NOISE IMPACT ASSESSMENT AT PLATTS AGRICULTURE LIMITED, WREXHAM

Platts Agriculture Limited,
Miners Park,
Llay Industrial Estate,
Wrexham,
LL12 0PJ

Report Prepared For:
Brian McKay
Group Compliance and Environmental Manager

Prepared By:
Andy Parks AMIOA
Environmental Consultant

Reviewed By:
Oliver Matthews AMIOA
Principal Consultant

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

APPENDICES

Appendix I: Calibration Certificates

ACRONYMS/TERMS USED IN THE TEXT

BS	**British Standard**
ECL	**Environmental Compliance Limited**
EP	**Environmental Permit**
Ha	**Hectares**
HGV	**Heavy Goods Vehicles**
NGR	**National Grid Reference**
NRW	**Natural Resources Wales**
NSR	**Noise Sensitive Receptor**
OS	**Ordnance Survey**
Platts	**Platts Agriculture Limited**
SWO	**Specified Waste Operation**
SLM	**Sound Level Meter**
SPL	**Sound Pressure Level**
the Site	**Platts Agriculture Wood Waste Processing Facility**

1. SYNOPSIS

1.1. Non-Technical Summary

1.1.1. A noise impact assessment was carried out at three Noise Sensitive Receptor ("NSR") locations adjacent to the Platts Agriculture Limited ("Platts") Wood Waste Processing Facility, Wrexham, LL12 0PJ ("the Site").

1.1.2. Noise monitoring was carried out in accordance with British Standard ("BS") 4142:2014+A1:2019 Methods for Rating and Assessing Industrial and Commercial Sound. Monitoring was performed during daytime and night-time periods, whilst on-site activities were operating as normal and repeated whilst all on-site activities had ceased, to determine the likelihood of complaints from the NSR's due to noise generating activities carried out at the Site.

1.1.3. On-site monitoring was also performed during a daytime period whilst normal operations were taking place on the Site. Monitoring was carried out on the specific activities taking place on the Site and also at site boundary locations.

2. INTRODUCTION

2.1. Overview

2.1.1. Environmental Compliance Limited ("ECL") were commissioned by Platts to carry out a noise impact assessment to determine the degree of disturbance on-site industrial processes may cause to NSR locations in the vicinity of the site. The noise impact assessment was requested by Natural Resources Wales ("NRW") as part of an application for a bespoke waste operation Environmental Permit ("EP").

2.1.2. Platts is proposing the operation of a bespoke waste facility accepting 60,000 tonnes per annum of non-hazardous wood waste to manufacture animal bedding and cubicle conditioner for use within the agricultural livestock sector.

2.1.3. Platts was formed in 1973 and is a market leading United Kingdom manufacturer and supplier of quality animal bedding and conditioner. Platts was awarded the Royal Warrant in 2018 as a mark of recognition for the supply of goods to Her Majesty the Queen.

2.1.4. Certain ambiguity within the regulations and cross referencing in the PAS 111 guidance meant Platts believed they were operating within the requirements of the legislation. Recent discussions, however, have highlighted that Platts require an EP for their activities which NRW requested must include a noise impact assessment, therefore, monitoring was carried out and this report prepared.

2.1.5. At the time of preparing this report, ECL are not aware of any historical or existing noise complaints made by residents at the NSR locations or other members of the public related to production activities at the Site.

2.2. Listed Activities

2.2.1. Platts propose to undertake one Specified Waste Operation ("SWO") as follows:

- storage of non-hazardous waste wood with treatment limited to pulverising and removal of wood dust from clean wood waste for use as animal bedding material and pulverising of treated wood waste to produce wood dust for use as a cubicle conditioner within the agricultural livestock sector.

2.2.2. The site operates for 24 hours a day, seven days a week. Noise generating activities that are carried out on the site include the following:

- operation of diesel-powered forklift trucks loading and unloading trailers and moving product around site;
- Heavy Goods Vehicles ("HGVs") delivering waste material and removing produce from the site; and,
- operation of hammer mills and extraction systems.

3. THE APPLICATION SITE

3.1. Site Location and Setting

3.1.1. The Site is located at Miners Park within the Llay Industrial Estate and is centred on Ordinance Survey ("OS") National Grid Reference ("NGR") 332077 356370. The Site will occupy an area of approximately 1.56 Hectares ("Ha").

3.1.2. The location of the Site and the approximate site boundary which is also the proposed Permit boundary (outlined in red) is provided in Figure 1.

Figure 1: Site Location and Approximate Site Boundary

3.1.3. During the planning phase of the project, three potential NSR locations were identified as being residential areas within 500m of the Site boundary. However, upon attending site to determine the suitability of the monitoring locations, it was found that the originally proposed locations NSR1 and NSR2 were unduly influenced by traffic noise from the B5102 Llay Road immediately to the south of the locations.

3.1.4. It was therefore decided that NSR1 should be moved to a location approximately 300m to the south of the originally proposed location to ensure a more representative measurement of noise emanating from the Site. Measurements were taken from location NSR2 as no alternative location was identified. Details of the specific NSR's where measurements were taken are provided in Table 1. A visual representation of the originally proposed NSR locations is provided in Figure 2 and the actual NSR locations where measurements were taken provided in Figure 3.

Table 1: Potential Noise Sensitive Receptors

ECL Ref.	Description	Easting	Northing	Distance from Site (m)	Heading (degrees)
NSR1[(a)]	Residential properties at The Meadows Barns	332590	355767	787	139
NSR2	Residential properties at Alandale	331690	355812	680	214
NSR3[(b)]	Agricultural field adjacent to Gwastad farm properties[(a)]	331651	355962	592	226

Notes to Table 1

(a) Monitoring location NSR1 was moved to a position approximately 300m south of the originally proposed location due to the high level of traffic noise from the B5102 Llay Road at the originally proposed location.

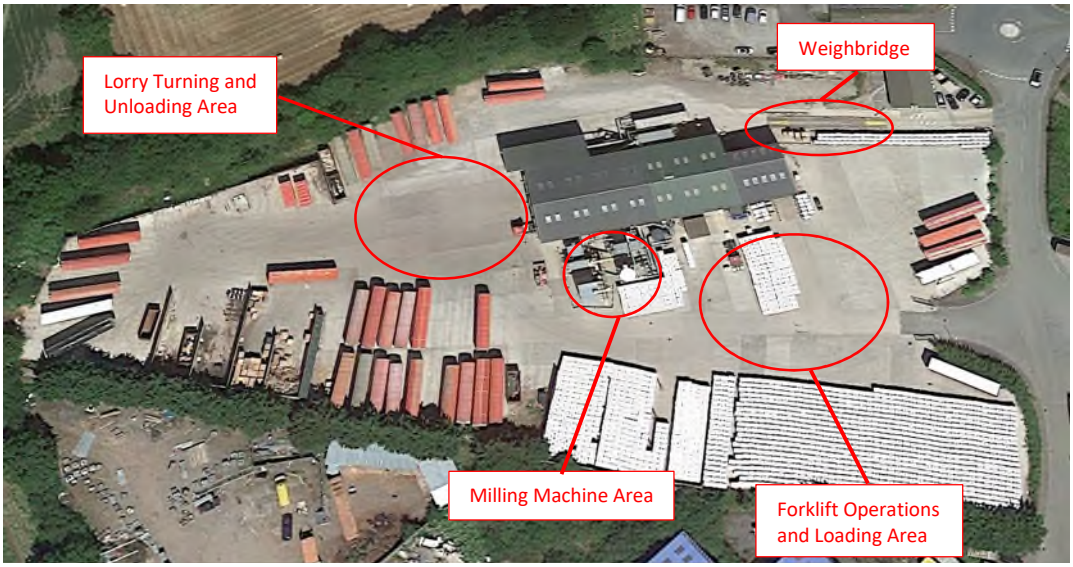
(b) After discussion with the resident of the farm, the position of Location 3 was moved from adjacent to the farm buildings to a field 190m to the south, due to concerns that livestock, that would be kept in the field adjacent to the farm buildings, would be disturbed and may become aggressive during the night-time monitoring.

Figure 2: Originally Proposed Potential Noise Sensitive Receptor Locations

Figure 3: Measured Potential Noise Sensitive Receptors Locations

3.1.5. The main noise sources on-site were identified as the hammer mills and extraction system in the milling machinery area and vehicle movements in the lorry turning area and at the weighbridge. Identification of these location within the Site are provided in Figure 4.

Figure 4: Identified On-site Main Noise Sources



3.1.6. On-site noise monitoring was carried out during a daytime period during normal on-site operations. The monitoring was performed adjacent to identified specific noise sources and also at site boundary locations.

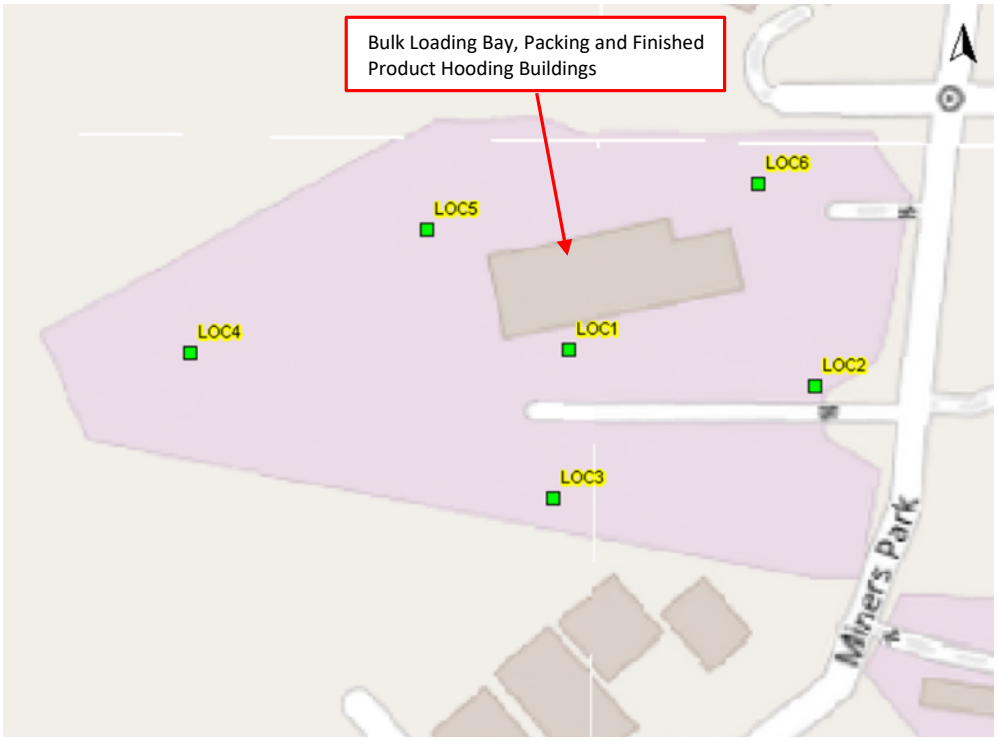
3.1.7. However, in areas to the south and west of the site, where full trailers containing processed and unprocessed product were parked, it was found that the trailers seemed to have a baffling effect, reducing the perceived noise level at the site boundary. There was also very limited space between the trailers and the site boundary hedges making it impossible to perform the testing in a free field environment, therefore monitoring was performed in front of the parked trailers closer to the sound sources to represent a worst-case scenario.

3.1.8. Details of the on-site monitoring locations are provided in Table 2 and a visual representation is provided in Figure 5.

Table 2: On-site Specific Sound Source and Site Boundary Monitoring Locations

ECL Ref.	Description	Easting	Northing
LOC1	Adjacent Milling Machinery, Chipper 1/Hammer Mill 3 and Chipper2/Hammer Mill 2	332081	356367
LOC2	South Gate	332142	256358
LOC3	Finished Product Storage Bay	332077	356330
LOC4	West Site Boundary	331987	356366
LOC5	Adjacent Unloading Bays	332046	356394
LOC6	Adjacent Weighbridge	332128	356408

Figure 5: On-site Specific Sound Source and Site Boundary Monitoring Locations



3.2. Ground Conditions and Geographical Context of the Area

3.2.1. All ground contained within the site boundary is covered by concrete or tarmac.

3.2.2. The Site is located on the west boundary of the Llay Industrial Estate. The areas to the north-east, east and south-east of the Site are dominated by the Llay Industrial Estate north and south. Ground cover in these areas is predominantly concrete with a mix of industrial and commercial buildings, a network of roads and some small patches of vegetation around site boundaries.

3.2.3. Beyond the boundary of the industrial estate, the ground between the site and NSR locations is rural farmland with boundaries of hedgerows and trees.

3.2.4. Platts have operated on the Site since the development of Llay Industrial Estate in 2001.

3.2.5. The Llay Industrial Estate is comprised of a mixture of commercial and industrial units. The types of industry operating on the estate that may contribute to the ambient sound levels in the area include woodworking, asphalt mixing, building materials supply and aerospace manufacture.

3.2.6. During the daytime and night-time monitoring periods at each of the NSR locations, it was also noted that the predominant noise source, whether the Site was operating or not, was HGV traffic on the B5102 Llay Road travelling to and from the direction of the industrial estate. Although the only HGV traffic that was witnessed entering or leaving the industrial estate was from the NSR1 monitoring location to the south of Llay Road.

3.2.7. A photographic record of the noise monitor at each monitoring location was taken whilst the monitoring was being performed during daytime periods. These photographs are provided in Figures 6 to 14. All off-site photographs at locations NSR1, NSR2 and NSR3 display the noise monitor facing toward the Site.

