

APPENDICES

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Appendix 1

NRW Schedule 5 & Commentary

Item No.	NRW Schedule 5 Comments	Maelor Consultants -Sch. 5 Response	Replied to NRW Comment Yes/No.
1.	A revised Noise Impact Assessment (NIA) which assesses the impacts from the changes proposed to your installation. Your noise assessment must meet the standards set out within the Environment Agency's guidance, which NRW continue to follow: Noise and vibration management: environmental permits - GOV.UK (www.gov.uk). The assessment should be carried out by a qualified person.		
	A revised NIA has not been provided, but rather a supplementary noise assessment submitted. The supplementary assessment does not meet the standards set out within our guidance referenced above	1. Sound levels from proposed changes (HGV & Plant) have been combined, and thereafter added to existing installation noise to assess the whole site. 2. Background Sound Levels have been applied to noise rating and noise impact assessments with the installation closed . 3. Context has been re-considered, having particular regard to environmental permitting requirements. 4. Acoustic (tonal) penalties have been re-appraised using an objective method in BS4142. These points are specifically dealt with in Sections 3 to 6 of this response to NRW. The previous Supplementary Report comprised an updated noise impact assessment, which is now further updated by the Sch. 5 response.	Yes

2.	Should the outcome of the above NIA identify adverse impact, submit a subsequent Noise Management Plan (NMP) in line with the above guidance		
	We acknowledge that a NMP has been provided, however an updated NMP is likely to be required once the above request has been satisfied.	Further proposed noise mitigation measures are detailed in Section 7. These are additional to the updated NMP that accompanied the application to vary the environmental permit.	Yes
3.	It is not clear if the site was operational during the noise survey, as the report from 2020 suggests that plant noise was audible during the measurement. It is a requirement of BS4142 that background sound measurements should be recent and should not be influenced by site noise. Additional background sound measurements should be undertaken, in accordance with BS4142 guidance, whilst the plant is not operational or additional justification needs to be provided for the background sound measurements used in the Noise Impact Assessment.		
	We acknowledge that an additional background survey was completed whilst the site was shut. By arrangement the plant was shut down Sunday 24 September 2023 @ 2pm through to 10am Monday 25 September 2023. Provide the time series data and statistical analysis used to determine the background sound levels (LA90) at all receptors.	A time-line of Background Sound Level measurements is provided at 3.2 of the response, as supported by data in Appendix 3. An explanation of how Background Sound Levels are considered is set out in 3.1, 3.2 and 3.3 of the response.	Yes
4.	We note there are other nearby noise sensitive receptors that have not been included in the assessment. All nearby noise sensitive receptors should be considered within the Noise Impact Assessment. The Noise Impact Assessment needs to include all nearby noise sensitive receptors, or additional justification provided for the receptors chosen and why they are deemed representative for the assessment.		
	Based on the information provided to date there are no further comments at this time other than the point raised above.	n/a	n/a
5.	The context in which a noise occurs is critical to assessing the severity of the pollution. Not every noise sensitive receptor will have the same response to the same noise pollution. Additional justification is required for the context argument presented in the Noise Impact Assessment report, due to the exceedances predicted at these receptors.		

	We are unable to accept the argument presented within Section 7 of the report as the justification presented is based on the previous Environoise modelling, which we have already stated that we cannot accept, as it does not meet the guidance: Noise and vibration management: environmental permits - GOV.UK (www.gov.uk). Further justification may be required for any context argument presented following the completion of the revised Noise Impact Assessment which must assess plant noise as a whole site, compared against the measured background sound levels (in the absence of the site).	Context has been re-appraised using additional EA information and BS4142. This is set out in Section 4 of the response, supported by Appendix 4. Context considers BS4142, Permitting Guidance and information from the Environment Agency, and encompasses consideration of the whole site (existing operations and proposed changes, as rated for noise impacts).	Yes
	All noise sources should be included in the modelling assessment as BS4142, and current guidance requires whole plant noise to be assessed. It appears Page 4 of 5 from the Noise Impact Assessment report and modelling files submitted that this is not the case. The Noise Impact Assessment needs to include all noise sources, or additional justification provided for the sources used.		
6.	The consultant has not assessed whole plant noise or followed the published guidance, which states: “Your noise impact assessment must consider all the noise resulting from the proposed variation – the existing site and the variation together. Show both components clearly and then add them together to give a new total for site noise at the receptors. The impact assessment will be based on this new value, known as the ‘specific level’ in BS 4142.” You must provide an assessment of whole plant noise and compare it against the measured background sound levels (in the absence of the site).	The response updates the Noise Impact Assessment and considers all noise resulting from the proposed changes in addition to existing installation noise, to appraise the whole-site. Section 5 of the response sets out revised impacts for combined noise sources as BS4142 Rating Levels. Rating Levels and Specific Sound Levels as per BS4142 are detailed in Appendix 5 and used in Tables set out in Section 5.	Yes
7.	Section 4.3 of the submitted Noise Impact Assessment provides information related to acoustic penalties and concludes none are required. BS4142 and current guidance states that you should “Record whether any character corrections are appropriate under BS 4142. Where neither tonal nor impulsive corrections apply, the environment agencies will generally expect a +3dB ‘other’ correction to be applied for readily distinguishable industrial noise, unless you can demonstrate this is not justified.” As the plant is audible at receptors, a +3dB penalty should be applied in-line with current guidance. An updated Noise Impact Assessment should be submitted having included a +3dB penalty into the modelling or provide further justification as to why this is not required.		

	Provide additional justification for the choice of penalties used in the submitted report and justify the absence of tonality and intermittency penalties, as our own observations show a tonal element is present within the vicinity of the site.	Section 6 of the response, supported by measurement results in Appendix 6 addresses this. One-third octave-band spectra have been used in accordance with BS4142 clause 9.3.2 and Annex C protocols to assess for prominent tones using measured one-third octave bands.	Yes
8.	The results presented in the Noise Impact Assessment report (Tables 4.2 and 4.3) do not correspond with the consultants own modelling files. There is also a discrepancy between the results in the Tables referenced above and paragraph 4.4.6. within the report. Clarification is required over the discrepancy in data and the results tables updated to reflect the results of the model.		
	Based on the information provided to date there are no further comments at this time.	n/a	n/a
9.	The noise modelling assesses the impact from the plant and the HGV movements on-site separately. The predicted impact from the plant itself (including all sources) and HGVs should be combined to give a total specific level at receptors. Updated noise modelling files and Noise Impact Assessment report should be submitted which assess predicted impact from all sources from the plant and HGV movements combined within the same model.		
	Please see points above regarding the assessment of whole plant noise.	Please see above.	n/a
10.	The Noise Impact Assessment only provides information relating to HGV pass by's. No information has been provided regarding potential noise sources from HGV's unloading/idling on site during delivery/collection. Comprehensive information should be submitted in relation to how the lorries are loaded/unloaded, duration, the processes that take place during this time and include any noise sources associated with this process in the Noise Impact Assessment.		
	Based on the information provided to date there are no further comments at this time	n/a	n/a

11.	Section 6 of the Noise Impact Assessment report includes details of proposed mitigation, however there is little information provided except “A noise attenuation system capable of providing 8dBA reduction where the plant is to operate during the night-time (23.00 - 07.00hrs) should be installed to the open vents at the side of the condenser unit, as these are the primary source of noise”. Submit full details of your proposed mitigation measures, and how the predicted impact will be appropriately mitigated. It should be noted that the predicted specific level exceeds 8dB above background. The guidance does not allow for the dB value to be lowered by context, only the classification (adverse/significant adverse). You will need to rigorously demonstrate that you are using appropriate measures to prevent or, where that is not practicable, minimise noise in accordance with guidance.		
	Provide additional clarification for the results presented in section 6.0 of the submitted report. The results only highlight the proposed variation sources and have been taken from the Environoise report. We previously stated that the predicted results presented in the Environoise report were not adequate for a full assessment as they only considered new noise sources associated with the variation and not whole site noise, as required by our published guidance. In addition, there is no consistency in the reported results in Section 6.0 (6.2 – 6.19), 6.23, 6.25 and Section 9.0 (Table 9.1), as it appears different background sound levels are used throughout these sections, which results in different impacts at receptors	Refer to Sections 3 & 5 of the Response, supported by Appendix 3 & 5. Whole-site appraisals are provided in Section 5. Background Sound Levels vary between monitoring locations, which in-turn provides for different whole-site noise impacts at receptors, corresponding to daytime and night-time. Whole-site noise impacts combine the existing installation and proposed changes.	Yes

Appendix 2

Proposed Noise Mitigation – Jacobs Bond Pasco Specifications & Data

This Appendix details measures necessary to reduce noise impacts associated with increased production capacity for environmental permitting purposes.

