

Environmental Noise Assessment Report

Site: **Holmfirth Dyers, Huddersfield**

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Executive Summary

Holmfirth Dyers – Camira Fabrics instructed Envirocare Technical Consultancy to undertake an environmental noise assessment at their facility based in Holmfirth, Huddersfield. The assessment was undertaken on the 14th and 15th March 2022.

The environmental noise assessment covers noise emissions from the activities carried out at the Holmfirth Dyers – Camira Fabrics site with specific focus on the potential noise impact at several residential receptor locations due to normal operations and from the despatch operations. The site is operational 24 hours a day 7 days a week and the assessment was undertaken to cover both daytime (07:00 – 23:00) and night-time (23:00-07:00) periods as detailed in BS41423:2014+A1:2019.

Measurement Locations

Environmental noise measurements were taken at the following monitoring positions (MP):

- R1 – Residential properties to the South West
- R2 – Residential properties to the West (Royd Mount)
- R3 – Residential property to the South East (72 Dunford Road)
- R4 – Residential properties to the East (21/23 Dunford Road)
- R5 – Residential properties to the North East (20 South Lane)

Daytime impact under normal operating conditions

At residential receptor locations R1 and R4 the results for the BS 4142:2014+A1:2019 assessment indicates that site generated noise under normal operating conditions during the day will have a significant adverse impact. These receptor locations are located closest to the site and had an outcome of +12 and +11 above the day time background level.

At residential receptor locations R2 and R5 the results for the BS 4142:2014+A1:2019 assessment indicates that site generated noise under normal operating conditions during the day will have an adverse impact. There was an outcome of +6 and +6 - 8 (Estimated) above the day time background level at these receptor locations.

At receptor location R3 the results for the BS 4142:2014+A1:2019 assessment indicates that it is unlikely that the specific sound source will have an adverse impact or a significant adverse impact with regards to site generated noise under normal operating conditions during the day. There was an outcome of 0 - +2 (Estimated) above the day time background level at this receptor. This receptor location was located furthest away from the site directly between Dunford Road and the river Ribble.

Night time impact under normal operating conditions

At residential receptor locations R1, R2, R4 and R5 the results for the BS 4142:2014+A1:2019 assessment indicates that site generated noise under normal operating conditions during the night will have an adverse impact. There was an outcome which ranged between +4 to +7 above the night time background level at these receptor locations.

At receptor location R3 the results for the BS 4142:2014+A1:2019 assessment indicates that there will be a low impact with regards to site generated noise under normal operating conditions during the night. There was an outcome of 0 above the night time background level at this receptor. This receptor location was located furthest away from the site directly between Dunford Road and the river Ribble.

Night time impact from noise generated by the despatch operations

At receptor R4 noise generated from the despatch operations has measured +9dB(A) above the night-time background level (L_{A90}) and is therefore considered to be having a significant adverse impact at this residential receptor location during the night.

At receptor R3 noise generated from the despatch operations has measured +5dB(A) above the night-time background level (L_{A90}) and is therefore considered to be having an adverse impact at this residential receptor location during the night.

At receptor R5 noise generated from the despatch operations has measured -1 dB(A) below the night-time background level (L_{A90}) and it is therefore considered unlikely to have an adverse impact or a significant adverse impact at this residential receptor location during the night.

Recommendations for noise control

Below are some suggestions for effective noise management controls to reduce the site generated noise levels to less than 5dB above the day time or night time background levels:

Substitution / Elimination

- Change the reversing beacons used on the forklift trucks to alternatives that use a wide range of white sound frequencies. These systems generate a 'ssh-ssh' sound which is gentle on the ear and dissipates quickly, meaning it can only be heard in the danger zone rather than a single frequency or tonal alarm which emits a high proportion of noise energy in a single frequency or small number of frequencies. The equivalent noise level emitted from the current reversing beacon measured 86dB(A) L_{Aeq} with an L_{Amax} measurement of 93dB(A).
- Consider replacing the diesel powered forklift trucks with electric alternatives as these generate far less noise due to there not being combustion engines or exhaust noise.
- Attempt to reduce the metallic impacts noise being generated from the movement and handling of the metal storage units by replacing these units with high density plastic alternatives. This was a significant source of intermittent noise during the day.

Engineering Controls and Maintenance

- Ensure that all fans and vents which operate intermittently are in good working order. It was observed that whilst measuring at R1 a vent activated on the roof of the finishing area for a short duration but generated a noise level of between 70-74dB(A) on start-up. If this is associated with a belt driven fan motor than consider replacing this with a direct drive motor. In addition to this, increase the efficiency of the aerodynamic flow inside the ducting and fit a silencer or plenum chamber to the vent.
- Attempt to reduce noise being generated from the movement of the plastic containers by improving the running surface, replacing the wheels with ones with a rubber coating or a high density plastic or changing the process so that containers are moved using electric powered ride on pallet trucks. This was a significant source of intermittent noise both during the day and during the night.
- Ensure good maintenance of all external plant and equipment as well as internal machinery as part of a preventative maintenance programme. Visually inspect and assess all external plant and equipment on a regular basis (weekly/fortnightly) and report any defects which may increase noise levels above what is generated from normal operation.
- Fit self-closing soft close mechanism to all external factory doors.

Administration and Training

- Keep the roller shutter door that accesses the bottom dye house area closed as much as possible. The noise level measured with this door open equalled 72dB(A) and with the door closed the noise level equalled 64dB(A) which is an 8dB(A) reduction.
- Limit the time that despatch operations occur, for example only allow despatch operations after 7am whereby the background level of the local area significantly increases.
- Continue to reiterate to employees the need to be considerate to neighbours especially during the night.

Glossary of Terms

Term / Abbreviation	Definition / Explanation
EMS	Environmental Monitoring Solutions
Noise	Unwanted sound. Any sound, that has potential to cause disturbance, discomfort or psychological stress to a subject exposed to it, or any sound, that could cause actual physiological harm to a subject exposed to it or physical damage to any structure exposed to it.
BS	British Standard
SLM	Sound Level Meter
NSR	Noise Sensitive Receptor
Sound Pressure Level SPL	Ten times the logarithm to the base ten of the square of the ratio of the effective or root mean square of the sound pressure fluctuations, P, and a standard reference pressure, Pref, of 20 micropascals. In this form the sound pressure is expressed as a level in decibels.
Sound Power Level SWL	The total sound energy radiated by a source, independent of location or distance that the sound is observed. Sound power measurements are often specified in the noise regulations of many kinds of products, from construction equipment to computer printers. Sound power is measured in Watts.
Decibel, dB	A decibel (dB) is a unit of measurement that gages the intensity of sound. The units define how loud a noise source is, ranging on a comparative scale from 0-194. A dB reading of "0" indicates the faintest sound the human ear can detect, while a dB reading of "180" would be the equivalent to standing on a rocket pad during launch.
'A' Weighted Decibel	A measure of the overall noise level of sound across the audible frequency range (20 Hz – 20 kHz) with a frequency weighting to compensate for the varying sensitivity of the human ear to sound at different frequencies. A 10dB(A) increase in sound level represents about a doubling of perceived loudness. A change of 3dB(A) is the minimum perceptible under normal circumstances.
L_{Aeq}	The equivalent continuous sound level and is the sound level of a steady sound having the same energy as a fluctuating sound over the same period. It is possible to consider this as the ambient noise encompassing all noise at a given time. L _{Aeq} is considered the best general-purpose index for environmental noise.
L_{A90}	The value of the A weighted sound pressure level of a continuous, steady sound that, within a specified time interval, is exceeded for 90% of the measurement period.
One-Third Octave Band	The audible frequency range is divided into a set of frequencies called bands. Each band covers a specific range of frequencies. A one-third octave band is a slight misnomer, as it is defined as a tenth of a decade, i.e. a frequency band whose upper band-edge frequency is the lower band frequency times the tenth root of ten.