Figure 6: Photograph of Monitoring Location NSR1

Figure 7: Photograph of Monitoring Location NSR2

Figure 8: Photograph of Monitoring Location NSR3

Figure 9: Photograph of On-Site Monitoring Location LOC1

Figure 10: Photograph of On-Site Monitoring Location LOC2

Figure 11: Photograph of On-Site Monitoring Location LOC3

Figure 12: Photograph of On-Site Monitoring Location LOC4

Figure 13: Photograph of On-Site Monitoring Location LOC5

Figure 14: Photograph of On-Site Monitoring Location LOC6

4. EQUIPMENT AND METEOROLOGY

4.1. Noise and Meteorological Monitoring Equipment

4.1.1. Details of the instrumentation used to measure noise levels and meteorological data are provided in Table 3. All calibration certificates are provided in Appendix 1:

Table 3: Noise and Meteorological Monitoring Equipment

Instrument	Make / Model	Serial Number	Accreditation	Date of Certificate
Sound Level Meter	Casella CEL-63X	4637948	Casella	17/02/2020
Microphone	Casella CEL-495	001295	Casella	17/02/2020
Calibrator	Casella CEL-120/1	5139241	Casella	16/04/2021
Anemometer	Airflow LCA301	0259042	ECL (internal)[(a)]	05/07/2021
Weather Station	Oregon Scientific BAA913HG	ECL/ID/204	ECL (Internal)[(b)]	07/05/2021

Notes to Table 4
(a) Unit calibrated against UKAS accredited master unit (ECL/ID/490).
(b) Unit calibrated against UKAS accredited Master Unit (ECL/ID/111).

4.2. Field Calibration Checks and Meteorological Conditions

4.2.1. Calibration of the Sound Level Meter ("SLM") microphone was carried out before and after each measurement period. The microphone was calibrated at a level of 114dB @ 1000Hz, the calibrator was attached to the end of the microphone. When the SLM detected a steady tone at the calibration frequency, it would automatically switch to the calibration screen allowing the calibration button to be pressed which would start the calibration procedure. Upon completion of the calibration procedure the SLM would display the calibration result and calibration offset, if any.

4.2.2. The meteorological conditions of wind speed, wind direction, ambient temperature, relative humidity, and cloud cover were recorded during each measurement period. Wind speed and direction was measured using a hand-held rotating vane anemometer. The instrument was held approximately 1.5m above ground level and rotated until the highest wind speed was recorded, the direction in which the anemometer was facing was used to determine the direction from which the wind was blowing. Ambient temperature and relative humidity were obtained using a thermo-hygrometer weather station. The weather station was positioned at a level of approximately 1.5m above ground level and left to stabilise during the monitoring period, when the readings had stabilised they were recorded. Cloud cover was visually estimated using the okta scale, with the convention that:

- 0 oktas represent the complete absence of cloud;
- 1 okta represents a cloud amount of 1 eighth or less, but not zero;
- 7 oktas represent a cloud amount of 7 eights or more, but not full cloud cover; and
- 8 oktas represent full cloud cover with no breaks.

4.2.3. Details of the pre and post calibrations and meteorological conditions during each measurement period are provided in Table 4. Upon completion of the monitoring the data was downloaded into the Casella Insight Data Management software programme, Version 199.005.17.00, for analysis and interpretation.

Table 4: Calibration and Meteorological Conditions

Time of Day	Site Condition	Location	Calibration Offset Pre / Post (dB)	General Weather Conditions	Wind Speed (max m/s) / Direction	Relative Humidity (%)	Ambient Temperature Pre / Post (°C)	Cloud Cover (oktas)
Night-time Measurements	Non-Operational	NSR1	-0.1 / 0.2	Dry, Calm	0.0 / not applicable	61	15.1 / 15.1	2
		NSR2	0.0 / 0.0	Dry, Calm	0.0 / not applicable	61	15.0 / 15.1	2
		NSR3	0.1 / 0.1	Dry, Calm	0.0 / not applicable	61	15.0 / 15.1	2
	Operational	NSR1	0.0 / 0.1	Dry, Calm	0.0 / not applicable	62	15.9 / 16.0	3
		NSR2	0.0 / 0.0	Dry, Calm	0.0 / not applicable	62	16.0 / 15.9	3
		NSR3	0.0 / 0.0	Dry, Calm	0.0 / not applicable	62	16.1 / 16.1	3
Daytime Measurements	Non-Operational	NSR1	-0.1 / 0.0	Dry, Light Breeze	2.3 / N	54	17.5 / 17.4	7
		NSR2	0.0 / -0.1	Dry, Light Breeze	3.2 / N	54	17.5 / 17.5	7
		NSR3	0.0 / 0.0	Dry, Light Breeze	3.5 / N	54	17.5 / 17.5	7
	Operational	NSR1	0.1 / 0.1	Dry, Light Air	1.9 / N	62	17.0 / 16.9	8
		NSR2	0.0 / 0.0	Dry, Light Air	1.5 / N	62	17.4 / 17.4	8
		NSR3	0.0 / 0.1	Dry, Light Air	1.8 / N	62	17.3 / 17.4	8
		LOC1	0.0 / 0.0	Dry, Light Air	1.1 / N	54	18.3 / 18.2	8
		LOC2	0.0 / 0.0	Dry, Light Air	1.2 / N	57	18.4 / 18.4	8
		LOC3	0.0 / 0.0	Dry, Light Air	1.2 / N	58	18.3 / 18.3	8
		LOC4	0.0 / 0.0	Dry, Light Air	1.4 / N	56	18.3 / 18.3	8
		LOC5	0.0 / 0.0	Dry, Light Air	1.3 / N	55	18.3 / 18.3	8
		LOC6	0.0 / 0.0	Dry, Light Air	1.2 / N	54	18.6 / 18.5	8

5. METHODOLOGY

5.1. Noise Impact Assessment Monitoring Methodology

5.1.1. Noise monitoring was performed at each NSR location during daytime and night-time periods in accordance with BS 4142:2014+A1:2019. The NSR locations were chosen as they were considered to be the most likely to provide results that were representative of the ambient and residual sound levels.

5.1.2. Monitoring was performed using a Class 1 SLM, using fast time weighting, which conforms to the requirements of BS EN 61672-1. All measurements of the ambient sound level, residual sound level and the background sound level were taken at heights of between 1.2m to 1.5m above ground level and under similar conditions. Measurements were taken at least 3.5m from any reflecting surface, other than the ground, to minimise the influence of reflections.

5.1.3. Weather conditions of wind speed and direction, relative humidity, ambient temperature, and cloud cover were recorded over each measurement period. Care was taken to avoid making measurements in poor weather conditions such as wind speeds greater than 5m/s. No monitoring was performed during periods of fog or precipitation.

5.1.4. Monitoring was performed at each location during daytime (07:00h to 23:00h) and night-time (23:00h to 07:00h) for a period of 1 hour during daytime periods and 15 minutes during night-time periods.

5.1.5. A field calibration check of the SLM was performed at the beginning of every measurement by means of an externally calibrated sound calibrator, the calibration was repeated at the end of the measurement period to determine calibration drift over the monitoring period.

5.1.6. Monitoring was performed at each location to determine the ambient sound level, distinguishing the specific sound from the residual sound. This was achieved by making measurements whilst normal site operations were being carried out and repeated when all noise generating site operations had ceased.

5.1.7. If required, a subjective rating penalty shall be applied correcting the specific sound level if a tone, impulse or other characteristic occurs as follows:

- tonality: a penalty of 2dB for a tone which is just perceptible at the noise receptor, 4dB where it is clearly perceptible and 6dB where it is highly perceptible;
- impulsivity: a penalty of 3dB for impulsivity which is just perceptible at the noise receptor, 6 dB where it is clearly perceptible and 9dB where it is highly perceptible; and
- intermittency: a penalty of 3dB if the intermittency is readily distinctive against the residual acoustic environment.

5.1.8. During each monitoring period a subjective record was made of the predominant noise source in the vicinity of the monitoring location; any noise that could be determined to emanate from the site and any off-site noise producing activities that may have affected the measurement results.

5.1.9. The specific sound level at the assessment location is calculated by correcting the ambient sound level to remove the contribution of the residual sound level using the following equation:

$$L_s = 10\text{Log}\,(10^{La/10} - 10^{Lr/10})$$

where: L_s is the Specific Sound Level
L_a is the Ambient Sound Level
L_r is the Residual Sound Level

5.1.10. The significance of the industrial sound from the Site shall be assessed depending upon the margin by which the rating level of the specific sound source exceeds the background sound level and the context in which the sound occurs.

5.1.11. An initial estimate of the impact of the specific sound shall be obtained by subtracting the measured background sound level from the rating level, which is equivalent to the specific sound level if no subjective rating penalty is applied (refer to Section 5.1.7). Typically, the greater this difference the greater the magnitude of the impact:

- a difference of around +10dB or more is likely to be an indication of a significant adverse impact, depending on the context;
- a difference of around +5dB is likely to be an indication of an adverse impact, depending on the context; and
- the lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context.

5.2. On-site Monitoring Methodology

5.2.1. Monitoring was performed using the methodology described in Section 5.1, except that all monitoring was performed for a period of 15 minutes at each location, during daytime periods whilst the Site was operating normally. A subjective record was made of any on-site noise generating activities observed during the monitoring periods at each location.

5.2.2. The monitoring was performed to enable a distance attenuation calculation of the noise impact of noise generating activities on the Site at NSR locations to be performed should the results of the noise impact assessment be inconclusive. If the distance attenuation calculation from the source to the NSR locations show that the noise contribution from the Site be less than the background noise level at the NSR locations, the contribution of the noise from the Site can be considered to be insignificant and have no impact on the NSR locations.

5.2.3. The distance attenuation calculator enables an analysis of how sound propagates in the air, the further away from the sound source the receptor location is, the lower the perceived sound intensity would be expected to be. The distance attenuation calculation is performed using the following formula:

$$L2 = L1 - \left[20 \log\left(\frac{r1}{r2}\right)\right].$$

where: L1 is the sound pressure level at point 1
L2 is the sound pressure level at point 2
r1 is the distance from the sound source to point 1
r2 is the distance from the sound source to point 2

6. NOISE MONITORING DATA AND PREDICTIONS

6.1. Off-site NSR Measurement Data

6.1.1. Noise measurements were carried out at each NSR location during daytime and night-time periods over the 13th and 14th October 2021.

6.1.2. The data measured during the daytime and night-time noise impact assessment is provided in Tables 5 and 6 and assessment of the impacts at the NSR locations is presented in Tables 7 and 8.

6.1.3. Graphical representations of the $L_{Aeq,T}$ dB data measured at each location during each monitoring period are presented in Figures 15 to 26. A subjective record of noise events made by the operator over the monitoring period is provided below with each figure identifying events that may have affected the noise levels at the monitoring locations.

6.2. On-site Location Measurement Data

6.2.1. Noise measurements were carried out at each location during a daytime period on the 14th October 2021.

6.2.2. The data measured at each on-site monitoring location is provided in Table 9 and the calculated sound pressure level at each NSR location attenuated for distance from the maximum on-site measured noise level is provided in Table 10.

6.2.3. Graphical representations of the $L_{Aeq,T}$ dB data measured at each location during each monitoring period are presented in Figures 27 to 32. A subjective record of noise events made by the operator over the monitoring period is provided below each figure identifying events that may have affected the noise levels at the monitoring locations.

Table 5: NSR Locations dB Noise Monitoring Data, Daytime

Location	Date / Time	Site Condition	Ambient Noise Level $L_{Aeq,T}$	Residual Noise Level $L_{Aeq,T}$	Background Noise Level $L_{A90,T}$	Subjective Comment
NSR1	13th October 2021 / 13:50 to 14:50	Operating	48	n/a	42	Dominant sound source from HGV's and light traffic on the B5102, Llay road, approximately 200m north of the monitoring location. Intermittent birdsong and light aircraft flying overhead. No discernible sound from the direction of the Site throughout the monitoring period.
NSR2	13th October 2021 / 15:28 to 16:28	Operating	60	n/a	44	Dominant sound source from HGV's and light traffic on the B5102, Llay road, immediately south of the monitoring location. Intermittent birdsong and light aircraft flying overhead. No discernible sound from the direction of the Site throughout the monitoring period.
NSR3	13th October 2021 / 16:58 to 17:58	Operating	46	n/a	41	Dominant sound source from HGV's and light traffic on the B5102, Llay road, approximately 150m south of the monitoring location. Intermittent birdsong and light aircraft flying overhead. No discernible sound from the direction of the Site throughout the monitoring period.
NSR1	14th October 2021 / 10:05 to 11:05	Not Operating	n/a	52	42	Dominant sound source from HGV's and light traffic on the B5102, Llay road, approximately 200m north of the monitoring location. Intermittent birdsong and light aircraft flying overhead. No discernible sound from the direction of the Site throughout the monitoring period.
NSR2	14th October 2021 / 11:14 to 12:14	Not Operating	n/a	58	43	Dominant sound source from HGV's and light traffic on the B5102, Llay road, immediately south of the monitoring location. Intermittent birdsong and light aircraft flying overhead. Noise from mechanical equipment operating to the west. No discernible sound from the direction of the Site throughout the monitoring period.
NSR3	14th October 2021 / 12:20 to 13:20	Not Operating	n/a	51	46	Dominant sound source from HGV's and light traffic on the B5102, Llay road, approximately 150m south of the monitoring location. Intermittent birdsong and light aircraft flying overhead. No discernible sound from the direction of the Site throughout the monitoring period.