A2.1 Cooling & Refrigeration Plant Exhausts

A2.2 Plant Façade

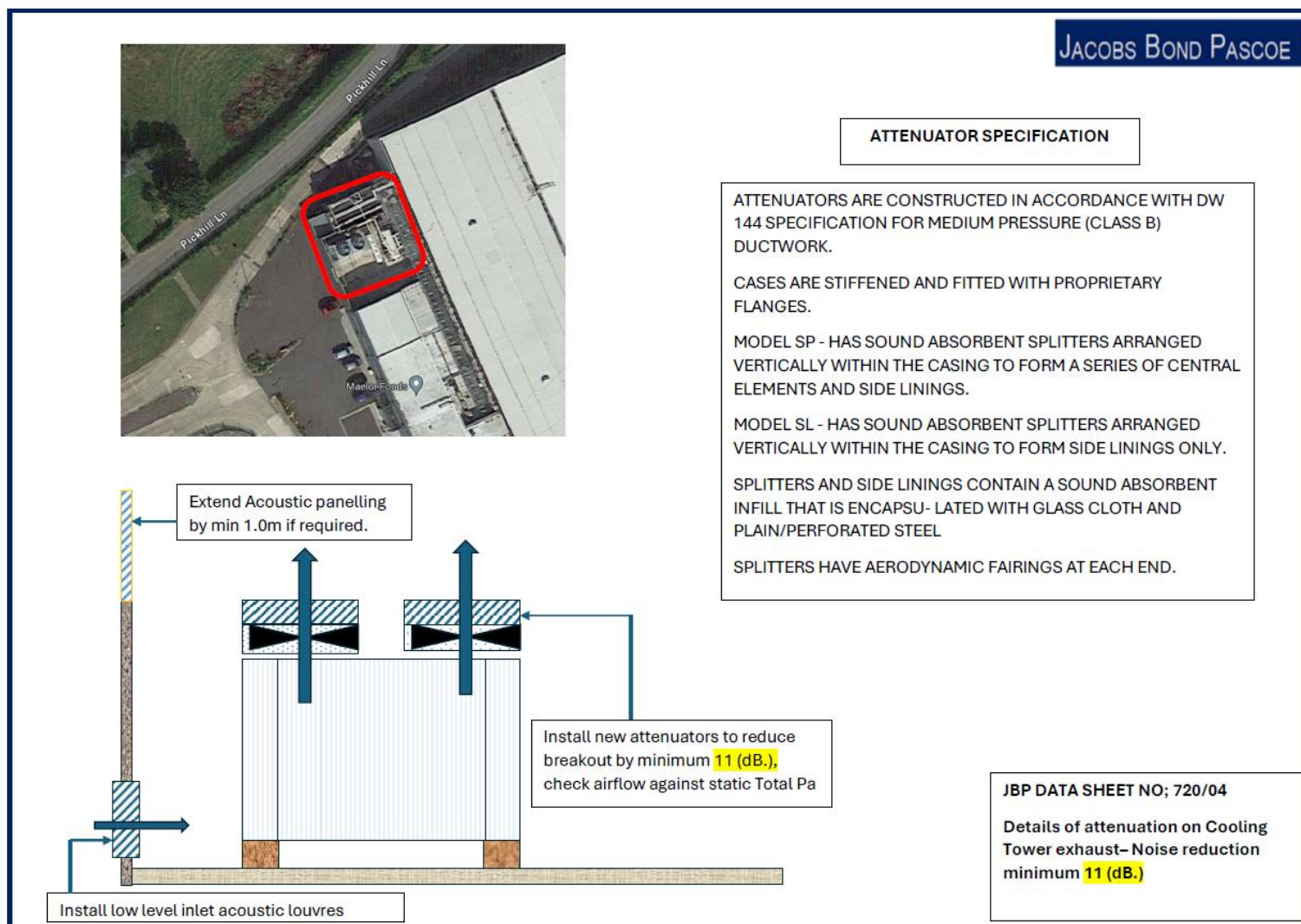
A2.3 HVAC Units

A2.4 Effluent Treatment Plant

A2.5 Installation Boundary Acoustic Screening

A2.6 Scrubber Unit Attenuation

A2.1 Cooling & Refrigeration Plant Exhausts

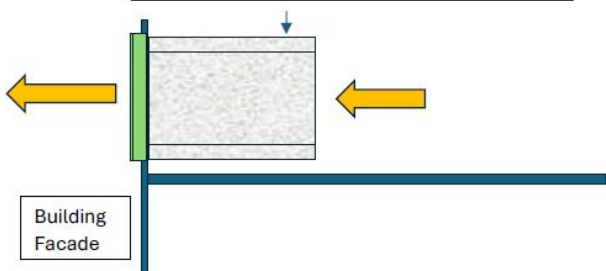


A2.2 Plant Façade

JACOBS BOND PASCOE



All exhaust and supply louvres to be attenuated with minimum 20 (dB.) Reduction



ATTENUATOR SPECIFICATION

ATTENUATORS ARE CONSTRUCTED IN ACCORDANCE WITH DW 144 SPECIFICATION FOR MEDIUM PRESSURE (CLASS B) DUCTWORK.

CASES ARE STIFFENED AND FITTED WITH PROPRIETARY FLANGES.

MODEL SP - HAS SOUND ABSORBENT SPLITTERS ARRANGED VERTICALLY WITHIN THE CASING TO FORM A SERIES OF CENTRAL ELEMENTS AND SIDE LININGS.

MODEL SL - HAS SOUND ABSORBENT SPLITTERS ARRANGED VERTICALLY WITHIN THE CASING TO FORM SIDE LININGS ONLY.

SPLITTERS AND SIDE LININGS CONTAIN A SOUND ABSORBENT INFILL THAT IS ENCAPSULATED WITH GLASS CLOTH AND PLAIN/PERFORATED STEEL

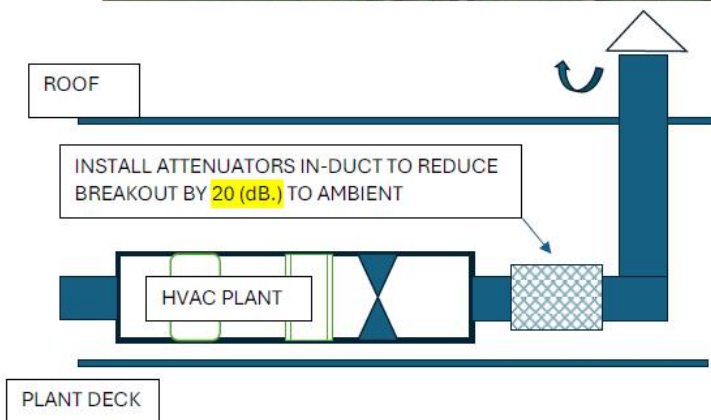
SPLITTERS HAVE AERODYNAMIC FAIRINGS AT EACH END.

JBP DATA SHEET NO; 720/02

Details of attenuation on Supply and Exhaust louvres – Noise reduction minimum 20 (dB.)

A2.3 HVAC Units

JACOBS BOND PASCOE



ATTENUATOR SPECIFICATION

ATTENUATORS ARE CONSTRUCTED IN ACCORDANCE WITH DW 144 SPECIFICATION FOR MEDIUM PRESSURE (CLASS B) DUCTWORK.

CASES ARE STIFFENED AND FITTED WITH PROPRIETARY FLANGES.

MODEL SP - HAS SOUND ABSORBENT SPLITTERS ARRANGED VERTICALLY WITHIN THE CASING TO FORM A SERIES OF CENTRAL ELEMENTS AND SIDE LININGS.

MODEL SL - HAS SOUND ABSORBENT SPLITTERS ARRANGED VERTICALLY WITHIN THE CASING TO FORM SIDE LININGS ONLY.

