



Noise Impact Assessment

Site Address: Aquavitrum Ltd, Riverside Industrial Park, Eastleigh, SO50 6JQ

Client Name: Aquavitrum Ltd

Project Reference No: NP-013262



Authorisation and Version Control

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Amendment History

Revision	Summary of Amendments
001	--
002	Criteria brought in line with LPA's request.
003	Additional blockwork walls included within mitigation section.
004	Amended assessment to consider newly proposed operating hours.
005	Minor amendments to wording
006	Further information included regarding latest consultation responses

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Contact Details

NOVA Acoustics Ltd,
Suite 13, Crown House,
94 Armley Road,
Leeds,
LS12 2EJ

0113 322 7977

www.novaacoustics.co.uk
technical@novaacoustics.co.uk

Delivering sustainable development by promoting good health and well-being through effective management of noise.

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1. Introduction

NOVA Acoustics Ltd has been commissioned to prepare a noise impact assessment for a change to operating hours for an operational glass recycling plant ('the Development Being Assessed') as part of the Aquavitrum Ltd at River side Industrial Park, Coneger Road, Eastleigh, SO50 6JQ ('the Site').

NOVA Acoustics has previously satisfied Conditions 12 and 13 for application No. CS/22/92808. It is understood that a proposal has been made to change the operational hours, with the facility seeking to operate continuously for an extended period of 06:00 – 23:00, seven days a week, but with no working on Public/Bank Holidays

The report details the existing background sound climate and the noise emissions associated with the Site. Measures required to mitigate noise impact have been recommended where necessary and assessed in accordance with the relevant performance standards, legislation, policy and guidance.

This noise assessment is necessarily technical in nature; therefore, a glossary of terms is included in Appendix A to assist the reader.

1.1 Standards, Legislation, Policy & Guidance

The following performance standards, legislation, policy and guidance have been considered to ensure good acoustic design in the assessment:

- Hampshire County Council conditional approval; specifically, 'Condition 12' & 'Condition 13'
- National Planning Policy Framework (2024 – Amd 2025)
- Noise Policy Statement for England (2010)
- BS4142:2014+A1:2019 – 'Methods for rating and assessing commercial and industrial sound'

Further information on the legislation can be found in Appendix B.

1.2 Proposal Brief & Background

As part of the Aquavitrum site, a glass recycling plant and other associated machinery have been installed in relation to waste management services. The site currently operates between 08:00 and 18:00 hours Monday to Friday, with proposals to extend these hours from 06:00 to 23:00 hours, 7 days a week.

Figure 1 below illustrates the development layout. Note that this figure may not represent the site's actual layout as of October 2025, but it offers a general idea of the design layout.



Figure 1 – Site Layout of Existing Development

A Noise Impact Assessment ('NIA') was conducted by Wardell Armstrong in October 2022 (ref: BR10131/Final) during a period when the facility was undergoing testing. The report outlined various noise control measures to ensure low impact, including:

- Crusher hoods,
- 2m tall, raised hopper sides and back,
- Acoustic covers for screens,
- Three-sided tipping bays.

The Wardell Armstrong report predicted specific sound levels at the site boundary of approximately 60 dBA and post-mitigation BS4142 rating sound levels ranging from 31 dBA to 35 dBA.

1.3 Local Planning Authority – Original Correspondence (2023)

Relevant correspondence between 2022 – 2023 between Wardell Armstrong and the LPA stated the following in regard to a proposed criterion.

“12. Not later than three months following the development hereby permitted being brought into use, a detailed Noise Mitigation Scheme to achieve the rating levels required to comply with Condition 11 above shall be submitted to and agreed in writing by the Waste Planning Authority.

Mitigation measures shall ensure that a site Rating Level of at least 5 decibels below the Background Sound Level is achieved at the nearest residential property (in free field conditions, as defined in BS 4142:2014 (as amended)).

The approved Noise Mitigation Scheme shall be implemented as approved throughout the duration of the development. At the reasonable request of the Waste Planning Authority, the approved Noise Mitigation Scheme shall be reviewed and updated to maintain compliance with the premises noise Rating Level limit.

Reason: To prevent adverse noise disturbance and to ensure the protection of the amenity of the occupiers of the nearest residential properties in accordance with Policy 10 (Protecting public health, safety and amenity) of the Hampshire Minerals & Waste Plan (2013) and Policy DM8 (Pollution) of the Eastleigh Borough Local Plan (2022)”.