Term / Abbreviation	Definition / Explanation
Ambient Sound	The totally encompassing sound at a given time, usually composed of sound from many sources near and far.
Residual Sound	The residual sound level is the ambient noise level excluding the specific sound level.
Specific Sound	The specific sound level is the level of sound generated by a specific source at a given distance in isolation from any residual sound.
Rating Level	The rating level is the accumulation of the specific sound level which has been measured or predicted at a noise sensitive receptor with the addition of any acoustic character corrections such as tonality and impulsivity.
BAT	Best available techniques (BAT) are the available techniques which are the best for preventing or minimising emissions and impacts on the environment.

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1.0 Introduction

Holmfirth Dyers – Camira Fabrics instructed Envirocare Technical Consultancy to undertake an environmental noise assessment at their facility based in Holmfirth, Huddersfield. The assessment was undertaken on the 14th and 15th March 2022.

The environmental noise assessment covers noise emissions from the activities carried out at the Holmfirth Dyers – Camira Fabrics site with specific focus on the potential noise impact at several residential receptor locations due to normal operations and from the despatch operations.

The site is operational 24 hours a day 7 days a week therefore the assessment was undertaken to cover both daytime (07:00 – 23:00) and night-time (23:00-07:00) as detailed in BS4142:2014+A1:2019.

The site is located in a mixed residential and commercial area close to the town centre of Holmfirth with residential properties located in close proximity on all sides of the facility. The site is situated in a valley with many residential properties overlooking the facility.

The objectives of the assessment were to:

- Take continuous sound measurements in the form of L_{Aeq} measurements directly at the identified residential receptor locations to assess the noise from the sites normal operations.
- Take continuous sound measurements in the form of an L_{Aeq} in the Despatch area during despatch activity and calculate the sound level from this specific activity at the nearest affected residential receptor locations.
- Establish the background noise level of the local area at a surrogate location where site generated noise was inaudible both during the day and during the night.
- Undertake an assessment in line with BS4142:2014 +A1:2019 - Methods for rating and assessing industrial and commercial sound.
- Assess the potential noise impact during normal operations and for both day (07:00 – 23:00) and night periods (23:00 – 07:00).
- Assess the potential noise impact during the despatch operations to cover the night period of (23:00 – 07:00).

2.0 Assessment Methodology

2.1 Relevant legislation

- National Planning Policy Framework, 2012
- Environmental Protection Act 1990
- British Standard 4142:2014 +A1:2019 Methods for rating and assessing industrial and commercial sound

2.2 Measurement equipment

Environmental noise measurements were made using the following equipment:

- Casella CEL63X Type 1 Sound Level Meter (serial number 1716908)
- Casella CEL120/1 Acoustic Calibrator (serial number 3516695)

The Sound Level Meter was calibrated using the Acoustic Calibrator to a level of 114dB at a frequency of 1Khz immediately prior to use and upon completion of the survey. No variation in calibration signal occurred (>0.2dB).

Where possible measurements have been taken in the "free-field" 3.5m away from any reflective surfaces and the Sound Level Meter was positioned on a tripod at approximately 1.5m high above the ground. All interferences have been excluded from the assessment by the use of the pause function, by post processing of the data and/or by positioning the sound level meter close to the specific source.

2.3 Weather conditions

Daytime 14th March 2022: Dry with approximately 10-50% cloud cover which varies during the assessment, wind speeds of between 2-3m/s from the south west and air temperature of 11°C.

Night-time 15th March 2022: Dry with approximately 0-25% cloud cover, wind speeds of between 2-3m/s from the south west and air temperature of 3°C.

2.4 Monitoring Locations

Environmental noise measurements were taken at the following monitoring positions (MP):

- R1 – Residential properties to the South West
- R2 – Residential properties to the West (Royd Mount)
- R3 – Residential property to the South East (72 Dunford Road)
- R4 – Residential properties to the East (21/23 Dunford Road)
- R5 – Residential properties to the North East (20 South Lane)
- MP1 – Despatch area during despatch operations
- MP2 – Loading area (General operations)
- MP3 - Tunnel between the finishing area and the bottom dye house area

Off-site measurements to establish the background level (LA90) were taken at the following locations:

- BG1 – Entrance to R.A. Berry and Son – Daytime and night time background (LA90) measurement
- BG2 – 60 Back Lane – Daytime and night time background (LA90) measurement

2.5 Measurement details

Daytime Measurements

During the day the sound level meter was set to record for 60-minutes at each receptor location whereby site noise could be measured in isolation from other environmental noise. The only exception was at R2 whereby a measurement of 32-minutes was taken to include a full loading cycle and 10-15 minutes of general site noise - although there was significant and constant interference from road noise, town centre noise, birdsong and the trickle of water associated with the river Ribble. Therefore an additional measurement was taken on-site during the day in the loading area to establish the general operation noise emitted from the loading area. This can then be used to calculate the site generated noise level at R2.

No sound level meter measurements could be taken at receptor locations R3 and R5 due to the constant interference from road noise, town centre noise, birdsong, noise from Holmfirth junior school and the trickle of water associated with the river Ribble. In these instances the site noise level has been calculated using the measured data from a different monitoring location or estimated from on-site observations taken at the specific receptor.

Night time Measurements

During the night the sound level meter was set to record for 15-minutes at each receptor location whereby site noise could be measured in isolation from other environmental noise. As there was significantly less interference from road noise, town centre noise and birdsong for example it was possible to take measurements at all 5 receptor locations of the general site noise being emitted. In addition to this a sound level meter measurement was taken in the tunnel between the finishing area and the bottom dye house area for an approximate duration of 6-minutes which incorporated noise being emitted directly from the site with the roller shutter doors open and closed.

A measurement was taken in the Despatch area of the despatch operations for an approximate duration of 20-minutes which covered a full despatch cycle. In addition to this a short measurement was taken of the reversing beacon used on the forklift truck directly at source – approximately 2m away. The impact of the despatch operations can be calculated at the nearest residential receptor locations (R3, R4 and R5).



Background Measurements

The background noise levels were measured during the day and during the night at two separate locations, one closer to the main road and one further up the valley, for a duration of fifteen minutes at each location. The background measurements consisted of noise in the local area in the absence of any noise generated from the site and are considered to be representative of typical environmental conditions.

3.0

Map of Site and Monitoring Locations

Photo 3.1 Overview of the Receptor locations



Photo 3.2 Overview of the on-site monitoring locations



Photo 3.3 Overview of the background (L_{A90}) monitoring locations (1)

