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NOISE IMPACT ASSESSMENT OF PROPOSED NEW WASH PLANT

GREEN FUTURE RECYCLING CENTRE, ANNA'S ROAD, BLACKPOOL, FY4 5JX

REPORT REFERENCE NO. J005300-8730-SI-01

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This report has been prepared based upon a scope of works and associated resources agreed between the client and Philip Dunbavin Acoustics Ltd (PDA). This report has been prepared with all reasonable skill, care and diligence and has been based upon the interpretation of data collected. This has been accepted in good faith as being accurate and valid at the time of the collection. This report has been based solely on the specific design assumptions and criteria stated herein.

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1.0 SUMMARY

At the request of Green Futures Recycling Ltd, a noise impact assessment has been undertaken relating to a proposed new wash plant at an existing glass recycling site at Green Futures Recycling Centre, Blackpool, FY4 5JX. This report details the impact of the proposed new wash plant of the site.

The results of the preliminary calculation of impact in accordance with BS 4142:2014+A1:2019 have indicated that the Rating Levels following the installation and operation of the new wash plant are at the worst affected noise-sensitive property +2dB above the background. This indicates an impact below the onset of 'adverse impact' and therefore a 'low' impact, depending on context.

When context is taken into account, the impact of the proposed new Aggregate Wash Plant operation remains low, indicating that there is unlikely to be any adverse impact on nearby properties due to noise from the site.

2.0 INTRODUCTION

The Green Future Recycling site consists of a glass recycling operation situated in a former brickworks. The existing site operations involve the storage and supply of bottle glass, and the crushing and processing of this glass to produce a range of high-quality, finely graded sand products. These are subsequently used as a media in abrasive blasting and water filtration.

The site is situated to the north of Anna's Road, Blackpool. The nearest noise sensitive residences are houses off Peel Road, to the north-north-east of the site, and the farmhouse at Lawns Farm, to the south-east of the site. It is noted that the landform rises up to the north-east of the site before dropping back, effectively forming a large 'bund' between the site and the houses off Peel Road.

To the South of Anna's Road is the large Westby Recycling and Landfill site.

The proposed development consists of the installation of a new wash plant at the existing glass recycling centre. The wash plant will allow the glass processed on-site to be further washed and graded. The wash plant will be loaded and unloaded using the same loading shovel already in use on site. A diesel electricity generator will also be located on the site to provide power for the new wash-plant.

The location of the site and surrounding local area including the closest residential receivers are shown in Figure 1 below.