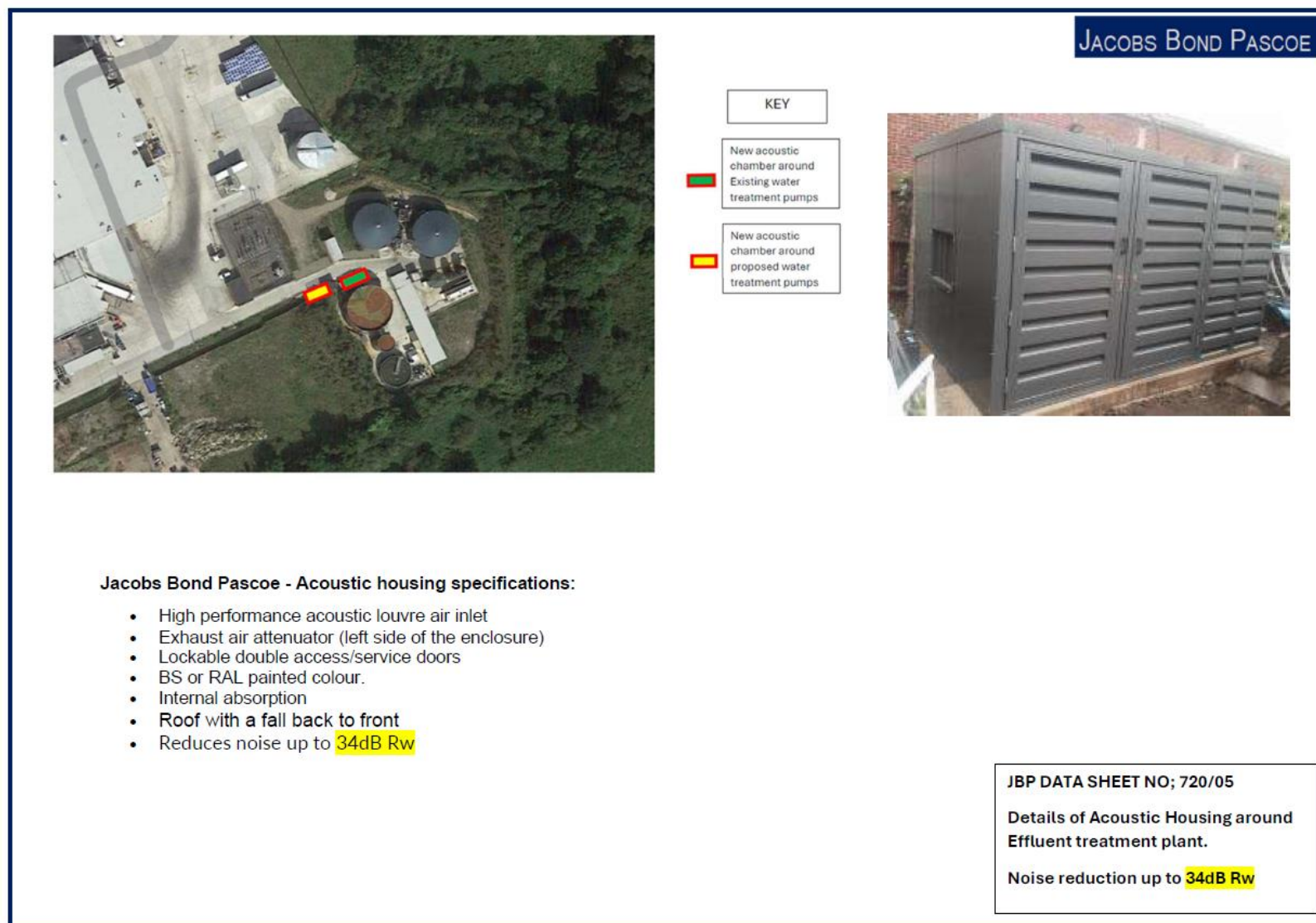
SPLITTERS AND SIDE LININGS CONTAIN A SOUND ABSORBENT INFILL THAT IS ENCAPSULATED WITH GLASS CLOTH AND PLAIN/PERFORATED STEEL

SPLITTERS HAVE AERODYNAMIC FAIRINGS AT EACH END.

JBP DATA SHEET NO; 720/03

Details of attenuation on supply and extract HVAC systems – Noise reduction minimum 20 (dB.)

A2.4 Effluent Treatment Plant



A2.5 Installation Boundary Acoustics Screening



KEY

Ultra-sound absorbent panelling

Ultra-sound absorbent security gates

Standard automated security gates.

Nearest residential receptors



Ultra noise reduction panelling designed and installed to blend into the background with different finishes to planning approval requirements - Reduction by **11 (dB.)**





Sound Absorbing Stone Wool

Absorbs and diffuses sound waves, reducing the amount of noise that can pass through it. Stone wool is naturally fire resistant and has service lifetime of over 30 years.

SPECIFICATION	
Materials	Solid pine wood, Steel frame, ROCKWOOL sound absorbing stone wool, and PE netting on the stone wool's surface.
Surface treatment	Impregnation User Class III according to EN 335:2013
Sound insulation	21dB according to EN1793-2(B2)
Sound absorption	11dB according to EN1793-1(A3)
Surface	PE netting (Polyethene)
Wind resistance	Maximum load 1.02 kN/m2 according to EN1794-1
Cleaning	Low maintenance , high pressure segment
Application	Industry, roads, public spaces.

JBP DATA SHEET NO; 720/01

Details of Ultra noise reduction perimeter panelling – Noise reduction minimum **11 (dB.)**

A2.6 Scrubber Unit Attenuation

JACOBS BOND PASCOE



Acoustic Panelling around scrubber – Reducing Noise Breakout By 11, dBA



Ultra noise reduction panelling designed and installed to blend into the background with different finishes to planning approval requirements - Reduction by 11 (dB.)



Sound Absorbing Stone Wool
Absorbs and diffuses sound waves, reducing the amount of noise that can pass through it. Stone wool is naturally fire resistant and has service lifetime of over 30 years.

SPECIFICATION	
Materials	Solid pine wood, Steel frame, ROCKWOOL sound absorbing stone wool, and PE netting on the stone wool's surface.
Surface treatment	Impregnation User Class III according to EN 335:2013
Sound insulation	21dB according to EN1793-2(B2)
Sound absorption	11dB according to EN1793-1(A3)
Surface	PE netting (Polyethylene)
Wind resistance	Maximum load 1.02 kNm2 according to EN1794-1
Cleaning	Low maintenance , high pressure segment
Application	Industry, roads, public spaces.

JBP DATA SHEET NO; 720/06
Details of Ultra noise reduction perimeter panelling – Noise reduction minimum 11 (dB.)

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Appendix 3

Background Sound Levels

<i>L</i> _{A90} (15min), dB PLANT OPERATIONAL			<i>L</i> _{A90} (15min), dB PLANT SHUTDOWN		
	Daytime	Night-time		Daytime	Night-time
Site A	45.2	35.3	Receptor A	50.5	26.7
29-30 Sep.	46.2	35.4	24-25 Sep.	50.4	36.0
	45.4	34.4		47.7	40.8
	43.0	35.1		47.0	35.9
	39.4			46.5	26.7
	38.7			46.2	25.5
	39.6			47.4	
	39.1			36.3	
	37.2				
Receptor A		43.7			
2 Oct.		42.9			
Background Sound Level (mean)	42	38	Background Sound Level (mean)	47	32
Site B	45.5	41.8	Receptor B	44.4	30.2
29-30 Sep.	43.3	41.9	24-25 Sep.	42.5	28.2
	45.2	43.6		43.4	29.0
	44.1	39.4		39.5	38.7
	42.3			41.0	29.8
	41.7				
	43.4				
	43.6				
Site B		40.3			
2 Oct.		42.4			
		41.8			
		43.1			
Background Sound Level (mean)	44	42	Background Sound Level (mean)	42	31

Site C	41.1	38.7	Receptor C	44.0	35.0
29-30 Sep.	42.8	42.7	24-25 Sep.	44.5	31.4
	42.7	42.5		42.4	27.6
	42.3	42.8		41.6	23.7
Background Sound Level (mean)	42	42	Background Sound Level (mean)	43	29

Site D	42.0	32.6	Receptor D	45.9	33.8
29-30 Sep.	39.9	33.7	24-25 Sep.	43.4	32.5
	40.2	36.0		45.6	23.7
	37.9	35.1		43.4	28.6
				47.0	
Background Sound Level (mean)	40	34	Background Sound Level (mean)	45	30

Night-time Background Sound Levels Adjusted for Start/End of Night-time Period (Maleor Site Closed)

Site	
A	35
B	32
C	35
D	34

SITE MEASUREMENTS

24 to 25 September 2023

SITE: A	Marlbrook House, Pickhill Lane – Opposite to Maelor Foods Entrance			
Start Time / Record	$L_{Aeq,(15\text{ minutes})}$, dB	$L_{A90,(15\text{ minutes})}$, dB	$L_{A10,(15\text{ minutes})}$, dB	Comment
Daytime Period				
14:57:48 Record 004	58	51	60	Maelor site closed
15:13:53 Record 005	59	50	58	Maelor site closed
15:29:48 Record 006	55	48	5	Maelor site closed
15:45:36 Record 007	59	47	57	Maelor site closed
16:06:22 Record 008	59	47	60	Maelor site closed
16:30:25 Record 009	63	46	58	Maelor site closed
21:20:40 Record 073	52	47	55	Maelor site closed
22:43:45 Record 074	53	36	46	Maelor site closed
Night-time Period				
23:44:16 Record 015	37	27	39	Maelor site closed
00:00:02 Record 016	44	36	47	Maelor site closed
00:15:43 Project 017	46	41	48	Maelor site closed
00:31:56 Record 018	43	36	46	Maelor site closed
03:02:18 Project 084	38	26	42	Maelor site closed

SITE: B	Pickhill Old Farm / Equestrian Complex, off Pickhill Lane			
Start Time / Record	$L_{Aeq,(15\text{ minutes})}$, dB	$L_{A90,(15\text{ minutes})}$, dB	$L_{A10,(15\text{ minutes})}$, dB	Comment
Daytime Period				
15:13:14 Record 062	50	44	52	Maelor site closed
15:35:43 Record 063	53	43	52	Maelor site closed

