

## Noise Report

Version 2

For  
Paul Smith  
at

**Waste4Generation Ltd**  
Permit (application) Number: N/A

at

12b Earlstree Road, Earlstrees Road,  
Earlstrees Industrial Estate,  
Corby, England,  
NN17 4AZ

conducted on  
21 December 2022

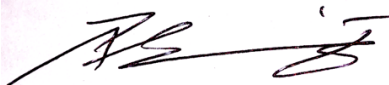
by

**Environmentally Sound Limited**

Tel: 01908 643433

Email: [info@environmentallysound.co.uk](mailto:info@environmentallysound.co.uk)

Report prepared by



P. A. Schmitz CEng MloA

Date: 28 December 2022

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## Summary

Waste4Generation Ltd (W4G) is a recycling plant for food-based effluent. The waste is used as fuel to generate electricity.

At W4G the waste is received and dispatched via articulated trucks, which consequently radiates noise from the mechanical engine in the truck and the vacuum pumps used to offload and load the waste. Additional machines that are used to clean and move the waste containers, also radiate noise, but not to the same noise level as the articulated trucks.

Environmentally Sound Limited were instructed to perform a noise environmental impact assessment (EIA), and the findings are discussed within this report.

Although the noise from the trucks is high, the location of the recycling plant is over 350 metres from the nearest sensitive receptor (NSR), and between the site and the NSR there are several heavy industrial units that are large in size. These act as obstacles to noise propagation over that distance.

Conclusively, the noise level of the trucks at W4G do not impact the background noise level at the NSRs.

If in the future it is decided to load more than one truck at a time, it is suggested to perform the same exercise with the use of noise modelling software, as the impact of the noise could exceed the background noise level at the NSR using the calculations in this report. The calculations in this report do not take the buildings (obstacles and barriers) into account, but as a clear path between the source and the receptor.

## 1. Introduction

An Environmental Impact Assessment (EIA) was requested by Waste4Generation Ltd (W4G). This EIA is for an assessment of noise only.

Although all the facilities surrounding W4G are industrial buildings, and no Nearest Sensitive Receptors (NSR) present, as the nearest residential house is 350 metres away from the W4G site.

In this report, under the section NSRs, the noise impact on the neighbouring buildings is discussed.

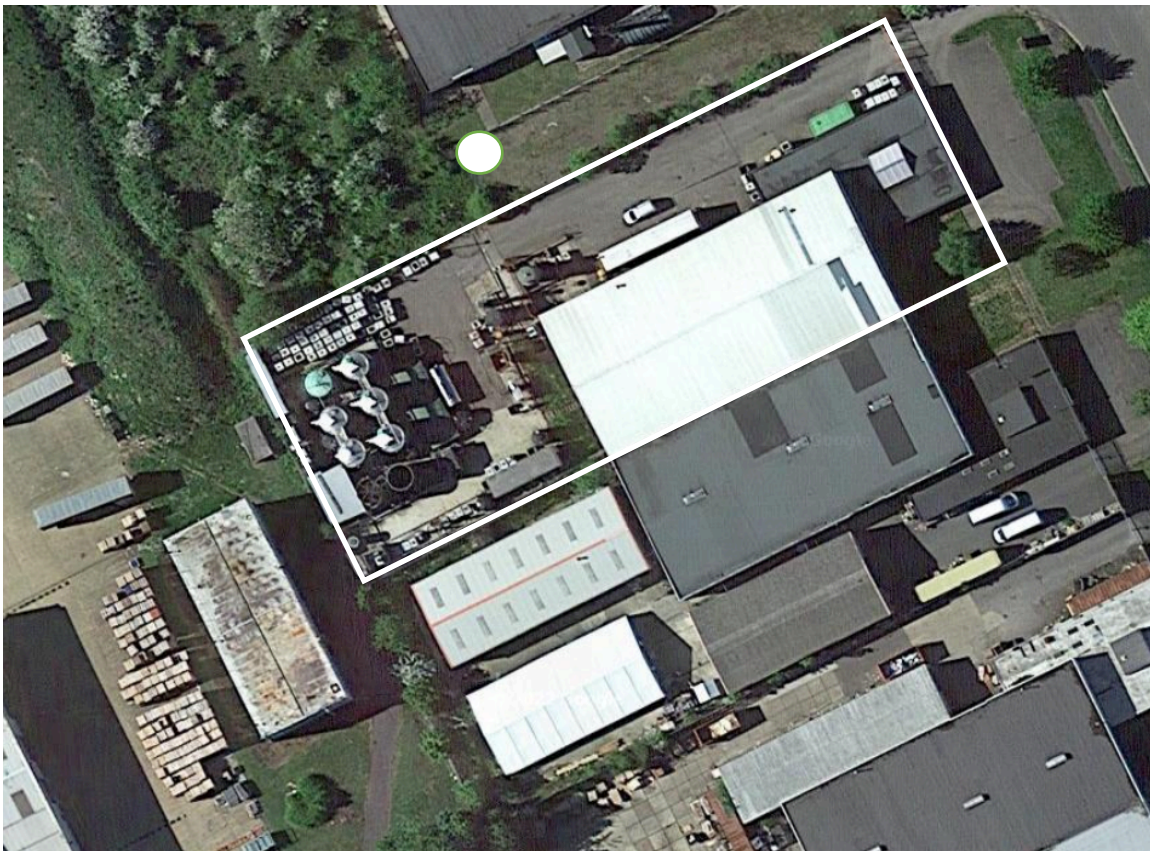


Figure 1: Waste4generation Ltd (white rectangle designates the perimeter of the site)

W4G is a waste recycling facility that processes food-based effluent. The machinery on site is both stationary and mobile, with the largest of the machines being articulated trucks bringing and taking loads from the site.

Articulated trucks transport the waste in and out of the facility via the weighbridge at the entrance. The mobile machinery, the front loader and the high-pressure cleaner, operate intermittently on site.

The end-product is then transported off the site to the respective buyers.

The machinery runs intermittently throughout the day from 08:00 to 17:00, Monday to Friday.

## 2. Assessment location(s)

The location of the measurements taken at the W4G site are discussed in this section

### 2.1. Nearest Sensitive Receptors

Figure 2 shows a layout of the W4G site and immediate surrounding area.