“13. Not later than six months following the development hereby permitted being brought into use a post-occupation Noise Impact Assessment shall be submitted to and approved in writing to the Waste Planning Authority. The Noise Impact Assessment shall ensure that the closest noise-sensitive receptors (including Chicken Hall Cottages and dwellings on Campbell Road) are not being subjected to noise levels and limits emanating from the premises beyond those set in Conditions 11 and 12 above.

If the Noise Impact Assessment shows that the noise levels do not comply with the agreed criteria, a scheme of noise mitigation shall be commissioned and included with the noise assessment, specifying timescales for the implementation of the scheme, and shall be submitted to the Waste Planning Authority within 21 days of the assessment’s completion for approval in writing.

Once approved, any mitigation measures shall thereafter be implemented in full and in accordance with timescales for an agreed and appropriate period of time.

Reason: To prevent adverse noise disturbance and to ensure the protection of the amenity of the occupiers of the nearest residential properties in accordance with Policy 10 (Protecting public health, safety and amenity) of the Hampshire Minerals & Waste Plan (2013) and Policy DM8 (Pollution) of the Eastleigh Borough Local Plan (2022)”.

An email dated 03/11/2022 from John Pyke (an EHO from Eastleigh Borough Council), detailed that a background sound level of 44dBA should be utilised as the baseline at Chickenhall Cottages and Campbell Road for any noise impact assessment regarding the site. However, attended measurements have also been undertaken at the same receptors to augment this criterion. On-site spot measurements were also undertaken around the site to facilitate noise modelling where necessary.

1.4 Proposed Criterion – 2025 Proposals

While a background sound level criterion of 44dBA is suitable for daytime operations, lower levels are generally anticipated during the most sensitive evening and early morning hours in the surrounding area. To support the proposed extension of hours, NOVA Acoustics conducted two long-term, unattended noise surveys to determine the residual night-time and weekend noise levels at both Chickenhall Cottages and Campbell Road.

Based on the results, a new criterion will be proposed across both NSRs to reflect the more sensitive operational hours. The methodology for the new survey is outlined below.

The assessment also takes into consideration of the mitigation measures put in place by the client in regard to the previous NOVA Acoustics report.

2. Environmental Noise Survey

2.1 Measurement Methodology

The following table outlines the measurement dates and particulars. In all instances a 130mm diameter windshield was fitted to the microphones.

Given the change in operational hours, the table below presents the environmental measurements from the most recent acoustic surveys. While the 2023 data may be of limited relevance in light of the updated results, report NP-010039 remains available for reference where required. Due to changes in operational hours, the table below includes only the most recent environmental measurements from the latest acoustic surveys. Report NP-010039 is still available for reference if needed.

Location	Survey Dates	Measurement Particulars
MP1	19-23/09/2025	Equipment affixed to a lamppost to the north of the existing site. Approximately 3.5m above the ground and at least 3m from any other large reflective surface.
MP2		Equipment affixed to a lamppost to the west of the existing site on Campbell Road. Approximately 3.5m above the ground and at least 3m from any other large reflective surface.
ST1	23/09/2025 13:30 – 14:32	Equipment affixed to a tripod at the boundary of the existing site. Approximately 1.5m above the ground.

Table 1 – Measurement Methodology

The figure below outlines the site surroundings and measurement locations:



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Figure 2 – Measurement Locations and Site Surroundings

2.2 Context & Subjective Impression

The site is located on the edge of an existing industrial estate, with a railway line to the south. During attended monitoring, noise emissions from the site were inaudible at the two nearest NSRs. In the initial daytime monitoring in 2023, local residents approached NOVA Acoustics to inquire about what was being measured, then claiming the site was inaudible and that they were unaware of its existence, which suggests the site does not negatively affect the nearby NSRs.

While monitoring at NSR1, the overall acoustic environment consisted of occasional road traffic noise from nearby unaffiliated sites and continuous noise emissions from the MTS Cleansing Services site located to the north-east.

At NSR2, the main noise sources included occasional aircraft movements from Southampton Airport to the south-west, as well as the M27 motorway located 2km in the same direction. During the survey, noise emissions from the neighbouring 'HWM Group' site were also clearly audible at NSR2.