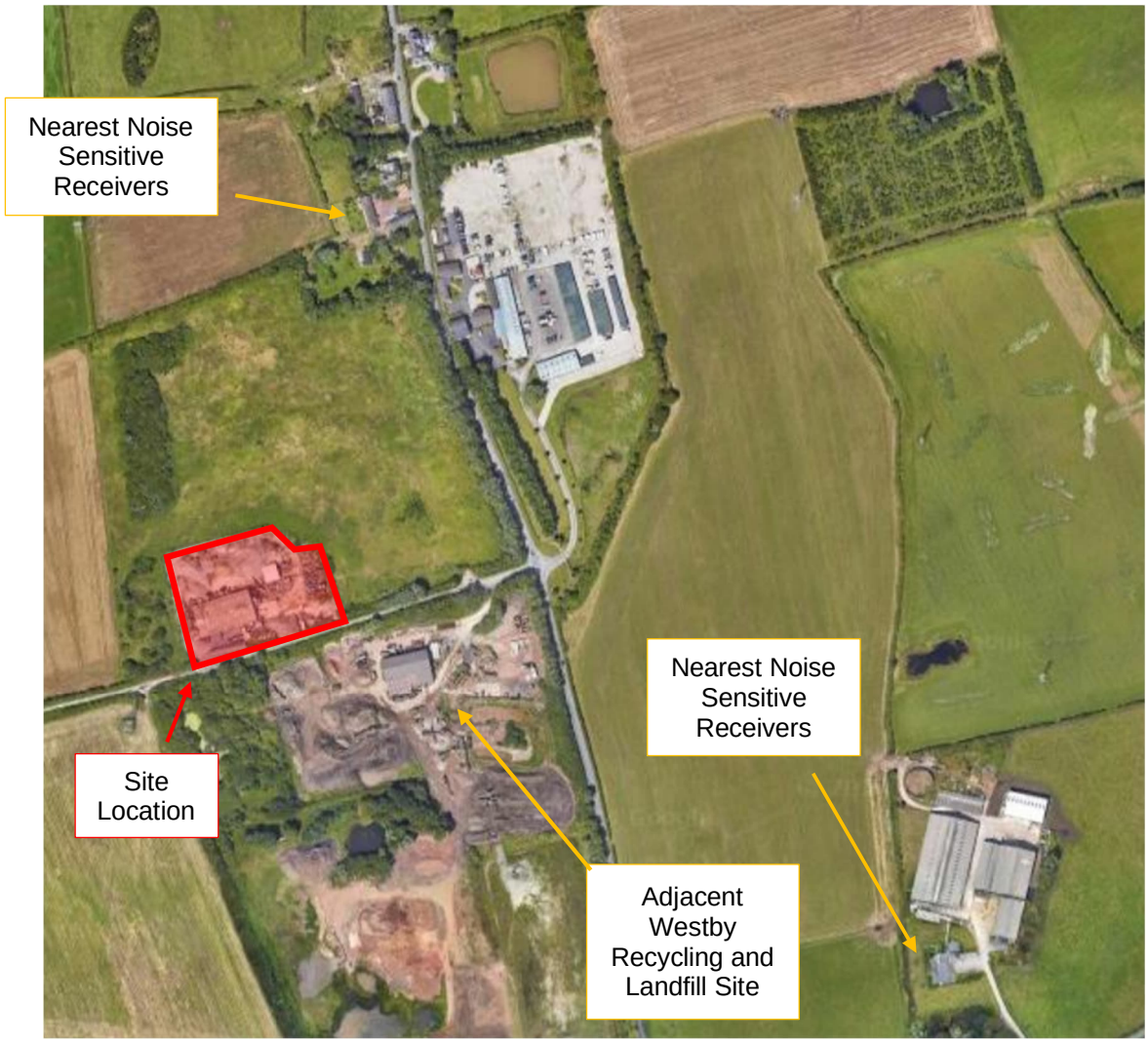


Figure 1. Site Location

3.0 NOISE ASSESSMENT CRITERIA

3.1 Guidance - Noise and Vibration Management: Environmental Permits

The above on-line guidance details the procedure for performing a risk assessment for noise and vibration emissions with regard to Environmental Permits. The full guidance is available at :

https://www.gov.uk/government/publications/noise-and-vibration-management-environmental-permits/noise-and-vibration-management-environmental-permits

The guidance states that the assessment should be carried out by a competent person who should be for example a holder of either:

- Institute of Acoustics Diploma in Acoustics and Noise Control
- Institute of Acoustics Certificate of Competence in Environmental Noise Measurement, with relevant experience

The guidance goes on to describe how the assessment should be carried out in terms of initial desktop risk assessment, off-site monitoring survey, source assessment and Best Available Technology (BAT) or appropriate measures justification for any required mitigation.

Broadly, the above assessment is to be carried out in accordance with the methodology of BS4142 'Methods for rating and assessing industrial and commercial sound', with any noise propagation modelling carried out in accordance with ISO 9613 'Acoustics – attenuation of sound during propagation outdoors'.

3.2 BS4142:2014+A1:2019 Methods for rating and assessing industrial and commercial sound

The effect of plant noise emissions on the nearest noise sensitive residences can be assessed in accordance with BS4142:2014+A1:2019 – '*Methods for rating and assessing industrial and commercial sound*'.

The standard describes a method of determining the level of a noise of commercial or industrial nature, together with procedures for assessing the impact of such a noise outside nearby noise sensitive areas.

The standard provides a procedure for comparing the noise from commercial sources with background noise levels in the absence of the commercial noise and determining the likely impact of the noise on noise sensitive areas.

In accordance with BS 4142 the background noise level is the typical A-weighted sound pressure level at the assessment position that is exceeded for 90% of a given time interval (L_{A90}). The specific noise level is the equivalent continuous (L_{Aeq}) sound pressure level at the assessment position produced by the noise source over a given time interval.

Certain acoustic features can increase the impact over that expected from a simple comparison between the specific noise level and the background level. Where such features are present, these are taken into account by adding corrections to the specific noise level.

The corrections are applied based on whether the following features occur, or are expected to be present. The correction values can either be determined subjectively, or by various objective measurement procedures.

- The noise contains a distinguishable, discrete, continuous tone (whine, hiss, screech, hum, etc.). 0 – 6 dB penalty

- The noise contains distinct impulses (bangs, clicks, clatters, or thumps). 0 – 9 dB penalty.
- The noise is irregular enough to attract attention. 0 – 3 dB penalty.
- Other features. 0 – 3 dB penalty.

From the addition of the above penalties where appropriate the rating level is established, this being the value that is compared with the background noise.

According to BS 4142 an initial estimate of the impact is given for a rating level of:

- 10 dB(A) or more above the background is an indication of significant adverse impact, depending on the context.
- 5 dB(A) above the background is an indication of an adverse impact, depending on the context.
- where the rating level does not exceed the background level, this is an indication of the specific sound source having a low impact, depending on the context.

The above initial assessment may then be modified depending on the context to take into account;

- The absolute level of the sound.
- The character and level of the residual sound compared to the character and level of the specific sound.
- The sensitivity of the receptor and whether dwellings or other premises used for residential purposes will already incorporate design measures that secure good internal and/or outdoor acoustic conditions, such as:

    1. Façade insulation treatment
    2. Ventilation and / or cooling that will reduce the need to have windows open so as to provide rapid or purge ventilation; and
    3. Acoustic screening

3.3 WHO Guidelines for Community Noise

In 1999, the WHO (World Health Organisation) published Guidelines for Community Noise, stating the following internal noise levels are applicable to dwellings.