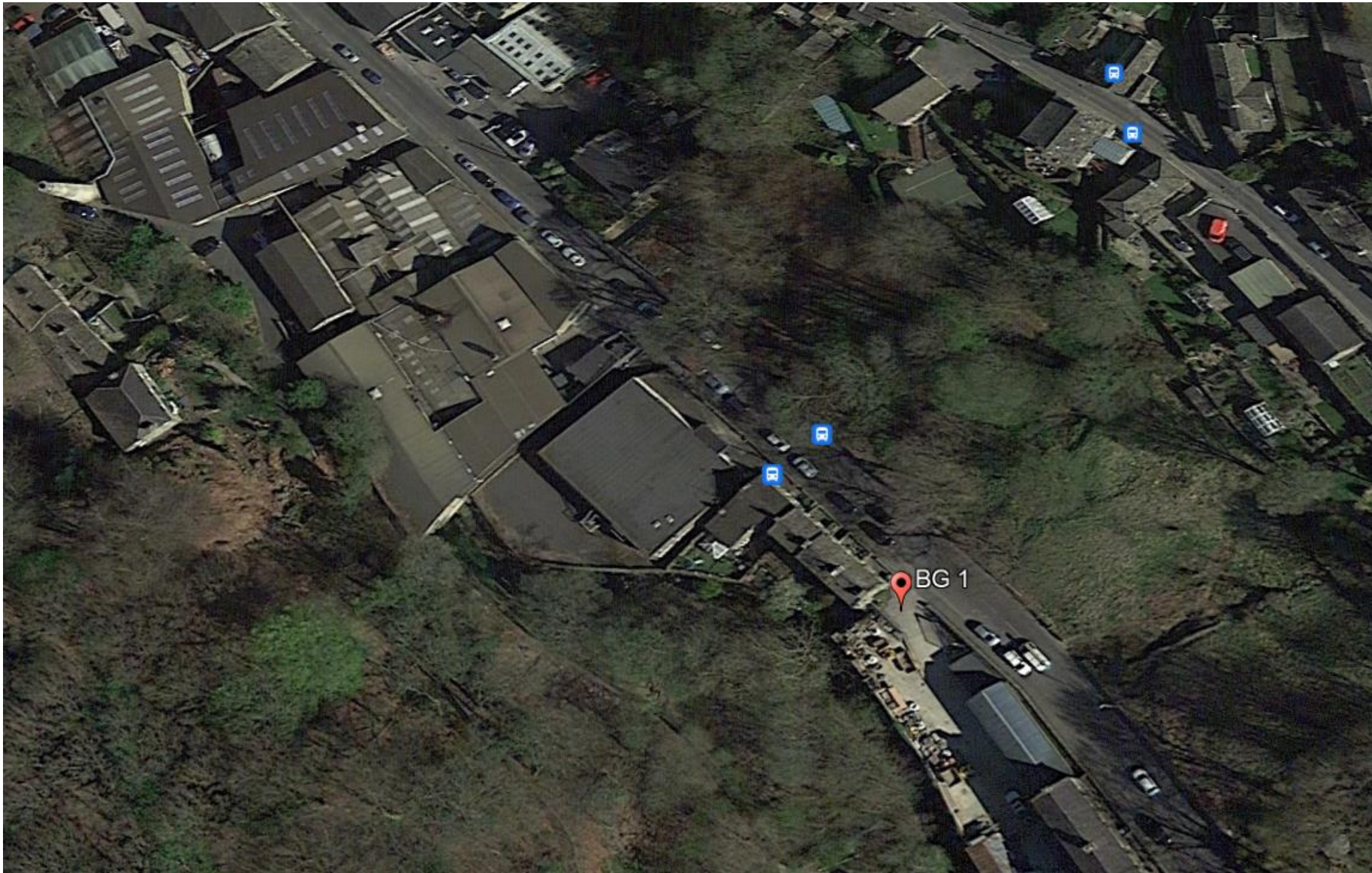


Photo 3.4 Overview of the exact background (L_{A90}) monitoring locations (2)



4.0 Monitoring Results and Assessment

4.1 Monitoring Results

The measured levels on the day and night of the assessment were reported as being representative of normal operational conditions. However, it should be noted that the working environment can change on daily basis depending on site activities.

The noise survey recorded the following levels, as shown in Tables 1 - 2:

Table 1: daytime (dB)

Monitoring Location	Start Time (hh:mm)	Measurement Duration	L _{Aeq}	L _{A90}	L _{Amax}
R1	9:41	60 min	55.6	52.0	73.8
R2	13:55	32 min	53.4	51.0	67.3
R3	No measurement due to external interference				
R4	10:48	60 min	54.7	51.0	69.8
R5	No measurement due to external interference				
MP2	14:36	9 min	58.9	57.0	70.8
BG1	12:30	15 min	65.5	46.5	86.9
BG2	13:20	15 min	50.7	47.5	70.9

No sound level meter measurements could be taken at R3 and R5 during the day due to constant interference affecting the results.

The observations at R3 were that the site was faintly audible in the range of 47 - 49dB(A).

The observations at R5 were that the site was clearly audible in the range of 50 - 52dB(A).

At R2 the site noise level (specific noise) can be calculated as the measured ambient level of 53.4dB(A) less the residual noise level of 50.7dB(A) measured at BG2. This then equates to a specific noise level at R2 of 50.1dB(A) which correlates with the observations made at this location whereby it was observed that the site was faintly audible in the range of 48 - 50dB(A).

Table 2: night-time (dB)

Monitoring Location	Start Time (hh:mm)	Measurement Duration	L _{Aeq}	L _{A90}	L _{Amax}
R1	00:40	15 min	47.3	46.0	63.7
R2	03:08	15 min	48.5	48.0	57.1
R3	01:30	15 min	41.3	41.0	54.4
R4	00:58	15 min	47.3	46.5	56.4
R5	02:25	15 min	45.1	44.5	52.9
MP1	04:53	20 min	68.4	52.5	90.5
MP3	01:47	6 min	66.9	63.0	80.0
BG1	01:15	15 min	51.0	42.5	75.8
BG2	02:43	15 min	41.6	39.5	56.2

At R2 the site noise level (specific noise) can be calculated as the measured ambient level of 48.5dB(A) less the residual noise level of 41.6dB(A) measured at BG2. This then equates to a specific noise level at R2 of 47.5dB(A) which correlates with the observations made at this location whereby it was observed that the site was audible in the range of 48 – 50dB(A).

4.2 Assessment of Noise at the Nearest Residential Receptors

In order to predict noise levels at the nearest residential receptor locations, the following equation has been used:

$$LP2 = LP1 - 20 \log(r2/r1) - \text{for point sources}$$

where, r1 is the distance from source to measurement location; and

r2 is the distance from source to receptor

Table 3: Predicted sound level from despatch operations

Receptor Location	Measurement Location	Measured Level (LP1)	Source to Measurement Location (r1)	Source to Receptor (r2)	Predicted level at Receptor (LP2)
R3	MP1	68.4	3	38	46.3
R4				25	50.0
R5				80	39.9

Table 4: Predicted sound level from general operations in the loading area

Receptor Location	Measurement Location	Measured Level (LP1)	Source to Measurement Location (r1)	Source to Receptor (r2)	Predicted level at Receptor (LP2)
R2	MP2	58.9	7	65	39.5

Table 5: Predicted sound level from noise generated in the tunnel between finishing and bottom dye house

Receptor Location	Measurement Location	Measured Level (LP1)	Source to Measurement Location (r1)	Source to Receptor (r2)	Predicted level at Receptor (LP2)
R4	MP3	66.9	2	47	39.5

4.3 BS 4142:2014 +A1:2019 Assessment

BS 4142:2014 +A1:2019 infers that for a given excess of the rating level over the background level, the noise impact is as follows:

Table 6: BS 4142:2014 +A1:2019 assessment of impact

Excess	Impact
≥10dB	An indication of a significant adverse impact.
≥ 5dB	An indication of an adverse impact.
≥ 0dB ≥5 dB	An indication that it is unlikely that the specific sound source will have an adverse impact or a significant adverse impact.
<0dB	An indication that the specific sound source will have a low impact.

Adverse impacts include, but are not limited to, annoyance and sleep disturbance. Not all adverse impacts will lead to complaints and not every complaint is proof of an adverse impact.

Table 7: R1 Daytime BS4142 Assessment

Results		Relevant BS4142 Clauses	Commentary
Background sound level	47	8.1.1 8.1.3 8.2	Measured at a surrogate location with site noise inaudible. Average of 46.5 and 47.5.
Measured specific sound level	56	7.3.6	As measured at the residential receptor
Acoustic feature correction	+3	9.2	Annex C of BS 4142 was used to analyse the 1/3 octave bands and determine that a tonal penalty should not be applied A penalty of +3 has been applied to the assessment as there was some intermittency due to the movement of plastic containers between production areas, intermittent vent noise, use of forklift trucks including an audible reversing beacon and activity associated with loading and despatch operations.
Rating level	59	9.2	-
Excess of rating level over background sound level	+12	11	-
Comparison to BS4142 assessment criteria	-	11	Assessment suggests an indication of a significant adverse impact.
Uncertainty and Context	-	10	The measurements were taken under repeatable conditions and the uncertainty in the result will be low. It was reported that the site was operating under normal conditions. The excess of the rating level over the background sound level is +12 dB and in this instance the uncertainty of the measurement does not have any significance to the outcome of the assessment. The context is that the site is located in a valley surrounded by residential properties some of which overlook the site. The site is predominantly an enclosed process; however, site noise was generally constant throughout the measurement period with occasional intermittent events from the movement of plastic containers between production areas, intermittent vent noise, use of forklift trucks including an audible reversing beacon and activity associated with loading and despatch operations with all of these activities operating externally.