15:52:59 Record 064	51	43	53	Maelor site closed
16:14:04 Record 065	45	40	47	Maelor site closed
16:30:00 Record 066	48	41	50	Maelor site closed
Night-Time Period				
23:17:47 Record 075	35	30	37	Maelor site closed
23:34:22 Record 076	32	28	35	Maelor site closed
23:52:26 Record 077	38	29	41	Maelor site closed
00:09:08 Record 078	43	39	46	Maelor site closed
02:24:28 Record 083	35	30	38	Maelor site closed

SITE: C

White Gate Cottage, Pickhill Lane

Start Time / Record	$L_{Aeq,(15\text{ minutes})}$, dB	$L_{A90,(15\text{ minutes})}$, dB	$L_{A10,(15\text{ minutes})}$, dB	Comment
Daytime Period				
17:43:11 Record 067	51	44	54	Maelor site closed
18:00:01 Record 068	51	45	52	Maelor site closed
18:16:30 Record 069	47	42	49	Maelor site closed
18:32:31 Record 070	46	42	48	Maelor site closed
Night-Time Period				
01:02:16 Record 079	45	35	49	Maelor site closed
01:21:34 Record 080	35	31	37	Maelor site closed
01:39:01 Record 81	36	28	39	Maelor site closed
02:00:14 Record 082	32	24	35	Maelor site closed

SITE: D

Mayfield House, Talwrn Lane

Start Time / Record	$L_{Aeq,(15\text{ minutes})}$, dB	$L_{A90,(15\text{ minutes})}$, dB	$L_{A10,(15\text{ minutes})}$, dB	Comment
Daytime Period				
17:35:26 Record 010	52	46	55	Maelor site closed

17:51:33 Record 011	51	43	54	Maelor site closed
18:07:21 Record 012	52	46	55	Maelor site closed
18:23:02 Record 013	49	43	53	Maelor site closed
18:38:49 Record 014	53	47	56	Maelor site closed
Night-time Period				
00:56:37 Record 019	41	34	44	Maelor site closed
01:12:02 Project 20	40	33	43	Maelor site closed
02:02:02 Record 021	31	24	34	Maelor site closed
02:17:29 Record 022	35	29	38	Maelor site closed

SITE: E	Site E: Porthygan Farm, A525 Wrexham Road			
Start Time / Record	$L_{Aeq,(15\text{ minutes})}$, dB	$L_{A90,(15\text{ minutes})}$, dB	$L_{A10,(15\text{ minutes})}$, dB	Comment
Daytime Period				
19:45:02 Record 071	51	46	54	Maelor site closed
20:41:12 Record 072	56	46	53	Maelor site closed

29 to 30 September 2023

SITE: A	Marlbrook House, Pickhill Lane - Opposite Residential Premises at Factory Entrance			
Start Time / Record	$L_{Aeq,(15\text{ minutes})}$, dB	$L_{A90,(15\text{ minutes})}$, dB	$L_{A10,(15\text{ minutes})}$, dB	Comment
Daytime Period				
14:59:15 Record 002	65	45	63	Maelor site operational
15:15:58 Record 003	64	46	62	Maelor site operational
15:31:38 Record 004	68	45	67	Maelor site operational
15:47:16 Record 005	63	43	63	Maelor site operational
20:50:24 Record 010	58	39	51	Maelor site operational
21:06:49 Record 011	57	39	51	Maelor site operational

21:22:24 Record 012	59	40	56	Maelor site operational
21:38:01 Record 013	56	39	51	Maelor site operational
21:53:04 Record 014	58	37	55	Maelor site operational
Night-time Period				
00:42:38 Record 019	41	35	44	Maelor site operational
00:58:20 Record 020	55	35	45	Maelor site operational
01:13:50 Record 021	37	34	38	Maelor site operational
01:30:01 Record 022	48	35	46	Maelor site operational

SITE: B	Pickhill Old Farm / Equestrian Complex, off Pickhill Lane			
Start Time / Record	L_{Aeq}, (15 minutes), dB	L_{A90}, (15 minutes), dB	L_{A10}, (15 minutes), dB	Comment
Daytime Period				
16:42:24 Record 087	48	46	49	Maelor site operational
16:58:11 Record 088	49	43	50	Maelor site operational
17:14:00 Record 089	49	45	49	Maelor site operational
17:30:18 Record 090	47	44	48	Maelor site operational
20:55:36 Record 095	44	42	46	Maelor site operational
21:11:14 Record 096	44	42	47	Maelor site operational
21:26:54 Record 097	45	43	47	Maelor site operational
21:42:34 Record 098	46	44	48	Maelor site operational
Night-time Period				
00:47:03 Record 103	44	42	46	Maelor site operational
01:02:57 Record 104	44	42	45	Maelor site operational
01:20:54 Record 105	46	44	47	Maelor site operational
01:36:39 Record 106	43	39	45	Maelor site operational

SITE: C	White Gate Cottage, Pickhill Lane			
Start Time / Record	$L_{Aeq,(15\text{ minutes})}$, dB	$L_{A90,(15\text{ minutes})}$, dB	$L_{A10,(15\text{ minutes})}$, dB	Comment
Daytime Period				
18:11:32 Record 091	45	41	47	Maelor site operational
18:39:11 Record 092	47	43	48	Maelor site operational
18:54:59 Record 093	49	43	53	Maelor site operational
19:11:01 Record 094	49	42	50	Maelor site operational
Night-time Period				
23:10:34 Record 099	42	39	43	Maelor site operational
23:26:42 Record 100	45	43	46	Maelor site operational
23:42:27 Record 101	45	43	46	Maelor site operational
23:58:39 Record 102	44	43	46	Maelor site operational

SITE: D	Mayfield House, Talwrn Lane			
Start Time / Record	$L_{Aeq,(15\text{ minutes})}$, dB	$L_{A90,(15\text{ minutes})}$, dB	$L_{A10,(15\text{ minutes})}$, dB	Comment
Daytime Period				
16:35:51 Record 006	48	42	50	Maelor site operational
16:51:29 Record 007	48	40	49	Maelor site operational
17:07:10 Record 008	46	40	49	Maelor site operational
17:22 Record t 009	47	38	49	Maelor site operational
				Maelor site operational
Night-time Period				
23:05:48 Record 015	40	33	42	Maelor site operational
23:21:29 Record 016	36	34	38	Maelor site operational
23:37:03 Record 017	39	36	41	Maelor site operational
23:52:22 Record 018	39	35	41	Maelor site operational

2 October 2023

Site A	Marlbrook House, Pickhill Lane - Opposite Residential Premises at Factory Entrance			
Start Time / Record	$L_{Aeq,(15 \text{ minutes})}$, dB	$L_{A90,(15 \text{ minutes})}$, dB	$L_{A10,(15 \text{ minutes})}$, dB	Comment
Night-time Period				
06:23:01 Record 111	60	44	56	Maelor site operational
06:38:40 Record 112	59	43	60	Maelor site operational

Site B:	Pick Pickhill Old Farm / Equestrian Complex, off Pickhill Lane			
Start Time / Record	$L_{Aeq,(15 \text{ minutes})}$, dB	$L_{A90,(15 \text{ minutes})}$, dB	$L_{A10,(15 \text{ minutes})}$, dB	Comment
Night-time Period				
05:00:12 Record 107	43	40	45	Maelor site operational
05:15:44 Record 108	44	42	45	Maelor site operational
05:31:14 Record 109	45	42	47	Maelor site operational
05:47:40 Record 110	45	43	46	Maelor site operational

Site D	Site D: Mayfield House, Talwrn Lane			
Start Time / Project	$L_{Aeq,(15 \text{ minutes})}$, dB	$L_{A90,(15 \text{ minutes})}$, dB	$L_{A10,(15 \text{ minutes})}$, dB	Comment
Night-time Period				
06:10	Maelor plant just audible. Road traffic (A525 / B5130) very noticeable. Random metallic bang heard – thought to be Maelor site. Low frequency sound audible from northerly direction (not Maelor site). Faint tone audible. Aircraft noise			Maelor site operational

APPENDIX 4

Additional Context Considerations

A4.1 Permitting Guidance directs the user to the following context considerations, on which comments are presented:

Context should consider:

- weekdays rather than weekends.

Comment: Maelor Foods is a 24 hour operation, the only (planning) limitation relating to vehicle movements from midnight Saturday to Midnight Sunday.

- what the sound ‘means’ – meaningful sound is one that conveys an unpleasant meaning beyond its mere acoustic content, for example noise from an abattoir.

Comment: In essence, Maelor Foods is an abattoir, and for some people the recognition of operations will signify unpleasantness and a dislike simply in principle. Acoustics Environment is not aware of any representations in this regard.

- time of day.

Comment: As a 24 hour operation, there are both daytime and night-time sounds (noise) associated with plant and vehicles.

- the absolute sound level.

Comment: This is addressed in Section 5 below.

- where the sound occurs.