The table below outlines the closest residential Noise Sensitive Receptors ('NSR') relative to the closest noise source associated with the Aquavitrum site.

NSR	Approximate Distance (m) from Closest Noise Source
1	Chicken Hall Cottages, Chicken Hall Lane, 398 m from the centre of the existing site
2	175 Campbell Road, 444 m from the centre of the existing site

Table 2 – NSR Identification

2.3 Environmental Noise Survey Results

As per a consultation response from the LPAs Pollution Team, it has been requested that background noise data is shown between 05:30 – 07:00 & 18:00 – 23:00 across weekday and weekend periods to gather a more in-depth idea of the acoustic environment.

Aquavitrum have since confirmed that glass tipping operations will not take place between 06:00–07:00 and 18:00–23:00, whilst all other on-site plant will remain operational at all times.

The table below illustrates the typical background sound levels during the unattended survey for the relevant assessment periods, with the lowest value highlighted for each monitoring position. All periods affected by existing operations have been excluded to ensure the results are not influenced by current site activity. Time history results and histograms are provided in Appendix D.

Noise Monitoring Location	05:30 – 07:00 $L_{A90,15min}$ (dB)	18:00 – 23:00 $L_{A90,15min}$ (dB)	07:00 – 23:00 $L_{A90,15min}$ (dB)
Weekday			
MP1	47	42	42
MP2	42	36	42
Weekend			
MP1	44	44	44
MP2	38	41	38

Table 3 – Measured Background Sound Levels – Assessment Periods

Based on the above values, the following criterion is proposed across both closest NSRs, which aligns with the lowest criteria across all periods.

Noise Monitoring Location	Lowest Criterion from Requested LPA Period (dB)	Council Criteria $L_{A,T,r}$ (dB)
Early Morning / Late Evening Criteria (05:30 – 07:00 & 18:00 – 23:00)		
NSR1 (Chicken Hall Cottages)	42	37
NSR2 (175 Campbell Road)	36	31
Entire Daily Operations Criteria (07:00 – 23:00)		
NSR1 (Chicken Hall Cottages)	42	37
NSR2 (175 Campbell Road)	38	33

Table 4 – Background Sound Level and Acoustic Design Criteria

Short-term Attended Survey Results Summary

In order to ascertain the levels generated by the existing site, a comparison between the measured levels at the site boundary between 2023 and 2025 is shown below.

Description	1/1 Octave Frequency Band (Hz, L _w dB)							Overall (dBA)
	63	125	250	500	1k	2k	4k	
ST1 – Site Boundary 11/10/2023 (08:14 – 13:57)	78	71	67	62	57	56	55	65
ST1 – Site Boundary 23/09/2025 (13:30 – 14:32)	75	67	63	58	58	57	56	64

Table 5 – Attended Survey Results Summary

As shown above, the measurements indicate only a 1dB variation, confirming that site-generated noise levels are broadly consistent with those measured in October 2023. Accordingly, the data informing the existing noise model will be retained, as the levels remain effectively unchanged.

3. Noise Impact Assessment

In the following section of the report, the impact of the noise emissions generated by the development.

3.1 Specific Sound Levels & Noise Modelling Data

The noise generating equipment associated with the development has been modelled within SoundPlan 9.1 software. The table below outlines the 1/1 octave frequency band sound power levels and percentage on-time per 1-hour reference daytime period of each noise source that have been inputted into the noise model. The source data and calculations used to derive the sound power levels below can be found in Appendix E.

Description	1/1 Octave Frequency Band (Hz, Lw dB)							Overall (dBA)	% On-Time
	63	125	250	500	1k	2k	4k		
Secondary Crusher / Imploder	109	106	100	92	88	87	85	97	100%
Secondary Screen	98	95	99	86	83	80	79	93	100%
Primary Screen	103	106	96	90	87	85	87	95	100%
Primary Crusher	110	95	97	89	87	84	83	94	100%
Cubicle Parts Separator	98	98	93	88	89	89	91	99	100%
Grit Vorts Motor	106	99	89	85	84	81	80	90	100%
Tipping Glass Load	111	99	97	91	89	90	91	98	80%
Water Screen	105	100	99	95	94	93	93	101	100%
Reversing Front Loader	103	102	97	93	91	88	87	97	80%
Truck Dumping Glass	103	100	96	94	94	95	95	102	80%