The remote measurements were taken at a location close to the neighbouring building. The reason for choosing this location is that there were no obstacles between the microphone and the source of the noise. Any other accessible locations would not have clear sight, or path for the noise source.

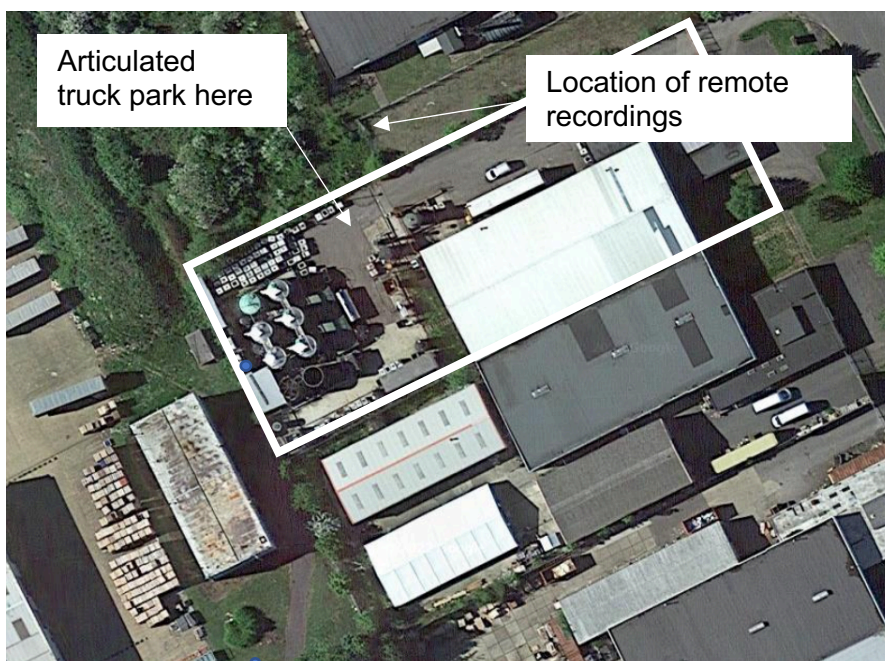


Figure 2: Location of Waste4generation Ltd and surrounding buildings

The deliveries are by articulated trucks, and the location where they park to offload is shown in figure 2.

Figure 3 shows the proximity of W4G to the NSR, residential house. The NSR is 330 metres away from W4G, and that there are several large industrial units between the two. The impact that W4G has on the NSR is discussed within this report.

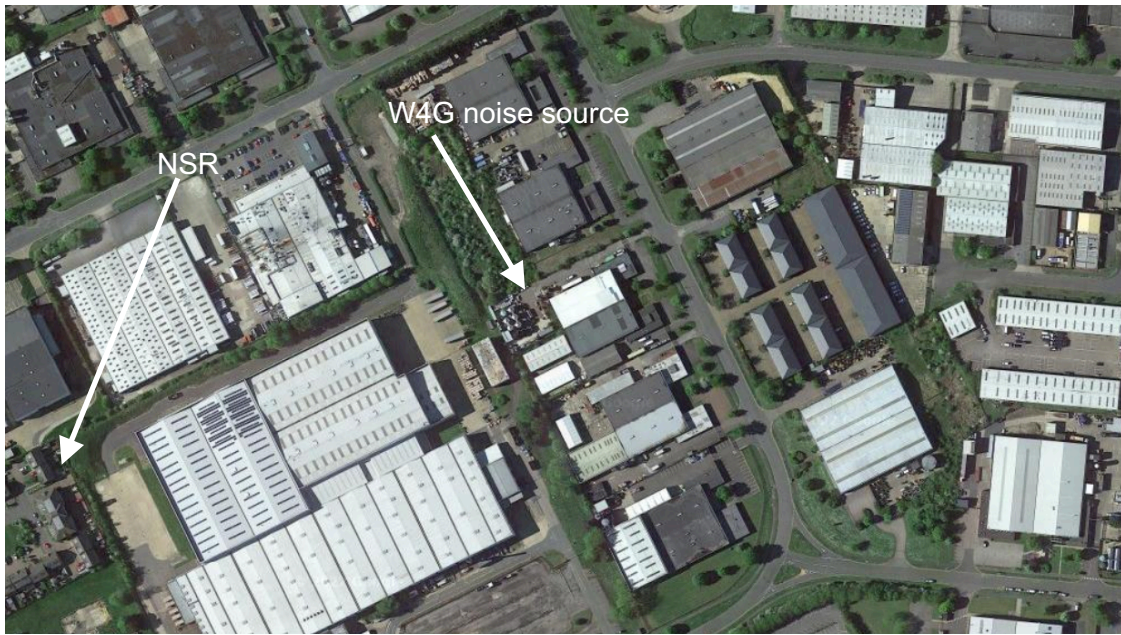


Figure 3: Location of Waste4generation Ltd and the NSR

### **3. Equipment and meteorology**

In this section the equipment and weather conditions are presented.

#### **3.1. Sound measuring system**

Sound Level Meter

Type and model: Rion Sound Level Meter N-52

Manufacturer: Rion

Serial number: 00620880 (see Appendix C)

#### **3.2. Weather Conditions**

The noise measurements for this location and that of the equipment operating at the location facility, were taken on 21 December 2022.

The weather at this time of year is not pleasant. The week before, temperatures were below freezing with frost on the ground. The week during which these measurements were taken, the temperatures were above freezing; however, it rained most of the week.

On the day of the measurements, it rained in the morning before the measurements were taken. Measurements seized once it started raining again.

21 December 2022

- 1) wind direction: wind still before sunrise; light breeze later the morning from a NE direction
- 2) still with moderate breeze gusts
- 3) Precipitation: rained before and after the measurements were taken
- 4) Fog: none
- 5) wet ground: yes (it's winter in England, it's always wet this time of year.)
- 6) frozen ground or snow covered: no
- 7) Temperature: 3°C to 10°C early morning, increasing throughout the day
- 8) Cloud cover: cloudy all day (7/8 cloud).

#### **3.3. Date and time of measurements**

Wednesday 21 December 2022

#### **3.4. Measurement time intervals**

Data was acquired every 10ms.