Comment: This is expected to comprise external and/or internal locations at extant residencies.

- new industry or new residences.

Comment: There are no known new residential developments. The proposed variation to the permitted installation does not require additional buildings and is essentially concerned with additional internal plant.

- intrinsic links between the source and receptor, for example the source is the resident’s place of work.

Comment: For the receptors considered, there are no known intrinsic links.

- local attitudes.

Comment: The plant has been operational for a number of years, and invariably complaints will periodically arise given the juxtaposition with residential development, which are acted upon. No information is available to suggest a general attitude among neighbouring properties that is fundamentally against Maelor Foods' operations, and it is recognised that the site has previously been in industrial/commercial usage for many decades prior to the current use.

- the residual acoustic environment:

Comment: This comprises regular aircraft movements; local road traffic; road traffic on key route networks; animal sounds; other commercial or industrial activity; sporting activity; behavioural sounds associated with human activity.

- the land use at the receptor (for example, gardens rather than yards).

Comment: Neighbouring residential development can feature both garden and yard areas.

- the exceedance (traditional BS 4142).

Comment: This has been addressed in terms of impacts in submissions in support of the application to vary the Environmental Permit.

- whatever else might be particular to that individual situation.

Comment: Profiles of the receptors are provided by site notes of acoustic features during the course of site surveys. It is clear that Maelor Foods competes with a host of other acoustic signatures and is not singularly the dominant feature during all daytime and night-time periods.

A4.2 According to permitting guidance, these elements are likely to make a situation more sensitive:

- more houses in the location.

Comment: No new housing development is known.

- noise during antisocial hours.

Comment: Maelor Foods has always been a daytime and night-time operation.

- noise at weekends

Comment: Maelor Foods operates weekdays and at weekends.

- a well-used amenity area.

Comment: From observations, use is incidental and normal.

- private rear gardens

Comment: There are neighbouring residential properties with private rear

gardens.

- the natural soundscape.

Comment: The soundscape contains a mixture of natural, commercial, industrial and transportation sounds. It is not classified as an area of outstanding natural beauty, or a site of special scientific interest, or a site of local importance to nature conservation.

- a new industry.

Comment: No new industry is known for the locality

- a highly sensitive receptor

Comment: No (noise sensitive) receptors have been identified as abnormally sensitive.

A4.3 Guidance further offers that the following elements are likely to make a situation less sensitive:

- more industry in the location

Comment: No additional industry is proposed for the location.

- noise only between 9 am to 5 pm

Comment: As set out above, Maelor Foods operates on a 24 hours basis.

- noise on weekdays only

Comments: As set out above, Maelor Foods operates on a 24 hours basis.

- a rarely used amenity area

Comment: There are no known areas in this context.

- open front yards

Comment: All noise-sensitive receptors considered have front (yard) areas to some extent.

- a polluted landscape

Comment: The area is not classified as a polluted landscape on account of industrial activity. Noise Mapping illustrates the main noise sources comprise road traffic on the A525 and B5130.

- bland sound

As with many industries, Maelor Foods exhibits a low-level, non-descript 'factory' sound with certain sound periodically superimposed that may or may not be identifiable according to location.

- long-standing industry.

Comment: Industrial/commercial activities have taken place on the site for many decades; Maelor Foods has been operational for 6 years and benefits from planning consent and an Environmental Permit.

- a less sensitive receptor.

Comment: There is neighbouring residential development that forms part of an agricultural holding which, given its location relative to Maelor Foods distance-wise, the local land form, and the dominant presence of road traffic noise, is a less sensitive receptor.

APPENDIX 5

Specific Sound Levels & Rating Levels

- A5.1 BS4142 requires the Specific Sound Level (attributable to a noise source that is under consideration) to be adjusted for the influence of Residual Sound, where the Residual Sound Level, as $L_{Aeq,T}$, is within 10 dB of the Specific Sound Level. This in essence means determining, in the absence of the Specific Sound, a representative value of the Residual Sound.
- A5.2 On initial consideration this can be considered to correspond to period L_{Aeq} values at each receptor during normal daytime and night-time, from which are subtracted L_{Aeq} values (Residual Sound Levels) corresponding to when the installation is closed, to provide the Specific Sound Levels attributable to current operations. It is found, however, that L_{Aeq} values when the installation is closed can exceed L_{Aeq} values when the plant is operating. Receptor Site A is also problematic, in that measurements during an installation shutdown omit HGV movements on Pickhill Lane (accessing and egressing the installation site). that would normally be featured under normal working periods. These would serve to increase Residual Sound Levels and are not part of installation noise under assessment.
- A5.3 Whilst receptor Sites B and C might appear to be a comparable receptor site to use in place of Site A, such that Residual Sound Levels could be assumed to be similar and representative, these are further away from the A525 Wrexham Road and do not experience HGV and other Maelor Foods traffic on Pickhill Lane, plus they at greater distance from the A525 Wrexham Road, components that contribute to ambient sound levels at Site A.
- A5.4 To progress this, Residual Sound Levels have firstly been calculated for each receptor site from the measured data sets by combining each 15 minute L_{Aeq} results recorded during daytime and night-time to produce total measurement period $L_{Aeq,T}$ values in the absence of the installation. By combining these values, this means using each 15 minute value to produce a total period value, which is the sum of the individual measurement time periods i.e. the number of 15 minute periods as a total.

Calculated Ambient (Residual) Sound Levels - Maelor Plant Closed

	Daytime	Night-time
Site A	$L_{Aeq,120 \text{ mins}}$ 59 dB [#]	$L_{Aeq,75 \text{ mins}}$ 43 dB [#]
Site B	$L_{Aeq,75 \text{ mins}}$ 50 dB	$L_{Aeq,75 \text{ mins}}$ 38 dB
Site C	$L_{Aeq,60 \text{ mins}}$ 49 dB	$L_{Aeq,60 \text{ mins}}$ 40 dB
Site D	$L_{Aeq,75 \text{ mins}}$ 52 dB	$L_{Aeq,60 \text{ mins}}$ 38 dB

[[#] Excludes HGVs on Pickhill Lane that would not be subject to Environmental Permit controls]

- A5.5 Measurements during plant operational periods have been assessed in the same fashion, combining L_{Aeq} values to produce ambient levels for daytime and night-time.

Calculated Ambient Sound Levels - Maelor Plant Operating

	Daytime	Night-time
Site A	$L_{Aeq,135 \text{ mins}}$ 63 dB	$L_{Aeq,80 \text{ mins}}$ 56 dB
Site B	$L_{Aeq,120 \text{ mins}}$ 47 dB	$L_{Aeq,120 \text{ mins}}$ 44 dB
Site C	$L_{Aeq,60 \text{ mins}}$ 48 dB	$L_{Aeq,60 \text{ mins}}$ 44 dB
Site D	$L_{Aeq,60 \text{ mins}}$ 47 dB	$L_{Aeq,60 \text{ mins}}$ 39 dB

- A5.6 Where possible, Specific Sound Levels attributable to the existing installation have been calculated by subtracting Residual Sound Levels from Ambient Sound Levels.

Initial Calculated Specific Sound Levels - Maelor Plant Operating (Ambient Sound Level – Residual Sound Level)

	Daytime	Night-time
Site A	$63 - 59 = L_{Aeq}$ 61 dB	$56 - 43 = L_{Aeq}$ 53 dB
Site B	n/a [*]	$44 - 43 = L_{Aeq}$ 43 dB
Site C	n/a [*]	$44 - 40 = L_{Aeq}$ 42 dB
Site D	n/a [*]	$39 - 38 = L_{Aeq}$ 32 dB

* Residual Levels exceed Ambient Levels

- A5.7 Where Residual Sound Levels (plant shutdown) are seen to exceed Ambient Sound Levels (with the plant operating), this is indicative of Maelor Foods not contributing significantly to the local noise

climate, with other sources being equally or more prevalent. This is notably attributed to local road traffic. To provide Specific Sound Levels where the calculation procedure above cannot be directly applied, the following approaches are used:

Site B Daytime: The lowest measured value of L_{Aeq} Residual Sound Level is applied.

Specific Sound Level = $47 - 45 = L_{Aeq}$ 43 dB

Site C Daytime: The lowest measured value of L_{Aeq} Residual Sound Level is applied.

