



Duranta Teesside

Screening Noise Impact Assessment

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REVISION HISTORY

Revision	Date	Revision Details	Author	Checked
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1 INTRODUCTION

- 1.1 dBx Acoustics Ltd has been appointed by Duranta Teesside Ltd to undertake a desktop screening noise impact assessment to support a permit variation for the Duranta Teesside Anaerobic Digestion (AD) site at Forty Foot Road, Middlesbrough TS2 1HG.
- 1.2 The proposed variation encompasses an area within the north-east corner of the site adjacent to Forty Foot Road. The proposed additional plant comprises a biogas upgrading unit with associated booster room, a digestate storage tank, and a new emergency backup flare unit.
- 1.3 Accordingly, this report presents a review of the existing and proposed noise sources at the site, and the potential noise impact arising at the nearest noise sensitive receptors.
- 1.4 A glossary of acoustic terminology is provided in Appendix A.

2 STANDARDS AND GUIDANCE

Middlesbrough Council

- 2.1 Planning permission for the proposed changes has been granted by Middlesbrough Council, application reference 25/0486/FUL.
- 2.2 There are no planning conditions relating to noise.

Environment Agency

- 2.3 The site has a current environmental permit, ref EPR/YP3236RW. The requirements relating to noise emissions from the site are reproduced as Figure 1, below.

Figure 1: Extract from Environmental Permit

3.4 Noise and vibration

- 3.4.1 Emissions from the activities shall be free from noise and vibration at levels likely to cause pollution outside the site, as perceived by an authorised officer of the Environment Agency, unless the operator has used appropriate measures, including, but not limited to, those specified in any approved noise and vibration management plan to prevent or where that is not practicable to minimise the noise and vibration.

3 INFORMATION ON EXISTING OPERATIONS

Noise Management Plan

- 3.1 A Noise Management Plan (NMP) was produced to support the permit application for the site in March 2014 (SLR report reference 405-4387-00001/NMP).
- 3.2 The nearest noise sensitive receptors are identified within the NMP, reproduced as Figure 2, below.

Figure 2: Noise Sensitive Receptors

Ref No	Receptor	Type	Distance (m)	Direction
1	Industrial Unit - Lloyd Street	Industry	70	E
2	Adjacent Industry - Forty Foot Road	Industry	70	W
3	Adjacent Industry - Ayrton Works Façade	Industry	10	N
4	Industrial Unit - Lloyd Street	Industry	75	SE
5	Industrial Unit - Trident Business Centre	Industry	500	NW
6	Industrial Unit - End of Richmond Street	Industry	250	E
7	Industrial Unit - Foundry	Industry	170	SW
8	SSSI - Sand Bank River Tees	Ecology	800	NE
9	Newport Primary School	Community	975	S
10	St Paul's Road	Residential	750	S

- 3.3 No new residential receptors have been identified from a review of recent mapping of the area.
- 3.4 The NMP presents a summary of the anticipated noise sources on site, and of background noise levels measured in the area in 2011.
- 3.5 Predictions of noise to an area of land at Nile Street, circa 400m from the site, which was formerly in residential use but currently remains undeveloped, indicated a specific noise level arising from the AD plant at night of 34dBL_{Aeq,T}.