Table 1 - WHO Guidelines for Community Noise criteria

Specific Environment	***Critical Health Effect(s)***	***L_{Aeq} dB***	***Time Base (hours)***[1]
Outdoor living area	Serious annoyance, daytime and evening	55	16
	Moderate annoyance, daytime and evening	50	16
Outside Bedrooms	Sleep disturbance, window open (outdoor values) night time	45	8

[1] Typically taken to be daytime/evening - 07:00 – 23:00 hours, and night time 23:00 – 07:00 hours.

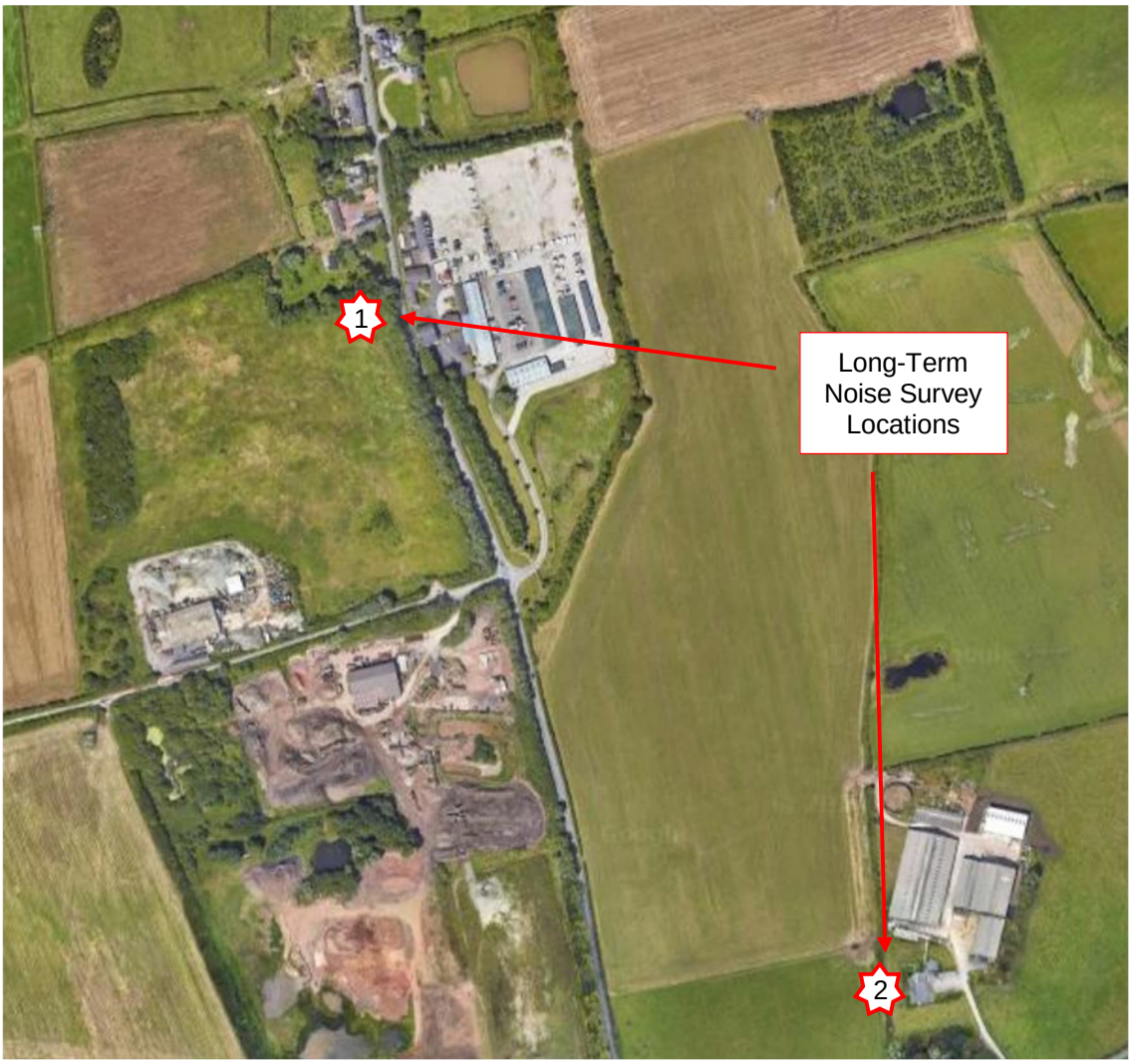
WHO guidelines state, '*To protect the majority of people from being seriously annoyed during the daytime, the outdoor sound level from steady, continuous noise should not exceed 55 dB L_{Aeq} on balconies, terraces and in outdoor living areas. To protect the majority of people from being moderately annoyed during the daytime, the outdoor sound level should not exceed 50 dB L_{Aeq}*.'

4.0 SURVEY DETAILS

4.1 Ambient Sound Measurement Locations

Ambient sound measurements were undertaken at two locations close to the nearest noise sensitive houses to the site. Figure 2 below shows the long-term measurement positions.