Table 6 – Sound Power Levels of Noise Generating Equipment

The following assumptions have been made within the modelling software:

- To accurately model the land surrounding the Proposed Development, the topographical data has been obtained from the EA's 'National LIDAR Programme' on the DEFRA Data Services Platform.
- For the purpose of the assessment, the ground between the source and receivers is considered to be primarily acoustically 'soft' surfaces, however, an area of hard ground has been modelled around the site.
- Octave band data was used to facilitate noise modelling in accordance with ISO 9613-2. ISO 9613-2 assumes a 'downwind' model to the NSRs.
- The sound map grid height has been set to 1.5m, however, the noise levels used in the assessment has been taken from the most exposed point of each façade.
- The development has been modelled in accordance with Appendix C and notes taken on site. Blockwork walls that exist around and beneath the equipment have been modelled and an absorption spectrum for concrete has been assumed with the model, with the recently implemented 4.8m high concrete wall modelled to line north-east of the hopper bay.
- Point source emitters have been used to represent the majority of noise sources under assessment, with a line source used to model the noise emissions from reversing front loader movement. Each source has been modelled at differing heights relative to each location of plant.
- The ambient measurements at the site boundary have been used to further augment the noise model. The noise model calibrated to within 1 dB of the ambient level measured at ST1, suggesting a high degree of accuracy.

The following sound map shows the specific sound levels emission from the site.

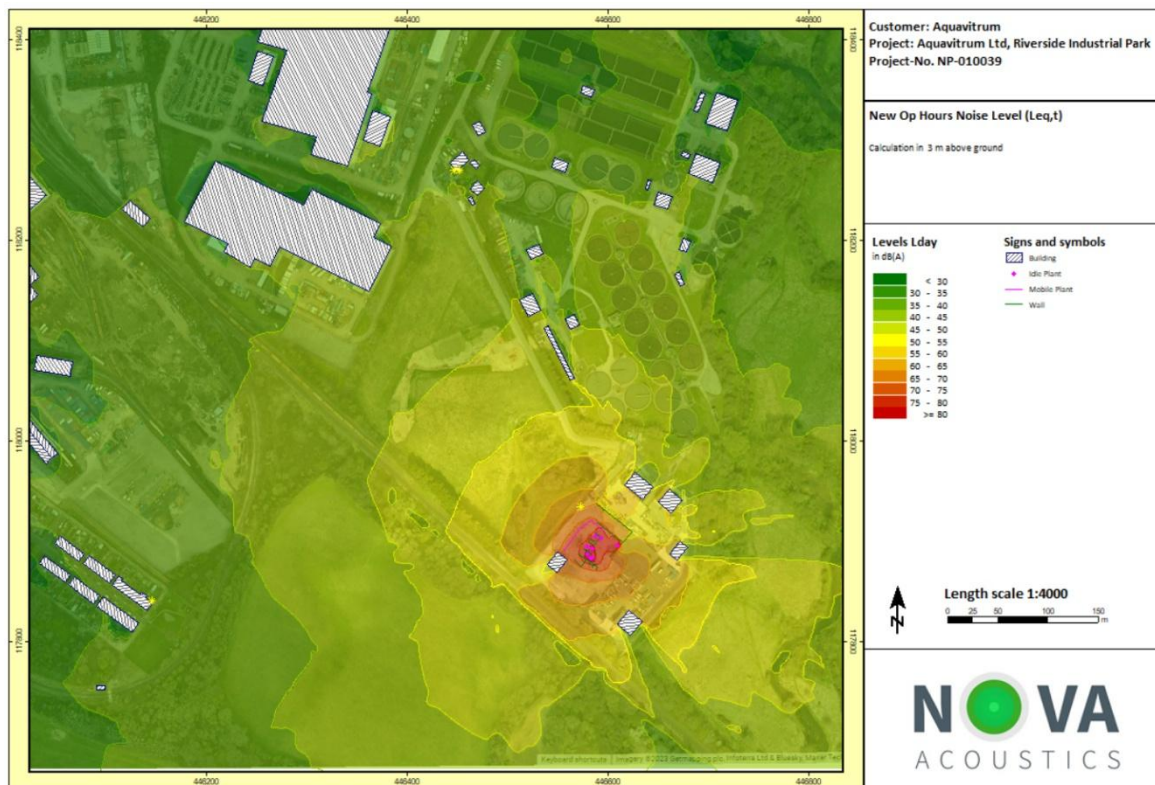


Figure 3 – Daytime Only (Inc. Glass Tipping)