#### **3.5. Reference time intervals**

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L <sub>p</sub> Store Interval	10ms
L <sub>eq</sub> Calculation Interval	1 minute (due to the variation of activity on site)

### **3.6. Software**

Microsoft Excel and Word were used to compile this report



## 4. Assessment Methodology

The assessment methodology is in accordance with the BS4142. Measuring the noise levels at an NSR when the recycling site was inoperative, and then acquiring noise level data while it was operational.

### 4.1. Specific sounds of machinery and equipment

The specific sounds of the equipment on the site were measured as close as possible to the machinery and at a remote location, coinciding with the boundary of the neighbouring property. No obstacles were between the recording device and the specific source.

Where it was possible, the specific sound levels of the noise sources were acquired independently.

#### 4.1.1. Articulated truck and trailer

When the articulated trucks arrived and were operational during offloading or onloading, the noise of the main power unit, the truck's diesel engine was measured at a safe distance of two metres. The truck trailer was equipped with a vacuum pump and that was also assessed at a safe distance of two metres.

The noise of the truck, when stationary, was also recorded on the boundary of the site with the nearest adjacent building. This was measured at 17 metres from the sources, and the noise level was a combination of the two noise sources, as one source cannot operate without the other.

The specific noise levels are discussed in more detail in the next section.

#### 4.1.2. Forklift truck and a pressure washer

When there are no trucks in the offloading/loading bay, a pressure washer is used to clean the area.

A forklift truck is also used in this area, behind the main building, at the same time as the pressure washer. The combined noise was recorded at the boundary. The combined noise recording and the individual noise levels are presented in the next section.

The recorded data is representative of the actual noise during the day. For both, the noise at the boundary is recorded, and calculated at the nearest building.

## 5. Noise monitoring data and specific sound level predictions

### 5.1. Noise levels of machinery

The noise data was recorded over 5 minutes intervals, as the activity on the site changes frequently. All readings are in dBA.

#### 5.1.1. Truck noise sources

The location of the sound level meter to the truck is shown in Figure 4.



Figure 4: The articulated truck and the microphone in close proximity.

The recorded truck sound level is tabulated in Table 1.

Start Time	21/12/2022 11:01												
Measuremer	00d 00:05:00.0												
	Main	12.5 Hz	16 Hz	20 Hz	25 Hz	31.5 Hz	40 Hz	50 Hz	63 Hz	80 Hz	100 Hz	125 Hz	
Leq		82.3	50.6	54.6	54.3	62.1	63.1	82.2	81.6	71.6	69.7	70.9	73.2
LE		100.1	68.4	72.4	72.1	79.9	80.9	100	99.4	89.4	87.5	88.7	91
Lmax		83.9	48.7	51.2	56.8	58.5	66.2	89	82.9	71	74.4	72.2	75.9
Lmin		81.1	49.6	51.4	56.7	55.3	62.8	64.3	81	71.8	67.8	70.7	71.2
LA1		83.2	58.1	60.9	60.3	67.1	67.7	89.3	83.4	78.6	75.1	73.2	76.7
LA10		82.9	54	57.5	57.5	64.6	66.2	89	82.8	74.7	73.7	72	75.1
LA50		82.3	48.8	53.7	53.2	61.6	61.6	64	81.2	70	67.5	70.7	72.6
LA90		81.9	44.3	48.7	49.2	57.9	57.9	61.9	80.5	68.4	65.5	69.8	71.4
LA95		81.7	42.8	47.6	48.2	56.9	56.8	61.6	80.4	68	65.1	69.4	71
Over	----												
Under	-----												
		160 Hz	200 Hz	250 Hz	315 Hz	400 Hz	500 Hz	630 Hz	800 Hz	1 kHz	1.25 kHz	1.6 kHz	
		66.4	67.2	66.9	68	65.2	72.7	73.5	72	79.4	71.2	68.5	
		84.2	85	84.7	85.8	83	90.5	91.3	89.8	97.2	89	86.3	
		70.4	68.9	68.7	67.4	67.4	74.8	75.4	73.2	80.9	73.1	70.7	
		62.6	65.8	64.3	68.5	64.1	71.5	72.1	71	77.8	69.3	68.5	
		72.6	71.9	71.9	69.6	68.3	74.6	75.1	73.8	80.6	72.8	70.4	
		69.5	68.8	69.2	69	66.7	74	74.5	73.2	80.1	72.2	69.7	
		64.6	66.8	66.1	68.1	64.9	72.6	73.4	71.7	79.5	71.2	68.4	
		62.9	65.3	64.2	66.3	63.7	71.5	72.4	71	78.3	70.1	67.1	
		62.4	65.1	63.9	65.8	63.3	71.3	72.1	70.9	78.1	69.8	66.8	
		2 kHz	2.5 kHz	3.15 kHz	4 kHz	5 kHz	6.3 kHz	8 kHz	10 kHz	12.5 kHz	16 kHz	20 kHz	
		66	65.4	63.5	61.9	59.1	55.7	51.8	51.5	49.7	43.6	36	
		83.8	83.2	81.3	79.7	76.9	73.5	69.6	69.3	67.5	61.4	53.8	
		67.5	66.1	64.1	63	60	57	52.7	51.6	50	43.9	36.8	
		64.9	65.1	62.8	61.1	58.5	54.2	50.8	50.8	49	42.2	34	
		67.6	66.6	64.8	63.3	60.5	57.4	55.4	55.1	53.9	50.8	43.4	
		67	66.1	64.2	62.8	59.8	56.5	52.5	52.6	51	44.6	36.9	
		65.9	65.5	63.4	61.7	59	55.6	51.6	51.2	49.3	43	35.3	
		65.2	64.7	62.7	61.1	58.4	54.7	50.8	50.4	48.4	41.9	33.9	
		65	64.6	62.5	60.9	58.2	54.5	50.7	50.3	48.2	41.8	33.8	

Table 1: 1/3 octave sound levels

The vacuum pump on the truck for offloading and loading the waste is shown in Figure 5.



Figure 5: The vacuum pump on the truck and the location of the sound level meter microphone

The noise level of the vacuum pump is shown in Table 2. As the vacuum pump runs at a constant speed, there was no need to record the noise level for longer than 1 minute, as the noise level did not change.