Table 8: R1 Night-time BS4142 Assessment

Results		Relevant BS4142 Clauses	Commentary
Background sound level	41	8.1.1 8.1.3 8.2	Measured at a surrogate location with site noise inaudible. Average of 42.5 and 39.5.
Measured specific sound level	47	7.3.6	As measured at the residential receptor
Acoustic feature correction	-	9.2	Annex C of BS 4142 was used to analyse the 1/3 octave bands and determine that a tonal penalty should not be applied. No penalties for intermittency and/or tonality are being applied.
Rating level	47	9.2	-
Excess of rating level over background sound level	+6	11	-
Comparison to BS4142 assessment criteria	-	11	Assessment suggests an indication of an adverse impact.
Uncertainty and Context	-	10	<p>The measurements were taken under repeatable conditions and the uncertainty in the result will be low. It was reported that the site was operating under normal conditions.</p> <p>The excess of the rating level over the background sound level is +6 dB and in this instance the uncertainty of the measurement does not have any significance to the outcome of the assessment.</p> <p>The context is that the site is located in a valley surrounded by residential properties some of which overlook the site. The site is predominantly an enclosed process; however, site noise was generally constant throughout the measurement period. There was significantly less intermittent noise events occurring during the night although there was some noise from the movement of plastic containers between production areas, use of forklift trucks including an audible reversing beacon.</p>

Table 9: R2 Daytime BS4142 Assessment

Results		Relevant BS4142 Clauses	Commentary
Background sound level	47	8.1.1 8.1.3 8.2	Measured at a surrogate location with site noise inaudible. Average of 46.5 and 47.5.
Measured specific sound level	50	7.3.6	As measured at the residential receptor
Acoustic feature correction	+3	9.2	Annex C of BS 4142 was used to analyse the 1/3 octave bands and determine that a tonal penalty should not be applied A penalty of +3 has been applied to the assessment as there was some intermittency due to the movement of plastic containers between production areas, intermittent vent noise, use of forklift trucks including an audible reversing beacon and activity associated with loading and despatch operations.
Rating level	53	9.2	-
Excess of rating level over background sound level	+6	11	-
Comparison to BS4142 assessment criteria	-	11	Assessment suggests an indication of an adverse impact.
Uncertainty and Context	-	10	The measurements were taken under repeatable conditions and the uncertainty in the result will be low. It was reported that the site was operating under normal conditions. The excess of the rating level over the background sound level is +6 dB and in this instance the uncertainty of the measurement does not have any significance to the outcome of the assessment. The context is that the site is located in a valley surrounded by residential properties some of which overlook the site. The site is predominantly an enclosed process; however, site noise was generally constant throughout the measurement period with occasional intermittent events from the movement of plastic containers between production areas, intermittent vent noise, use of forklift trucks including an audible reversing beacon and activity associated with loading and despatch operations with all of these activities operating externally.

Table 10: R2 Night-time BS4142 Assessment

Results		Relevant BS4142 Clauses	Commentary
Background sound level	41	8.1.1 8.1.3 8.2	Measured at a surrogate location with site noise inaudible. Average of 42.5 and 39.5.
Measured specific sound level	48	7.3.6	As measured at the residential receptor
Acoustic feature correction	-	9.2	Annex C of BS 4142 was used to analyse the 1/3 octave bands and determine that a tonal penalty should not be applied. No penalties for intermittency and/or tonality are being applied.
Rating level	48	9.2	-
Excess of rating level over background sound level	+7	11	-
Comparison to BS4142 assessment criteria	-	11	Assessment suggests an indication of an adverse impact.
Uncertainty and Context	-	10	<p>The measurements were taken under repeatable conditions and the uncertainty in the result will be low. It was reported that the site was operating under normal conditions.</p> <p>The excess of the rating level over the background sound level is +7 dB and in this instance the uncertainty of the measurement does not have any significance to the outcome of the assessment.</p> <p>The context is that the site is located in a valley surrounded by residential properties some of which overlook the site. The site is predominantly an enclosed process; however, site noise was generally constant throughout the measurement period. There was significantly less intermittent noise events occurring during the night although there was some noise from the movement of plastic containers between production areas, use of forklift trucks including an audible reversing beacon.</p>

Table 11: R3 Daytime BS4142 Assessment

Results		Relevant BS4142 Clauses	Commentary
Background sound level	47	8.1.1 8.1.3 8.2	Measured at a surrogate location with site noise inaudible. Average of 46.5 and 47.5.
Estimated specific sound level	47 - 49	7.3.6	Estimated at the residential receptor
Acoustic feature correction	-	9.2	Annex C of BS 4142 was used to analyse the 1/3 octave bands and determine that a tonal penalty should not be applied. No penalties for intermittency and/or tonality are being applied.
Rating level	47 - 49	9.2	-
Excess of rating level over background sound level	0 - +2	11	-
Comparison to BS4142 assessment criteria	-	11	Assessment indicates that it is unlikely that the specific sound source will have an adverse impact or a significant adverse impact.
Uncertainty and Context	-	10	<p>There is some uncertainty in the measurement as the site generated noise level at the receptor location, the specific sound level, had to be estimated due to external interference and it was not possible to measure the ambient noise and then the residual noise with all site noise absent at this location. It is the professional opinion of the assessor that the estimated sound levels stated are a good reflection of the specific sound level and this has been correlated with calculations using measured data from other receptor locations.</p> <p>The context is that the site is located in a valley surrounded by residential properties some of which overlook the site. The site is predominantly an enclosed process; however, site noise was generally constant throughout the measurement period with occasional intermittent events from the movement of plastic containers between production areas, intermittent vent noise, use of forklift trucks including an audible reversing beacon and activity associated with loading and despatch operations with all of these activities operating externally.</p>

Table 12: R3 Night-time BS4142 Assessment

Results		Relevant BS4142 Clauses	Commentary
Background sound level	41	8.1.1 8.1.3 8.2	Measured at a surrogate location with site noise inaudible. Average of 42.5 and 39.5.
Measured specific sound level	41	7.3.6	As measured at the residential receptor
Acoustic feature correction	-	9.2	Annex C of BS 4142 was used to analyse the 1/3 octave bands and determine that a tonal penalty should not be applied. No penalties for intermittency and/or tonality are being applied.
Rating level	41	9.2	-
Excess of rating level over background sound level	0	11	-
Comparison to BS4142 assessment criteria	-	11	Assessment suggests an indication that the specific sound source will have a low impact.
Uncertainty and Context	-	10	The measurements were taken under repeatable conditions and the uncertainty in the result will be low. However there may be fluctuations in the background level under differing weather conditions which may increase or decrease the background level – although this would not significantly alter the outcome of the assessment. The context is that the site is located in a valley surrounded by residential properties some of which overlook the site. The site is predominantly an enclosed process; however, site noise was generally constant throughout the measurement period. There was significantly less intermittent noise events occurring during the night although there was some noise from the movement of plastic containers between production areas, use of forklift trucks including an audible reversing beacon.