Table 6: NSR Locations dB Noise Monitoring Results, Night-Time

Location	Date / Time	Site Condition	Ambient Noise Level $L_{Aeq,T}$	Residual Noise Level $L_{Aeq,T}$	Background Noise Level $L_{A90,T}$	Subjective Comment
NSR1	14th October 2021 / 02:00 to 02:15	Operating	36	n/a	29	Dominant sound source from HGV's and light traffic on the B5102, Llay road, approximately 200m north of the monitoring location. Low steady humming noise coming from the direction of the industrial estate. No discernible noise from the Site.
NSR2	14th October 2021 / 01:40 to 01:55	Operating	32	n/a	26	Dominant sound source from HGV's and light traffic on the B5102, Llay road, immediately south of the monitoring location. Low steady humming noise coming from the direction of the industrial estate. No discernible noise from the Site.
NSR3	14th October 2021 / 01:16 to 01:31	Operating	36	n/a	32	Dominant sound source from HGV's and light traffic on the B5102, Llay road, approximately 150m south of the monitoring location. Low steady humming noise coming from the direction of the industrial estate. No discernible noise from the Site.
NSR1	13th October 2021 / 23:20 to 23:35	Not Operating	n/a	35	27	Dominant sound source from HGV's and light traffic on the B5102, Llay road, approximately 200m north of the monitoring location. Occasional cattle noise and dogs barking from adjacent field and residential buildings. No discernible noise from the Site.
NSR2	13th October 2021 / 23:45 to 00:00	Not Operating	n/a	46	30	Dominant sound source from HGV's and light traffic on the B5102, Llay road, immediately south of the monitoring location. No discernible noise from the Site.
NSR3	14th October 2021 / 00:10 to 00:25	Not Operating	n/a	38	33	Dominant sound source from HGV's and light traffic on the B5102, Llay road, approximately 150m south of the monitoring location. Low steady humming noise coming from the direction of the industrial estate. No discernible noise from the Site.

Table 7: Noise Impact Assessment Monitoring Results, Daytime

Location	Ambient Noise Level	Residual Noise Level	Specific Noise Level	Rating Penalty	Rating Level	Background Noise Level	Excess of Rating Over Background Sound Level	Assessment Results
	L_a	L_r	L_s	dB	dB	$L_{A90,T}$	dB	
NSR1	48	52	n/a	3[(a)]	n/a	42	n/a	Adverse impact unlikely
NSR2	60	58	57	3[(a)]	60	44	16	Adverse impact highly likely
NSR3	46	51	n/a	3[(a)]	n/a	41	n/a	Adverse impact unlikely

Notes to Table 7

(a) Although the specific sound did not feature characteristics that were either tonal, nor impulsive, nor intermittent, a penalty of 3dB was applied to the specific sound level in order to represent a worst-case scenario.

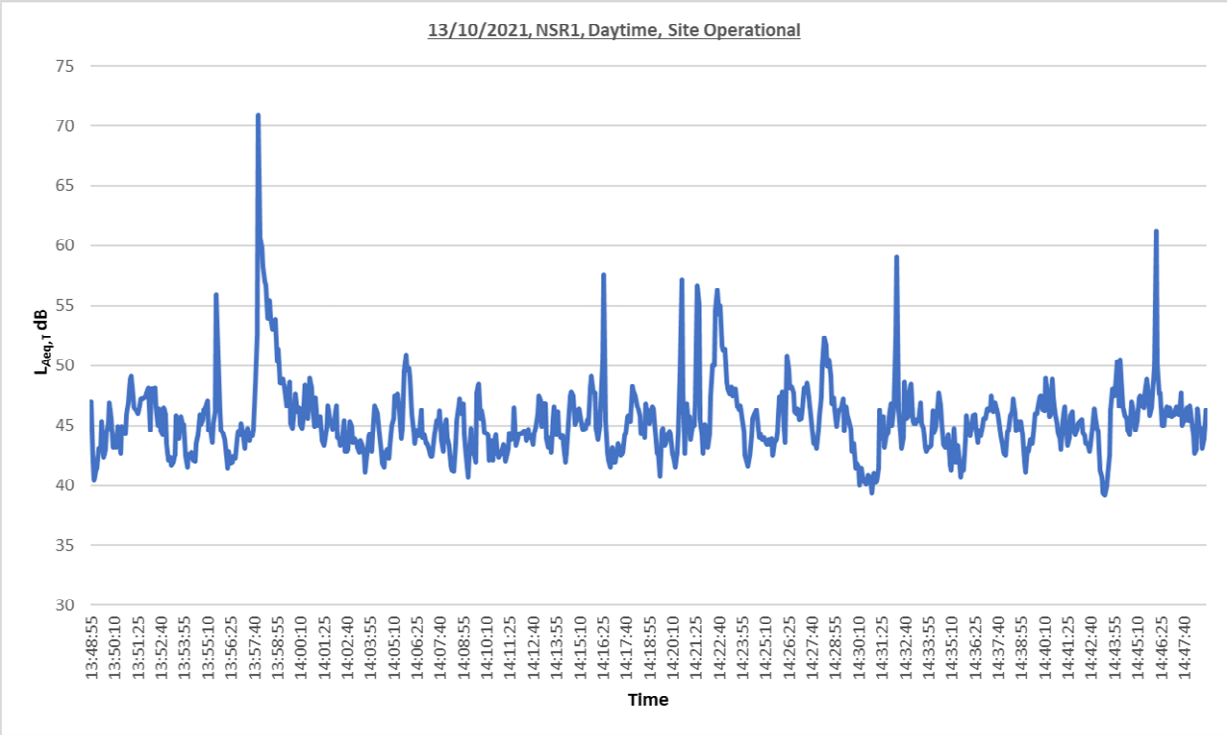
Table 8: Noise Impact Assessment Monitoring Results, Night-Time

Location	Ambient Noise Level	Residual Noise Level	Specific Noise Level	Rating Penalty	Rating Level	Background Noise Level	Excess of Rating Over Background Sound Level	Assessment Results
	L_a	L_r	L_s	dB	dB	$L_{A90,T}$	dB	
NSR1	36	35	29	3[(a)]	32	29	3	Adverse impact unlikely
NSR2	32	46	n/a	3[(a)]	n/a	30	n/a	Adverse impact unlikely
NSR3	36	38	n/a	3[(a)]	n/a	33	n/a	Adverse impact unlikely

Notes to Table 8

(a) Although the specific sound did not feature characteristics that were either tonal, nor impulsive, nor intermittent, a penalty of 3dB was applied to the specific sound level in order to represent a worst-case scenario.

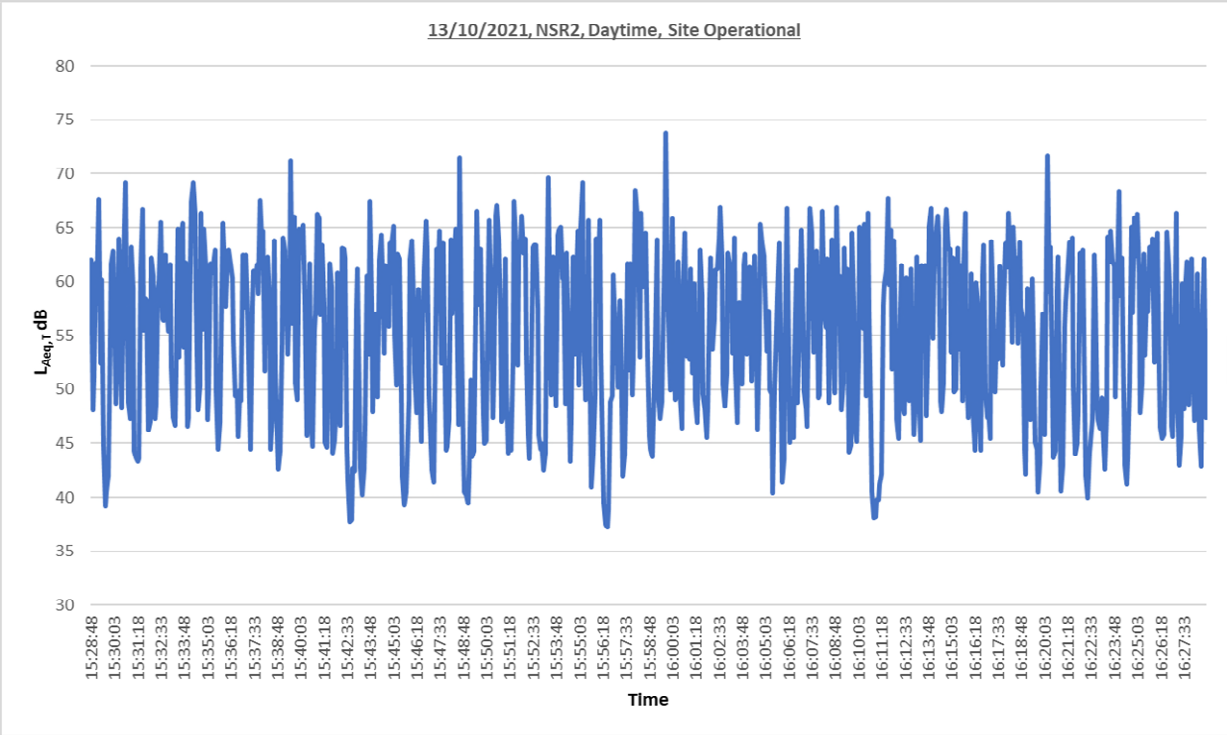
Figure 15: $L_{Aeq,T}$ dB Data, 13/10/2021, NSR1, Daytime, Site Operational



Notes to Figure 15

Vehicle traffic passing continuously on B5102 Llay Road approximately 220m to the north of the monitoring location.
13:58hrs: Tractor passes by the monitoring location on access road heading north.
14:15hrs: Car passes by the monitoring location on access road heading south.
14:20hrs: Light aircraft flying overhead, car passes by the monitoring location on access road heading north.
14:22hrs: Car passes by the monitoring location on access road heading north.
14:28hrs: Light aircraft flying overhead.
14:32hrs: Car passes by the monitoring location on access road heading north.
14:46hrs: Car passes by the monitoring location on access road heading north.

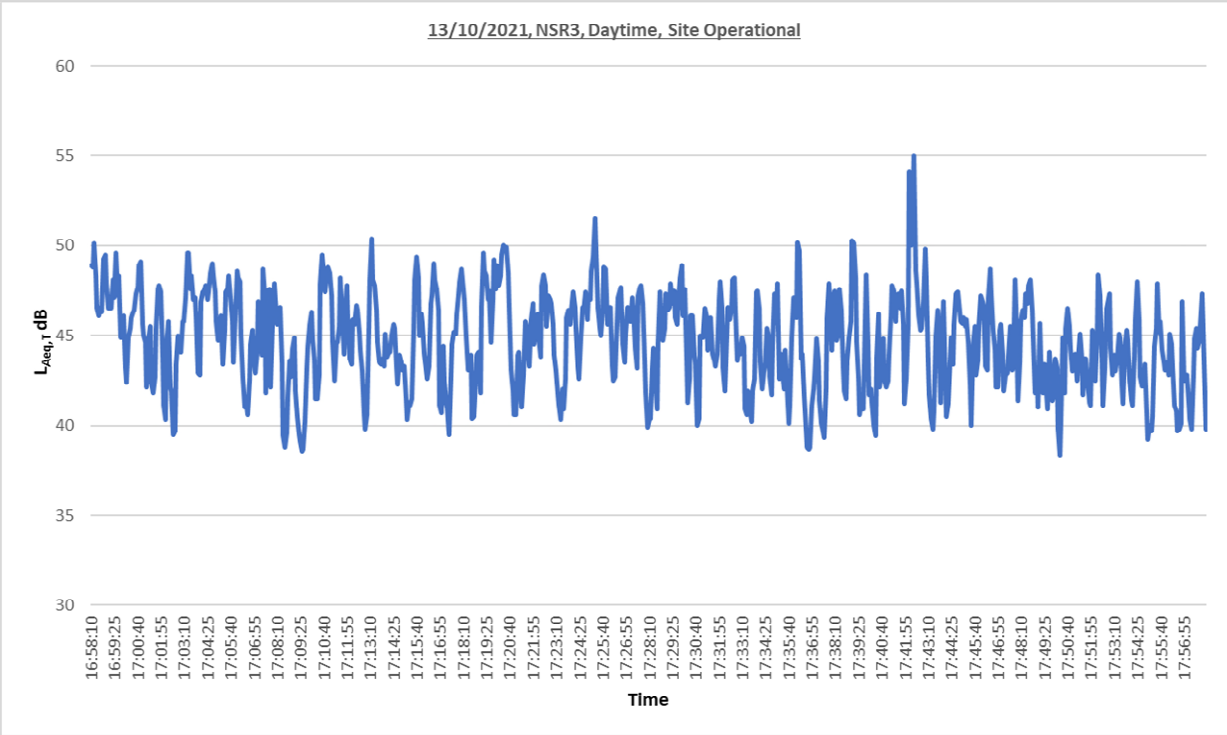
Figure 16: $L_{Aeq,T}$ dB Data, 13/10/2021, NSR2, Daytime, Site Operational



Notes to Figure 16

Vehicle traffic passing continuously on B5102 Llay Road immediately to the south of the monitoring location.
15:36hrs: Light aircraft flying overhead.
16:25hrs: Light aircraft flying overhead.