Figure 2. Long-term noise survey locations



The measurement positions are detailed as follows:

- LT1 (12:03 4/12/24 – 13:21 5/12/24) – microphone located on a pole approximately 1.5m above ground level close to the nearest residential receivers to the north of site at Peel Road. This was deemed to have no reflective surfaces affecting the noise level measurements.
- LT2 (13:10 4/12/24 – 13:37 5/12/24) – microphone located on a pole approximately 1.5m above ground level at the nearest residential receivers to the south-east of site at Lawns Farm. This was deemed to have no reflective surfaces affecting the noise level measurements.

Measurements were also undertaken to characterise the existing sources on site. Measurements were made of noise egress from the activities within the main processing building, and also noise from the external dust-extraction plant and filters. The noise was dominated by the two external dust extraction cyclones outside of the north façade of the main building. Figure 3 below shows the short-term measurement position.

Figure 3. Short-term noise survey location

The short-term measurements are detailed as follows:

- ST1 – outside background noise measurement with no plant noise on site (intermittent noise was audible from the adjacent landfill site)
- ST2 – outside noise measurement with plant noise on site (internal machinery in main building)
- ST3 – outside noise measurement with a both plant and dust extraction on site. This measurement was undertaken in 1/3 octave bands in order to detect any tonality within the plant noise.

4.2 Survey times

The background ambient sound survey was carried out between 12:00 on Wednesday 04/12/2024 and 13:00 on Thursday 05/12/2024. Measurements of the existing sources on-site were taken between 11:30 and 12:45 on Wednesday 04/12/2024. All measurements were taken by Sam Iles of PDA Ltd.

4.3 Measurement equipment

The survey was conducted using 2 x NTi XL2 sound level meters, for which calibration certificates are held. The sound level meters are Class 1 accuracy in accordance with IEC 61672-1. The meters were set to A-Weighted and fast response. The meters were calibrated immediately before and after measurements took place and no significant drift was observed. For all measurements the meters were set to log automatically.

4.4 Weather

Observations were made of the weather at the site during the surveys which are reported below:

4/12/2024

- Temperature: 6 – 10°C
- Wind Speed: 1-6 m/s N
- Overcast skies with occasional low levels of precipitation

5/12/2024

- Temperature: 10 – 11°C
- Wind Speed: 0-7 m/s WSW
- Overcast skies with occasional low levels of precipitation

It is noted that the windspeeds for a short period overnight exceeded the upper limit of 5 m/s. BS 4142 guidelines state to exercise caution when making measurements in poor weather conditions, such as wind speeds greater than 5 m/s. However, as the proposed operating hours of the site are limited to the daytime, these higher windspeeds have not adversely affected the measurements used for the assessment of the daytime impact of the site.

4.5 Subjective Discussion of Sound Sources

The ambient sound at the background sound measurement positions was a mixture of distant road traffic, with some traffic noise from local roads, which although not continuous did include regular HGV traffic. Additionally, there were intermittent periods when noise from the Westby Recycling and Landfill site were audible.

The sources in operation on the Green Future site consisted of processing machinery within the main building on the site which was audible at a relatively low level outside the shed, and the dust extraction system which was connected to two external filters outside the north facing façade of the main building. It was noted that although materials are delivered to the site by HGV and subsequently processed materials being dispatched by HGV, no deliveries or dispatches occurred during the survey period. Similarly, it was noted that there was a wheeled loader on site, but that this did not operate during the survey period.

5.0 MEASURED RESULTS

A summary of the ambient sound levels measured at the nearest noise sensitive properties is given below. The full measurement results at each position are plotted in Appendix B.

Table 2 – Summary of sound measurements at background survey positions

Date	Position	Time Period (hh:mm)	Duration (hh:mm)	$L_{Aeq,T}$ (dB)	L_{Amax} (dB)	Range of $L_{A90,5mins}$ (dB)
Wednesday 4th December	1	Day 12:03 – 23:00	10:57	56	72	40 – 51
Thursday 5th December		Night 23:00 – 07:00	08:00	46	63	32 – 44
Wednesday 4th December	2	Day 13:10 – 23:00	09:50	51	80	39 – 47

Thursday 5th December		Night 23:00 – 07:00	08:00	43	59	30 – 44
Thursday 5th December	1	Day 07:00 – 13:21	05:21	56	68	44 – 50
	2	Day 07:00 – 13:37	05:37	54	70	44 – 52

It was noted that the existing glass processing operations are already in operation at the site, and operated for part of the measurement period. The periods of operation were sporadic throughout the day and were not particularly discernible at the nearest noise sensitive residences, particularly when the intermittent sound from the nearby landfill site was also taken into consideration.

5.1 Derivation of background sound level

As the existing operations at the site operated intermittently during the measurement, we have taken measurements at the nearest noise sensitive properties during periods when the current activities were known not to be operating to determine an appropriate background sound level in the absence of the Green Future recycling activities.

For a conservative approach we have taken 30 minutes after operations at the site ended (17:00 – 17:30, note that operations ceased at 17:00 which is an hour earlier than the permitted operating hours of the site), and 30 minutes before the operations started (06:30 – 07:00). It was also observed that there were no operations between 12:00 and 12:15 on 04/12/2024 and this period was also included for position 1. Measurements were not taken at Position 2 for this time period.