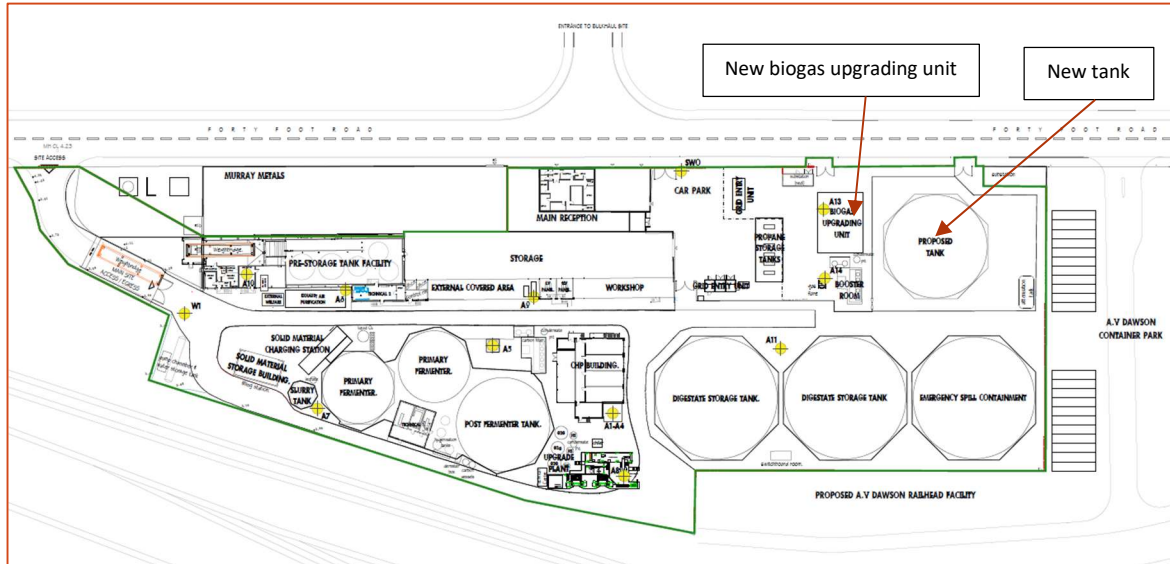
Noise Validation Report

- 3.6 A noise validation report was produced by SLR in January 2022 (report reference 405.04935.00011.R01.v1).
- 3.7 This validation exercise included measurements of noise from the developed site, and noted that noise was not audible at Nile Street. Based on measurements of the plant in operation, the calculated noise level at Nile Street was found to be 24dBL_{Aeq,T}, 10dB lower than that predicted in the noise management plan, and 24dB below the night time background noise level of 48dBL_{A90,T} at this location.
- 3.8 At the adjacent industrial premises on Forty Foot Road, the plant noise level at the façade of the IUS offices was 49dBL_{Aeq,T} compared to a daytime ambient noise level of circa 61dBL_{Aeq,T}.

4 PROPOSED CHANGES

4.1 Figure 3, below, shows the proposed site layout with the additional plant indicated.

Figure 3: Proposed Site Layout



- 4.2 The manufacturer's data for the Biogas Upgrading Unit indicates a sound pressure level of $85\text{dBL}_{\text{Aeq,T}}$ at 1m (Bright Renewals reference *BRIGHTQU039_Q104_00689v4_EN* dated 24th October 2025).
- 4.3 The new digestate storage tank will be fitted with stirrers. As a worst case, the sound pressure level of $57\text{dBL}_{\text{Aeq,T}}$ at 10m for an external stirrer, as used in the Noise Management Plan, is assumed.

5 NOISE IMPACT ASSESSMENT

Forty Foot Road

- 5.1 Calculation 1 summarises the noise impact arising from the proposed plant at the nearby premises on Forty Foot Road.

Calculation 1: Noise to Forty Foot Road

Item	Sound Pressure Level, $\text{dBL}_{\text{Aeq,T}}$	Quoted Distance, m	Distance to Receptor, m	Distance Correction, dB	Screening, dB	Resultant Noise Level, $\text{dBL}_{\text{Aeq,T}}$
Biogas Upgrading Unit	85	1	40	-32	0	53
Digestate Tank	57	10	50	-14	0	43
Cumulative Noise Level						53

- 5.2 The resultant noise level from the new plant of $53\text{dBL}_{\text{Aeq,T}}$, which when added to the $49\text{dBL}_{\text{Aeq,T}}$ for the existing plant as detailed in the Noise Validation Report, leads to an overall plant noise level of $55\text{dBL}_{\text{Aeq,T}}$ at the industrial premises.
- 5.3 This is 6dB below the daytime ambient noise level of $61\text{dBL}_{\text{Aeq,T}}$ at this location.
- 5.4 It is noted that the industrial premises are typical warehousing/distribution units, with no windows or openings facing the Duranta site.
- 5.5 As such, no adverse noise impact to these receptors is indicated.

Nile Street

- 5.6 Calculation 2 summarises the noise impact arising from the proposed plant to Nile Street.