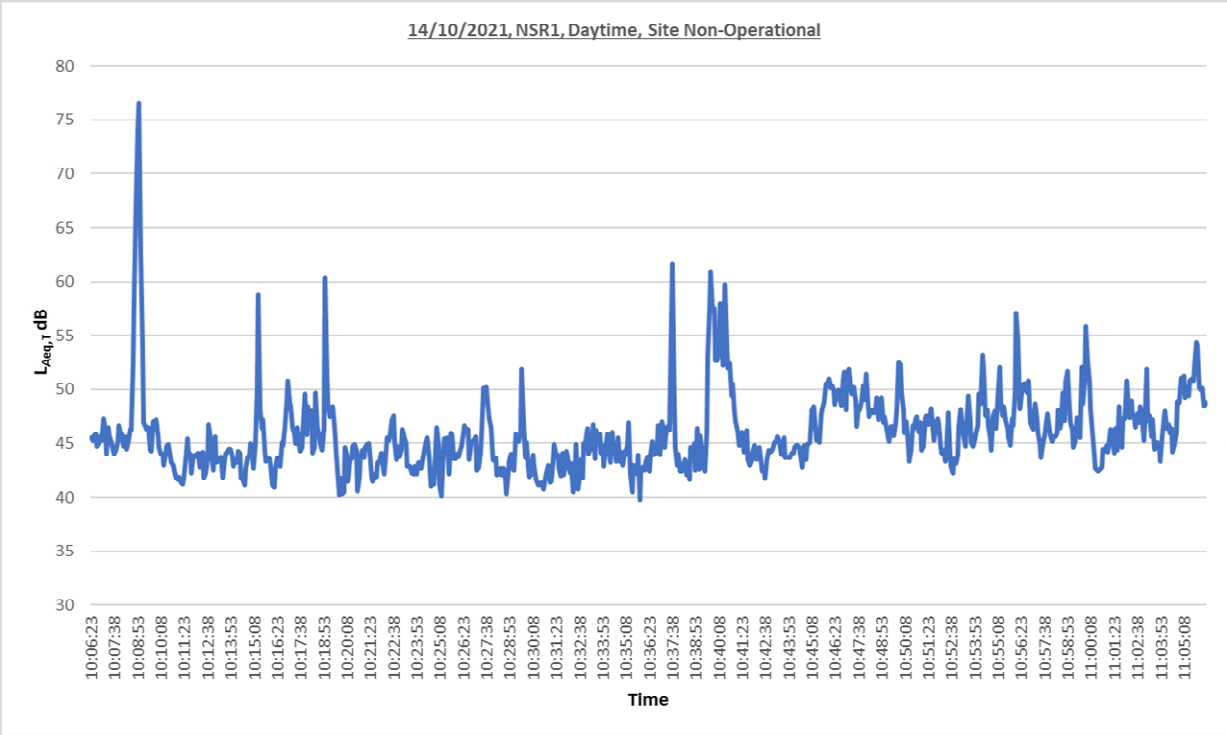
Figure 17: $L_{Aeq,T}$ dB Data, 13/10/2021, NSR3, Daytime, Site Operational



Notes to Figure 17

Vehicle traffic passing continuously on B5102 Llay Road approximately 150m to the south of the monitoring location.
17:43hrs: Rattling trailer noise heard from road to the south.

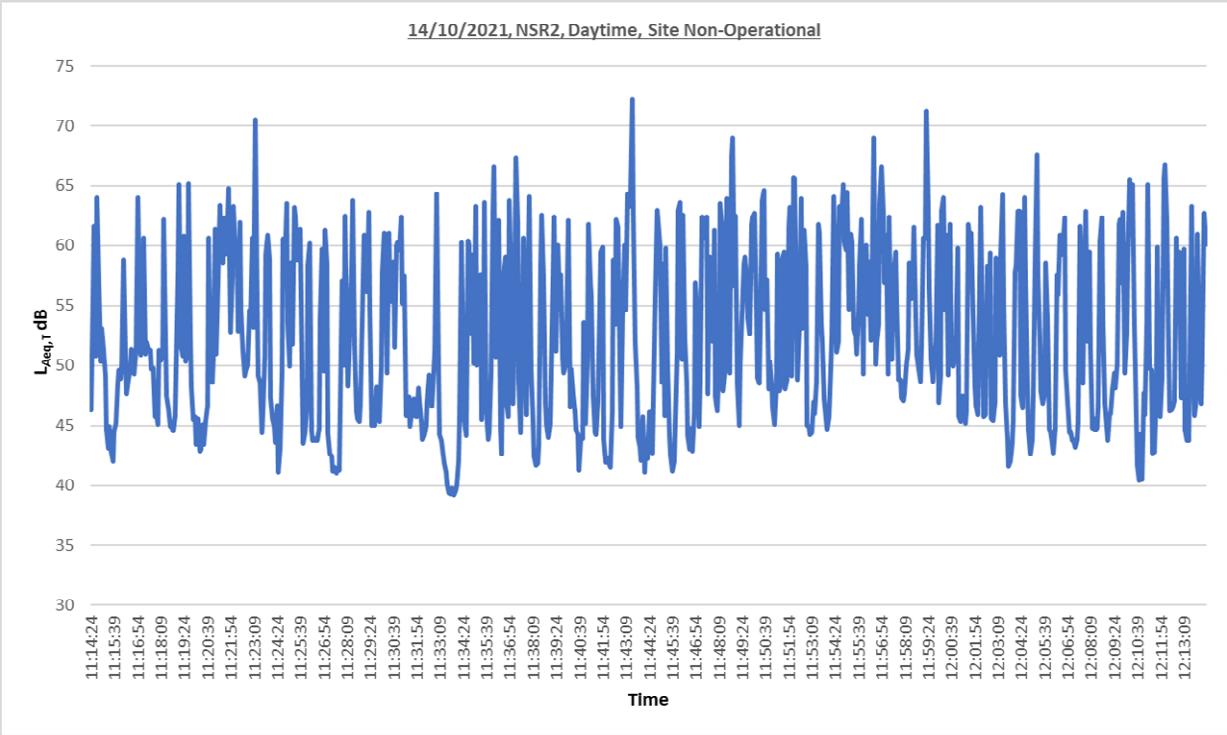
Figure 18: $L_{Aeq,T}$ dB Data, 14/10/2021, NSR1, Daytime, Site Non-Operational



Notes to Figure 18

Vehicle traffic passing continuously on B5102 Llay Road approximately 220m to the north of the monitoring location.
10:07hrs: Two tractors pass by the monitoring location on access road heading north.
10:13hrs: Car passes by the monitoring location on access road heading north.
10:17hrs: Car passes by the monitoring location on access road heading north.
10:36hrs: Aircraft flying overhead.
10:50hrs: Emergency vehicle siren heard to the west.
10:52hrs: Light aircraft flying overhead.

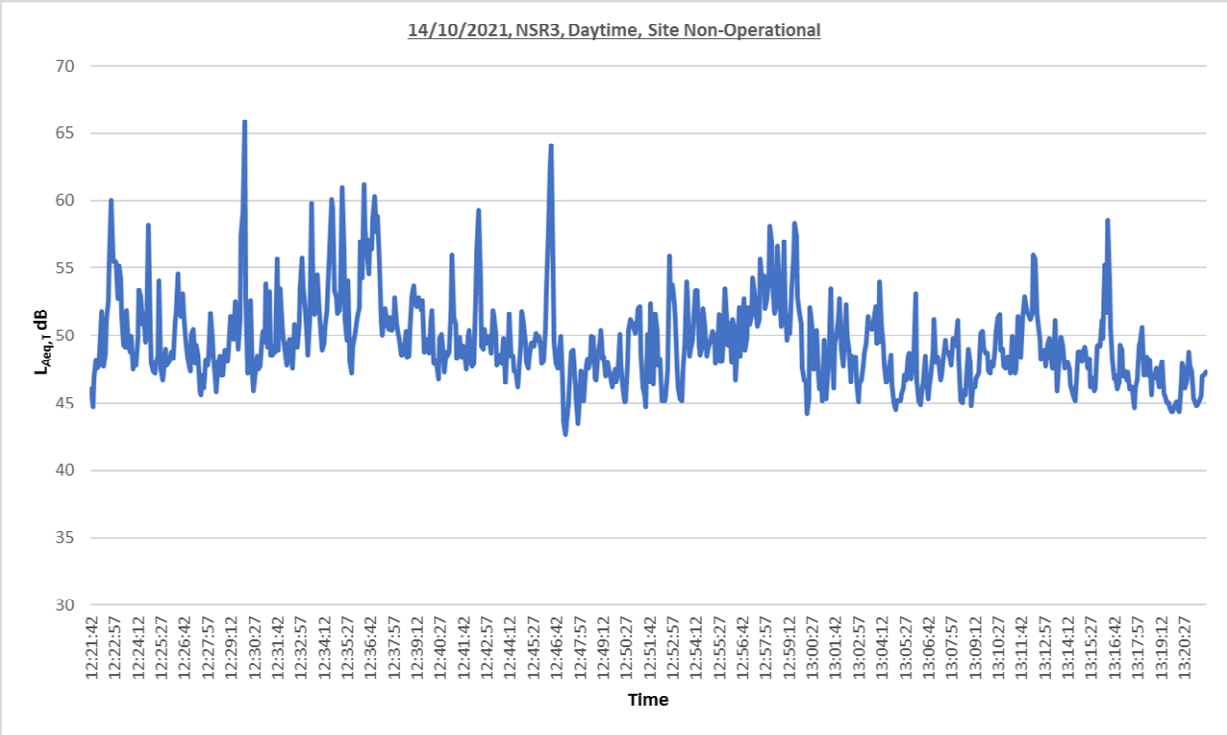
Figure 19: $L_{Aeq,T}$ dB Data, 14/10/2021, NSR2, Daytime, Site Non-Operational



Notes to Figure 19

Vehicle traffic passing continuously on B5102 Llay Road immediately to the south of the monitoring location.
11:15hrs: Aircraft flying overhead.

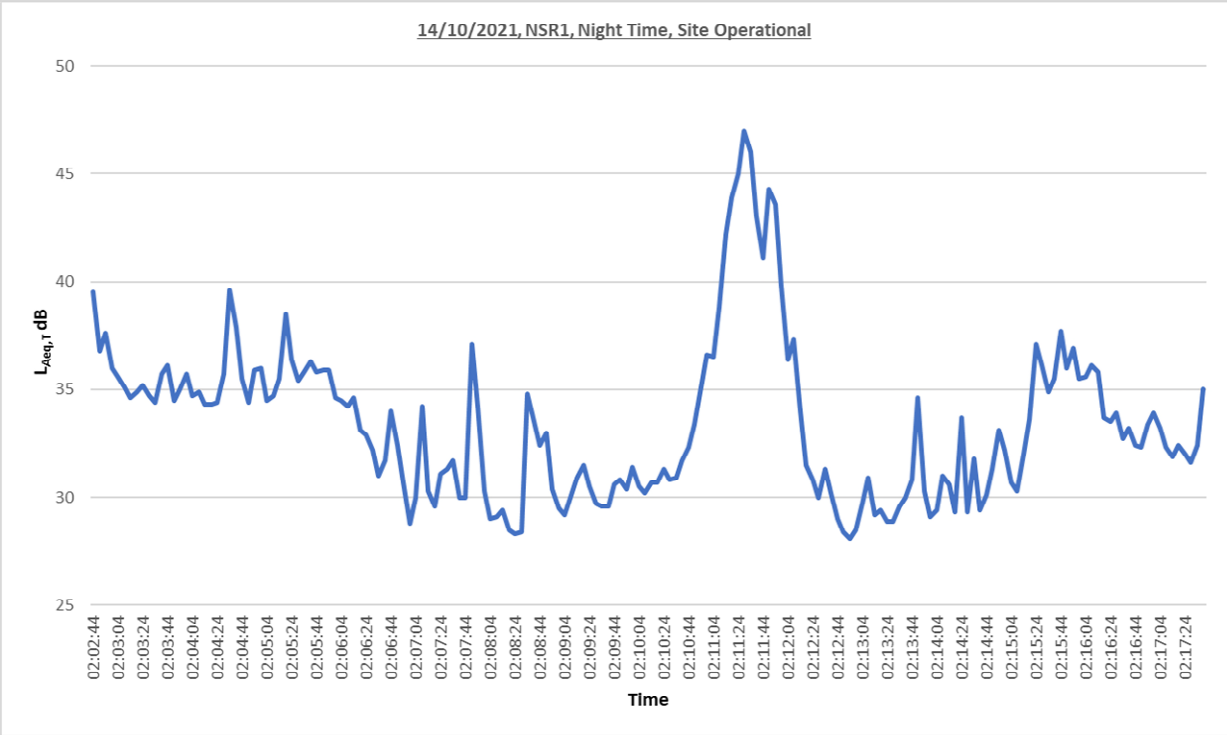
Figure 20: $L_{Aeq,T}$ dB Data, 14/10/2021, NSR3, Daytime, Site Non-Operational