Table 13: R4 Daytime BS4142 Assessment

Results		Relevant BS4142 Clauses	Commentary
Background sound level	47	8.1.1 8.1.3 8.2	Measured at a surrogate location with site noise inaudible. Average of 46.5 and 47.5.
Measured specific sound level	55	7.3.6	As measured at the residential receptor
Acoustic feature correction	+3	9.2	Annex C of BS 4142 was used to analyse the 1/3 octave bands and determine that a tonal penalty should not be applied A penalty of +3 has been applied to the assessment as there was some intermittency due to the movement of plastic containers between production areas, intermittent vent noise, use of forklift trucks including an audible reversing beacon and activity associated with loading and despatch operations.
Rating level	58	9.2	-
Excess of rating level over background sound level	+11	11	-
Comparison to BS4142 assessment criteria	-	11	Assessment suggests an indication of a significant adverse impact.
Uncertainty and Context	-	10	The measurements were taken under repeatable conditions and the uncertainty in the result will be low. It was reported that the site was operating under normal conditions. The excess of the rating level over the background sound level is +11 dB and in this instance the uncertainty of the measurement does not have any significance to the outcome of the assessment. The context is that the site is located in a valley surrounded by residential properties some of which overlook the site. The site is predominantly an enclosed process; however, site noise was generally constant throughout the measurement period with occasional intermittent events from the movement of plastic containers between production areas, intermittent vent noise, use of forklift trucks including an audible reversing beacon and activity associated with loading and despatch operations with all of these activities operating externally.

Table 14: R4 Night-time BS4142 Assessment

Results		Relevant BS4142 Clauses	Commentary
Background sound level	41	8.1.1 8.1.3 8.2	Measured at a surrogate location with site noise inaudible. Average of 42.5 and 39.5.
Measured specific sound level	47	7.3.6	As measured at the residential receptor
Acoustic feature correction	-	9.2	Annex C of BS 4142 was used to analyse the 1/3 octave bands and determine that a tonal penalty should not be applied. No penalties for intermittency and/or tonality are being applied.
Rating level	47	9.2	-
Excess of rating level over background sound level	+6	11	-
Comparison to BS4142 assessment criteria	-	11	Assessment suggests an indication of an adverse impact.
Uncertainty and Context	-	10	<p>The measurements were taken under repeatable conditions and the uncertainty in the result will be low. It was reported that the site was operating under normal conditions.</p> <p>The excess of the rating level over the background sound level is +6 dB and in this instance the uncertainty of the measurement does not have any significance to the outcome of the assessment.</p> <p>The context is that the site is located in a valley surrounded by residential properties some of which overlook the site. The site is predominantly an enclosed process; however, site noise was generally constant throughout the measurement period. There was significantly less intermittent noise events occurring during the night although there was some noise from the movement of plastic containers between production areas, use of forklift trucks including an audible reversing beacon.</p>

Table 15: R5 Daytime BS4142 Assessment

Results		Relevant BS4142 Clauses	Commentary
Background sound level	47	8.1.1 8.1.3 8.2	Measured at a surrogate location with site noise inaudible. Average of 46.5 and 47.5.
Estimated specific sound level	50 - 52	7.3.6	Estimated at the residential receptor
Acoustic feature correction	+3	9.2	Annex C of BS 4142 was used to analyse the 1/3 octave bands and determine that a tonal penalty should not be applied A penalty of +3 has been applied to the assessment as there was some intermittency due to the movement of plastic containers between production areas, intermittent vent noise, use of forklift trucks including an audible reversing beacon and activity associated with loading and despatch operations.
Rating level	53 - 55	9.2	-
Excess of rating level over background sound level	+6 - 8	11	-
Comparison to BS4142 assessment criteria	-	11	Assessment suggests an indication of an adverse impact.
Uncertainty and Context	-	10	There is some uncertainty in the measurement as the site generated noise level at the receptor location, the specific sound level, had to be estimated due to external interference and it was not possible to measure the ambient noise and then the residual noise with all site noise absent at this location. It is the professional opinion of the assessor that the estimated sound levels stated are a good reflection of the specific sound level and this has been correlated with calculations using measured data from other receptor locations. The context is that the site is located in a valley surrounded by residential properties some of which overlook the site. The site is predominantly an enclosed process; however, site noise was generally constant throughout the measurement period with occasional intermittent events from the movement of plastic containers between production areas, intermittent vent noise, use of forklift trucks including an audible reversing beacon and activity associated with loading and despatch operations with all of these activities operating externally.

Table 16: R5 Night-time BS4142 Assessment

Results		Relevant BS4142 Clauses	Commentary
Background sound level	41	8.1.1 8.1.3 8.2	Measured at a surrogate location with site noise inaudible. Average of 42.5 and 39.5.
Measured specific sound level	45	7.3.6	As measured at the residential receptor
Acoustic feature correction	-	9.2	Annex C of BS 4142 was used to analyse the 1/3 octave bands and determine that a tonal penalty should not be applied. No penalties for intermittency and/or tonality are being applied.
Rating level	45	9.2	-
Excess of rating level over background sound level	+4	11	-
Comparison to BS4142 assessment criteria	-	11	Assessment suggests an indication of an adverse impact.
Uncertainty and Context	-	10	<p>The measurements were taken under repeatable conditions and the uncertainty in the result will be low. It was reported that the site was operating under normal conditions.</p> <p>The excess of the rating level over the background sound level is +4 dB and, in this instance, although the excess of rating over background sound level was less than +5 dB, this conclusion is reached by professional judgement, taking context into consideration.</p> <p>The context is that the site is located in a valley surrounded by residential properties some of which overlook the site. The site is predominantly an enclosed process; however, site noise was generally constant throughout the measurement period. There was significantly less intermittent noise events occurring during the night although there was some noise from the movement of plastic containers between production areas, use of forklift trucks including an audible reversing beacon.</p>

5.0 Discussion

Daytime impact under normal operating conditions

At residential receptor locations R1 and R4 the results for the BS 4142:2014+A1:2019 assessment indicates that site generated noise under normal operating conditions during the day will have a significant adverse impact. These receptor locations are located closest to the site and had an outcome of +12 and +11 above the day time background level.

At residential receptor locations R2 and R5 the results for the BS 4142:2014+A1:2019 assessment indicates that site generated noise under normal operating conditions during the day will have an adverse impact. There was an outcome of +6 and +6 - 8 (Estimated) above the day time background level at these receptor locations.

At receptor location R3 the results for the BS 4142:2014+A1:2019 assessment indicates that it is unlikely that the specific sound source will have an adverse impact or a significant adverse impact with regards to site generated noise under normal operating conditions during the day. There was an outcome of 0 - +2 (Estimated) above the day time background level at this receptor. This receptor location was located furthest away from the site directly between Dunford Road and the river Ribble.

Night time impact under normal operating conditions


At residential receptor locations R1, R2, R4 and R5 the results for the BS 4142:2014+A1:2019 assessment indicates that site generated noise under normal operating conditions during the night will have an adverse impact. There was an outcome which ranged between +4 to +7 above the night time background level at these receptor locations.

At receptor location R3 the results for the BS 4142:2014+A1:2019 assessment indicates that there will be a low impact with regards to site generated noise under normal operating conditions during the night. There was an outcome of 0 above the night time background level at this receptor. This receptor location was located furthest away from the site directly between Dunford Road and the river Ribble.

Night time impact from noise generated by the despatch operations

At receptor R4 located directly adjacent to the despatch area It has been calculated that noise generated from the despatch operations results in an equivalent noise level (LAeq) of 50dB(A). This is an increase of 3dB(A) above the specific sound level measured at the same receptor location during the night and noise from the despatch process can be seen to be +9 above the night time background level. When taking into consideration context and the acoustic features of the despatch operations this process is considered to be having a significant adverse impact at residential receptor location R4.