Specific Sound Level = $48 - 46 = L_{Aeq}$ 44 dB

Site D Daytime: an L_{Aeq} 10 dB below the Residual Sound Level is applied since all measured values of Residual Sound exceed the period ambient sound Level

Specific Sound Level = $47 - 10 = L_{Aeq}$ 37 dB

- A5.8 Further problems are apparent in calculating the Specific Sound Level for Site A, since HGVs and other traffic associated with Maelor Foods on Pickhill Lane was absent during the shutdown period. This would increase ambient sound levels, having implications for determining the Specific Sound Level. NRW has previously clarified that traffic on the highway is not part of Environmental Permit regulatory controls as it is beyond the installation boundary. Hence, such elements logically form part of the background, ambient and residual sounds.
- A5.9 To provide for an additional contribution of night-time HGVs, Maelor Foods have provided information on vehicle movements which over the period 23.00 to 07.00 hours is up to 16 vehicles (total in-bound and out-bound). Averaged across the night-time period, this amounts to 0.5 vehicles per 15 minute period.
- A5.10 Site measurements of Sound Exposure Levels, L_{AE} , dB of HGV pass-bys at Site A were carried out on 29 September and 2 October 2023 for vehicles entering and leaving the site, and are used to inform this scenario. These are an L_{Aeq} measurement normalised to one second, commonly used to capture acoustic events and aid comparison of sound energy. They enable a correction to account for the absent number of night-time HGVs per 15 minute period by using the measured L_{AE} to produce, for example, a 15 minute L_{Aeq} .
- A5.11 Assuming one HGV vehicle per 15 minutes, the corrections to the Residual Sound Level is based on

individual L_{AE} values. For HGVs these spanned a range 84.1 dB to 88.2 dB.

- A5.12 For the lower L_{AE} HGV pass-by value 84.1 dB, a single HGV therefore produces $L_{Aeq\ 15\ Minutes}$ 55 dB at Site A. For the higher HGV L_{AE} pass-by value, this produces $L_{Aeq\ 15\ Minutes}$ 59 dB. Along with other vehicle pass-bys (which have been observed in some cases as equalling or exceeding the L_{AE} of HGVs largely due to greater speeds, on-road distance travelled, manner of driving and road conditions), these features effectively control the Residual Sound Level at Site A due to their magnitude, in contrast to noise emanating from the installation. The infrequency of HGV pass-bys, however, would not offer any major implications on the Background Sound Level, $L_{A90,T}$ due to the limited time HGVs are present and the frequency (of pass-bys).
- A5.13 One HGV per 15 minutes on Pickhill Road would consequentially elevate the Residual Sound Level to at least L_{Aeq} 55 dB. The night-time Specific Sound Level is therefore:
 $56 - 55 = L_{Aeq}$ 49 dB
This is considered as a maximum value as using the maximum HGV pass-by value as a correction sees the Residual Sound Level exceed the ambient sound level by 4 dB.
- A5.14 Comparing daytime period L_{Aeq} values at Site A for the installation operating and the installation shut down produces $L_{Aeq,135\ minutes}$ 63 dB and $L_{Aeq,120\ Minutes}$ 59 dB respectively. This differential may reasonably be expected to be lower during weekdays, when traffic patterns in the area can reasonably be expected to be generally busier.
- A5.15 Site A is thus highly susceptible to all forms of traffic pass-bys which are dominant and lead to high measured ambient sound levels. The contribution of installation noise to the ambient sound is secondary to this, as has readily been confirmed by site observations. The calculated Specific Sound Level using the above method is adjudged to be unrepresentatively high, notably in comparison to the night-time value, whilst recognising that the plant operates on a 24 hours pattern for the majority of the time. The lowest measured Ambient Sound Level provides a better reference point to consider the contribution of the installation as this, but this is then exceeded by the calculated Residual Sound Level when the installation was closed. Using the lowest measured Residual Sound Level and the lowest Ambient Sound Levels to determine the contribution of installation noise gives a better indication of the extent of daytime installation noise, i.e.

$$\text{Specific Sound Level} = 56 - 52 = L_{\text{Aeq}} 54 \text{ dB}$$

A5.16 During night-time, site observations have also verified that installation noise is minimal at Site A in comparison to vehicles on the highway. The contribution of the installation presents as an underlying feature, and with the installation operational, the period ambient sound level at Site A is $L_{\text{Aeq}} 56 \text{ dB}$, compared to a range 55 dB to 59 dB assessed when the site was closed. Using the lower value would by calculation therefore indicate a Specific Sound Level of 49 dB(A) .

A5.17 Specific Noise Levels for the existing installation have been revised:

Revised Calculated Specific Sound Levels - Maelor Plant Operating		
	Daytime	Night-time
Site A	$56 - 52 = L_{\text{Aeq}} 54 \text{ dB}$	$56 - 55 = L_{\text{Aeq}} 49 \text{ dB}$
Site B	$47 - 45 = L_{\text{Aeq}} 43 \text{ dB}$	$44 - 43 = L_{\text{Aeq}} 43 \text{ dB}$
Site C	$48 - 46 = L_{\text{Aeq}} 44 \text{ dB}$	$44 - 40 = L_{\text{Aeq}} 42 \text{ dB}$
Site D	$47 - 10 = L_{\text{Aeq}} 37 \text{ dB}$	$39 - 38 = L_{\text{Aeq}} 32 \text{ dB}$

NOISE IMPACT RATINGS

Site A: DAYTIME

A5.18 Specific Sound Level 54 dB(A) (current installation)

Environoise Proposed Changes - Specific Sound level Plant = 45 dB(A)

Environoise Proposed Changes - Specific Sound level HGVs = 39 dB(A)

Specific Sound Level – combined new Plant and HGVs = $45 + 39 = 46 \text{ dB(A)}$

Distinguishable Feature Correction = $+3 \text{ dB(A)}$

Rating Level – Proposed Changes, Plant and HGVs = $46 + 3 = 49$

Rating Sound Level – whole-site (existing installation & proposed changes)

$54 + 49 = 55 \text{ dB(A)}$

Background Sound Level (installation shutdown) = 47 dB(A)

Exceedance above Background Sound Level (site closed) = $55 - 47 = +8 \text{ dB(A)}$

Assessment of Impact: Indication of adverse impact, depending on the context.

- A5.19 Concerning World Health Organisation Critical Health Effect Criteria for daytime outdoor living areas of L_{Aeq} 55 dB for serious annoyance, it is indicated installation noise is at this threshold for front façade areas.

Site A: NIGHT-TIME

- A5.20 Specific Sound Level 49 dB(A) (current installation)

Envirnoise Proposed Changes Specific Sound level Plant = 45 dB(A)

Envirnoise Proposed Changes Specific Sound level HGVs = 37 dB(A)

Specific Sound Level – combined new Plant and HGVs = $45 + 47 = 46$ dB(A)

Distinguishable Feature Correction = +3 dB(A)

Rating Level – Proposed Changes, Plant and HGVs = $46 + 3 = 49$

Rating Sound Level – whole-site (existing installation & proposed changes)

$49 + 49 = 52$ dB(A)

Background Sound Level (installation shutdown) = 32 dB(A)

Exceedance above Background Sound Level (site closed) = $52 - 32 = +20$ dB(A)

Assessment of Impact: Indication of adverse impact, depending on the context.

- A5.21 Installation noise is predicted as likely to exceed the aspirational World Health Organisation Critical Health Effect Criteria for night-time of L_{Aeq} 45 dB (outside of bedrooms to safeguard sleep, allowing for an open window) for front facades areas.

BS4142 impact rating Site B: DAYTIME

- A5.22 Specific Sound Level 43 dB(A) (current installation)

Envirnoise Proposed Changes Specific Sound level Plant = 28 dB(A)

Envirnoise Proposed Changes Specific Sound level HGVs = 23 dB(A)

Specific Sound Level – combined new Plant and HGVs = $28 + 23 = 29$ dB(A)

Distinguishable Feature Correction = +3 dB(A)

Rating Level – Proposed Changes, Plant and HGVs = $29 + 3 = 32$

Rating Sound Level – whole-site (existing installation & proposed changes)

$43 + 32 = 43$ dB(A)

Background Sound Level (site closed) = 42 dB(A)

Exceedance above Background Sound Level (site closed) = $43 - 42 = +1$ dB(A)

Assessment of Impact: Indication of less than an adverse impact to adverse impact, depending on the context

- A5.23 It is indicated ambient levels will remain below the aspirational World Health Organisation Critical Health Effect Criteria for daytime outdoor living areas of L_{Aeq} 55 dB for serious annoyance, and L_{Aeq} 50 dB for moderate annoyance.