Notes to Figure 20

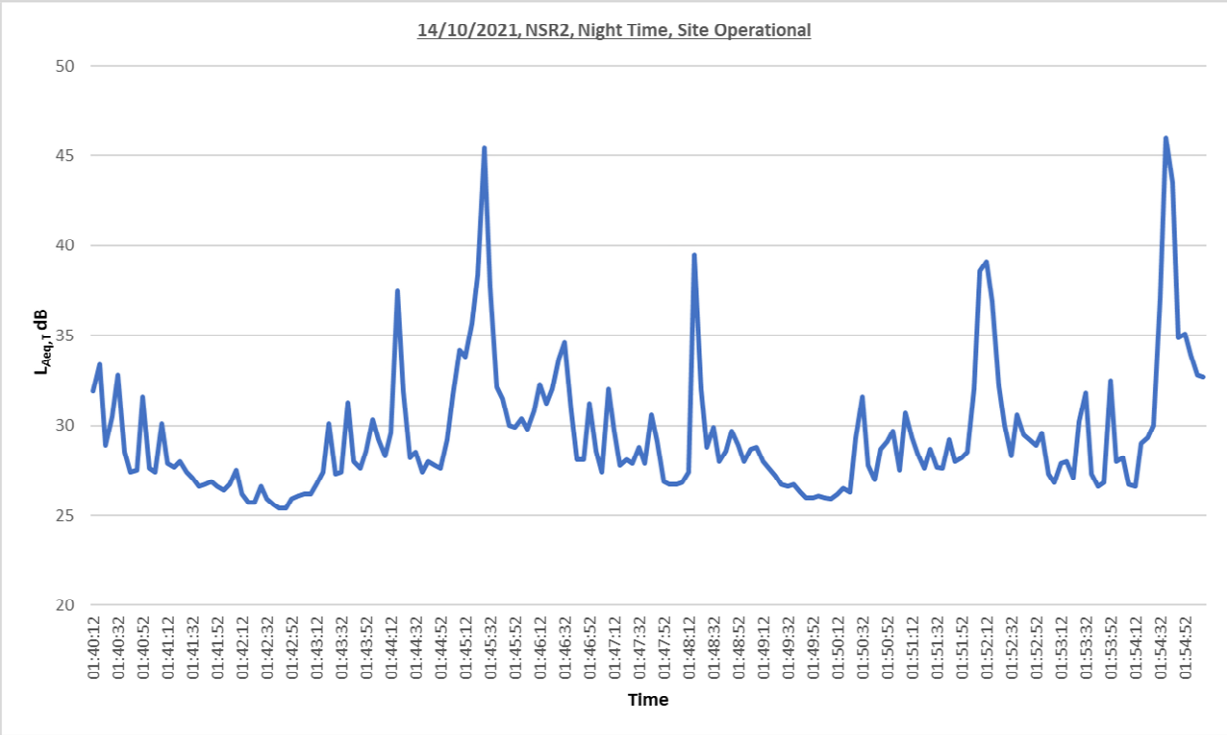
Vehicle traffic passing continuously on B5102 Llay Road approximately 150m to the south of the monitoring location.
12:29hrs: Noise from farm machinery to the north.
12:38hrs: Emergency vehicle siren heard to the west.
12:45hrs: Noise from HGV passing to the south.
13:12hrs: Noise from tractor in field to the north east.

Figure 21: $L_{Aeq,T}$ dB Data, 14/10/2021, NSR1, Night Time, Site Operational



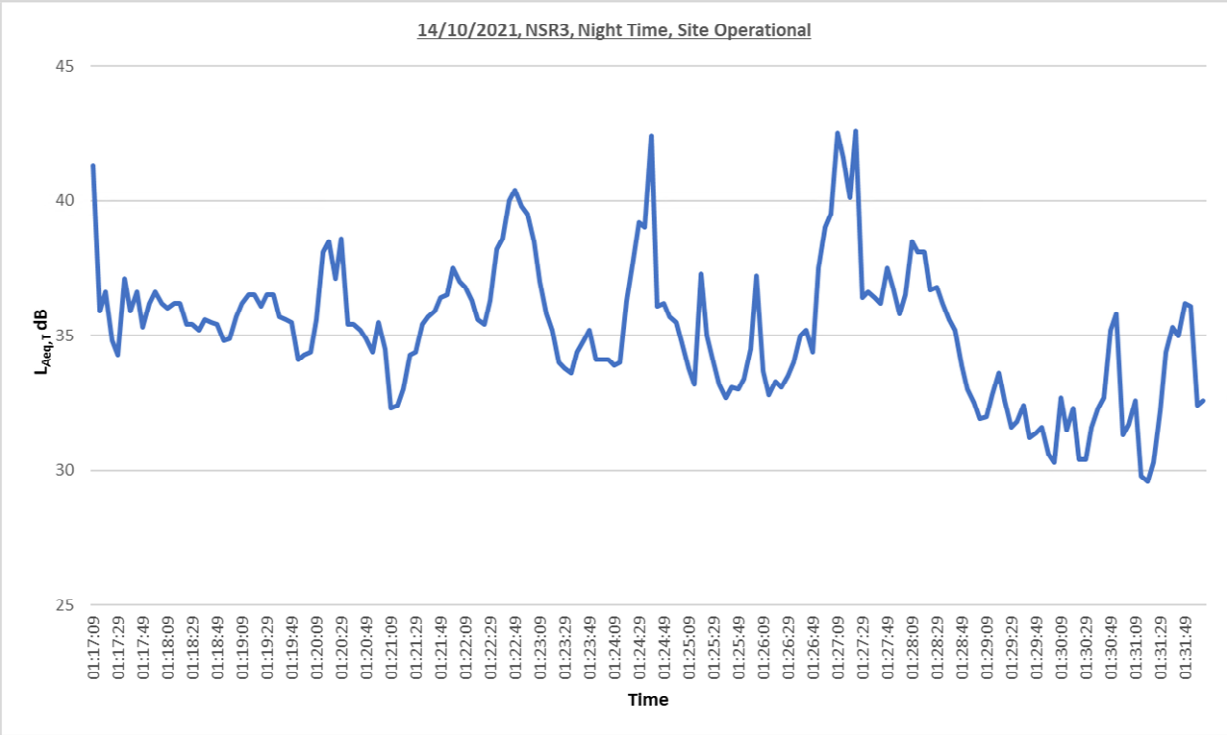
Notes to Figure 21
Low humming noise from industrial estate to the north throughout the monitoring period.
02:10hrs: Vehicle passing on B5102 Llay Road to the north.

Figure 22: $L_{Aeq,T}$ dB Data, 14/10/2021, NSR2, Night Time, Site Operational



Notes to Figure 22
Low humming noise from industrial estate to the east throughout the monitoring period.
01:45hrs: Vehicle passes on B5102 Llay Road to the south.
01:54hrs: Vehicle passes on B5102 Llay Road to the south.

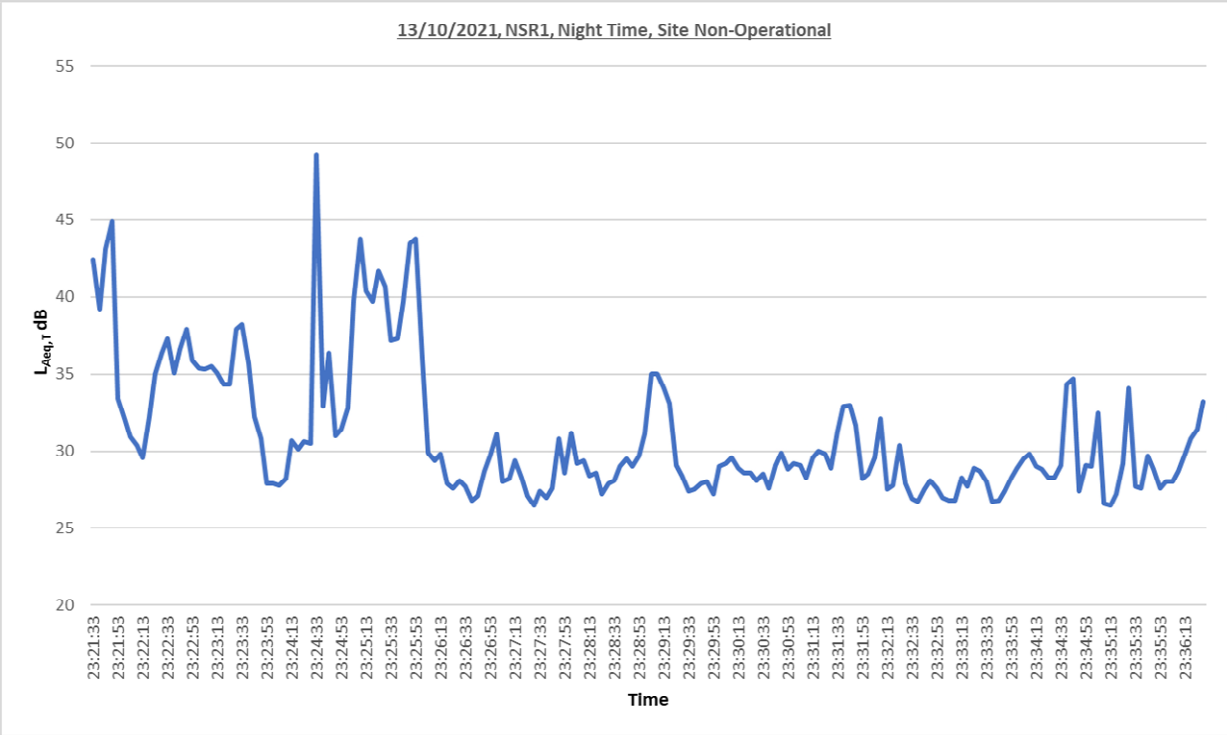
Figure 23: $L_{Aeq,T}$ dB Data, 14/10/2021, NSR3, Night Time, Site Operational



Notes to Figure 23

Low humming noise from industrial estate to the east throughout the monitoring period.
Intermittent traffic noise on B5102 Llay Road to the south throughout the monitoring period.

Figure 24: $L_{Aeq,T}$ dB Data, 13/10/2021, NSR1, Night Time, Site Non-Operational

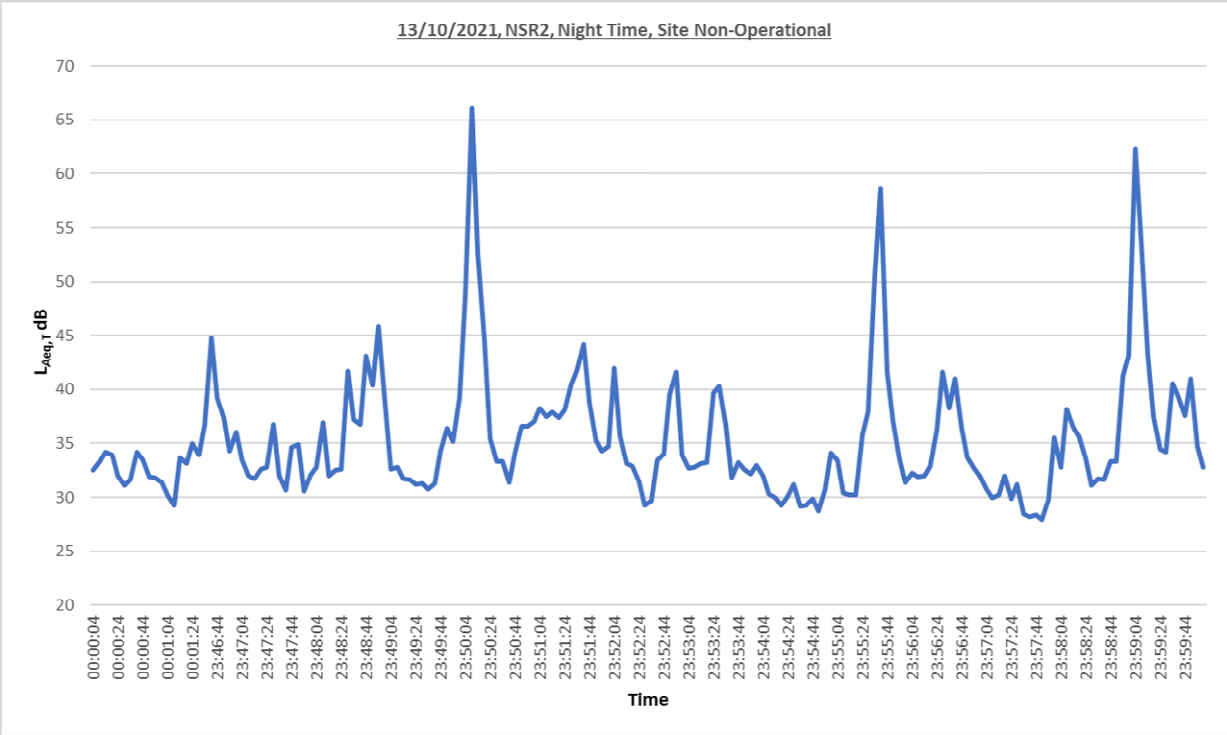


Notes to Figure 24

Very light traffic on the B5102 Llay Road to the north.