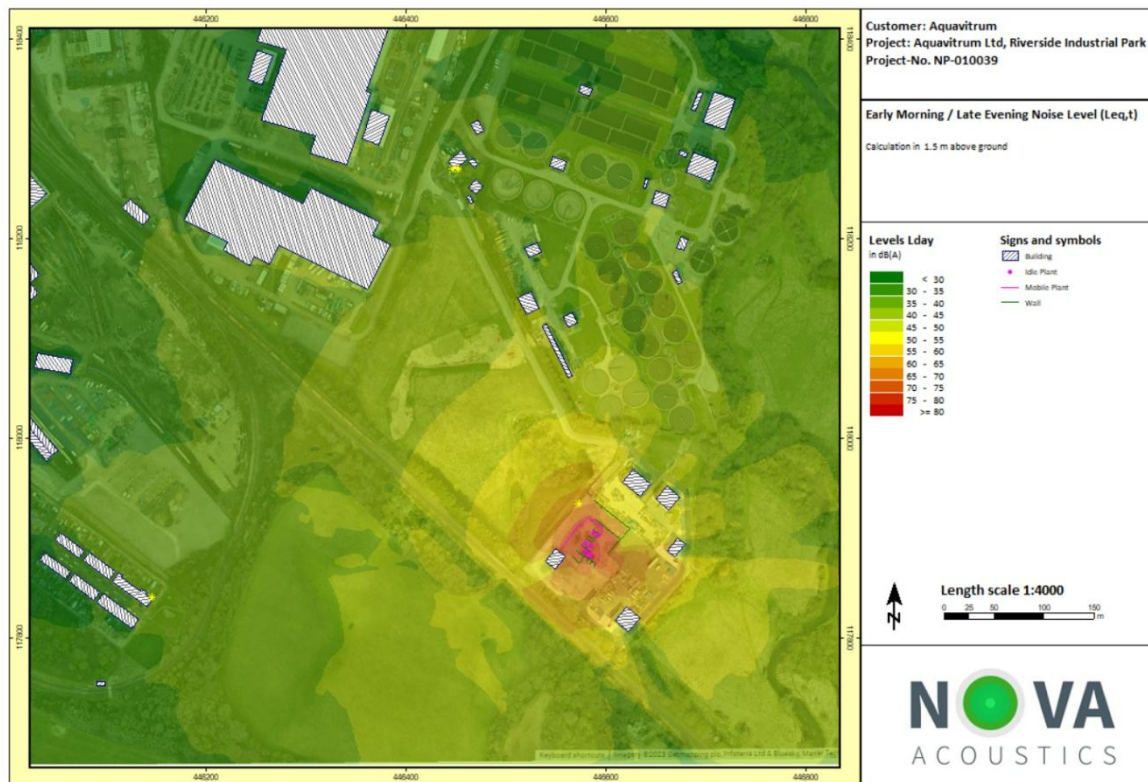


Figure 4 – Early Morning / Late Evening (No Glass Tipping)

3.2 BS4142 Noise Impact Assessment

The BS4142 noise impact assessments are conducted at the most affected NSRs in the tables overleaf, in consideration of the current on-site layout and the newly proposed criterion.