Start Time	21/12/2022 11:51												
Measuremer	00d 00:01:00.0												
Main	12.5 Hz	16 Hz	20 Hz	25 Hz	31.5 Hz	40 Hz	50 Hz	63 Hz	80 Hz	100 Hz	125 Hz		
Leq	83.3	54.1	60.1	58.3	61.4	86.3	83.1	74.9	70	68.8	71.1	67.4	
LE	101.1	71.9	77.9	76.1	79.2	104.1	100.9	92.7	87.8	86.6	88.9	85.2	
Lmax	90.7	59.4	61.9	59.4	61.8	87.5	85.1	84.4	71.2	70.1	69.6	68.2	
Lmin	74.1	52	55.4	50.6	51.9	67.6	64.6	66.9	61.7	66.5	70.7	64.9	
LN1	89.6	60.8	67	64.1	65.9	91	87.7	83.7	76.9	74.6	75.2	72.4	
LN2	86.5	57.7	63.8	61.4	64.3	89.7	86.6	76.6	73.9	72.4	74.1	71.5	
LN3	81.3	52.2	57.8	57.2	60.5	84.3	81.2	73.2	67.3	66.5	70.3	65.1	
LN4	77.1	47.1	52.7	52.3	55	60.8	59.6	69.4	63.4	62.2	64.8	62	
LN5	76.1	45.9	51	51.1	53.3	58.2	58.4	68.4	62.6	61.5	64.1	61.3	
Over	----												
Under	-----												
	160 Hz	200 Hz	250 Hz	315 Hz	400 Hz	500 Hz	630 Hz	800 Hz	1 kHz	1.25 kHz	1.6 kHz		
	68.8	75.8	69.7	71.3	72.2	72.3	74.6	76.5	72	72	72	72.3	
	86.6	93.6	87.5	89.1	90	90.1	92.4	94.3	89.8	89.8	90.1	90.1	
	73	81	72.6	78.3	75.8	79.9	81.4	88.9	77	75.2	76.4	76.4	
	64.6	75.4	65	65.5	65.9	63.7	66	66.1	61.9	62.4	61.7	61.7	
	72.3	81.5	74.5	78	78.3	79.9	80.2	87	77	77	77.6	77.6	
	70.9	79.4	72.3	74.2	75.4	75.3	78.4	79.7	74.6	75	75.7	75.7	
	68.4	74.2	69.5	69.9	70.7	71.1	72.3	72.7	71.6	71.4	71	71	
	65.8	70	64.2	65.9	66.5	65.4	67.4	70.1	65.9	65.4	65.7	65.7	
	65.2	68.2	63.5	65.4	65.6	64.9	66.9	69.2	64.4	64.5	63.9	63.9	
	2 kHz	2.5 kHz	3.15 kHz	4 kHz	5 kHz	6.3 kHz	8 kHz	10 kHz	12.5 kHz	16 kHz	20 kHz		
	74.4	71.1	69.8	68.9	65.8	61.2	58.1	55.4	53	49.3	43.4	43.4	
	92.2	88.9	87.6	86.7	83.6	79	75.9	73.2	70.8	67.1	61.2	61.2	
	79.2	76.1	74.8	73.3	70.4	64.5	59.6	54.7	50	44.2	37.6	37.6	
	62.6	59.5	58.8	57.5	55.5	52.7	52.1	51.9	48.3	45.6	39.2	39.2	
	79.7	76.4	75.7	74.6	70.7	66.2	64.8	63.8	62.5	59.8	54.6	54.6	
	78.4	75	73.5	72.8	69.5	64.4	60.8	57.6	55.3	52	47.2	47.2	
	70.3	68.7	66.5	65.3	62.6	58.8	56.2	54.2	50.6	44.4	37.5	37.5	
	66.7	62.9	62.3	60.8	58.2	55	52.1	50.3	46.8	41.5	33.2	33.2	
	65.2	61.7	61	60.1	57.1	53.8	51	47.9	45.2	40.9	32.6	32.6	

Table 2: Noise levels and 1/3 octaves levels of the vacuum pump

## 5.2. Noise levels at the neighbouring building boundary

The noise level was recorded at the boundary with the neighbouring building. The location is shown in Figure 2. This location was chosen as the activity and noise sources on site are in clear view from the remote measurement location; therefore, no obstacles between the sources and the microphone.

### 5.2.1. Background noise level

The background noise level was measured at the boundary. The noise level values are shown in Table 3, with the  $L_{A90} = 50.3\text{dBA}$ , which is the background noise level.

Start Time	21/12/2022 11:20												
Measurement	00:00:00.00												
	Main	12.5 Hz	16 Hz	20 Hz	25 Hz	31.5 Hz	40 Hz	50 Hz	63 Hz	80 Hz	100 Hz	125 Hz	
Leq		52.1	51.5	55.8	55.9	59.4	59.4	59.8	62.7	59.4	54.9	54	52
LE		76.9	76.3	80.6	80.7	84.2	84.2	84.6	87.5	84.2	79.7	78.8	76.8
Lmax		60.9	50	52.4	54.5	63.1	62.6	70.1	84	82.2	67.8	70.1	58.1
Lmin		48.8	45.7	57.9	52.2	53.7	47	54.7	58.2	58.2	51.8	51.5	52.4
LN1		56.4	59.3	65.6	66.3	67.2	71.8	70.6	71	66.1	60.8	60.7	60.5
LN2		53.7	54.6	58.7	58.1	62.5	61.6	64.4	61.2	57.3	56	53.4	
LN3		51.7	49.4	53.1	52.5	57.6	53.9	56.8	60.4	57.5	54	53	50.4
LN4		50.3	44.2	47.9	48.2	53.2	49.8	52.4	56.5	53.5	51.4	50.2	48.2
LN5		50	42.8	46.5	47	52	48.8	51.4	55.2	52.5	50.6	49.3	47.6
Over	----												
Under	-----												
		160 Hz	200 Hz	250 Hz	315 Hz	400 Hz	500 Hz	630 Hz	800 Hz	1 kHz	1.25 kHz	1.6 kHz	
		49.1	46.6	45.2	42.9	41.8	42.2	42.7	43	43.3	41.7	40.5	
		73.9	71.4	70	67.7	66.6	67	67.5	67.8	68.1	66.5	65.3	
		60	55.6	54	49.1	44.9	44	45.7	47.2	46	46.2	43.6	
		46.5	45.3	42	42.2	40.3	40.3	41.2	40.3	39.4	35.9	34.8	
		55.9	52.7	50.7	47.2	45.2	45.9	46.3	47.5	47.5	46.4	44.8	
		51	48.3	47	44.7	43.1	43.5	44.1	44.6	45	43.5	42.1	
		48.1	45.9	44.7	42.5	41.6	41.9	42.4	42.6	43	41.3	40.1	
		46	43.7	42.4	40.7	40.2	40.6	41.1	41	40.8	39.3	38.1	
		45.5	43.2	41.9	40.2	39.8	40.3	40.8	40.5	40.3	38.7	37.4	
		2 kHz	2.5 kHz	3.15 kHz	4 kHz	5 kHz	6.3 kHz	8 kHz	10 kHz	12.5 kHz	16 kHz	20 kHz	
		39.4	39.4	37.5	35.7	32.8	30.7	28.4	25.4	22.5	19.8	11.8	
		64.2	64.2	62.3	60.5	57.6	55.5	53.2	50.2	47.3	44.6	36.6	
		43.9	43.4	42.5	37.4	34.7	31.9	30	26.9	23.9	20	13.4	
		33.6	33	30.6	28.5	26.7	24.8	24.2	19	17.8	18.1	9.5	
		44.9	46.6	44.4	42.3	41	39	37.6	35.7	34.1	31.4	23.3	
		41.6	43.1	40.6	37.3	35.1	33.4	31.4	28.6	25.2	20.9	14	
		38.7	36.9	35.8	33.6	31.1	28.7	25.7	21.3	17.2	12.2	7.5	
		36.3	35	33.1	30.6	27.8	24.6	21.1	16.2	11.7	8.3	6.3	
		35.8	34.5	32.7	30.1	26.9	23.4	20	14.9	10.7	7.9	6.2	

