between the A-weighted sound pressure level, with time-weighting characteristic I, averaged over the same time interval, and $LA_{e,T}$ A value of greater than 2 dB ($LAIm-LA_{eq}$) would indicate an impulsive characteristic.

6 NOISE EMISSIONS – ON SITE EQUIPMENT

Equipment on Site Measured Noise Levels

Emission point reference No.	Location	Octave bands (Hz) Sound Pressure Levels dB (unweighted) per band									Impulsive or tonal qualities	Periods of Emission	Other Comments
		31.5	63	125	250	500	1k	2k	4k	8k			
1	Baling equipment @ 5 m	57	56	47	45	45	45	42	39	34	No	Operating hours only	Located indoors
2	Cat 226 Loader @ 2m	78	83	76	76	75	81	70	65	61	Reversing beacon is tonal	Operating hours only	Located indoors
3	Generator @ 2m	84	86	81	79	69	63	59	53	45	No	Operating hours only	
4	Eurec S2000 running empty @ 3m	69	87	88	79	78	70	68	64	58	No	Operating hours only	Located indoors
5	Eurec S2000 running on load @ 3m	72	81	72	73	75	68	68	63	61	No	Operating hours only	Located indoors
6	Eurec sorter on load @ 3m	77	82	80	79	80	76	75	70	66	No	Operating hours only	Located indoors
7	Manitou Loader MLT 678 Turbo @ 5m	58	54	45	42	41	39	35	31	28	Reversing beacon is tonal	Intermittent	

7 ENVIRONMENTAL NOISE INDICES

Location	National Grid Reference (6N, 6E)	Sound Pressure Levels		
		$L(A)_{eq}$	$L(A)_{10}$	$L(A)_{90}$
SITE MEASUREMENTS				
Location 1: N1 Entrance Gate		52	56	42
Location 2: N2 NSL northeast of site		59	54	29
Location 3: N3 NSL southwest of site		52	47	35
COMMENTS				
All locations can be considered to be well within accepted limit for traffic noise				
Location 1: N1 Entrance Gate	Within EPA guideline values for daytime operation			
Location 2: N2 NSL northeast of site	Noise levels at N2 include traffic on county road LAeq reduces to ~ 40 dB(A) excluding traffic			
Location 3: N3 NSL southwest of site	Within EPA guideline values for daytime operation – including traffic noise Currently exceeds EPA guideline value for night-time operation even with traffic excluded. This location is on the site boundary. The two nearest dwellings are over 100 metres from the site boundary and occupied by the brother and mother of the Managing Director of Killarney Waste Disposal Ltd.			

8 DISCUSSION OF RESULTS

Three monitoring locations were chosen:

1. At the site entrance
2. At the nearest noise sensitive location to the North east
3. At the nearest noise sensitive location to the South west

These locations offer the best monitoring locations as the sites are easily accessible and offer a representative view of noise emissions from the site.

The noise levels at the noise sensitive location are determined by the road traffic noise on local road rather than any noise arising from the licensed activities and so the licensed activity complies with EPA guidance for licenced activities during the day time.

Noise levels are below the NRA guideline values for traffic noise and the projected increase in traffic levels as a result of the proposed extension will not significantly increase traffic noise levels.

Noise levels due to on site activities at the site boundary do not exceed EPA guidance values for daytime operation. The generator and site activity noise can exceed the night-time limit on the eastern site perimeter. Mitigation is required if the site is to operate outside the hours 08:00 to 22:00 hrs.

Location N1

- site based noise level in compliance with EPA requirements

Location N2

- noise climate predominantly influenced by road traffic noise on local road. No tonal or impulsive components. No audible noise from licensed activities - complies with licence conditions.

Location N3

- site based noise level in compliance with EPA requirements. Note L_{90} level is higher than that recorded at N2 at plant is audible at this location.
-

9 CONCLUSION

The mitigation measures required for night time working are outlined in the following section.