Early Morning / Late Evening Assessment

Noise Impact Assessment at NSR1 (Chicken Hall Lane Cottage – First Floor)								
Description	1/1 Octave Frequency Band (Hz, dB)							Overall (dBA)
	63	125	250	500	1k	2k	4k	
Specific Sound Level at NSR1 (L _{eq})	55	44	41	35	34	30	21	39
Acoustic Feature Correction	Site noise emissions inaudible at NSR.							0
Rating Sound Level (L _{Ar,T})								39
Lowest Early Morning / Late Evening Criteria (L _{Ar,T})	Typical L _{A90,15min} – 5 dB							37
Exceedance of Council Criterion								+2
Exceedance of Typical L _{A90}								-3
BS4142 Assessment Outcome	'Low Impact, dependent on context', at NSR1.							
NPPF & NPSE Outcome	No Observed Adverse Effect Level ('NOAEL').							
Noise Impact Assessment at NSR2 (Campbell Road Terrace - First Floor)								
Description	1/1 Octave Frequency Band (Hz, dB)							Overall (dBA)
	63	125	250	500	1k	2k	4k	
Specific Sound Level at NSR2 (L _{eq})	53	43	39	33	30	25	15	37
Acoustic Feature Correction	Site noise emissions inaudible at NSR.							0
Rating Sound Level (L _{Ar,Tr})								37
Lowest Early Morning / Late Evening Criteria (L _{Ar,T})	Typical L _{A90,15min} – 5 dB							31
Exceedance of Council Criterion								+6
Exceedance of Typical L _{A90}								+1
BS4142 Assessment Outcome	Low likelihood of 'adverse impact, dependent on context', at NSR1.							
NPPF & NPSE Outcome	No Observed Adverse Effect Level ('NOAEL').							

Table 7 – BS4142 Noise Impact Assessment – Early Morning / Late Evening

All Day Assessment

Noise Impact Assessment at NSR1 (Chicken Hall Lane Cottage – First Floor)								
Description	1/1 Octave Frequency Band (Hz, dB)							Overall (dBA)
	63	125	250	500	1k	2k	4k	
Specific Sound Level at NSR1 (L _{eq})	56	45	41	35	34	30	21	40
Acoustic Feature Correction	Site noise emissions inaudible at NSR.							0
Rating Sound Level (L _{A,r,T})								40
All Day Criteria (L _{A,r,T})	Typical L _{A90,15min} – 5 dB							37
Exceedance of Council Criterion								+3
Exceedance of Typical L _{A90}								-2
BS4142 Assessment Outcome	'Low Impact, dependent on context', at NSR1.							
NPPF & NPSE Outcome	No Observed Adverse Effect Level ('NOAEL').							
Noise Impact Assessment at NSR2 (Campbell Road Terrace - First Floor)								
Description	1/1 Octave Frequency Band (Hz, dB)							Overall (dBA)
	63	125	250	500	1k	2k	4k	
Specific Sound Level at NSR2 (L _{eq})	54	43	40	34	31	27	17	38
Acoustic Feature Correction	Site noise emissions inaudible at NSR.							0
Rating Sound Level (L _{A,r,Tr})								38
All Day Criteria (L _{A,r,T})	Typical L _{A90,15min} – 5 dB							33
Exceedance of Council Criterion								+5
Exceedance of Typical L _{A90}								0
BS4142 Assessment Outcome	'Low Impact, dependent on context', at NSR1.							
NPPF & NPSE Outcome	No Observed Adverse Effect Level ('NOAEL').							

Table 8 – BS4142 Noise Impact Assessment – All Day

Discussion

As set out in the assessment above, noise emissions from the existing site are predicted to exceed the criteria of 5dB below background proposed by the LPA. However, this is thought to be an onerous target for a development such as this, especially given its proximity to other industrial units within the Riverside Industrial Park. When compared with the lowest typical $L_{A90,15min}$ levels measured across each assessment period, the predicted impact is minor, with a worst-case exceedance of only 1dB anticipated during the more sensitive hours at NSR2.

As demonstrated in Appendix D.2, whilst the lowest typical $L_{A90,15min}$ value has been adopted for each respective assessment period, there are numerous periods during which the prevailing typical background sound level is approximately 2–3 dB higher than these selected baseline values. Consequently, the assessment has been undertaken against both a robust representation of the background noise environment and the stringent criterion of 5dB below background stipulated by the LPA.

This approach represents a precautionary assessment methodology. When considered against the more representative prevailing $L_{A90,15min}$ levels, and in the absence of the additional LPA requirement, the predicted operational noise levels would be expected to remain within acceptable limits, with 'low impact' anticipated at the closest NSRs in accordance with BS4142.

At this stage, consideration should also be given to the predicted internal noise levels at the two nearest NSRs. Allowing for the 13dB attenuation provided by a partially open window and adopting the 'worst-case' external noise level of 39dBA at the window of NSR1 during the early morning or evening hours, the resulting internal noise level is predicted to be approximately 26dB. This is at least 4dB below the recommended internal sleeping criterion (23:00 – 07:00) and 8dB below the recommended resting criterion (07:00 – 23:00) set out in BS8233.