Table 3: The noise level values for the background noise recording.

### 5.2.2. Background noise level at the NSR

The background noise measurement at the NSR is shown in Table 5

	Main	12.5 Hz	16 Hz	20 Hz	25 Hz	31.5 Hz	40 Hz	50 Hz	63 Hz	80 Hz	100 Hz	125 Hz	
Leq	48.7	8.6	13.6	18.2	21.8	24.1	26.4	28.9	29.6	29.4	30.1	31.4	
LE	78.3	38.2	43.2	47.8	51.4	53.7	56	58.5	59.2	59	59.7	61	
Lmax	70	4.4	2.6	9.7	8.3	11.5	22.8	20.8	22.2	26.3	28.7	28.9	
Lmin	41	5	-4	-2.1	6.2	11.5	12.5	15.2	18.8	21.9	20.6	18.4	
LN1	57.6	20	26.4	30.6	34.6	36.6	38.2	40.6	41.2	40.6	40.1	41.6	
LN2	51.4	11.5	16	20.2	23.7	26.3	28.2	30.2	30.9	31.8	33.2	34.2	
LN3	46.2	1.7	3.7	6.8	10.5	13.4	17.8	22	23.3	24.1	25.7	26.9	
LN4	44.2	-4.7	-4.5	-2.4	3.6	7	12.2	17.1	19.1	20.1	21.7	22.6	
LN5	42.9	-9.8	--	-6.8	-0.6	3.5	8.8	13.7	16.2	17.5	19.1	20.3	
Over	----												
Under	-----												
		160 Hz	200 Hz	250 Hz	315 Hz	400 Hz	500 Hz	630 Hz	800 Hz	1 kHz	1.25 kHz	1.6 kHz	
		31.8	34.9	35.1	34.2	33.7	35.8	37.5	39.4	40.3	38.7	37.7	
		61.4	64.5	64.7	63.8	63.3	65.4	67.1	69	69.9	68.3	67.3	
		29.2	33	35	35.5	36.3	47.2	46.1	46.5	46.8	51.3	56.5	
		22.1	24.9	23.2	24.2	26.3	29.1	31.2	33.3	32.7	31.7	30.5	
		41.4	46.4	46.2	43.4	43.2	46	46.9	47.9	47.7	46.8	46.3	
		35	37.4	38	38.1	36.7	37.8	39.4	41.4	42.6	41.1	40.1	
		27.7	29.1	30.1	30	30.6	32.8	35.3	37.8	38.7	36.6	35.5	
		23.6	25.3	26.5	26.7	27.8	30.7	33.2	35.6	36.5	34.6	33.2	
		21.3	23.1	24.3	24.8	26.2	29.3	31.8	34.2	34.7	32.8	31.4	
		2 kHz	2.5 kHz	3.15 kHz	4 kHz	5 kHz	6.3 kHz	8 kHz	10 kHz	12.5 kHz	16 kHz	20 kHz	
		36.8	34.2	32.3	29.7	27.8	26.3	30.5	23.8	17.2	7.7	2.3	
		66.4	63.8	61.9	59.3	57.4	55.9	60.1	53.4	46.8	37.3	31.9	
		56	54.5	52.9	56.3	59	60.1	67.1	60	53.3	39.8	28.6	
		28.2	24.2	21	18.4	17	15.2	12.3	10.1	7.1	3.9	1.4	
		46.4	44.8	43.5	40.3	38	35.5	32.2	27.6	22.8	15.8	7.8	
		39.5	36.5	34.4	31.7	29.6	26.7	23.3	19.1	13.8	7.7	2.4	
		33.8	29.7	26.3	23.2	20.5	17.4	14.1	10.8	7.3	4.1	1.6	
		31.2	27.1	23.3	19.6	15.9	12.9	10.6	8.5	6.3	3.7	1.4	
		29.5	25.5	21.8	17.7	13.9	11.1	9.4	7.9	6	3.5	1.3	

Table 4: The noise level data at the NSR

### 5.2.3. Truck noise

The truck noise recorded at the remote location is shown in Table 5. This is one reading for two sources on the truck, the main power unit, and the vacuum pump. This reading is a more accurate valuation of the noise at this location to that calculated at distance for two sources.

The façade of the neighbouring building is seven metres further away from the noise sources, and when the noise level is calculated for that distance, the noise level is 63.5dBA.