It has been calculated that noise generated from the despatch operations results in an equivalent noise level (LAeq) of 46dB(A) at receptor R3 located directly between Dunford Road and the river Ribble approximately 38m away from the despatch area. This is an increase of 5dB(A) above the



specific sound level measured at the same receptor location during the night and noise from the despatch process can be seen to be +5 above the night time background level. When taking into consideration context and the acoustic features of the despatch operations this process is considered to be having an adverse impact at residential receptor location R3.

It has been calculated that noise generated from the despatch operations results in an equivalent noise level (LAeq) of 40dB(A) at receptor R5 located adjacent to the despatch area and up the valley overlooking the site. This is below the specific sound level measured at the same receptor location during the night and noise from the despatch process can be seen to be -1 below the night time background level. When taking into consideration context and the acoustic features of the despatch operations it is considered unlikely that sound from the despatch operations will have an adverse impact or a significant adverse impact at residential receptor location R5.

6.0 Recommendations

Below are some suggestions for effective noise control to reduce the site generated noise level to less than 5dB above the day time or night time background levels:

- Keep the roller shutter door that accesses the bottom dye house area closed as much as possible. The noise level measured with this door open equalled 72dB(A) and with the door closed the noise level equalled 64dB(A) which is an 8dB(A) reduction.
- Limit the time that despatch operations occur, for example only allow despatch operations after 7am whereby the background level significantly increases due to increased environmental noise from transportation sources.
- Change the reversing beacons used on the forklift trucks to alternatives that use a wide range of white sound frequencies. These systems generate a 'ssh-ssh' sound which is gentle on the ear and dissipates quickly, meaning it can only be heard in the danger zone rather than a single frequency or tonal alarm which emits a high proportion of noise energy in a single frequency or small number of frequencies. This was measured on site and the frequency range of the current reversing beacon can be seen below:



The equivalent noise level emitted from the current reversing beacon measured 86dB(A) LAeq with an LMax measurement of 93dB(A).

- Also with regards to the use of forklift trucks, consider replacing the diesel powered vehicles with electric alternatives as these generate far less noise due to there not being combustion engines or exhaust noise.
- Ensure that all fans and vents which operate intermittently are in good working order. It was observed that whilst measuring at R1 a vent activated on the roof of the finishing area for a short duration but generated a noise level of between 70-74dB(A) on start-up. If this is associated with a belt driven fan motor than consider replacing this with a direct drive motor. In addition to this, increase the efficiency of the aerodynamic flow inside the ducting and fit a silencer or plenum chamber to the vent.
- Attempt to reduce noise being generated from the movement of the plastic containers by improving the running surface, replacing the wheels with ones with a rubber coating or a high density plastic or changing the process so that containers are moved using electric powered



ride on pallet trucks. This was a significant source of intermittent noise both during the day and during the night.

- Attempt to reduce the metallic impacts noise being generated from the movement and handling of the metal storage units by replacing these units with high density plastic alternatives. This was a significant source of intermittent noise during the day.
- Ensure good maintenance of all external plant and equipment as well as internal machinery as part of a preventative maintenance programme. Visually inspect and assess all external plant and equipment on a regular basis (weekly/fortnightly) and report any defects which may increase noise levels above what is generated from normal operation.
- Continue to reiterate to employees the need to be considerate to neighbours especially during the night.
- Fit self-closing soft close mechanism to all external factory doors.

Appendix 1 – Noise Measurement Data and Observations

Appendix 1.1 Off site Community Receptors

Location	R1 – Residential properties to the South West		Date	Day 14 th March 2022	
Measurement Parameters					
Start Time	Measurement Duration	LAeq	LA ₉₀	LAF _{MAX}	
9:41	60 min	55.6	52.0	73.8	
Observations and Comments					
<p>Site noise was a constant drone with occasional intermittent hisses and venting noise from various parts of the site.</p> <p>There was a metallic rattling sound which was generated by the opening and closing of a metal roller shutter door. Other intermittent noise was from the movement of the plastic containers between buildings and vehicle reversing beacons.</p> <p>There was a fan or vent on top of the finishing area building roof which generated a high level of noise on start-up which ranged between 70-74dB(A).</p> <p>Off site noise came from birdsong, almost constant traffic movements including HGV's and buses associated with Dunford Road and occasional residential noise</p>					

Location	R1 - Residential properties to the South West	Date	Night 15 th March 2022	
Measurement Parameters				
Start Time	Measurement Duration	LAeq	LA ₉₀	LA _{FMAX}
00:40	15 min	47.3	46.0	63.7
Observations and Comments				
<p>Noise levels were notably lower than during the day. The finishing area does not run at night and this was confirmed to be representative of typical conditions.</p> <p>Noise was constant with a constant hum/drone of machines and vents and occasional intermittent banging noise and movement of plastic containers between production areas. This raised the noise level at this location to between 60-64dB(A).</p> <p>There was little off site interference other than low level noise from the river Ribble and a small number of vehicles using Dunford road.</p>				

Location	R2 - Residential properties to the West (Royd Mount)		Date	Day 14 th March 2022	
Measurement Parameters					
Start Time	Measurement Duration	LAeq	LA ₉₀	LAF _{MAX}	
13:55	32 min	53.4	51.0	67.3	
Observations and Comments					
<p>This receptor was located at the top of the valley and properties directly overlook the loading area of the facility. Site noise was faintly audible but there was also significant interference from traffic and town centre noise, birdsong and the trickle of the river Ribble.</p> <p>A measurement of the ambient noise level was taken which encompassed a loading cycle as well as a proportion of general site activity. For the assessment the residual level measured at BG2 during the day is used to determine the specific sound level.</p> <p>Site noise consisted of a constant low drone of fans and/or vents and noise from the operation of the tumbler. In addition to this there were intermittent noise events such as forklift truck movements including reversing beacons, the movement and reversing beacon of a van which was being loaded, the movement and handling of metal storage units, the movement and rattle of a pallet truck and the rumble of the movement of a plastic container used to move product between production areas. There was also a loud venting noise as the boiler was blowing down which generated a noise level of 60dB(A) for a short period. There was also an occasional popping/banging sound which was coming from a pipe in which steam was transported.</p>					

Location	R2 - Residential properties to the West (Royd Mount)		Date	Night 15 th March 2022	
Measurement Parameters					
Start Time	Measurement Duration	LAeq	LA ₉₀	LAF _{MAX}	
03:08	15 min	48.5	48.0	57.1	
Observations and Comments					
<p>Site noise from the tumbler was audible. In addition to this there was also an occasional popping/banging sound which was coming from a pipe in which steam was transported.</p> <p>Off-site noise from the trickle of the river Ribble, birdsong and occasional vehicle movements.</p> <p>Specific source to be calculated using the ambient level of this measurement and the residual level of BG2.</p>					

Location	R3 - Residential property to the South East (72 Dunford Road)		Date	Day 14th March 2022
Measurement Parameters				
Start Time	Measurement Duration	LAeq	LA₉₀	LAF_{MAX}
No measurement taken due to constant external interference				
Observations and Comments				
<p>At this receptor location the site was faintly audible but traffic on Dunford road and the river Ribble at the rear of the property were constant sources of interference.</p> <p>The audible site noise consisted of a low hum or drone emanating from the facility although the exact source of the noise could not be determined in isolation. It is likely that the noise was coming from the vents on the roof or noise was escaping through the fabric of the building or through the open fire door which led to the smoking shelter.</p>				

Location	R3 - Residential property to the South East (72 Dunford Road)		Date	Night 15th March 2022
Measurement Parameters				
Start Time	Measurement Duration	LAeq	LA₉₀	LAF_{MAX}
01:30	15 min	41.3	41.0	54.4
Observations and Comments				
<p>At the front of the property there was very constant fan/vent noise and rumbling from the movement of plastic containers moving between production areas. The finishing area was not operational so there was less noise than during the day.</p> <p>One notable sound was the raising and lowering of a roller shutter door which caused a metallic rattle and measured between 46-48dB(A).</p> <p>At the rear of the property the site was audible but the river Ribble was a constant interference hindering the measurement of the specific sound.</p>				