Further to this, it was noted by the on-site engineer during the initial visit that at NSR1, site operations were considered inaudible, and the measured ambient and residual sound levels support this observation, along with comments made by some residents who were unaware of the site's presence due to the proximity of the unaffiliated industrial estate to the east.

Lastly, it should be recognised that the client has adopted a proactive approach to noise mitigation and has confirmed that glass tipping, identified as the loudest activity associated with the development, will be restricted to daytime hours only to minimise potential noise impact where practicable.

4. Conclusion and Action Plan

The Proposed Development has been assessed against the requirements of BS4142 and the LPA's policies and guidance.

The BS4142 assessment shows that in comparison to the proposed LPA criterion, exceedances are predicted at the closest NSR. However, when considering assessment towards the lowest typical $L_{A90,15min}$, low impact is expected across all NSRs in accordance with BS4142.

Based on the above, noise levels at the two nearest NSRs suggest a low likelihood of 'adverse impact' according to BS4142. The noise impacts are thought to align with the threshold for a 'No Observed Adverse Effect Level' ('NOAEL') as defined by the NPPF and NPSE.

However, to ensure a low likelihood of adverse impact, current plant/equipment and operational procedures should not be altered (unless providing a like-for-like replacement). Should any alterations be made, further measurements and assessment will be required to ensure low impact can be achieved.

The findings of this report will require written approval from the Local Authority prior to work commencing.

Appendix A – Acoustic Terminology

A-weighted sound pressure level, L_{pA}	Quantity of A-weighted sound pressure given by the following formula in decibels (dBA). $L_{pA} = 10 \log_{10} (pA/p_0)^2$. Where: pA is the A-weighted sound pressure in pascals (Pa) and p_0 is the reference sound pressure (20 μ Pa)
Background Sound	Underlying level of sound over a period, T , which might in part be an indication of relative quietness at a given location
Equivalent continuous A-weighted sound pressure level, $L_{Aeq,T}$	Value of the A-weighted sound pressure level in decibels (dB) of a continuous, steady sound that, within a specified time interval, T , has the same mean-squared sound pressure as the sound under consideration that varies with time
Facade level	Sound pressure level 1 m in front of the facade
Free-field level	Sound pressure level away from reflecting surfaces
Indoor ambient noise	Noise in a given situation at a given time, usually composed of noise from many sources, inside and outside the building, but excluding noise from activities of the occupants
Noise Criteria	Numerical indices used to define design goals in a given space
Noise Rating (NR)	Graphical method for rating a noise by comparing the noise spectrum with a family of noise rating curves
Octave Band	Band of frequencies in which the upper limit of the band is twice the frequency of the lower limit
Percentile Level, $L_{AN,T}$	A-weighted sound pressure level obtained using time-weighting “F”, which is exceeded for $N\%$ of a specified time interval
Rating Level, $L_{Ar,Tr}$	Equivalent continuous A-weighted sound pressure level of the noise, plus any adjustment for the characteristic features of the noise
Reverberation time, T	Time that would be required for the sound pressure level to decrease by 60 dB after the sound source has stopped
Sound Pressure, p	root-mean-square value of the variation in air pressure, measured in pascals (Pa) above and below atmospheric pressure, caused by the sound
Sound Pressure Level, L_p	Quantity of sound pressure, in decibels (dB), given by the formula: $L_p = 10 \log_{10} (p/p_0)^2$. Where: p is the root-mean-square sound pressure in pascals (Pa) and p_0 is the reference sound pressure (20 μ Pa)
Weighted sound reduction index, R_w	Single-number quantity which characterizes the airborne sound insulating properties of a material or building element over a range of frequencies

Appendix B – Standards, Legislation, Policy, and Guidance

This report is to be primarily based on the following standards, legislation, policy and guidance.

B.1 – National Planning Policy Framework (2024 – Amd 2025)

Government policy on noise is set out in the National Planning Policy Framework (NPPF), with the latest revision published in 2025. This replaced all earlier guidance on noise and places an emphasis on sustainability. In section 15, Conserving and enhancing the natural and local environment, paragraph 187e, it states:

Preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans;

Paragraph 198 states:

Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development. In doing so they should:

- a) Mitigate and reduce to a minimum potential adverse impact resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life;*
- b) Identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason; and*
- c) Limit the impact of light pollution from artificial light on local amenity, intrinsically dark landscapes and nature conservation.*

B.2 – Noise Policy Statement for England (2010)

Paragraph 198 of the NPPF also refers to advice on adverse effects of noise given in the Noise Policy Statement for England (NPSE). This document sets out a policy vision to:

Promote good health and a good quality of life through the effective management of noise within the context of Government policy on sustainable development.