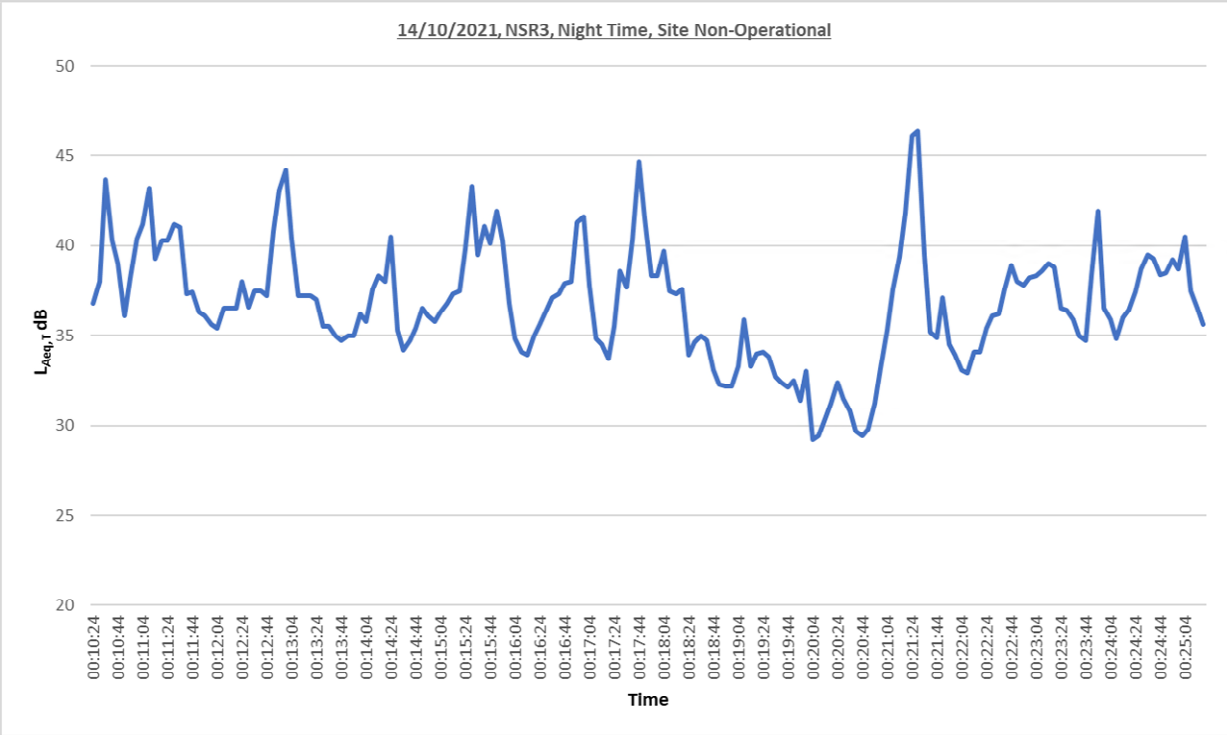
Occasional livestock noise from field to the west and dogs barking to the south.

Figure 25: $L_{Aeq,T}$ dB Data, 13/10/2021, NSR2, Night Time, Site Non-Operational



Notes to Figure 25
23:50hrs: Vehicle passes on B5102 Llay Road to the south.
23:55hrs: Vehicle passes on B5102 Llay Road to the south.
23:58hrs: Vehicle passes on B5102 Llay Road to the south.

Figure 26: $L_{Aeq,T}$ dB Data, 14/10/2021, NSR3, Night Time, Site Non-Operational



Notes to Figure 26

Low humming noise from industrial estate to the east throughout the monitoring period.
Intermittent traffic noise on B5102 Llay Road to the south throughout the monitoring period.

Table 9: On-site dB Monitoring Results, Daytime

Location	Date / Time	Noise Level $L_{Aeq,T}$	Noise Level L_{Amax}	Noise Level L_{Amin}	Background Noise Level $L_{A90,T}$	Subjective Comment
LOC1	14th October 2021 / 14:23 to 14:38	84	92	82	83	Dominant sound from Chipper1/Hammer Mill 3 and Chipper 2/Hammer Mill 2, intermittent noise from Bobcat reverse siren to the west of the monitoring location.
LOC2	14th October 2021 / 14:40 to 14:55	65	77	60	62	Forklift truck unloading an HGV trailer approximately 20m to the west of the monitoring location, HGV movements in the loading yard, intermittent birdsong.
LOC3	14th October 2021 / 15:00 to 15:15	60	71	58	59	Dominant sound from Chipper1/Hammer Mill 3 and Chipper 2/Hammer Mill 2 approximately 40m to the north of the monitoring location, intermittent birdsong.
LOC4	14th October 2021 / 15:17 to 15:32	51	71	46	47	Dominant sound from Chipper1/Hammer Mill 3 and Chipper 2/Hammer Mill 2 approximately 90m to the east of the monitoring location. Also, HGV and forklift vehicle movements in the lorry turning and unloading area approximately 55m to the east. Intermittent birdsong.
LOC5	14th October 2021 / 15:34 to 15:49	64	79	55	59	Dominant sound from Chipper1/Hammer Mill 3 and Chipper 2/Hammer Mill 2 approximately 45m to the southeast of the monitoring location. Also, HGV and forklift vehicle movements in the lorry turning and unloading area approximately 15m to the south. Intermittent birdsong.
LOC6	14th October 2021 / 15:53 to 16:08	63	58	51	53	Dominant sound from Chipper1/Hammer Mill 3 and Chipper 2/Hammer Mill 2 approximately 60m to the southwest of the monitoring location. Also, and HGV and Light Goods Vehicle ("LGV") passed over the weighbridge during the monitoring period. Intermittent birdsong.

Table 10: Predicted Source[(a)] dB Contribution to Sound Pressure Levels ("SPL") at On-site Locations, Daytime

Location	Distance from Sound Source to Measurement Location (m)	Measured SPL at the Monitoring Locations	Predicted SPL at the On-site Monitoring Locations
		dB $L_{Aeq,T}$	dB
LOC1	3	84	n/a
LOC2	64	65	57
LOC3	37	60	62
LOC4	92	61	54
LOC5	42	64	61
LOC6	64	63	57

Notes to Table 10

(a) For this assessment the sound 'Source' is the highest noise level measured on-site from a specific activity, in this case the operation of the Hammer Mills in the Milling Machinery area.

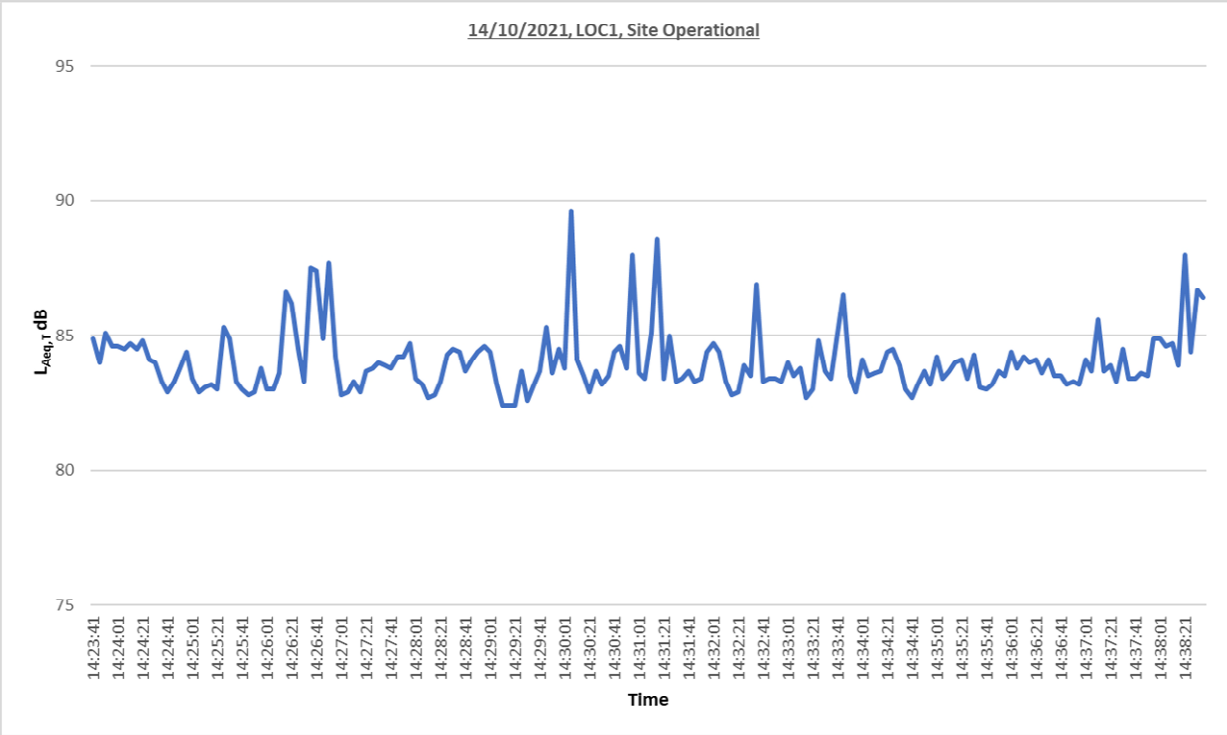
Table 11: Predicted On-site dB Contribution to SPL at NSR Locations, Daytime

Location	Distance from Sound Source to NSR (m)	Max SPL On-site	Predicted Site Contribution to SPL Level at NSR Locations Attenuated for Distance	NSR Background Noise Level
		dB $L_{Aeq,T}$	dB	$L_{A90,T}$
NSR1	790	87[(a)]	39	42
NSR2	670		40	44
NSR3	590		41	41

Notes to Table 11

(a) Although the sound measured from the source did not feature characteristics that were either tonal, nor impulsive, nor intermittent, a penalty of 3dB was applied to the $L_{Aeq,T}$ measured level in order to represent a worst case scenario.

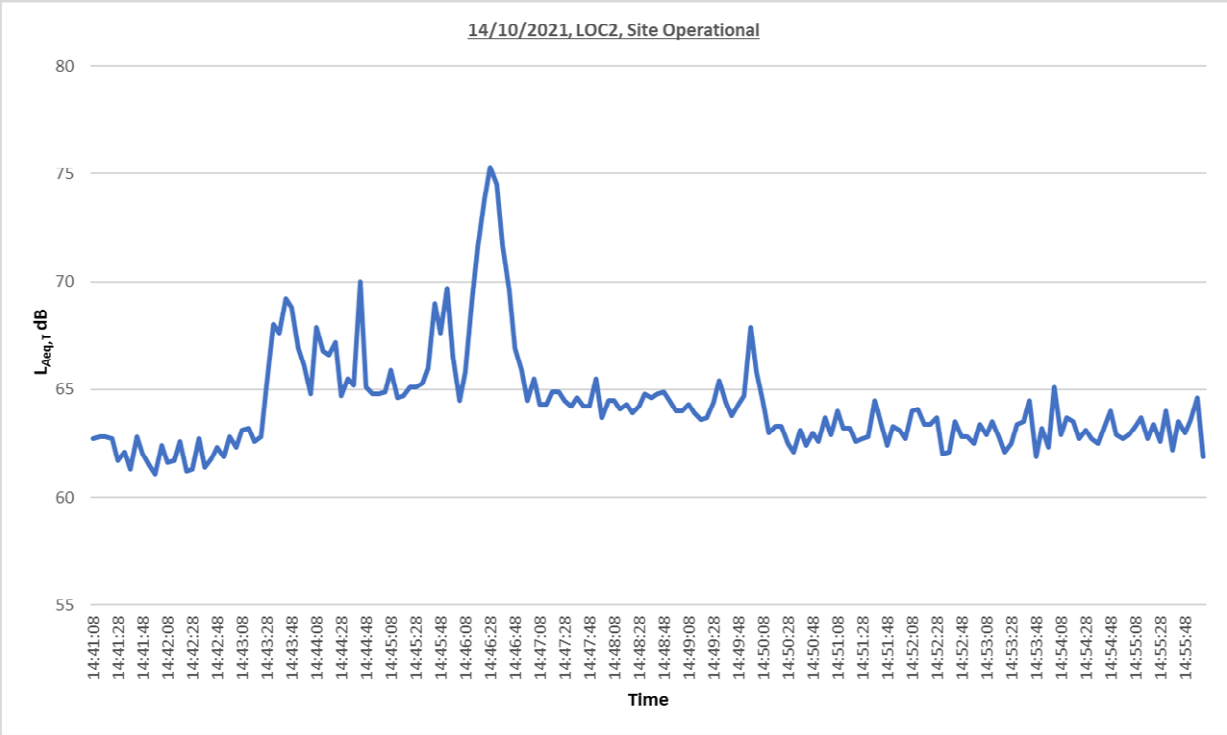
Figure 27: $L_{Aeq,T}$ dB Data, 14/10/2021, LOC1, Daytime, Site Operational



Notes to Figure 27

Noise from Chipper1/Hammer Mill3 and Chipper2/Hammer Mill2 throughout the monitoring period.
14:26hrs: Reverse siren from bobcat forklift vehicle.
14:30hrs: Reverse siren from bobcat forklift vehicle.
14:33hrs: Reverse siren from bobcat forklift vehicle.

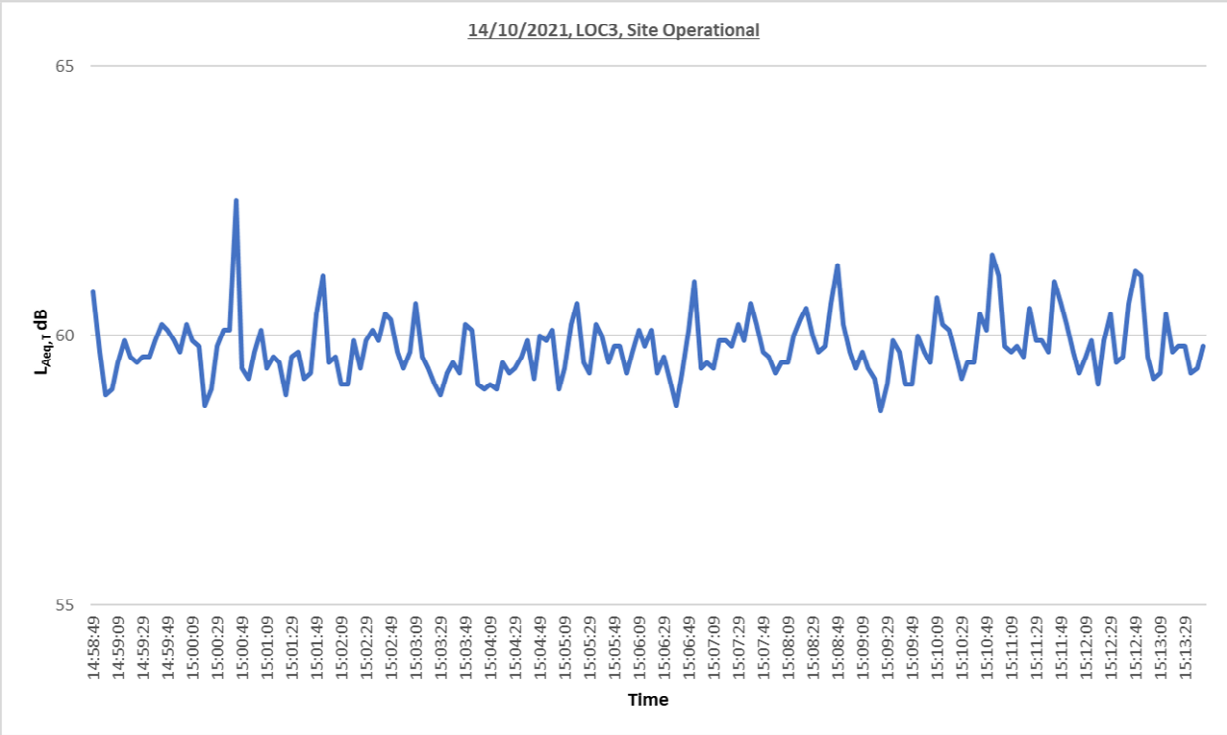
Figure 28: $L_{Aeq,T}$ dB Data, 14/10/2021, LOC2, Daytime, Site Operational



Notes to Figure 28

Background noise from Chipper1/Hammer Mill3 and Chipper2/Hammer Mill2 throughout the monitoring period.
14:26hrs: HGV drives in loading area to pick up trailer.
14:51hrs: Forklift truck operating in the loading area.