Location	R4 - Residential properties to the East (21/23 Dunford Road)		Date	Day 14th March 2022
Measurement Parameters				
Start Time	Measurement Duration	LAeq	LA₉₀	LA_{FMAX}
10:48	60 min	54.7	51.0	69.8
Observations and Comments				
<p>This receptor location was located approximately 20-25m away from the façade of the site with Dunford road directly between the residential properties and the site.</p> <p>Traffic movements on Dunford road were the dominant source of noise however it was possible to measure some site noise between vehicle movements. Site noise generally consisted of a constant hum or drone emanating from the site generally in the range of 50-55dB(A). There were also forklift truck movements with forklifts using the main road to move metal storage units. These generated high levels of sound from the metallic impacts generated by the movement and handling process. The forklift also generated some impact noise when it was travelling on the main road unloaded – from the rattle of the forks not being under load.</p> <p>There was a van which reversed into the despatch area and was then loaded, approximately 15-20 minutes later the van drove off. The forklift being used was a diesel powered forklift so some engine and exhaust noise was audible during its movements. In addition to this there was the use of the reversing beacon used every time the forklift truck was put into reverse and generated a loud tonal warning sound.</p> <p>Off site noise came from passing traffic on Dunford road, birdsong, hammering and tool use at the neighbouring garage.</p>				

Location	R4 - Residential properties to the East (21/23 Dunford Road)		Date	Night 15th March 2022	
Measurement Parameters					
Start Time	Measurement Duration	LAeq	LA₉₀	LA_{MAX}	
00:58	15 min	47.3	46.5	56.4	
Observations and Comments					
<p>Noise levels were notably lower than during the day. The finishing area does not run at night and this was confirmed to be representative of typical conditions.</p> <p>Noise was constant with a constant hum/drone of machines and vents and occasional intermittent banging noise and movement of plastic containers between production areas. This raised the noise level at this location to between 53-56dB(A).</p> <p>There was little off site interference other than a small number of vehicles using Dunford road.</p>					

Location	R5 - Residential properties to the North East (20 South Lane)		Date	Day 14th March 2022
Measurement Parameters				
Start Time	Measurement Duration	LAeq	LA₉₀	LAF_{MAX}
No measurement taken due to constant external interference				
Observations and Comments				
<p>This receptor is located on the valley side and properties directly overlook the facility.</p> <p>At this receptor location the site was faintly audible but traffic on Dunford road, noise from Holmfirth junior school, birdsong, residential noise and aeroplanes were constant sources of interference.</p> <p>The audible site noise consisted of a constant hum or drone from fans or vents located on the roof, from the movements of forklift trucks including reversing beacons and from plastic containers being moved between production areas causing a notable rolling / rumbling sound</p>				

Location	R5 - Residential properties to the North East (20 South Lane)		Date	Night 15th March 2022
Measurement Parameters				
Start Time	Measurement Duration	LAeq	LA₉₀	LAF_{MAX}
02:25	15 min	45.1	44.5	52.9
Observations and Comments				
<p>Very constant and dominant fan / vent noise generated from the roof of the building.</p> <p>Low level noise from production processes including some low intermittent impact noise, reversing alarms, and machine alarms.</p> <p>The movement and rumble of plastic containers between production areas elevated the noise level to between 47-48dB(A).</p>				

Appendix 1.2 Onsite Measurement Locations

Location	MP2 - Loading area (General operations)		Date	Day 14 th March 2022	
Measurement Parameters					
Start Time	Measurement Duration	LAeq	LA ₉₀	LAF _{MAX}	
14:36	9 min	58.9	57.0	70.8	
Observations and Comments					
<p>With forklift truck noise excluded this measurement was taken to establish the general operations noise level with noise emanating from within the loading bay – specifically from the tumbler which uses large air moving equipment (fan motors / dryer units) as part of the drying process.</p> <p>There was also occasional vent noise such as when the boiler was blowing down and a metallic popping/banging sound which was coming from a pipe in which steam was transported.</p> <p>It was reported that two forklift trucks are used in this area, one electric and one diesel powered. The electric one was used for loading / unloading and the diesel one was used for transporting metal storage units up the main road and into the despatch area.</p>					

Location	BG1 - Entrance to R.A. Berry and Son		Date	Day 14 th March 2022	
Measurement Parameters					
Start Time	Measurement Duration	LAeq	LA ₉₀	LAF _{MAX}	
12:30	15 min	65.5	46.5	86.9	
Observations and Comments					
<p>Almost continuous traffic noise from vehicles using Dunford road. Estimated at approximately 6 vehicle movements per minute.</p> <p>Trickle of the river Ribble, birdsong and rustle of leaves on trees.</p> <p>Some residential noise from adjacent properties and pedestrians passing on footpath at the side of Dunford road.</p>					

Location	BG2 – 60 Back Lane	Date	Day 14th March 2022	
Measurement Parameters				
Start Time	Measurement Duration	LAeq	LA₉₀	LAF_{MAX}
13:20	15 min	50.7	47.5	70.9
Observations and Comments				
<p>Positioned further away from the main road to assess the general environment in the absence of such significant and constant road noise.</p> <p>Traffic noise was still a major contributor to the noise as was general town centre activity, birdsong, and a slight rustling of leaves on trees.</p>				

Location	MP1 – Despatch area during despatch operations	Date	Night 15th March 2022	
Measurement Parameters				
Start Time	Measurement Duration	LAeq	LA₉₀	LAF_{MAX}
04:53	20 min	68.4	52.5	90.5
Observations and Comments				
<p>The despatch cycle lasted approximately 20 minutes and consisted of:</p> <ul style="list-style-type: none"> ▪ Vehicle/van turning into despatch area predominantly consisting of engine noise and reversing beacon ▪ Vehicle being unsheeted and the load straps removed which caused some impact noise ▪ Driver then opening the roller shutter doors to the facility which measured 61dB(A) ▪ Driver then operating a diesel powered forklift truck to load/unload the vehicle which consisted of engine noise, exhaust noise, noise from the reversing beacon and noise from the movement of the vehicle and handling of the products being loaded/unloaded. <p>Following this process the reversing beacon of the forklift truck was measured at 86dB(A).</p>				

Location	MP3 - Tunnel between the finishing area and the bottom dye house area		Date	Night 15th March 2022
Measurement Parameters				
Start Time	Measurement Duration	LAeq	LA₉₀	LAF_{MAX}
01:47	6 min	66.9	63.0	80.0
Observations and Comments				
<p>Mechanical drone / rotary noise from production machinery and the movement of plastic containers between production areas.</p> <p>Noise levels with the roller shutter door open measured 72dB(A) Noise levels with the roller shutter door closed measured 64dB(A)</p>				

Location	BG1 - Entrance to R.A. Berry and Son		Date	Night 15th March 2022
Measurement Parameters				
Start Time	Measurement Duration	LAeq	LA₉₀	LAF_{MAX}
01:15	15 min	51.0	42.5	75.8
Observations and Comments				
<p>Trickle of water from the river Ribble, low buzz of transformer by the Phoenix centre, passing cars using Dunford road – estimated at 11 cars during the monitoring period.</p>				

Location	BG2 - 60 Back Lane		Date	Night 15th March 2022
Measurement Parameters				
Start Time	Measurement Duration	LAeq	LA₉₀	LAF_{MAX}
02:43	15 min	41.6	39.5	56.2
Observations and Comments				
<p>Trickle of water in the river Ribble, birdsong and occasional vehicle movements.</p>				

Appendix 2 – Overview of Relevant Legislation

National Planning Policy Framework

The Planning Policy Guidance Note PPG24 'Planning and Noise' published in 1994 outlined the considerations to be taken into account by local authorities in determining planning applications both for noise sensitive developments and for those activities which will generate noise.