No significant noise generating activity takes place prior to 08:00 hrs and with the mitigation measures proposed for night time working the facility can be considered to be in compliance with the likely licence conditions.

10 MITIGATION MEASURES

The Three significant noise sources on site that contribute to off-site noise levels are:

1. The Generator
2. Loading and Unloading Activities in the yard
3. Timber Shredding

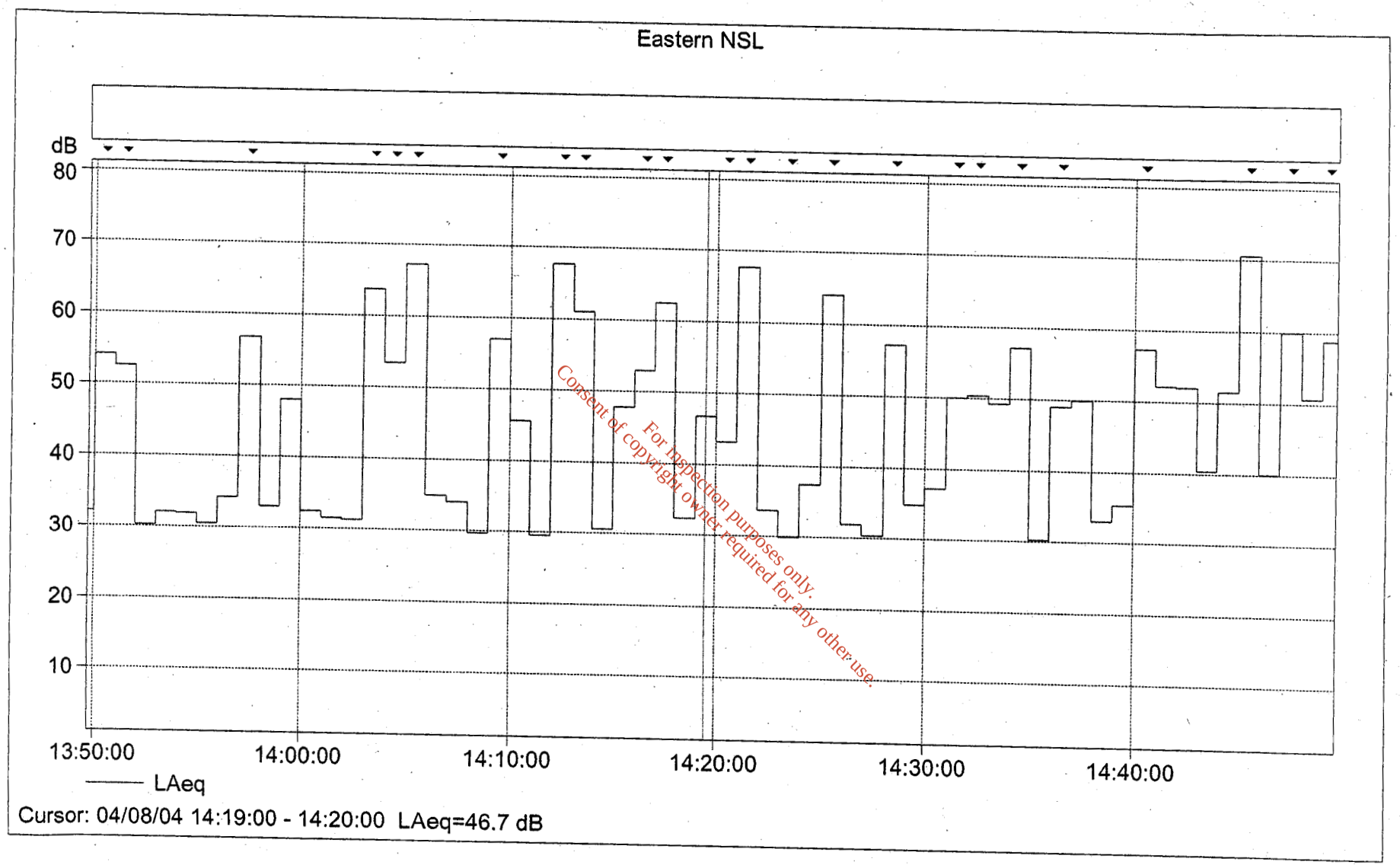
These latter two of these noise sources will be enclosed by the new extension to the building and so will reduce as part of the proposed extension.