In order to determine an appropriate typical background level we have taken the median value of the 15 minute L_{A90} values measured for the above periods. For the Residual Sound Level we have taken the overall L_{Aeq} of the same periods.

Table 3 – Background and Residual Sound Levels at nearest noise sensitive properties (no operations at site)

Location	Background Sound Level	Residual Sound Level
1	46	56
2	45	50

5.2 Specific Sound Levels

5.2.1 Existing Plant Noise

Measurements were taken of the noise egress from the main processing building and dust extraction system at the site. Deliveries were not observed and these have been modelled based upon previous measurements of HGV movements. Similarly the loading shovel (JCB 560-80 Waste Master) spectrum is based on a previous loading shovel measurement from the PDA database, normalised to the manufacturers sound power for the 560-80 of 107dB(A). The Generator sound data is taken from the measurement of a similar generator on another site from the PDA database.

Table 4 – Specific sound levels of plant

Measurement		dB(A)	dB(Z)							
Plant	Distance [m]		63	125	250	500	1000	2000	4000	8000
Main building & dust extract	30	66	75	72	69	62	59	56	55	44
HGV movement [1]	4	78	82	77	76	75	73	69	66	60
Loading Shovel	10	68	71	70	70	65	62	60	55	49

Notes 1: L_{max} measurement of HGV drive-past at 4m closest point (i.e. treated as point source at 4m to determine the sound power sound power).

5.2.2 Proposed wash plant

It is proposed to install a new wash plant on the site. The wash plant proposed is a relatively small plant for processing the crushed recycled glass. Although some noise measurement data has been provided for a similar plant (road sweepings wash plant) the measurements reported are all in the near-field of the plant, and it has not been possible to accurately determine the sound power of the plant from the measurements. In order to produce a conservative model of the likely worst-case noise levels, we have used noise data for a larger aggregate wash plant (M2500 – AGGMAX wash plant). The wash plant has been modelled as a point source 2.5m above ground level.

The wash plant will be loaded using the existing JCB WasteMaster 560/80 loading shovel.

In addition to the wash plant a new diesel electricity generator will be required to power the wash plant. Noise levels for the generator have been modelled based upon measurements of a similar generator from the PDA Database. The generator has been modelled as a point-source 0.5m above ground level.

Table 5 – Specific sound levels of proposed plant

Measurement		L_{WA}	L_{PA}	dB(Z) L_w or L_P							
Plant	Distance [m]			63	125	250	500	1000	2000	4000	8000
Proposed new wash plant (M2500 Aggmax) sound power level L_{WA} derived from CDE Global survey measurement	-	110	-	124	109	109	106	105	103	100	93
Generator	5	-	84	80	83	82	83	78	74	70	65

6.0 NOISE IMPACT ASSESSMENT

6.1 Existing Use

The noise propagation from the existing operations on-site has been modelled for the existing operations on-site. The model has assumed that the dust extract and main plant is operating for 100% of the time, that the loading shovel is operating for 50% of the time, and that HGVs are active on the site for one delivery per hour assessment period (estimated as 4 minutes driving / manoeuvring).

The dust extract plant has been modelled as two point sources 4m high to the north of the building, the loading shovel has been modelled as an area source over the yard area at 0.5m high, and the HGVs

have been modelled as a line source following the haul road around the site perimeter at a height of 0.5m.

The model has been calibrated such that the predicted noise from the main building and dust extract plant matches the level that was measured at the calibration location on the site.

The results of the noise propagation model for the existing operations are shown in Figure 2 below:

Figure 2 - SoundPlan model – Calculated noise levels at receivers with pre-existing plant on site

6.1.1 Feature Correction

The sound due to the existing recycling activities was dominated by the sound from the dust extraction plant. It was noted that this was not tonal or impulsive in character and furthermore the plant operated continuously. Whilst other items such as HGV movements and loading shovel operation were intermittent, these are not likely to be significantly audible at the noise sensitive receivers.

As such no penalties for feature correction have been applied for the existing operations.

6.1.2 Preliminary Impact Assessment

Please refer to the table below which details the results of the modelling calculation described above and compared these Rating Levels with the Background Sound Levels derived within Section 5.1.

Table 6 - Comparison of current operations with underlying background sound levels

Noise Sensitive Receiver	Predicted Specific Sound Level $L_{Aeq,T}$ (dB)	Feature Correction	Rating Level L_{Ar} (dB)[1]	Typical Background $L_{A90(15\text{-}min)}$ (dB)	Difference between Rating Level and Background (dB)
MP1 - Houses on Peel Road	36 – 38	+0	36-38	46	-10 – -8
MP2 - Residential receivers at Lawns Farm (worst case)	29 – 32	+0	29 – 32	45	-16 – -13

It is noted that BS4142 indicates the following:

10 dB(A) or more above the background is an indication of significant adverse impact, depending on the context.

5 dB(A) above the background is an indication of an adverse impact, depending on the context.

Where the rating level does not exceed the background level, this is an indication of the specific sound source having a low impact, depending on the context.