The Guidance acknowledges that noise can have a significant effect on the environment and on the quality of life enjoyed by individuals and communities. However, it advises that while the planning system should be used to minimise the adverse impact of noise, planning authorities should not place unreasonable restrictions on development, or add unduly to the costs and administrative burdens of business.

This Planning Policy Guidance Note has been replaced by the National Planning Policy Framework, published in 2012.

The National Planning Policy Framework (NPPF) sets out the Government's planning policies for England and how they are expected to be applied. It provides a framework within which local people and their accountable councils can produce their own distinctive local and neighbourhood plans, which reflect the needs and priorities of their communities.

Throughout the NPPF is the presumption in favour of sustainable development. The presumption is subject to two exceptions. First it will not apply where any adverse impacts of allowing development would "significantly and demonstrably" outweigh the benefits when assessed against the policies in the NPPF as a whole. Secondly, the presumption will not apply where specific policies in the NPPF – such as those relating to green belt or national parks – indicate that development should be restricted.

With regards to noise, the NPPF notes that the planning system should contribute to and enhance the natural and local environment by preventing both new and existing development from contributing to or being out at unacceptable risk from, or being adversely affected by unacceptable levels of soil, air, water or noise pollution or land instability.

Planning policies and decisions should aim to:

- avoid noise from giving rise to significant adverse impacts on health and quality of life as a result of new development.
- mitigate and reduce to a minimum other adverse impact on health and quality of life arising from noise from new development, including through the use of conditions.
- recognise that development will often create some noise and existing businesses wanting to develop in continuance of their business should not have unreasonable restrictions put on them because of changes in nearby land uses since they were established.
- identify and protect areas tranquillity which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason.

Environmental Protection Act 1990

Chapter 43 of the Environmental Protection Act 1990 (EPA) makes provision for the improved control of pollution, including noise, arising from any industrial, commercial or activities of any other nature whatsoever.

Specifically, the EPA re-enacts the provisions of the Control of Pollution Act 1974; it restates the law defining statutory nuisances and improves the summary procedures for dealing with them.

Section 80 of the EPA empowers local authorities to deal with statutory nuisances when they occur. The level at which a noise is deemed to be a statutory noise nuisance is not defined in the EPA, this is left to the judgement of individual local authorities. The EPA also grants the right to private citizens to bring a court case against the owner/operator of a noise source.

With regards to the term 'nuisance' there is no specific definition in the Act, so the tests as at common law apply. A definition often used in Court is "A nuisance is a material interference with a person's use or enjoyment of their land or property".

Case law supports the view that factors such as nature of noise, time of day or night it occurs, day of the week on which it occurs, how long it occurs for, how often it occurs and the character of the area in which it occurs should be taken into account when deciding whether the interference is material, as well as whether those affected are overly sensitive or whether they represent the "Man on the Clapham Omnibus".

In court proceedings for an offence, it is a defence to prove that best practicable means were used to prevent or counteract the effects of noise. Under 79(9), 'best practicable means' is to be interpreted by reference to the following provisions:

- "practicable" means reasonably practicable having regard among other things to local conditions and circumstances, to the current state of technical knowledge and to the financial implications.
- the means to be employed include the design, installation, maintenance and manner and periods of operation of plant and machinery, and the design, construction and maintenance of buildings and structures.
- the test is to apply only so far as compatible with any duty imposed by law.
- the test is to apply only so far as compatible with safety and safe working conditions, and with the exigencies of any emergency or unforeseeable circumstances.

BS 4142:2014 +A1:2019

British Standard 4142:2014 +A1:2019 Methods for rating and assessing industrial and commercial sound describes methods for rating and assessing sound of an industrial and/or commercial nature, which includes:

- sound from industrial and manufacturing processes.
- sound from fixed installations which comprise mechanical and electrical plant and equipment.
- sound from the loading and unloading of goods and materials at industrial and/or commercial premises; and
- sound from mobile plant and vehicles that is an intrinsic part of the overall sound emanating from premises or processes, such as that from forklift trucks, or that for train or ship movements on or around an industrial and/or commercial site.

BS 4142 defines the following terms for describing existing and future noise levels:

- Ambient Sound Level, $L_a = LA_{eq, T}$ – Equivalent continuous A-weighted sound pressure level of the totally encompassing sound in a given situation at a given time, usually composed of sound from many sources near and far, at the assessment location over a given time interval, T
- Specific Sound Level, $L_s = LA_{eq, T_r}$ – Equivalent continuous A-weighted sound pressure level produced by the specific sound source at the assessment location over a given time interval, T_r
- Residual Sound Level, $L_r = LA_{eq, T}$ – Equivalent continuous A-weighted sound pressure level of the residual sound at the assessment location over a given time interval, T
- Background Noise Level, $LA_{90, T}$ – A-weighted sound pressure level that is exceeded by the residual sound at the assessment location for 90% of a given time interval, T, measured using time weighting F and quoted to the nearest whole number of decibels

The standard states that, when possible, the background sound level should be measured at the assessment location. It should be ensured that the measurement time interval is of sufficient duration to obtain a representative value of the background sound level.

BS4142 notes that where it is not possible to determine the specific sound level directly by measurement, it may be appropriate to determine the specific sound level by a combination of measurement and calculation.

Certain acoustic features can increase the significance of impact over the basic comparison between the specific sound level and the background sound level.

Subjectively and where appropriate, such as for instances where a new, proposed sound cannot be measured, the specific sound level should be corrected if a tonal or impulsive characteristic is expected to be present.

Tonality

- Just perceptible, apply a penalty of 2dB
- Clearly perceptible, apply a penalty of 4dB
- Highly perceptible, apply a penalty of 6dB

Impulsivity

- Just perceptible, apply a penalty of 3dB
- Clearly perceptible, apply a penalty of 6dB
- Highly perceptible, apply a penalty of 9dB


For other sound characteristics which are not tonal or impulsive but readily distinguishable, a penalty of 3dB can be applied.

Where a specific sound is intermittent and readily distinctive, a penalty of 3dB can be applied.

If the subjective method is not sufficient for assessing the audibility or prominence of tones or impulsive sounds, identification can be made using the one-third octave method and a correction of 6dB added if present.

When making an assessment the impact of a specific sound, an initial estimation is made by subtracting the measured background sound level from the rating level. Typically, the greater the difference, the greater the magnitude of impact:

- A difference of around +10dB or more is likely to be an indication of a significant adverse impact
- A difference of around +5dB is likely to be an indication of an adverse impact
- 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



Appendix 3 – References

National Planning Policy Framework, 2012

Environmental Protection Act 1990

British Standard 4142:2014 +A1:2019 Methods for rating and assessing industrial and commercial sound

Appendix 4 – Certificates of Competency



Diploma in Acoustics and Noise Control

This is to certify that

Christopher Parkin

*has satisfied the Examining Board in
the General Principles of Acoustics Module,
Laboratory, Project and Specialist Modules in*

*Environmental Noise
Noise and Vibration Control Engineering*

Chairman of the Examining Board

Institute Secretary

Date 30 August 2016

*Reference Number R0754
Centre University of Derby*



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Certificate of Competence in Environmental Noise Measurement

This is to certify that

Christopher Parkin

*has completed a course of instruction approved by the
Institute of Acoustics and designed to enable the candidate
to undertake environmental noise measurements in a
competent manner and has achieved a satisfactory
performance in the written and practical examinations
thereof and that this fact has been recorded in a
Register kept by the Institute for this purpose.*



Education Committee Chairman



Institute Secretary

Date 23 October 2009

Centre University of Derby

Reference Number EE208

*For the purposes of Credit Transfer or Professional Development this Certificate
may be considered to be equivalent to 25 points or hours*

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