BS4142 impact rating Site B: NIGHT-TIME

- A5.24 Specific Sound Level 43 dB(A) (current installation)

Environoise Proposed Changes Specific Sound level Plant = 28 dB(A)

Environoise Proposed Changes Specific Sound level HGVs = 22 dB(A)

Specific Sound Level – combined new Plant and HGVs = $28 + 22 = 29$ dB(A)

Distinguishable Feature Correction = +3 dB(A)

Rating Level – Proposed Changes, Plant and HGVs = $29 + 3 = 32$

Rating Sound Level – whole-site (existing installation & proposed changes)

$43 + 32 = 43$ dB(A)

Background Sound Level (installation shutdown) = 42 dB(A)

Exceedance above Background Sound Level (site closed) = $43 - 31 = +12$ dB(A)

Assessment of Impact: Indication of significant adverse impact to adverse impact, depending on the context

- A5.25 Comment: This scenario is equivalent to the existing situation for site operations during daytime with the exception of the Background Sound level. A significant adverse impact has not been observed during site surveys. BS4142 recognises that the middle of the night can be distinctly different (and potentially of lesser importance) compared to the start or end of the night-time period for sleep purposes, which can typically exhibit higher $L_{A90,T}$ levels. A level of up to L_{A90} 39 dB was recorded, which if used in the rating would provide for an exceedance above Background Sound Level of +8 dB(A), and modify the impact to an indication of adverse impact, depending on the context.
- A5.26 The level of impact (measured by the nature and volume of complaints) concerning the existing installation is not reflected in the impact rating, and the predictions for additional processing capacity that is the subject of the variation, in combination or alone, provides for no substantive changes to this consideration.
- A5.27 Absolute levels of sound under current operational conditions produced a period L_{Aeq} of 44 dB(A) with the site operational; the aspirational World Health Organisation Critical Health Effect Criteria for night-time outside of bedrooms to safeguard sleep, allowing for an open window, is L_{Aeq} 45 dB.
- A5.28 Based on site observations when the installation is operational, and allowing for existing sound energy levels to be doubled by the proposed permit variation, it is adjudged this would not lead to a significant impact, and, if no further noise reductions were effected, a level of 47 dB(A) would prevail based on elevating the present night-time period L_{Aeq} 44 dB.

BS4142 impact rating Site C: DAYTIME

- A5.29 Specific Sound Level 44 dB(A) (current installation)

Environoise Proposed Changes Specific Sound level Plant = 28 dB(A)

Environoise Proposed Changes Specific Sound level HGVs = 23 dB(A)

Specific Sound Level – combined new Plant and HGVs = 28 + 23 = 29 dB(A)

Distinguishable Feature Correction = +3 dB(A)

Rating Level – Proposed Changes, Plant and HGVs = 29 + 3 = 32 dB(A)

Rating Sound Level – whole-site (existing installation & proposed changes)

$$44 + 32 = 44 \text{ dB(A)}$$

Background Sound Level (site closed) = 43 dB(A)

$$\text{Exceedance above Background Sound Level} = 44 - 43 = +1 \text{ dB(A)}$$

Assessment of Impact: Indication of less than adverse impact, depending on the context

- A5.30 It is indicated ambient levels will remain below the aspirational World Health Organisation Critical Health Effect Criteria for daytime outdoor living areas of L_{Aeq} 55 dB for serious annoyance, and L_{Aeq} 50 dB for moderate annoyance.

BS4142 impact rating Site C: NIGHT-TIME

- A5.31 Specific Sound Level 42 dB(A) (current installation)

Environoise Proposed Changes Specific Sound level Plant = 28 dB(A)

Environoise Proposed Changes Specific Sound level HGVs = 22 dB(A)

$$\text{Specific Sound Level – combined new Plant and HGVs} = 28 + 22 = 29 \text{ dB(A)}$$

Distinguishable Feature Correction = +3 dB(A)

$$\text{Rating Level – Proposed Changes, Plant and HGVs} = 29 + 3 = 32 \text{ dB(A)}$$

Rating Sound Level – whole-site (existing installation & proposed changes)

$$42 + 32 = 42 \text{ dB(A)}$$

Background Sound Level (site closed) = 29 dB(A)

$$\text{Exceedance above Background Sound Level} = 42 - 29 = +13 \text{ dB(A)}$$

Assessment of Impact: Indication of significant adverse impact, depending on the context

- A5.32 Comment: This scenario mirrors Site B for night-time. Absolute levels of sound under current operational conditions produced a period L_{Aeq} of 44 dB(A). Based on site observations when the installation is operational, this does not lead to a significant impact and, if allowing for existing sound energy levels (the specific sound level) to be doubled by the proposed permit variation, with no further noise reductions, a level of 45 dB(A) is forecast to prevail. This again is considered would not give rise to a significant noise impact.

- A5.33 For areas adjoining the rear façades of Site C, the absolute levels of sound under current operational conditions are indicated as achieving the World Health Organisation Critical Health Effect Criteria for night-time of L_{Aeq} 45 dB (outside of bedrooms to safeguard sleep, allowing for an open window).

BS4142 impact rating Site D: DAYTIME

- A5.34 For this situation, the measured Ambient Sound Level is exceeded by the Residual Sound Level. The lowest measured 15 minute L_{Aeq} value of 49 dB with the plant shutdown still exceeds the measured Ambient Sound Level. This is indicative of Maelor Foods contributing negligibly to the ambient sound in this locality during the daytime, as was confirmed by site observations. Therefore, a Specific Sound Level of 37 dB(A) is assumed, which would not contribute to the Ambient Sound Level.
- A5.35 The basis for assessments at Site D uses values of specific noise for plant and HGV changes assigned to Site C. Given the approximate doubling of separation distance of Site D comparative to Site C from the installation site, solely on geometrical spreading of sound energy (ignoring ground and air absorption) would see a conservative reduction in levels of -6 dB.
- A5.36 Specific Sound Level 37 dB(A) (current installation)

Environoise Proposed Changes Specific Sound level Plant = 28 dB(A)

Environoise Proposed Changes Specific Sound level HGVs = 23 dB(A)

Distance correction = -6 dB(A)

Specific Sound Level – combined new Plant and HGVs = 22 + 17 = 23 dB(A)

Distinguishable Feature Correction = +3 dB(A)

Rating Level – Proposed Changes, Plant and HGVs = 23 + 3 = 26

Rating Sound Level – whole-site (existing installation & proposed changes)

37 + 26 = 37 dB(A)

Background Sound Level (site closed) = 45 dB(A)

Exceedance above Background Sound Level = $37 - 45 = -8$ dB(A)

Assessment of Impact: Indication of low impact (not exceeding Background Sound Level), depending on the context

- A5.37 Comment: For areas adjoining the rear façade of Site D, the absolute levels of sound under existing and with proposed varied operational conditions are indicated as falling below the World Health Organisation Critical Health Effect Criteria for daytime outdoor living areas of L_{Aeq} 55 dB for serious annoyance, and L_{Aeq} 50 dB for moderate annoyance.

BS4142 impact rating Site D: NIGHT-TIME

- A5.38 Specific Sound Level 32 dB(A) (current installation)

Environoise Proposed Changes Specific Sound level Plant = 28 dB(A)

Environoise Proposed Changes Specific Sound level HGVs = 22 dB(A)

Distance correction = -6 dBA)

Specific Sound Level – combined new Plant and HGVs = $22 + 16 = 38$ dB(A)

Distinguishable Feature Correction = +3 dB(A)

Rating Level – Proposed Changes, Plant and HGVs = $38 + 3 = 41$

Rating Sound Level – whole-site (existing installation & proposed changes)

$32 + 26 = 58$ dB(A)

Background Sound Level (site closed) = 30 dB(A)

Exceedance above Background Sound Level = $58 - 30 = +28$ dB(A)

- A5.39 Comment: The distinguishable feature correction is considered to be excessive for this location and had been applied initially for consistency to accord with the requirements of NRW. It is pertinent to note comments on behalf of the occupier of the property at which surveys were carried out, to the effect that ‘noise was not an issue’.

- A5.40 For areas adjoining the rear façade of Site D, absolute levels of sound under current operational conditions produced a period L_{Aeq} of 39 dB(A); the World Health Organisation Critical Health Effect

Criteria for night-time (outside of bedrooms to safeguard sleep, allowing for an open window) is L_{Aeq} 45 dB. This criteria is indicated to be met with production changes that would be brought about by the application to vary the environmental permit.

Reappraisal of Noise Impacts

- A5.41 BS4142 recognises that the middle of the night can be distinctly different (and potentially of lesser importance) compared to the start or end of the night-time period for sleep purposes. This has a direct bearing on determining noise impacts.
- A6.42 Background Sound Levels with the site closed have consequently been corrected to provide amended noise ratings for the whole-site, which includes existing operations and proposed changes:

	Night-time
	Specific Sound Level – Background Sound Level
Site	
A	$52 - 35 = +17$
B	$43 - 32 = +11$
C	$42 - 35 = +7$
D	$33 - 34 = -1$

Appendix 6

Assessing Tonal Penalties

- A6.1 For tonality specifically, the range of corrections (penalties) in BS4142 is from 0 to +6 dB. The standard firstly provides for a subjective appraisal of this: +2 dB for a tone which is just perceptible at the noise receptor; +4 dB where it is clearly perceptible; and +6 dB where it is highly perceptible.
- A6.2 On-site observations determined that tonal sounds were mainly absent, and when identified were at the cusp of just perceptible or thereabouts, which would attract at most a penalty of to +2 dB if at all. The +3 dB used in the assessment to accord with NRW requirements is in practice numerically more stringent compared to a penalty for a tone that is just perceptible, in accommodating the consideration for intermittency. When identified, tones were either mid or high frequency, the latter being associated with effluent treatment plant aeration blowers at c.1 kHz
- A6.3 BS 4142 provides an objective method based on one-third octave bands to test for the presence of prominent, discrete-frequency spectral components (tones). This examines the level in a one-third octave band of interest as a comparison with the levels in adjacent bands. For a prominent, discrete tone to be identified as present, the time-averaged sound pressure level in the one-third octave band of interest is required to exceed the levels in adjacent bands by a specified constant level difference as follows:
- 15 dB in the low frequency one-third octave bands 25 Hz to 125 Hz
 - 8 dB in the middle-frequency one-third octave bands (160 Hz to 400 Hz)
 - 5 dB in the high-frequency one-third octave bands (500 Hz to 10,000 Hz)
- A6.4 With reference to the Acoustics Environment report of October 2023, records have been compared against site observations, notably when a transient tonal noise was discerned from the installation site. This identifies the following records:

