APPENDIX ES13.2

NOISE COMPLIANCE MONITORING

Noise Monitoring in Accordance with the Noise Monitoring Scheme for Thornhaugh Landfill Site, Peterborough

AUGEAN SOUTH LTD

R24.12062/1/2/SE
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REPORT DETAILS

Client	Augean South Ltd
Report Title	Noise Monitoring in Accordance with the Noise Monitoring Scheme
Site Address	Thornhaugh Landfill Site, Leicester Road, Thornhaugh, Peterborough
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QUALITY ASSURANCE

Issue No.	Issue Date	Author	Technical Review
1	20/12/23		
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2	06/02/24		
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1.0 INTRODUCTION

1.1 At the request of Augean South Ltd, Vibrock Limited were commissioned to undertake sound level measurements in accordance with an approved noise monitoring scheme associated with the planning permission for the landfill operations at Thornhaugh Landfill Site in Peterborough.

1.2 This report details the results of a noise level survey undertaken on 22 November 2023 at noise-sensitive locations in the vicinity of the site and provides comments regarding compliance with the permitted noise limits. During the monitoring period, the landfill site area was fully operational.

1.3 Further detail relating to the acoustic terminology used within this report is provided in Appendix 1.

2.0 NOISE CRITERIA

2.1 As part of planning condition requirements URS was appointed by Augean plc in 2013 to prepare a Noise Monitoring Scheme for Thornhaugh Landfill Site.

2.2 Noise limits from site activities are conditioned within planning permission 12/00463/MMFUL granted on 6th November 2012 as shown below.

Condition 16

Except for temporary operations the rating level of noise emitted from the site shall not exceed the specified noise criteria levels in Schedule 1. The noise levels shall be determined at the nearest noise sensitive properties as listed in Schedule 1. Measurements taken to verify compliance shall have regard to the effects of extraneous noise and shall be corrected for such effects. Within two months of the commencement of development a noise monitoring scheme shall be submitted to and agreed in writing by the Local Planning Authority. Noise monitoring shall thereafter be undertaken in accordance with the approved scheme.

Schedule 1

Location	***Site noise limits $L_{Aeq,1h}$ (free-field) during working hours***	***42 dB $L_{Aeq,5min}$ (free-field) at any other time***
Home Farm House	*55*	*42*
Leedsgate Farm	*50*	*42*
Nightingale Farm (Mon-Friday)	*50*	*42*
Nightingale Farm (Saturday)	*46*	*42*
Sibberton Lodge	*51*	*42*
Oaks Wood Cottage	*55*	*42*
Toll Cottage	*55*	*42*

2.3 The noise monitoring scheme outlines the monitoring locations, instrumentation requirements, microphone positions, frequency of monitoring and the information to be recorded and reported.

2.4 The noise monitoring presented in this report was undertaken in accordance with requirements outlined within the approved scheme.

3.0 SURVEY

3.1 Introduction

3.1.1 The methodology described below was employed during the noise level survey.

3.1.2 Measurements were undertaken with reference to the guidance presented within BS 7445:2003.

3.2 Monitoring Period

3.2.1 Sound levels were measured between 12:53 and 14:55 hrs on 22 November 2023.

3.3 Monitoring Locations

3.3.1 Monitoring was undertaken at locations representing noise-sensitive premises within the vicinity of the quarry site as follows:

Location Ref.	Description
1	Home Farm House
2	Leedsgate Farm
3	Nightingale Farm
4	Sibberton Lodge
5	Oaks Wood Cottage
6	Toll Cottage

3.3.2 A plan showing the monitoring locations is presented in Figure 1.

3.4 Instrumentation

3.4.1 The following instrumentation was used during the survey. During all measurements the microphones were protected with outdoor windshields.

Manufacturer	Description	Type	Serial Numbers
Cirrus	Type 1 Integrating Sound Level Meter	CR:800B CR:811C CR:800B CR:831A CR:811C CR:811C	C17489FF D21902FD C17699FF B15879FF D21904FD D20222FD
	Acoustic Calibrator	CR:515	56097

3.4.2 The monitoring positions were 'free field' (no vertical reflective surfaces within 3.5 metres of the microphone) and at a height of between 1.2 – 1.5 metres above ground level.

3.4.3 The following settings were used for each sound level meter:

- Parameters L_{eq}, L_{max}, L_{10}, L_{90}
- Frequency Weighting A
- Time Weighting Fast
- Averaging-Integrating Period: 15 minutes
- Data Logging: Repeat (Contiguous)

3.4.4 With the equipment set up in the configuration used during measurement, field calibration checks were performed on site immediately before and after the survey period using a sound calibrator. No significant drift (i.e. no greater than ±0.5 dB) in the calibration value was observed between the initial and final checks.

3.5 Observations

3.5.1 Weather conditions during the survey period were dry. Average wind speeds were in the region of 2 – 4 ms^{-1} and predominantly from a south-westerly direction. Cloud cover varied between 2 – 3 oktas and temperatures were in the region of 10°C.