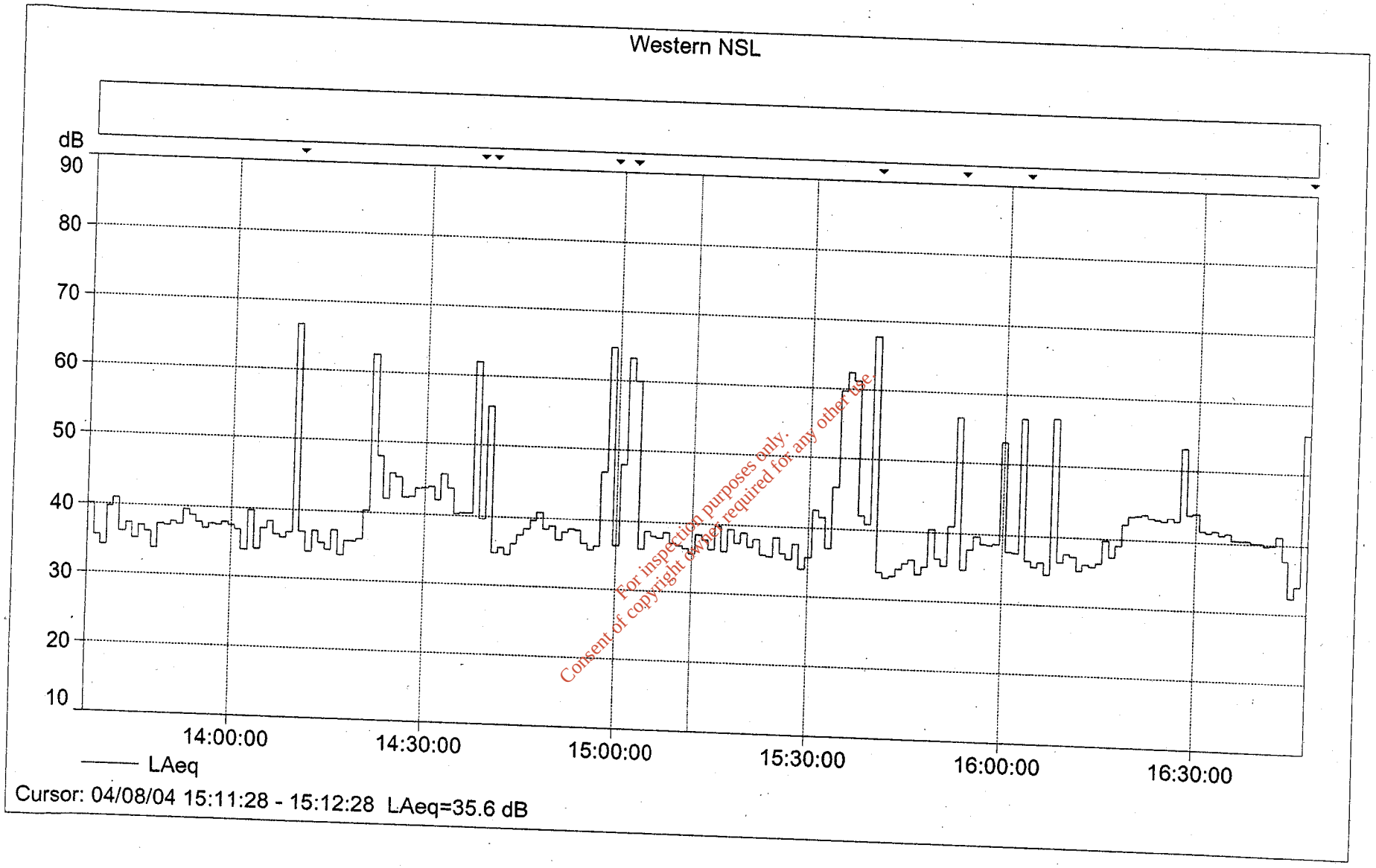
With regard to the generator, it is currently located in an acoustic enclosure but unfortunately is located very close to the site boundary (and the monitoring point).