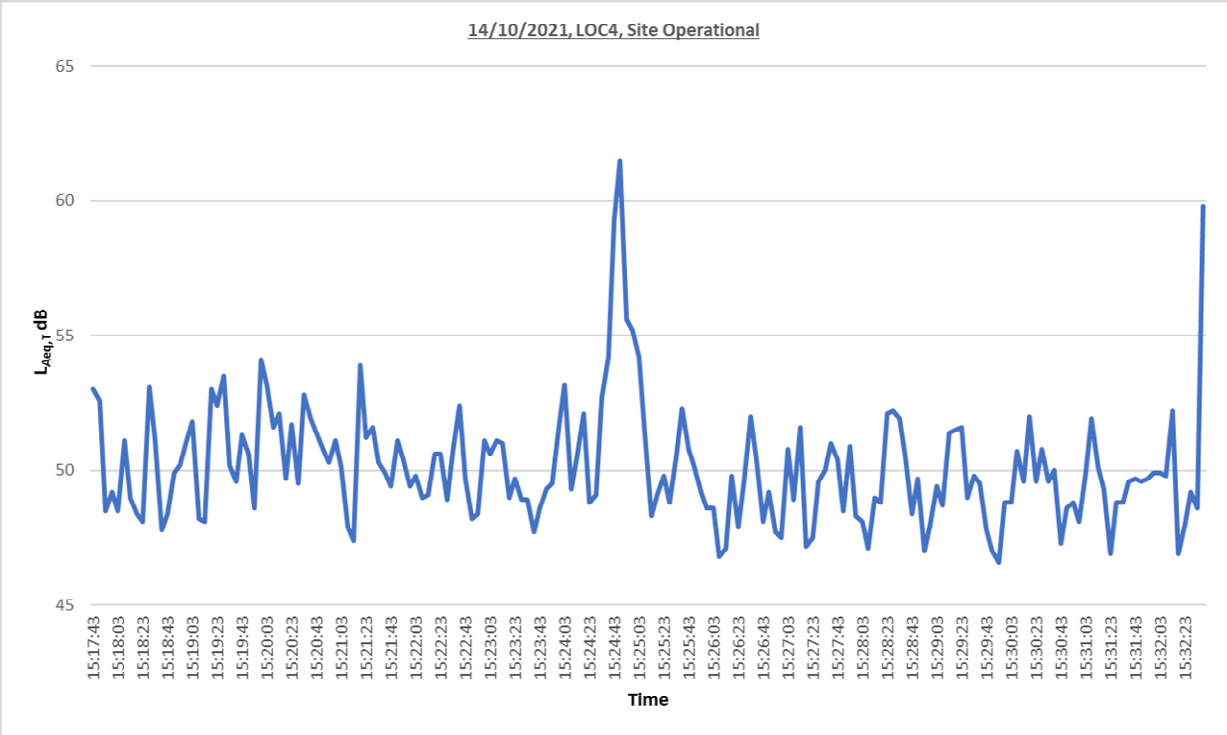
Figure 29: $L_{Aeq,T}$ dB Data, 14/10/2021, LOC3, Daytime, Site Operational



Notes to Figure 29

Background noise from Chipper1/Hammer Mill3 and Chipper2/Hammer Mill2 throughout the monitoring period.
15:00hrs: Forklift truck drives past the monitoring location.

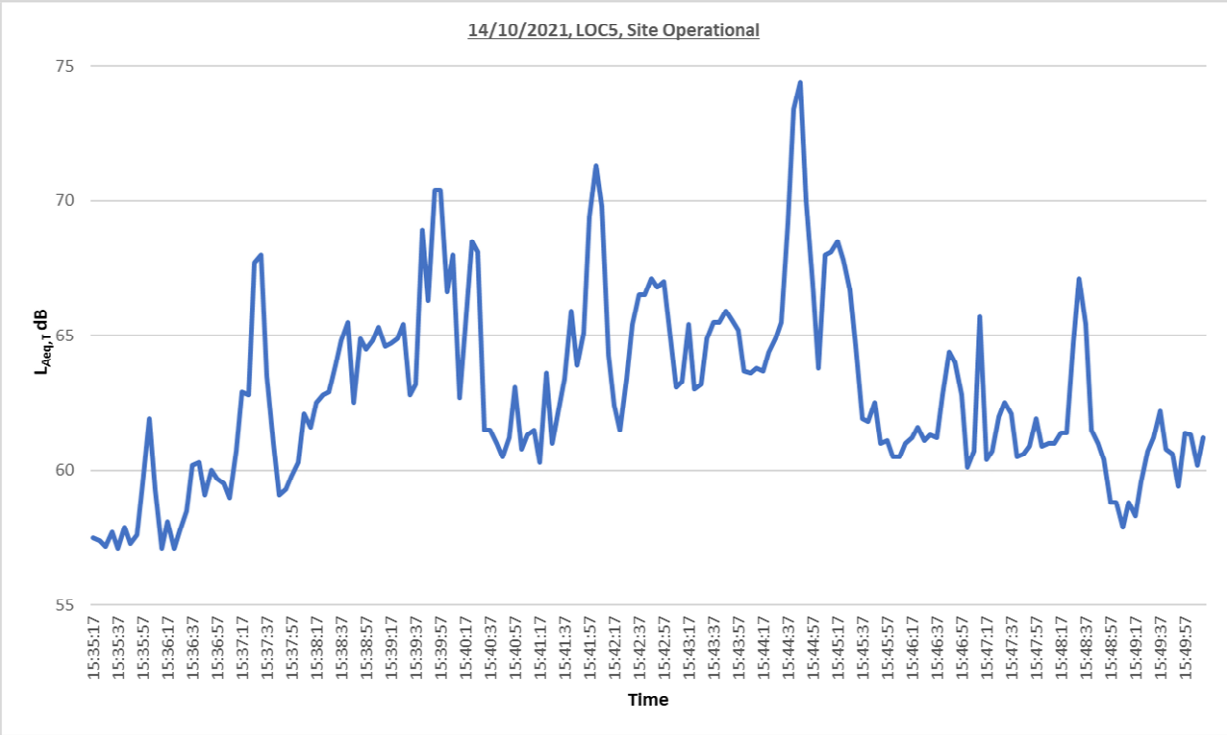
Figure 30: $L_{Aeq,T}$ dB Data, 14/10/2021, LOC4, Daytime, Site Operational



Notes to Figure 30

Background noise from Chipper1/Hammer Mill3 and Chipper2/Hammer Mill2 throughout the monitoring period.
Forklift truck operating in lorry turning area throughout monitoring period.
15:23hrs: HGV removes trailer from the loading bay.

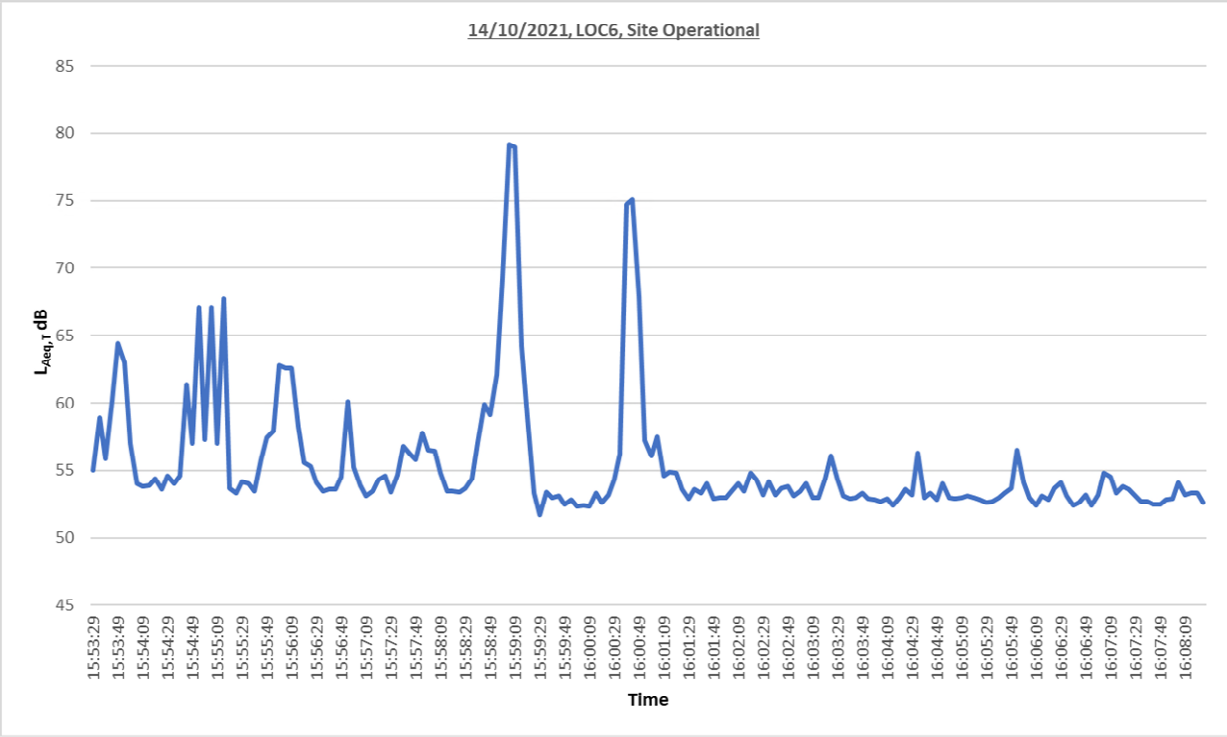
Figure 31: $L_{Aeq,T}$ dB Data, 14/10/2021, LOC5, Daytime, Site Operational



Notes to Figure 31

Background noise from Chipper1/Hammer Mill3 and Chipper2/Hammer Mill2 throughout the monitoring period.
Forklift truck operating in lorry turning area throughout monitoring period.
15:37hrs: HGV enters the lorry turning area.
15:39hrs: Trailer removed from the loading bay and new trailer placed in loading bay.

Figure 32: $L_{Aeq,T}$ dB Data, 14/10/2021, LOC6, Daytime, Site Operational



Notes to Figure 32

Background noise from Chipper1/Hammer Mill3 and Chipper2/Hammer Mill2 throughout the monitoring period.
15:54hrs: Van drives onto the weighbridge.
15:58hrs: HGV drives onto the weighbridge.
16:00hrs: HGV drives off the weighbridge.

7. NOISE IMPACT ASSESSMENT

7.1. Determination of Degree of Impact of Site Activities on NSR Locations

7.1.1. Noise monitoring was performed at three locations identified as potential NSR locations that may be affected by noise generating activities carried out at Platts Agriculture Limited. The monitoring was performed in accordance with the requirements of the Reference Method BS 4142:2014+A1:2019 Methods for rating and assessing industrial and commercial sound.

7.1.2. The methods described in the BS use outdoor sound levels to assess the likely effects of sound on people who might be inside or outside of a dwelling or premises used for residential purposes upon which sound is incident.

7.1.3. Monitoring was performed over two days during daytime and night time periods whilst normal on-site activities were being performed and also during periods agreed with the Site when all noise generating on-site activities ceased. In accordance with the BS, monitoring was performed at each location, during each monitoring period, over an appropriate reference time interval of 1 hour during the day and 15 minutes during the night.

7.1.4. The ambient sound levels were measured during periods of site activity and inactivity to enable the specific sound to be distinguished from the residual sound. Upon completion of all monitoring the specific sound was calculated using the formula provided in the BS and included in Section 5.2.3. of this report.

7.1.5. Section 9.1 of the BS describes how certain acoustic features can increase the significance of impact over that expected from a basic comparison between the specific sound level and the background sound level and, where such features are found to be present at the assessment location, a character correction should be added to the specific sound level to obtain the rating level. This is described in Section 5.1.7. of this report.

7.1.6. Although no tonality, impulsivity or intermittency of the noise measured at the monitoring locations could be determined, a +3dB penalty was added to the specific sound level to demonstrate a ‘worst-case’ scenario in determining the degree of impact noise generating activities on the Site may have on the NSR locations.