The noise level at the NSR, residential homes that are located 350 metres away, is calculated to be 43.5dBA; however, there are heavier industries that are more noisy between this site and the residential homes

	Main	12.5 Hz	16 Hz	20 Hz	25 Hz	31.5 Hz	40 Hz	50 Hz	63 Hz	80 Hz	100 Hz	125 Hz
Leq	65.9	48.1	54.7	51.7	60.4	54.7	71.5	74.1	63.7	58.6	59.4	64.2
LE	83.7	65.9	72.5	69.5	78.2	72.5	89.3	91.9	81.5	76.4	77.2	82
Lmax	74.1	46.9	55.3	49.5	63.2	57.5	77.5	75.1	65.7	61.8	61.4	66.5
Lmin	63	42.8	50.2	52.7	56.5	52	56.5	71.4	57.9	52.7	59	63.6
LN1	73.2	54.1	60.6	56.9	66.1	59.2	77.8	76	66.5	63.7	62.2	66.4
LN2	66.9	51	57.9	54.3	63.4	57	77.4	75.3	65.3	62.4	60.8	65.4
LN3	65.2	46.9	53.5	50.8	59.4	54.3	55.8	74	63.6	56.6	59.3	64.2
LN4	64.7	42.5	49.1	46.7	55.7	50.6	53.2	72.8	61.9	53.9	57.6	62.8
LN5	64.5	41.1	48	45.8	54.1	49.7	52.6	71.9	61	53.3	57	62.5
Over	----											
Under	-----											
		160 Hz	200 Hz	250 Hz	315 Hz	400 Hz	500 Hz	630 Hz	800 Hz	1 kHz	1.25 kHz	1.6 kHz
		58.8	57.8	54.9	50.3	51.6	59.2	57.3	57.5	59.1	56.2	54.9
		76.6	75.6	72.7	68.1	69.4	77	75.1	75.3	76.9	74	72.7
		62.5	59.6	54	53.4	56.3	59.9	73	60.6	68.9	62.2	58.4
		56.2	54.6	51.5	46.3	47.1	50.9	51.6	52.5	56	53.1	54
		63.3	61.3	58.8	55.1	55.9	61.5	68.2	63	68.1	63	58.4
		61	59.4	56.7	52.5	54	60.7	57.1	58.7	59.8	57.8	56.3
		58.1	57.3	54.5	49.9	50.8	59.2	55.5	57	58	55.1	54.5
		56.4	56.1	52.9	47.1	48.8	57.6	53.9	55.7	56.8	54.1	53.4
		56	55.6	52.5	46.5	48.3	56.9	53.2	55	56.5	53.9	53.2
		2 kHz	2.5 kHz	3.15 kHz	4 kHz	5 kHz	6.3 kHz	8 kHz	10 kHz	12.5 kHz	16 kHz	20 kHz
		53.2	51.8	49.2	47.2	43.4	40.5	37.7	38	35.3	26.7	18.4
		71	69.6	67	65	61.2	58.3	55.5	55.8	53.1	44.5	36.2
		56	54.4	51.4	49.1	46	43.9	39.3	37.4	35.2	27.9	19.4
		51.6	50.7	46.8	45.2	42.1	37.7	33.5	32	29.1	21.1	12.5
		55.6	54.4	51.7	49.9	46.9	45.8	45.8	44	41.8	36.2	28.6
		54.6	52.9	50.7	48.2	44.5	41.8	39.3	40.1	37.2	28.5	20.5
		52.8	51.6	48.8	47	43.1	40.2	36.5	37.4	34.9	25.1	16.2
		52.1	50.7	47.8	46.1	42.1	38.7	34.4	34.9	32.4	23.1	13.9
		51.9	50.5	47.6	45.9	41.9	38.4	34.1	33.5	29.8	21.8	13.6

Table 5: Noise level values for the truck off/loading measured at the boundary

### 5.2.4. Forklift truck and the pressure washer

The pressure washer and the forklift operate in the loading bay area once the truck has left. The data presented in this section was recorded while they were operational, and the sound level equipment was located on the boundary at the remote location.

The noise level data is presented in Table 6.

Start Time	21/12/2022 12:20												
Measuremer	00d 00:05:00												
	Main	12.5 Hz	16 Hz	20 Hz	25 Hz	31.5 Hz	40 Hz	50 Hz	63 Hz	80 Hz	100 Hz	125 Hz	
Leq		59	49.6	53.7	53	57.5	60.8	63.9	68	69.8	64.2	58.6	59.3
LE		84.2	74.8	78.9	78.2	82.7	86	89.1	93.2	95	89.4	83.8	84.5
Lmax		72.4	48.8	54.6	48.8	51.3	59.2	54.5	59	81.2	71.3	66.7	75.6
Lmin		46.1	46.2	51.6	50.6	48.4	48.2	51.3	53.5	52.2	51.5	48.9	46.9
LN1		68.9	57.8	60.8	62	66.6	72.9	77.9	79.5	83.3	77.5	67.4	72.1
LN2		63.1	52.8	57	55.2	61.6	61.3	67.6	68.8	71.9	65.9	62.1	61.9
LN3		52.3	47.6	52.1	51	53.2	54.2	55.5	62.2	57.5	56.9	55.1	52.6
LN4		48	42.5	47.1	46.9	47.9	50.1	51.6	55.5	52.1	50.4	50.4	47.8
LNS		47.6	41	45.6	45.9	46.5	49.1	50.6	54.4	51.1	49.5	49.6	47.1
Over	----												
Under	-----												
		160 Hz	200 Hz	250 Hz	315 Hz	400 Hz	500 Hz	630 Hz	800 Hz	1 kHz	1.25 kHz	1.6 kHz	
		57.3	56.1	53.4	51.7	53.1	51	49.3	49.4	47.9	47.3	46.3	
		82.5	81.3	78.6	76.9	78.3	76.2	74.5	74.6	73.1	72.5	71.5	
		66.7	66.3	65.2	62.1	74.3	64.3	59.4	61.3	59.4	60	56.1	
		46.1	41.6	40.6	35.5	36.3	36.7	37.3	39.5	36.3	35.5	33.4	
		68	67	63.3	62.3	65.3	63.4	59.8	59.2	58.2	57.3	55.5	
		60.8	61.5	58.4	55.9	55.2	53.7	53.8	53.3	52	51.4	50.5	
		51.7	48.3	46.5	43.8	42	42.9	42.7	43.6	42.7	41.5	40.3	
		47.3	44.4	40.9	38.1	37.8	38.7	38.4	39.4	38.5	37.1	35.5	
		46.5	43.6	40.2	37.5	36.9	37.8	37.8	38.5	38	36.5	34.9	
		2 kHz	2.5 kHz	3.15 kHz	4 kHz	5 kHz	6.3 kHz	8 kHz	10 kHz	12.5 kHz	16 kHz	20 kHz	
		45.7	44.8	43.7	42.2	40.5	38.5	36.5	33.6	30.3	25.3	17.4	
		70.9	70	68.9	67.4	65.7	63.7	61.7	58.8	55.5	50.5	42.6	
		54.1	52.8	51.3	49.1	47.6	45.2	42.3	38.9	35.1	29.5	20.7	
		31	29.6	27.5	24.1	21.5	18.5	13.9	9.9	8.1	7.3	5.9	
		53.4	52.7	51.5	50	49	47.8	46.5	43.6	40.5	35.8	27.8	
		50.4	49.3	48.5	47	44.9	42.8	41.1	38.3	35.1	30	21.7	
		39	37.6	35.7	34.7	35.5	32.5	29.8	27.7	24.6	19.2	12	
		33.4	31.5	29.2	26.8	24.5	21.3	17	12.5	9.1	7.8	6.3	
		32.6	30.9	28.4	25.7	23.1	20	15.5	11	8.5	7.6	6.2	