Calculation 2: Noise to Nile Street

Item	Sound Pressure Level, $\text{dBL}_{\text{Aeq,T}}$	Quoted Distance, m	Distance to Receptor, m	Distance Correction, dB	Screening, dB	Resultant Noise Level, $\text{dBL}_{\text{Aeq,T}}$
Biogas Upgrading Unit	85	1	400	-52	-10	23
Digestate Tank	57	10	400	-52	-10	15
Cumulative Noise Level						24

- 5.7 The resultant noise level from the new plant of $24\text{dBL}_{\text{Aeq,T}}$, when added to the $24\text{dBL}_{\text{Aeq,T}}$ for the existing plant as detailed in the Noise Validation Report, leads to an overall plant noise level of $27\text{dBL}_{\text{Aeq,T}}$ at this location.
- 5.8 This is 21dB below the night-time background noise level of $48\text{dBL}_{\text{A90,T}}$ at this location and as such would not be audible.
- 5.9 It is stressed that this area is currently undeveloped, but represents a worst-case for potential future residential development in the area.

Emergency Flare Unit

- 5.10 Noise from the existing emergency flare unit is not considered in the Noise Management Plan or Noise Validation report.
- 5.11 A second emergency flare unit is proposed.
- 5.12 Such items are not typically considered as part of a noise impact assessment, as their operation is sporadic and related only to emergency conditions.
- 5.13 Based on noise data for a BMF HTN7.5 Bivalent Flare, a noise level of $66\text{dBL}_{\text{Aeq,T}}$ at 2m can be anticipated during operation. Correcting for distance (and with no allowance for screening) the resultant noise level from flare operation at Nile Street would be $20\text{dBL}_{\text{Aeq,T}}$.
- 5.14 With reference to the existing background and ambient noise levels, this would not be audible.

6 CONCLUSION

- 6.1 dBx Acoustics Ltd has been appointed by Duranta Teesside Ltd to undertake a desktop screening noise impact assessment to support a permit variation for the Duranta Teesside Anaerobic Digestion (AD) site at Forty Foot Road, Middlesbrough TS2 1HG.
- 6.2 The proposed variation encompasses an area within the north-east corner of the site adjacent to Forty Foot Road. The proposed additional plant comprises a biogas upgrading unit with associated booster room, a digestate storage tank, and a new emergency backup flare unit.
- 6.3 This assessment makes reference to the noise survey and Noise Management Plan as well as the Noise Validation Report previously submitted to the Environment Agency.
- 6.4 It is demonstrated that the additional plant at the site would not have any adverse noise impact at the nearby industrial premises, or at more remote residential receptors.
- 6.5 On this basis, a full noise impact assessment is not considered to be required.

APPENDIX A – GLOSSARY OF ACOUSTIC TERMINOLOGY

Decibel, dB	A unit of level derived from the logarithm of the ratio between the value of a quantity and a reference value. For sound pressure level (L_p) the reference quantity is 2×10^{-5} N/m ² . The sound pressure level existing when microphone measured pressure is 2×10^{-5} N/m ² is 0 dB, the threshold of hearing.
L	Instantaneous value of Sound Pressure Level (L_p) or Sound Power Level (L_w).
Frequency	Number of cycles per second, measured in hertz (Hz), related to sound pitch.
A-weighting	Arithmetic corrections applied to values of L_p according to frequency. When logarithmically summed for all frequencies, the resulting single "A weighted value" becomes comparable with other such values from which a comparative loudness judgement can be made, then, without knowledge of frequency content of the source.
$L_{eq,T}$	Equivalent continuous level of sound pressure which, if it actually existed for the integration time period T of the measurement, would possess the same energy as the constantly varying values of L_p actually measured.
$L_{Aeq,T}$	Equivalent continuous level of A weighted sound pressure which, if it actually existed for the integration time period, T, of the measurement would possess the same energy as the constantly varying values of L_p actually measured.
$L_{n,T}$	L_p which was exceeded for n% of time, T.
$L_{An,T}$	Level in dBA which was exceeded for n% of time, T.
L_{Fmax}	The instantaneous maximum sound pressure level which occurred during the measurement. F indicates that the fast time-weighting is used.
L_{AFmax}	The instantaneous maximum A weighted sound pressure level which occurred during the measurement. F indicates that the fast time-weighting is used.
$L_{Ar,Tr}$	The rating level: the equivalent continuous A-weighted sound pressure level of the noise, plus any adjustment for the characteristic features of the noise.
Reverberation Time, T	The time that would be required for the sound pressure level to decrease by 60 dB after the sound source has stopped. The descriptor T, often includes other nomenclature to describe the type of reverberation time measurement or if the reverberation time is an average taken for specific frequencies. For example, a T_{mf} is the mid-frequency reverberation time.
Absorption Coefficient, α	The fraction of reverberant sound energy absorbed by a material. It is expressed as a value between 1.0 which equates to perfect absorption and 0 which equates to zero absorption.
Acoustic Class, A - E	Classification of sound absorbers into Sound Absorption Classes A-E, according to BS EN ISO 11654, including frequencies 200-5000 Hz
NRC	A single-number rating system used to compare the sound-absorbing characteristics of building materials. A measurement of the acoustical absorption performance of a material, calculated by averaging its Sound Absorption Coefficients at 250, 500, 1000 and 2000 Hz
STI	Speech Transmission Index , Metric ranging between 0 and 1 representing the transmission quality of speech with respect to intelligibility by a speech transmission channel
R	Sound Reduction Index , the laboratory measured sound insulation properties of a material or building element in octave or third octave bands.
R_w	Weighted Sound Reduction Index , a single number which represents the sound reduction of a material. It is derived by plotting the sound reduction index against a set of reference curves. The curves are shifted until a best-fit is established and the curve which best fits the sound reduction spectrum is used to represent the single figure value.
D_w	Weighted Level Difference , the weighted level difference between a pair of rooms, stated as a single figure.