The initial estimate of impact indicates that the Rating Sound Level is well below the Background Sound Level at all noise sensitive properties, indicating that these properties are not adversely impacted, depending on context.

In accordance with BS4142:2014+A1:2019 the above preliminary estimates need to be adjusted if required after consideration of context which is discussed further in Section 7.0 below.

6.2 Proposed New Wash Plant

The noise propagation model has been repeated for the proposed new plant on the site. The model has considered the proposed new wash plant, generator, both operating for 100% of the assessment period, and loading shovel assumed to operate for 25% of the assessment period (servicing the wash plant only).

The results of the noise propagation model for the proposed plant are shown in Figure 3 below:

Figure 3 SoundPlan model – Calculated noise levels at receivers with proposed plant only

6.2.1 Feature Correction

Based on measurements for other wash plants undertaken by PDA we would not expect the sound of the proposed wash plant to be either tonal, impulsive or intermittent. The wash plant is expected to be the dominant source at the site however (based on the currently assumed relatively high sound levels) and may be distinguishable from the background sound at the noise sensitive residences. For this reason a +3dB feature correction penalty has been applied to the specific sound level.

6.2.2 Preliminary Impact Assessment

Please refer to the table below which details the results of the modelling calculation described above and compared these Rating Levels with the Background Sound Levels derived within Section 5.1.

Table 7 - Comparison of proposed new plant only with underlying background sound levels

Noise Sensitive Receiver	Predicted Specific Sound Level $L_{Aeq,T}$ (dB)	Feature Correction	Rating Level L_{Ar} (dB)[1]	Typical Background $L_{A90(15\text{-}min)}$ (dB)	Difference between Rating Level and Background (dB)
MP1 - Houses on Peel Road	42 – 44	+3	45-47	46	-1 – +1
MP2 - Residential receivers at Lawns Farm (worst case)	40 – 42	+3	43 – 45	45	-2 – -0

The initial estimate of impact indicates that the Rating Sound Level is at or below the Background Sound Level at most noise sensitive properties, indicating that these properties are not adversely impacted, depending on context. At one receiver the Rating Sound Level just exceeds the background level, but is still well below the level of onset of adverse impact. Therefore the properties are not adversely impacted by the proposed new plant, depending on context.

In accordance with BS4142:2014+A1:2019 the above preliminary estimates need to be adjusted if required after consideration of context which is discussed further in Section 7.0 below.

6.3 Existing and proposed plant

The noise propagation model has been repeated with both the existing and proposed plant operational to give the total impact when all of the activities are taking place simultaneously.

The results of the noise propagation model for the proposed plant are shown in Figure 4 below:

Figure 4 – SoundPlan model – Calculated noise levels at receivers with existing and proposed plant on site

6.3.1 Feature Correction

Based on the conservative sound levels assumed for the wash plant there is potential for the wash plant sound to be the dominant sound source audible from the site. As described previously, wash plant sounds are not significantly tonal, impulsive or intermittent in nature, however, for avoidance of doubt we have assumed that the wash plant may be discernible as a different source from the other commercial sources. For this reason a precautionary +3dB feature correction penalty has been applied to the specific sound level.

6.3.2 Preliminary Impact Assessment

Please refer to the table below which details the results of the modelling calculation described above and compared these Rating Levels with the Background Sound Levels derived within Section 5.1.

Table 8 - Comparison of existing and proposed operations with underlying background sound levels

Noise Sensitive Receiver	Predicted Specific Sound Level $L_{Aeq,T}$ (dB)	Feature Correction	Rating Level L_{Ar} (dB)[1]	Typical Background $L_{A90(15\text{-}min)}$ (dB)	Difference between Rating Level and Background (dB)
MP1 - Houses on Peel Road	43 – 45	+3	46-48	46	0 – +2
MP2 - Residential receivers at Lawns Farm (worst case)	41 – 42	+3	44 – 45	45	-1 – -0

The initial estimate of impact indicates that the Rating Sound Level is below the +5dB onset of adverse impact at all properties, indicating that these properties are not adversely impacted, depending on context. At all but one receiver the Rating Level does not exceed background. Therefore the properties are not adversely impacted by the proposed new plant, depending on context.

In accordance with BS4142:2014+A1:2019 the above preliminary estimates need to be adjusted if required.

7.0 CONTEXT

The BS4142 preliminary estimate of impact for the site operations needs to be modified for context. With reference to context BS4142 indicates that the significance of sound of an industrial and/or commercial nature affecting residential uses depends upon both 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. BS4142 indicates that pertinent factors that could modify context would include: the absolute level of sound; the character and level of the residual sound compared to the character and level of the specific sound; the sensitivity of the receptor and whether dwellings or other premises used for residential purpose already incorporate design measurements that secure good internal and/or outdoor acoustic conditions.

With respect to the absolute sound level, The Specific Sound Level is below the WHO Guidelines for Community Noise 50 dB criterion for all nearby noise sensitive properties.