It is recommended that the generator be enclosed in an open enclosure (no roof required) on the south-western corner of the existing building. This enclosure to comprise of two walls to a height of 300mm above the top of the exhaust pipe and enclosing the generator at a distance of not less than 1 metre to allow access for maintenance etc.

The entrance to the enclosure can be open provided the walls overlap.

Appendix A. Detailed Monitoring Results





Biospheric Engineering Ltd.

Frequency Analysis Table

Client:	Killarney Waste Disposal Ltd
Site:	Aughnacurreen, Killarney, Co. Kerry
Location:	Entrance Gate
Survey Date:	4th August 2004

Frequency Hz	$^1/_3$ Octave dBA	$^1/_3$ Octave dB lin	$^1/_1$ Octave dBA	$^1/_1$ Octave dB lin
25	3	48		
31.50	9	48	16	54
40	15	50		
50	19	49		
63	27	53	29	55
80	24	46		
100	30	49		
125	27	43	33	50
160	27	40		
200	27	38		
250	28	36	34	43
315	32	39		
400	37	41		
500	37	40	44	47
630	42	44		
800	43	44		
1000	44	44	48	48
1250	44	43		
1600	43	42		
2000	40	39	46	45
2500	37	35		
3150	33	32		
4000	28	27	35	34
5000	26	26		
6300	21	21		
8000	20	21	27	26
10000	24	21		
Leq Sound Level	**51**	**59**		

Biospheric Engineering Ltd.

Frequency Analysis Table

Client:	Killarney Waste Disposal Ltd
Site:	Aughnacurreen, Killarney, Co. Kerry
Location:	East of Site at crossroads
Survey Date:	4th August 2004

Frequency Hz	1/3 Octave dBA	1/3 Octave dB lin	1/1 Octave dBA	1/1 Octave dB lin
25	9	54		
31.50	15	55	23	60
40	21	56		
50	29	59		
63	33	60	39	64
80	37	60		
100	33	53		
125	34	50	39	56
160	36	49		
200	38	49		
250	39	48	44	53
315	40	46		
400	42	46		
500	43	46	48	51
630	45	47		
800	47	47		
1000	47	47	52	52
1250	47	47		
1600	47	46		
2000	45	44	51	49
2500	45	43		
3150	43	42		
4000	40	39	46	45
5000	38	38		
6300	36	36		
8000	34	35	40	40
10000	36	34		
Leq Sound Level	**56**	**67**		

Biospheric Engineering Ltd.

Frequency Analysis Table

Client:	Killarney Waste Disposal Ltd
Site:	Aughnacurreen, Killarney, Co. Kerry
Location:	NSL at west of site
Survey Date:	4th August 2004

Frequency Hz	1/3 Octave dBA	1/3 Octave dB lin	1/1 Octave dBA	1/1 Octave dB lin
25	5	49		
31.50	9	48	17	54
40	16	50		
50	18	48		
63	18	45	25	51
80	22	45		
100	31	50		
125	25	41	33	51
160	24	37		
200	23	34		
250	23	32	31	39
315	29	36		
400	36	40		
500	38	42	43	46
630	40	41		
800	42	43		
1000	44	44	47	48
1250	42	41		
1600	44	43		
2000	41	40	46	45
2500	37	36		
3150	33	32		
4000	33	32	38	37
5000	33	32		
6300	32	32		
8000	31	32	38	37
10000	35	32		
Leq Sound Level	**51**	**58**		