D_{nT}	Standardised Level Difference, a frequency-dependent measurement of airborne sound insulation, calculated using the following formula: $D_{nT} = L_1 - L_2 + 10\log(T/T_0)$ dB Where: L_1 is the energy-averaged sound pressure level due to the pink noise source measured in the source room using a sweep technique. L_2 is the energy-averaged sound pressure level measured in the receiving room using a sweep technique. T is the mean receiving room reverberation time (derived from T_{30} measured in seconds). T_0 is the reference reverberation time (= 0.5s for dwellings).
$D_{nT,w}$	Weighted Standardised Level Difference, a single-figure value of airborne sound insulation performance, derived according to procedures in BS EN ISO 717-1, based on the D_{nT} values at different frequencies (100-3150 Hz third octave bands).
$D_{n,F,w}$	Weighted, Normalised Flanking Level Difference, the normalised, weighted difference in sound level between a pair of rooms via a flanking element, such as mullion or ceiling detail. The level difference in octave bands is first normalized to a reference amount of absorption and then plotted against a set of reference curves to establish a single figure value.
D_{ne}	Normalised Element Level Difference. The normalised difference in sound level between a pair of rooms via a small element such as a trickle ventilator. The level difference in octave bands is normalized to a reference amount of absorption.
$D_{n,e,w}$	Weighted, Normalised Element Level Difference. The normalised, weighted difference in sound level between a pair of rooms via a small element such as a trickle ventilator, stated as a single figure. The level difference in octave bands is normalized to a reference amount of absorption and then plotted against a set of reference curves to establish a single figure value.
C_{tr}	Spectrum Adaptation Term, a correction term applied to the sound insulation single-number values (R_w, D_w, and $D_{nT,w}$) in accordance with BS EN ISO 717-1. Applying the C_{tr} penalises a construction's performance if its low frequency performance is poor in relation its performance at higher frequencies.
Impact Sound	The noise generated by an impact on a structure. This is normally used to describe the noise created by people walking or moving furniture on a floor structure.
L_{nT}	Standardised Impact Sound Pressure Level, a frequency dependent measurement of impact sound insulation, calculated using the following formula: $L_{nT} = L_1 + 10\log(T/T_0)$ dB Where: L_1 is the mean sound pressure level due to the tapping machine measured in the receiving room using a sweep technique. T is the mean receiving room reverberation time (derived from T_{30} measured in seconds). T_0 is the reference reverberation time (0.5s for dwellings)
$L'_{nT,w}$	Weighted Standardised Impact Sound Pressure Level, a single-figure value (@ 500 Hz) of impact sound insulation, performance, derived according to BS EN ISO 717-2, based on the L_{nT} values at different frequencies (100Hz- 3150 Hz third octave bands).
Insertion Loss, IL	The reduction of noise level due to the presence of a noise control device such as an attenuator, excluding any regeneration noise created by its presence.
NR	The Noise Rating level. This is a single figure value derived by plotting a noise spectrum against a set of curves. The curve under which the spectrum fits is the resulting NR level.

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