The character of the sound from the Green Futures site is not out of character with other environmental sounds in the vicinity of the site, being in the vicinity of other recycling and landfill and commercial processes, active farmland, and also close to road traffic sources which include a reasonably high proportion of HGV traffic. The proposed additional source (the wash plant and generator) are not expected to be significantly audible at the noise sensitive properties, only being predicted to exceed background marginally at one property when including for a +3dB penalty. It is also noted that without the penalty the Specific Noise Level actually remains below background, which brings into question whether the application of the penalty is actually appropriate, as it is unlikely at this level that the plant sound would be readily identifiable or distinct against other sources. A further consideration in this respect is that the property where the Specific Sound Level is predicted to marginally exceed the Background Sound Level is an upstairs window which is likely to be a bedroom. The impact is therefore likely to be further reduced as the permitted operating hours of the site (07:00 – 18:00 by planning consent) are daytime only.

We would further note that the residual sound level exceeds the Rating Level at all properties and the character of the residual sound is dominated by intermittent car and HGV traffic and noise events from the nearby recycling and landfill site during the daytime hours when the site operates.

Taking into account the above contextual features, and the minimal exceedance of the pre-existing background sound level due to the proposed additional plant and operations, after context has been taken into account, the impact of the site would remain as low.

8.0 UNCERTAINTY

BS4142 indicates that an assessment of noise impact should consider uncertainty within the assessment. This uncertainty can arise from: uncertainty in measurements; uncertainty in sound emission and sound power level; and uncertainty in calculation method.

8.1 Uncertainty in Measurements

It is noted that the instrumentation used for the assessment conform to Class 1 accuracy in accordance with IEC 61672. In addition, the instrumentation has been calibrated to national standards and were field calibrated at the time of the measurements. The measurements of background were undertaken on the boundary of the nearest residential receivers.

We would therefore consider that the effect of uncertainty on the measurement of background sound would be minimal.

8.2 Uncertainty in Sound Power Levels

The noise emission from the Aggregate Wash Plant has been taken from a manufacturer supplied measurement report in normal operation. We would note that the plant measured was a larger scale plant than that proposed for the site and as such is expected to be somewhat louder than the plant to be installed. As such, and uncertainty in the noise level of the plant is expected to be skewed in such a way that the impact if the sound is likely to be overstated.

Measurements other plant items have been carried out in a conservative manner and we would therefore consider that the uncertainty of the determination of the source sound powers would be minimal, and generally be conservative (more likely to overpredict rather than underpredict the sound power of the considered new sources).

8.3 Uncertainty in Calculation Method

It is noted that the calculations have been undertaken utilising a known prediction method and have utilised the standard ISO 9613-2:2024. In addition calculations have been undertaken utilising commercial prediction software. We note that the ISO 9613 method assumes meteorological conditions favourable to noise propagation (in all directions), and for much of the time during operation of the plant we would expect noise propagation to be less favourable (i.e. lower noise) than those predicted herein.

Taking into account of the above, we would consider uncertainty in the results of the assessment due to the calculation method to be low, with the calculations being conservative.

9.0 CONCLUSION

At the request of Green Futures Recycling Ltd, a noise impact assessment has been undertaken relating to a proposed new wash plant at an existing glass recycling site at Green Futures Recycling Centre, Blackpool, FY4 5JX. This report details the impact of the proposed new wash plant of the site.

The results of the preliminary calculation of impact in accordance with BS 4142:2014+A1:2019 have indicated that the Rating Levels following the installation and operation of the new wash plant are at the worst affected noise-sensitive property +2dB above the background. This indicates an impact below the onset of 'adverse impact' and therefore a 'low' impact, depending on context.

When context is taken into account, the impact of the proposed new Aggregate Wash Plant operation remains low, indicating that there is unlikely to be any adverse impact on nearby properties due to noise from the site.

APPENDIX A – DEFINITION OF ACOUSTIC TERMS

The decibel

This is the basic unit of noise, denoted dB.

A Weighting

This is a weighting process which simulates the human ear's different sensitivity at different frequencies. A weighting can be shown two typical ways, 50 dB(A) L_{eq} or 50 dB $L_{Aeq.}$ Both mean the same thing. (See below for a definition of L_{eq}). The dB(A) level can be regarded as the overall level perceived by human beings.

L_{eq} and $L_{eq(s)}$

This is the equivalent continuous noise level which contains the same acoustic energy as the actual time-varying sound. In other words it is a kind of average noise level. It is denoted dB L_{eq} or, for A-weighted figures dB(A) L_{eq} or dB L_{Aeq}. It can also be expressed in terms of frequency analysis (see later). $L_{eq(s)}$ is the sample L_{eq} level.

L_n

This is the level exceeded for n% of the time. It is denoted dB L_n or, for A-weighted figures dB(A) L_n or dB $L_{An.}$ It can be expressed in terms of frequency analysis (see later). L_{90} is the level exceeded for 90% of the time and is a measure of the lowest level typically reached. L_{10} is the level exceeded for 10% of the time and is the highest level typically reached. L_{50} is the level exceeded for 50% of the time and, mathematically, it is the median.