7.1.7. All monitoring was manned by a trained operator and a subjective record taken of the perceived dominant noise source at each location and any specific events that occurred during the monitoring periods that may affect the measured noise levels.

7.1.8. During each monitoring period at the NSR locations, the operator perceived that the predominant noise source was traffic on the B5102 Llay Road. Noise levels from the direction of the site could not be determined during daytime monitoring periods and were little more than a low humming sound during night-time monitoring periods.

7.1.9. This perception was strengthened upon completion of the monitoring and interpretation of the data when it was determined that in four out of the six impact assessments, the residual noise level was found to be higher than the ambient noise level.

7.1.10. This would suggest that noise levels at each of the NSR locations are determined more by the volume and type of traffic travelling on the B5102 Llay Road than by noise generating activities on the Site.

7.1.11. It can also be seen that when comparing the $L_{Aeq,T}$ noise profiles in Figures 15 to 20 for daytime periods and Figures 21 to 26 for night-time periods, the relative profiles of the graphs change very little independent of whether the Site is operational or not, and the noise levels at the NSR locations seem to be more influenced by locally occurring events than on-site activities.

7.1.12. From the details of the noise impact assessment data provided in Tables 7 and 8, it can be observed that all adverse impacts screen out as being 'unlikely', except for location NSR2 measured during the daytime period. The excess of rating over the background sound level at location NSR2 is 16 indicating that an adverse impact on people living in residential properties at this location is highly likely.

7.1.13. However, from a comparison of Figures 16 and 19 showing the $L_{Aeq,T}$ noise levels over the monitoring periods at location NSR2, it can be observed that there is very little difference in the respective noise profiles whether the site is operational or not. As the predominant noise source at this location was determined to be noise from traffic passing on the B5102 Llay Road adjacent to the south of the monitoring location, it is likely that the degree of impact indicated by the impact assessment results is more likely due to road traffic load and type of traffic rather than noise generating activities on the Site.

7.1.14. In order to add further confidence to the determination that noise levels at the NSR locations are more influenced by local events rather than noise generating activities on the Site, on-site measurements were taken of the main noise generating source on Site which were determined to be the Hammer Mills and associated extraction system, and also at site boundary locations. This data was used to predict the contribution of on-site noise generating activities to the ambient noise levels at the NSR locations. The methodology is described in Section 5.2. of this report.

7.1.15. The expected contribution to the ambient SPL at the NSR locations was calculated using the sound attenuation formula described in Section 5.2.3. of this report. As the distance from the noise source increases, the SPL from the source will decrease. When this SPL level falls below the background noise level at the NSR, it can be expected that the source no longer influences the ambient sound level at the NSR.

7.1.16. In order to test the accuracy of the sound attenuation calculations, predicted SPLs were compared to measured SPLs at each of the on-site monitoring locations. This data is provided in Table 10. It can be seen from the data in Table 10 that at all on-site measurement locations, except LOC3, the measured SPL was higher than the predicted SPL. Although the sound attenuation formula does not take into account any localised noise events during the monitoring periods, or reflections from objects or surfaces around the monitoring locations, as the measured SPLs were found to be higher than the predicted SPL's in almost all instances, a +3dB noise penalty was applied to the noise source to represent a 'worst case' scenario.

7.1.17. The data from the distance attenuation calculation is provided in Table 11. At all NSR locations the predicted contribution from noise generating activities at the Site was below the measured background SPL at the NSR locations. This suggests that noise generating activities performed on the Site will no longer influence the ambient sound level at the NSR locations.

8. NOISE CONTROL

8.1. Prevention or Control of Impact of Site Activities on NSR Locations

8.1.1. As described in Section 7 of this report, it is considered that any detrimental noise impact on the NSR locations is more likely to be as a consequence of locally occurring noise events in the vicinity of the NSR's rather than noise generating activities performed on the Site.

8.1.2. During the on-site noise monitoring, it was determined that the predominant noise generating activity performed on the Site was the use of the Hammer Mills and associated extraction system.

8.1.3. ECL recommends the continued implementation of the documented periodic maintenance and repair schedule for all equipment on the Site. The documentation should include all scheduled maintenance and repairs carried out on all equipment in order to determine any decline in performance of the equipment over time.

8.1.4. ECL also recommend the Site perform periodic boundary noise monitoring to determine any changes in the intensity of the sound over time. ECL is not advising that Platts Agriculture Limited should invest in a fully compliant SLM and associated equipment as the monitoring would only be performed to provide an indication of change in the potential impact of the on-site noise generating activities. However, should the periodic monitoring suggest on-site noise levels are increasing, we would then recommend fully compliant monitoring of the noise generating activities on the Site and impact at the NSR locations is repeated to determine the potential degree of impact on the NSRs.

9. UNCERTAINTY

9.1. Description of Uncertainties

9.1.1. The level of uncertainty associated with the measurement of the sound level depends on a number of factors, including;

- the complexity of the sound source and the level of variability in sound emission from the source;
- the complexity and level of variability of the residual acoustic environment;
- the level of residual sound in the presence of the specific sound at the measurement location(s);
- the location(s) selected for taking the measurements;
- the distance between the sources of sound and the measurement location and intervening ground conditions;
- the number of measurements taken;
- the measurement time intervals;
- the range of times when the measurements have been taken;
- the measurement method and the variability between different practitioners in the way the method is applied;
- the level of rounding of each measurement recorded; and
- the instrumentation used.

9.1.2. The NSR locations used for this study were chosen due to the likelihood that any noise impact at the NSR locations would be as a direct result of noise generating activities from the Site and not influenced by other industrial and commercial activities being carried out at the Llay Industrial Estate. The NSR locations were also chosen as they were the closest residential areas to the Site location and, therefore, were more likely to suffer from a negative impact from noise generating on-site activities.

9.1.3. Monitoring was performed using instrumentation which conforms to BS EN61672-1, Class 1, for free-field application. The measurement time intervals and range of times when measurements were taken were in accordance with the requirements of BS 4142:2014+A1:2019.

9.1.4. Weather conditions during the monitoring periods were considered to be acceptable. The predominant wind direction being from the north may have influenced the level of sound carried from the Site to locations NSR2 and NSR3, however, the low wind speeds during each monitoring period would have reduced the influence of the wind direction.

9.1.5. The complexity of the sound and level of variability in sound emission from the Source is considered to be low and relatively constant when not affected by external noise events, such as vehicles operating in the vicinity of the Source.

9.1.6. The complexity and level of variability of the residual acoustic environment at the NSR locations is considered to be high and greatly influenced by the weight and type of traffic using the B5102 Llay Road in the vicinity of the NSR's. It was found that the presence or absence of the specific sound had little influence on the ambient noise levels at the NSRs and was more influenced by noise generating activities in the immediate vicinity of the NSRs.

10. CONCLUSIONS

10.1. Conclusions and Next Steps

10.1.1. The noise impact assessment determined that noise generating activities at the Site were unlikely to have any adverse impact on the NSR locations.

10.1.2. Further calculations of the SPL attenuation with distance determined that the contribution from on-site noise generating activities was below the background noise levels at the NSR locations and would not affect the ambient noise levels at these locations.

10.1.3. Therefore, the noise generating activities at the Site can be considered to be insignificant, as long as there are no changes in the ambient noise levels at the NSR locations. Consequently, no further action is required.

Appendix 1: Calibration Certificates

Certificate of Conformity and Calibration

Instrument Model:- **CEL-633C**

Serial Number	4637948
Firmware revision	V129-09

Microphone Type:-	**CEL-251**	**Preamplifier Type:-**	**CEL-495**
Serial Number	1295	**Serial Number**	**002151**

Instrument Class/Type:- **1**

Applicable standards:-

IEC 61672: 2002 / EN 60651 (Electroacoustics - Sound Level Meters)
IEC 60651 1979 (Sound Level Meters), ANSI S1.4: 1983 (Specifications For Sound Level Meters)

Note:- *The test sequences performed in this report are in accordance with the current Sound level meter Standard - IEC61672. The combination of tests performed are considered to confirm the products electro-acoustic performance to all applicable standards including superceeded Sound Level Meter Standards - IEC60651 and IEC60804.*

Test Conditions:-	22.3 °C	**Test Engineer:-**	Chris Chesney
	35.1 %RH	**Date of Issue:-**	February 17, 2020
	1002.2 mBar		

Declaration of conformity:-

This test certificate confirms that the instrument specified above has been successfully tested to comply with the manufacturer's published specifications. Tests are performed using equipment traceable to national standards in accordance with Casella's ISO 9001:2008 quality procedures. This product is certified as being compliant to the requirements of the CE Directive.

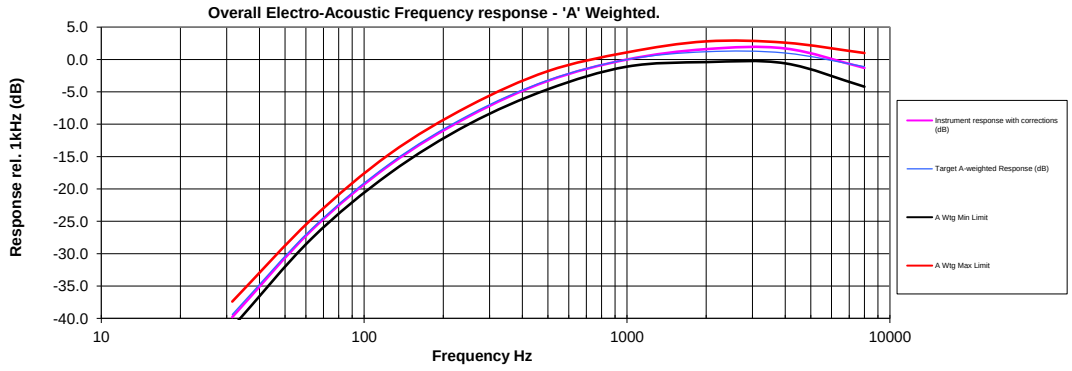
Test Summary:-

Self Generated Noise Test	**All Tests Pass**
Electrical Signal Test Of Frequency Weightings	**All Tests Pass**
Frequency & Time Weightings At 1 kHz	**All Tests Pass**
Level Linearity On The Reference Level Range	**All Tests Pass**
Toneburst Response Test	**All Tests Pass**
C-peak Sound Levels	**All Tests Pass**
Overload Indication	**All Tests Pass**
Acoustic Tests	**All Tests Pass**

Combined Electro-Acoustic Frequency Response - *A Weighted*

Combined Electro-Acoustic Frequency Response - A Weighted (IEC 61672-3:2006)

The following A-Weighted frequency response graph shows this instruments overall frequency response based upon the application of multi-frequency pressure field calibrations. The microphones Pressure to Free field correction coefficients are applied to pressure response. Reference level taken at 1kHz.



Casella UK
Regent House, Wolseley Road, Kempston, Bedford MK42 7JY United Kingdom
Tel: +44 (0) 1234 844100
Fax: +44(0) 1234 841490
E-mail: info@casellasolutions.com

Casella USA
415 Lawrence Bell Drive, Unit 4 Buffalo, NY 14221, USA
Toll Free (800) 366-2966
Tel: +1 (716) 276 3040
E-mail: info@casellausa.com

Casella India
Ideal Industries India Pvt.Ltd. 229-230, Spazedge, Tower -B Sohna Road, Sector-47, Gurgaon-122001, Haryana , India.
Tel: +91 124 4495100
E-mail: casella.sales@ideal-industries.in

Casella China
Ideal Industries China Room 305, Building 1, No.1279, Chuanqiao Rd, Pudong New District, Shanghai, China
Tel: +86-21-31263188
Fax: +86-21-61605906
Email: info@casellasolutions.cn

Casella Australia
Ideal Industries (Aust) PTY. LTD Unit 17, 35 Dunlop Rd, Mulgrave. Vic. 3170, Australia.
Email: australia@casellasolutions.com

Tested to CEL-63X test sheet TP444 revision 01-00

Certificate of Conformity and Calibration

Customer:	ECL
Instrument:	CEL-120/1
Serial Number:	5139241
Job Number:	23421
Date of Issue:	16-Apr-2021
Engineer:	S. Adams

Traceable Equipment:

Reference Calibrator	EQ11086
DVM type Fluke 45	EQ00023

Test Conditions:

Ambient Temperature	22.0	°C
Ambient Humidity	24.0	%RH
Ambient Pressure	1027	mBar

Results:

	Level 1	Level 2	Frequency
Initial Reading	113.88 dB	93.88 dB	1.0000 kHz
Final Reading	114.00 dB	94.00 dB	1.0000 kHz

Uncertainty:

Level	±	0.15	dB
Frequency	±	0.5	Hz

This test certificate confirms that the instrument specified above has been successfully tested to comply with the manufacturer's published specifications.
Tests are performed using equipment traceable to national standards in accordance with Casella's ISO 9000:2015 quality procedures.
The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor k=2, providing a level of confidence of approximately 95%.

Casella UK
Regent House, Wolseley Road,
Kempston, Bedford
MK42 7JY
United Kingdom
Tel: +44 (0)1234 844100
Fax: +44(0)1234 841490
E: info@casellasolutions.com

Casella USA
13 Pratts Junction Road,
Sterling, MA 01564-2305
USA
Toll Free: (800) 366-2966
E: info-us@casellasolutions.com

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IDEAL Industries India Pvt. Ltd
229-230 Tower-B, Spazedge, Sector 47,
Sohna Road, Gurgaon-122001, India
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Casella Australia
IDEAL Industries (AUST) Pty. Ltd
Unit 17, 35 Dunlop Rd, Mulgrave.
VIC 3170, Australia
Tel: +61 3 9562 0175
E: australia@casellasolutions.com