4.0 RESULTS

4.1 Summary

4.1.1 The noise measurement data obtained during the noise level survey is presented in Tables 1 - 6.

4.1.2 The results are summarised and compared with the planning condition noise limits in the table below.

Location No.	Description	dB $L_{Aeq,1h}$	
		Measured	Criterion
1	Home Farm House	72	55
2	Leedsgate Farm	56	50
3	Nightingale Farm	57	50
4	Sibberton Lodge	69	51
5	Oaks Wood Cottage	59	55
6	Toll Cottage	55	55

4.2 Discussion

Home Farm House

4.2.1 The measured noise level of 72 dB $L_{Aeq,1h}$ was above the noise criterion of 55 dB $L_{Aeq,1h}$. The noise climate at this monitoring location was heavily influenced by regular vehicle movements along the A47. During lulls in traffic flow, site operations from the site were inaudible at the monitoring location during the survey period. The noise criterion was exceeded at this location; however, the exceedance was not attributable to waste operations taking place at the site.

Leedsgate Farm

4.2.2 The measured noise level of 56 dB $L_{Aeq,1h}$ was above the noise criterion of 50 dB $L_{Aeq,1h}$. The dominant noise sources at the monitoring location emanated from frequent road traffic along Kings Cliffe Road and noise from the adjacent Kings Cliffe industrial estate, specifically in the form of mobile plant and HGV movements, ingressing and egressing the industrial estate. Site operations at Thornhaugh Landfill were inaudible at the monitoring location during the survey period. Birdsong and occasional aircraft movements also contributed to the acoustic environment at this location during the survey. The noise criterion was exceeded at this location; however, the exceedance was not attributable to waste operations taking place at the site.

Nightingale Farm

4.2.3 The measured noise level of 57 dB $L_{Aeq,1h}$ was above the noise criterion of 50 dB $L_{Aeq,1h}$. The noise climate at this location was influenced by frequent traffic movements along Kings Cliffe Road. During lulls in traffic flow, site operations from the site were not audible at the monitoring location. Birdsong added to the acoustic environment at this location. The noise criterion was exceeded at this location; however, the exceedance was not attributable to waste operations taking place at the site.

Sibberton Lodge

4.2.4 The measured noise level of 69 dB $L_{Aeq,1h}$ was above the noise criterion of 51 dB $L_{Aeq,1h}$. The noise climate at this monitoring location was heavily influenced by regular vehicle movements along the A47. During lulls in traffic flow, site operations were inaudible at this location. The noise criterion was exceeded at this location; however, the exceedance was not attributable to waste operations taking place at the site.

Oaks Wood Cottage

4.2.5 The measured noise level of 59 dB $L_{Aeq,1h}$ was above the noise criterion of 55 dB $L_{Aeq,1h}$. The noise climate at this monitoring location was heavily influenced by regular vehicle movements along the A47. During lulls in traffic flow, site operations were inaudible at this location. The noise criterion was exceeded at this location; however, the exceedance was not attributable to waste operations taking place at the site.

Toll Cottage

4.2.6 The measured noise level of 55 dB $L_{Aeq,1h}$ equalled the noise criterion of 55 dB $L_{Aeq,1h.}$ The noise climate at this monitoring location consisted of regular road traffic movements along the A47, birdsong, occasional aircraft movements and a dog barking at a nearby residential property, close to Toll Cottage. Site operations were inaudible during the survey. The noise criterion was not exceeded at this location.

5.0 SUMMARY

5.1 Sound level monitoring was conducted at six noise sensitive locations surrounding Thornhaugh Landfill site in accordance with the approved noise monitoring scheme.

5.2 During the monitoring period on 22 November 2023, the landfill site was fully operational. Noise levels measured at five of the six locations were above the relevant noise limits, however, in all cases, the exceedances were not as a result of noise emissions from the site which were inaudible during the survey period.

5.3 The acoustic environment in the vicinity of the site is influenced by a range of sound sources and dominated by road traffic noise from vehicles using the A47 which is adjacent to the northern boundary of the site.

FIGURE 1

Monitoring Locations

Ref.	Location
1	Home Farm House
2	Leedsgate Farm
3	Nightingale Farm
4	Sibberton Lodge
5	Oaks Wood Cottage
6	Toll Cottage

TABLE 1

Environmental Noise Levels
Thornhaugh Landfill Site

Monitoring Location: Home Farm House
Date: 22 November 2023

Start Time	Duration (mins)	Parameters (dB)			
		L_{Aeq}	L_{A10}	L_{A90}	L_{Amax}
13:45	15	71.6	75.6	55.8	82.6
14:00	15	71.6	75.5	55.3	82.8
14:15	15	71.1	74.9	54.5	83.8
14:30	15	72.1	75.9	57.3	82.2
Resultant over 1.0 hour period		**72**	**75**	**56**	**84**