Table 6: Noise level data of the forklift and pressure washer taken at the boundary

Other than for these sources, there are no other known noise sources on the site.

However, should the processing capacity increase, more truck will visit the site, but alterations to the site are required to accommodate the increase in traffic.

## 6. Noise impact assessment

The noise impact assessment is for the noise from the W4G site on the NSR.

Refer to section 4 for the NSR data and how it was recorded and calculated.

### 6.1. BS4142 noise impact assessment of the current site on the NSR

The format of table 2 hereafter is taken directly from the BS 4142 standard. The noise impact assessment is of the current processing capacity at the recycling site.

Measured ambient sound level	$L_{Aeq(15\text{ minutes})}=48.7\text{dB}$	Due to constant change of activity at the NSR, only a 15 minute recording was possible.
Residual sound level	$L_{Aeq(5\text{ minutes})}=48.7\text{dBA}$	Residual noise at the NSR
Background sound level	$L_{A90(15\text{ minutes})}=44.2\text{dB}$	Background noise level at the NSR
Specific sound level	$L_{Aeq(5\text{ minutes})}=39\text{dB}$	$L_{Aeq(5\text{ minutes})}=66\text{dB}$ was measured at the boundary (15 metres from the source).  $L_{Aeq(5\text{ minutes})}=39\text{dB}$ , calculated at 330 metres away from the source
Acoustic feature correction	+3dB	Truck idling and a vacuum pump operating produces a constant level within impulses or tones.
Rating level	$(39\text{dB} + 3\text{dB}) = 42\text{dB}$	
Excess of rating over background sound level	$42\text{dB} - 44\text{dB} = -2\text{dB}$	The specific noise is calculated to be 2dB below the background noise at the NSRs
Assessment indicates likelihood of significant impact		No impact

Uncertainty of the assessment	Not significant	The NSR is remote to the noise source, and it is likely that other noise sources closer to the NSR will impact the
-------------------------------	-----------------	--

Table 7: BS 4142 assessment tabulated for the noise EIA on the NSR

Although the BS4142 assessment indicates no likelihood of impact. The likelihood that the noise from W4G having this impact on the NSR is very low, as there are many other industrial activities in the Earlstree Industrial Estate that could impact on the NSR. Mainly because trucks are the main means of transporting goods in and out of the industrial estate.



## **7. Mitigation / Noise control**

Environmentally Sound Limited are aware that W4G requested a NIA, although the site has no impact on NSRs, i.e. schools, residential dwelling, hospitals etc.

W4G is located in the Earlstree Industrial Estate and as far as Environmentally Sound Limited are aware, there is no known noise limit to which factories and companies must adhere.

Therefore, because of the afore-mentioned reasons, no noise mitigation is required.

## 8. Uncertainty

The uncertainty is low for the noise levels presented in this report. All measurements were taken between 2 metres and 25 metres of the known noise sources, albeit for the noise level at the NSR. The likelihood that other remote sources have contributed to the measured noise levels, are slim.

The noise level calculation of the truck noise at the NSR was calculated as for a no obstacle path over 330 metres. In Figure 3, it is evident that there are several obstacles in the path that would mitigate the noise level at the NSR.

It is suggested, that if W4G increase the processing capacity at the site, i.e. two or more trucks loading at a time, the noise EIA should use noise prediction software, which would be more accurate.

As for the noise from the truck, a truck is the common means of transport in an industrial estate, and the use of trucks are common. Other companies in the area also use truck, and the likelihood that trucks visiting W4G having an impact on the NSR are slim.

## 9. Conclusions and next steps

The W4G site can accommodate one truck at a time. Should the site be altered and accommodate more than one truck at a time, noise calculation based on these noise levels can be done to ascertain the combined noise level.

As Earlstree Industrial Estate is an industrial area, there is most probably no upper noise limit restricting the increase of operations at this site. If more trucks should visit at any one time, the level will increase by probably 3dB. An increase of 3dB could have an impact on the NSR.

However, due to the building topography around the W4G site, it is advised to use noise modelling software to ascertain the true magnitude of the noise at the NSR, but should only be used then.