L_{max}

This is the maximum level reached during a measurement period. The "time constant", or the ability of the equipment to respond to impulses is usually expressed along with it, e.g. "Fast", "Slow", etc. It is denoted dB L_{max} or, for A-weighted figures dB(A) $L_{max,}$ dB $L_{Amax,}$ etc. It can also be expressed in terms of frequency analysis.

Frequency Analysis

Whereas dB(A) gives a very useful overall figure, it has its limitations in that it cannot be used to model or predict the effect of noise control and mitigation as this nearly always has radically different performance at different frequencies.

Frequency analysis expresses an overall noise level at each frequency or band of frequencies in the audible range. Octave band analysis divides the audible range into 10 bands from 31.5 Hz to 16 kHz and the noise level in each band can be expressed in any form e.g. L_{eq}, L_{90}, L_{max} etc. One third octave band analysis uses 30 bands.

Narrow band analysis takes the process to resolutions of less than 1 Hz. This is useful for identifying the existence of tones (whines, hums, etc.) and in pin-pointing the sources.

APPENDIX B – SURVEY DATA CHARTS

Figure 5. Ambient Noise Level Survey – Peel Road (LT1)

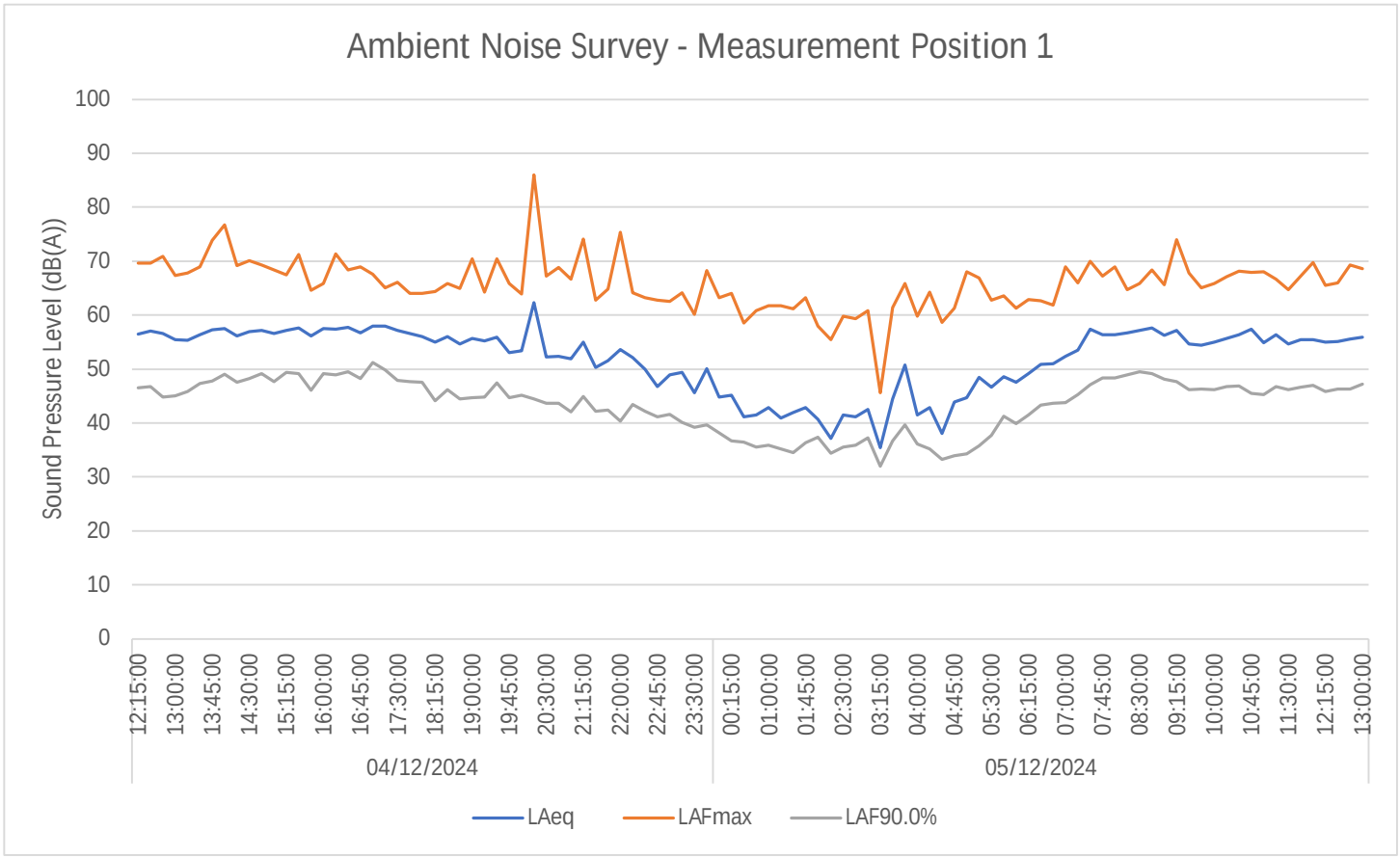


Figure 6. Ambient Noise Level Survey – Lawns Farm (LT2)