TABLE 2

Environmental Noise Levels
Thornhaugh Landfill Site

Monitoring Location: Leedsgate Farm
Date: 22 November 2023

Start Time	Duration (mins)	Parameters (dB)			
		L_{Aeq}	L_{A10}	L_{A90}	L_{Amax}
12:53	15	55.1	58.2	39.0	70.0
13:08	15	55.1	57.2	41.8	76.5
13:23	15	56.3	59.9	44.6	72.9
13:38	15	55.5	58.6	44.4	70.3
Resultant over 1.0 hour period		**56**	**58**	**42**	**77**

TABLE 3

Environmental Noise Levels
Thornhaugh Landfill Site

Monitoring Location: Laverock House, Nightingale Farm
Date: 22 November 2023

Start Time	Duration (mins)	Parameters (dB)			
		L_{Aeq}	L_{A10}	L_{A90}	L_{Amax}
13:05	15	55.8	54.2	38.9	76.2
13:20	15	57.3	59.5	39.9	76.1
13:35	15	57.2	58.6	39.5	76.1
13:50	15	58.0	59.0	39.7	75.8
Resultant over 1.0 hour period		**57**	**58**	**40**	**76**

TABLE 4

Environmental Noise Levels
Thornhaugh Landfill Site

Monitoring Location: Sibberton Lodge
Date: 22 November 2023

Start Time	Duration (mins)	Parameters (dB)			
		L_{Aeq}	L_{A10}	L_{A90}	L_{Amax}
13:17	15	69.0	72.7	57.3	80.3
13:32	15	68.8	72.4	55.3	80.9
13:47	15	69.6	73.3	58.4	81.9
14:02	15	69.3	72.7	57.3	82.2
Resultant over 1.0 hour period		**69**	**73**	**57**	**82**

TABLE 5

Environmental Noise Levels
Thornhaugh Landfill Site

Monitoring Location: Oaks Wood Cottage
Date: 22 November 2023

Start Time	Duration (mins)	Parameters (dB)			
		L_{Aeq}	L_{A10}	L_{A90}	L_{Amax}
13:27	15	60.4	61.9	52.6	80.4
13:42	15	58.8	61.3	54.1	67.2
13:57	15	58.3	61.0	52.2	67.0
14:12	15	59.8	62.5	53.8	73.2
Resultant over 1.0 hour period		**59**	**62**	**53**	**80**

TABLE 6

Environmental Noise Levels
Thornhaugh Landfill Site

Monitoring Location: Toll Cottage
Date: 22 November 2023

Start Time	Duration (mins)	Statistical Parameters / dB			
		L_{Aeq}	L_{A10}	L_{A90}	L_{Amax}
13:55	15	54.7	57.1	49.5	73.9
14:10	15	55.0	57.1	50.6	63.1
14:25	15	55.3	57.6	50.6	62.3
14:40	15	56.0	58.4	51.4	67.3
Resultant over 1.0 hour period		**55**	**58**	**51**	**74**

APPENDIX 1

Glossary of Acoustic Terms

A-weighting*:* The human ear is most sensitive to frequencies in the range 1 kHz to 5 kHz. On each side of this range the sensitivity falls off. A-weighting is used in sound level meters to replicate this sensitivity and respond in the same way as the human ear.

Ambient noise: A measure of the totally encompassing sound in a given situation at a given time, usually composed of sound from many sources near and far.

Broadband: A term used to describe sounds which comprise a range of frequencies with no particular tone being dominant.

Calibration: A check of the function of a sound level meter by comparison to a source of known sound pressure level.

Decibel (dB): Based on a logarithmic scale the decibel compresses the range of numbers required to describe the wide range of sound pressure level variations into a manageable scale. The threshold of hearing is defined as 0 dB and the threshold of pain defined as 120 dB(A).

Impulse noise: Any type of single or repeated noise of short duration, for example, the noise from explosions or a drop forge.

$L_{Aeq,T}$: The equivalent continuous sound energy level. The sound level of a steady or constant sound having the same energy as a fluctuating sound over a specified measurement period T.

$L_{A90,T}$: A statistical measure of the A-weighted sound level exceeded for 90% of the measurement period T, and is used as a measure of the quieter sections of the measurement period. The L_{A90} is referred to as the background noise level and is measured in dB(A).

$L_{Amax,Fast}$: A measure of the maximum root mean squared (r.m.s.) A-weighted sound pressure level occurring during the measurement period and is measured in dB(A).

Noise: Generally defined as unwanted sound.

Sound: Produced by mechanical vibration of a surface, which sets up rapid pressure fluctuations in the surrounding air.

Sound Pressure Level (L_p): A measurement of the variation of pressure relative to the threshold of hearing. The average human ear is capable of detecting sound pressure levels from 20 μPa (the threshold of hearing) up to 200 Pa (the threshold of pain) - a range of 10 million.

Tonal: A term used to describe sounds which have a particular dominant frequency, for example whistles and alarms.