## Appendix A: Equipment operational on site

The sound level ratings of both the forklift and the pressure washer are shown in



Figure A 1: Sound level rating for the JCB forklift (104dBA)



Figure A 2: Sound level rating for the Kärcher pressure washer (94dBA)

## Appendix B: Sound level meters calibration certificate




### CERTIFICATE OF CALIBRATION



Date of Issue: 04 March 2022

Certificate Number: UCRT22/1311

Calibrated at & Certificate issued by:  
ANV Measurement Systems  
Beaufort Court  
17 Roebuck Way  
Milton Keynes MK5 8HL  
Telephone 01908 642846 Fax 01908 642814  
E-Mail: info@noise-and-vibration.co.uk  
Web: www.noise-and-vibration.co.uk  
Acoustics Noise and Vibration Ltd trading as ANV Measurement Systems

Page 1 of 2 Pages
Approved Signatory
 K. Mistry

Customer ANV Measurement Systems  
Beaufort Court  
17 Roebuck Way  
Knowhill  
Milton Keynes  
MK5 8HL

Order No. ANV MS HIRE  
Description Sound Level Meter / Pre-amp / Microphone / Associated Calibrator  
Identification

Manufacturer	Instrument	Type	Serial No. / Version
Rion	Sound Level Meter	NL-52	00620880
Rion	Firmware		2.0
Rion	Pre Amplifier	NH-25	20940
Rion	Microphone	UC-59	03474
Rion	Calibrator	NC-74	34536109
	Calibrator adaptor type if applicable		NC-74-002

Performance Class 1  
Test Procedure TP 2.SLM 61672-3 TPS-49  
*Procedures from IEC 61672-3:2006 were used to perform the periodic tests.*  
Type Approved to IEC 61672-1:2002 YES Approval Number 21.21 / 13.02  
*If YES above there is public evidence that the SLM has successfully completed the applicable pattern evaluation tests of IEC 61672-2:2003*  
Date Received 02 March 2022 ANV Job No. UKAS22/03149  
Date Calibrated 04 March 2022

The sound level meter submitted for testing has successfully completed the class 1 periodic tests of IEC 61672-3:2006, for the environmental conditions under which the tests were performed. As public evidence was available, from an independent testing organisation responsible for approving the results of pattern evaluation tests performed in accordance with IEC 61672-2:2003, to demonstrate that the model of sound level meter fully conformed to the requirements in IEC 61672-1:2002, the sound level meter submitted for testing conforms to the class 1 requirements of IEC 61672-1:2002.

Previous Certificate	Dated	Certificate No.	Laboratory
	30 March 2021	UCRT21/1431	0653

This certificate is issued in accordance with the laboratory accreditation requirements of the United Kingdom Accreditation Service. It provides traceability of measurement to the SI system of units and/or to units of measurement realised at the National Physical Laboratory or other recognised national metrology institutes. This certificate may not be reproduced other than in full, except with the prior written approval of the issuing laboratory.

<b>CERTIFICATE OF CALIBRATION</b>	<b>Certificate Number</b>
	<b>UCRT22/1311</b>
UKAS Accredited Calibration Laboratory No. 0653	Page 2 of 2 Pages

**Sound Level Meter Instruction manual and data used to adjust the sound levels indicated.**

SLM instruction manual title	Sound Level Meter	NL-42 / NL-52
SLM instruction manual ref / issue		11-03
SLM instruction manual source	Manufacturer	
Internet download date if applicable		N/A
Case corrections available		Yes
Uncertainties of case corrections		Yes
Source of case data	Manufacturer	
Wind screen corrections available		Yes
Uncertainties of wind screen corrections		Yes
Source of wind screen data	Manufacturer	
Mic pressure to free field corrections		Yes
Uncertainties of Mic to F.F. corrections		Yes
Source of Mic to F.F. corrections	Manufacturer	
Total expanded uncertainties within the requirements of IEC 61672-1:2002	Yes	
Specified or equivalent Calibrator	Specified	
Customer or Lab Calibrator	Lab Calibrator	
Calibrator adaptor type if applicable		NC-74-002
Calibrator cal. date		17 February 2022
Calibrator cert. number		UCRT22/1255
Calibrator cal cert issued by		0653
Calibrator SPL @ STP	94.00	dB Calibration reference sound pressure level
Calibrator frequency	1001.99	Hz Calibration check frequency
Reference level range	25 - 130	dB

Accessories used or corrected for during calibration - Extension Cable & Wind Shield WS-15  
 Note - if a pre-amp extension cable is listed then it was used between the SLM and the pre-amp.

Environmental conditions during tests	Start	End	
Temperature	23.77	23.50	± 0.30 °C
Humidity	37.1	33.4	± 3.00 %RH
Ambient Pressure	100.94	100.95	± 0.03 kPa

Response to associated Calibrator at the environmental conditions above.

Initial indicated level	94.2	dB	Adjusted indicated level	94.0	dB
The uncertainty of the associated calibrator supplied with the sound level meter ±				0.10	dB

Self Generated Noise This test is currently not performed by this Lab.

Microphone installed (if requested by customer) = Less Than	N/A	dB	A Weighting
Uncertainty of the microphone installed self generated noise ±	N/A	dB	

Microphone replaced with electrical input device -	UR = Under Range indicated					
Weighting	A		C		Z	
	14.5	dB UR	18.6	dB UR	24.1	dB UR
Uncertainty of the electrical self generated noise ±				0.12	dB	

The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor  $k=2$ , providing a coverage probability of approximately 95%. The uncertainty evaluation has been carried out in accordance with UKAS requirements.

For the test of the frequency weightings as per paragraph 12. of IEC 61672-3:2006 the actual microphone free field response was used.

The acoustical frequency tests of a frequency weighting as per paragraph 11 of IEC 61672-3:2006 were carried out using an electrostatic actuator.

..... END .....

Calibrated by: AH

R 1

Additional Comments The results on this certificate only relate to the items calibrated as identified above.

None

## Appendix C: Credentials of person compiling report

Paul Schmitz MBA CEng (person that performed noise assessments, data analysis, wrote and authorised the report)

Chartered Engineer for over 15 years

Member of the Institute of Acoustics  
Registered with the Engineering Council

Experience in noise and vibration for over 25 years

Spent three years in research in structural dynamics and noise at the ISVR

Followed an engineering career in vibration, structural dynamics, and noise in automotive, aerospace, consultancy industries and environmental consultancy, particularly in model updating of structural dynamics to manipulate mode shapes to improve designs to be resilient to vibration environments and to mitigate noise radiation.

In the automotive industry performed transfer path analyses to mitigate noise radiation by manipulating the structural behaviour of automotive components and body panels using LMS and Hyperworks and Abaqus finite element software.

Currently operates an independent consultancy in noise and vibration relating to the environment and other sectors requiring noise assessments and mitigation. Focusing on noise assessments to most noise standards and the mitigation thereof.

Previous professional memberships held.

Member of the Institute of Mechanical Engineers  
Member of the Royal Aeronautical Society  
Member of the Society of Environmental Engineers