Site A 29-30 September 2023

Record nos. 005, 012, 019

Site B 29-30 September 2023

Record nos. 089; 090; 096; 104; 105; 106

Site C 29-30 September

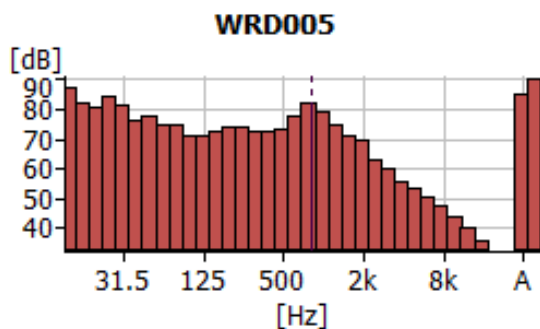
Record nos. 099; 100; 102

2 October 2023 Site A Record nos. 110, 111

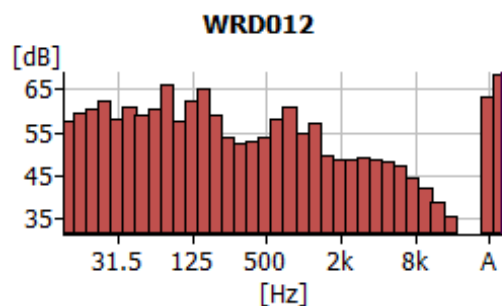
A6.5 Each of these records has been examined for what were audibly identified as transient mid or high frequency tones, having regard to the BS 4142 criteria. The spectral data is presented below. None of the spectra corresponding to when an identifiable tone had been noted fulfil the BS4142 objective criteria for the presence of a prominent, discrete-frequency spectral component.

A6.6 Tonal sounds have not been observed as either a consistent or prominent feature. As an example of reasoning for this, considering chiller plant, it is understood the sound profile for this plant is variable according to load (plant demand) to the point where there is no duty.

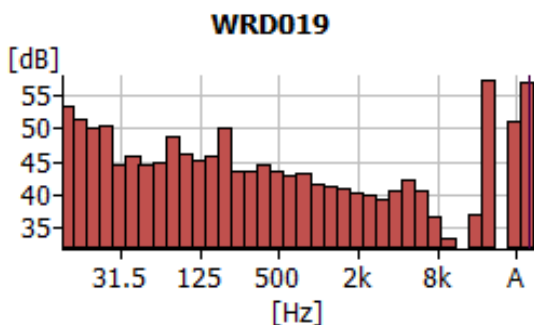
Site A: 29 September 2023 Daytime



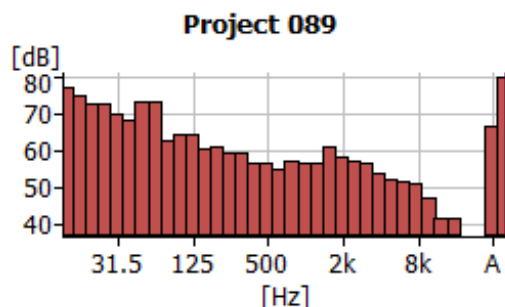
Site A: 29 September Daytime



Site A: 30 September 2023 Night-time

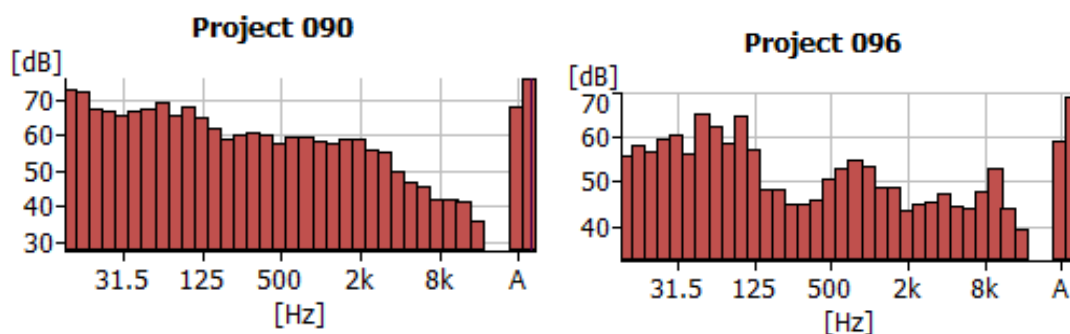


Site B: 29 September 2023 Daytime



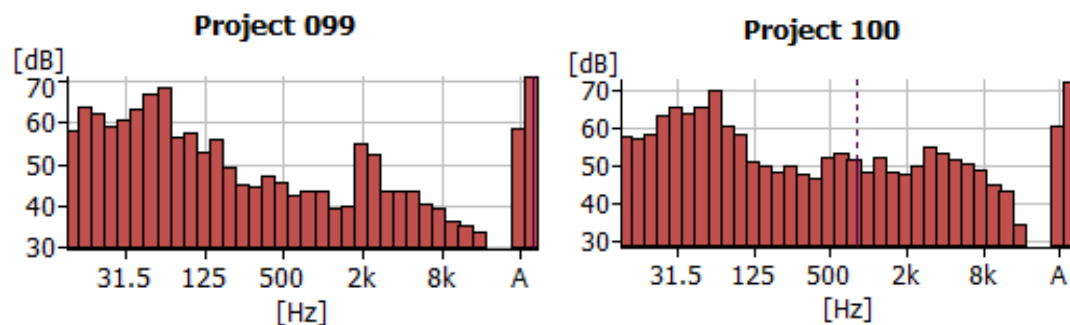
Site B: 29 September 2023 Daytime

Site B: 29 September Daytime



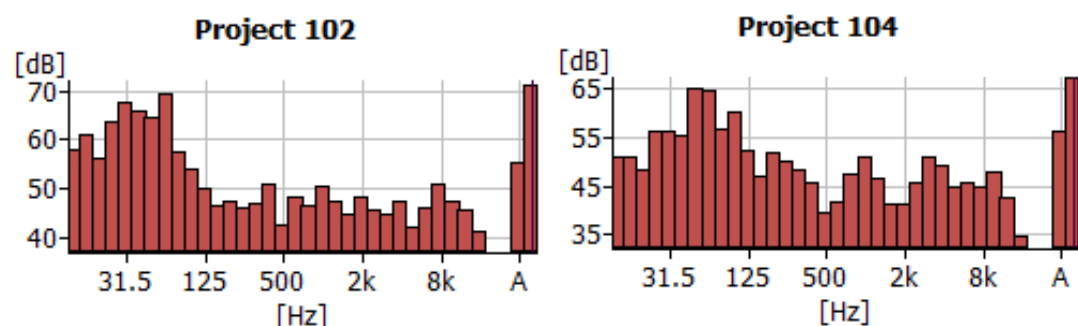
Site C: 30 September 2023 Night-time

Site C: 30 September 2023 Night-time



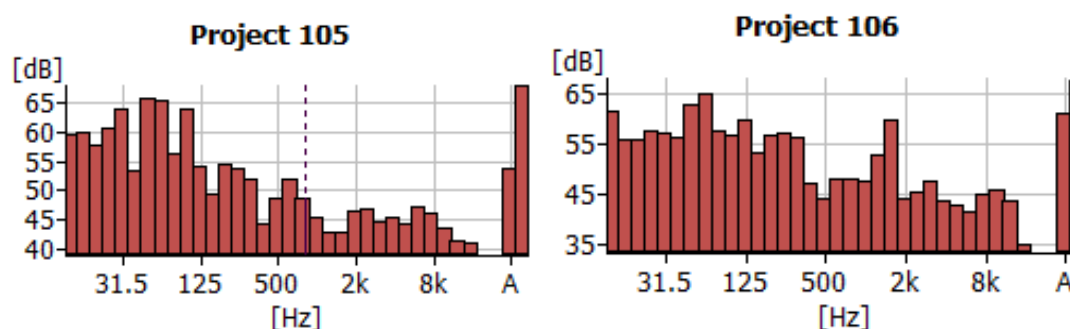
Site C: 30 September Night-time

Site B: 30 September 2023 Night-time



Site B: 30 September 2023 Night-time

Site B: 30 September 2023 Night-time



Site B; 2 October 2023 Night-time