To achieve this vision the Statement identifies the following three aims:

Through the effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development:

- Avoid significant adverse impacts on health and quality of life;
- Mitigate and minimise adverse impacts on health and quality of life;
- Where possible, contribute to the improvement of health and quality of life.

In achieving these aims the document introduces significance criteria as follows:

SOAEL – Significant Observed Adverse Effect Level

This is the level above which significant adverse effects on health and quality of life occur. It is stated that “significant adverse effects on health and quality of life should be avoided while also considering the guiding principles of sustainable development”.

LOAEL – Lowest Observed Adverse Effect Level

This is the level above which adverse effects on health and quality of life can be detected. It is stated that the second aim above lies somewhere between LOAEL and SOAEL and requires that: “all reasonable steps should be taken to mitigate and minimise adverse effects on health and quality of life while also considering the guiding principles of sustainable development. This does not mean that such adverse effects cannot occur.”

NOEL – No Observed Effect Level

This is the level below which no effect can be detected. In simple terms, below this level, there is no detectable effect on health and quality of life due to the noise. This can be related to the third aim above, which seeks: “where possible, positively to improve health and quality of life through the pro-active management of noise while also considering the guiding principles of sustainable development, recognising that there will be opportunities for such measures to be taken and that they will deliver potential benefits to society. The protection of quiet places and quiet times as well as the enhancement of the acoustic environment will assist with delivering this aim.”

The NPSE recognises that it is not possible to have a single objective noise-based measure that is mandatory and applicable to all sources of noise in all situations and provides no guidance as to how these criteria should be interpreted. It is clear, however, that there is no requirement to achieve noise levels where there are no observable adverse impacts but that reasonable and practicable steps to reduce adverse noise impacts should be taken in the context of sustainable development and ensure a balance between noise sensitive and the need for noise generating developments.

Any scheme of noise mitigation outlined in this report will, therefore, aim to abide by the above principles of the NPPF and NPSE whilst recognizing the constraints of the site.

B.3 – BS4142:2014+A1:2019 – ‘Methods for rating and assessing industrial and commercial sound’

Overview

BS4142:2014 sets out a method to assess the likely effect of sound from factories, industrial premises or fixed installations and sources of an industrial nature in commercial premises, on people who might be inside or outside a dwelling or premises used for residential purposes in the vicinity.

The procedure contained in BS4142:2014 for assessing the effect of sound on residential receptors is to compare the measured or predicted sound level from the source in question, the $L_{Aeq,T}$ ‘specific sound level’, immediately outside the dwelling with the $L_{A90,T}$ background sound level.

Where the sound contains a tonality, impulsivity, intermittency and other sound characteristics, then a correction depending on the grade of the aforementioned characteristics of the sound is added to the specific sound level to obtain the $L_{A,r,Tr}$ 'rating sound level'. A correction to include the consideration of a level of uncertainty in sound measurements, data and calculations can also be applied when necessary.

Rating Penalty

Section 9 of BS4142:2014 describes how the rating sound level should be derived from the specific sound level, by deriving a rating penalty.

BS4142:2014 states:

"Certain acoustic features can increase the significance of impact over that expected from a basic comparison between the specific sound level and the background sound level. Where such features are present at the assessment location, add a character correction to the specific sound level to obtain the rating level. This can be approached in three ways:

- a) subjective method;*
- b) objective method for tonality;*
- c) reference method."*

Due to the nature of the development the subjective method has been adopted to derive the rating sound level from the specific sound level. This is discussed in Section 9.2 of BS4142:2014, which states:

"Where appropriate, establish a rating penalty for sound based on a subjective assessment of its characteristics. This would also be appropriate where a new source cannot be measured because it is only proposed at that time, but the characteristics of similar sources can subjectively be assessed. Correct the specific sound level if a tone, impulse or other characteristics occurs, or is expected to be present, for new or modified sound sources."

BS4142:2014 defines four characteristics that should be considered when deriving a rating penalty, namely; tonality; impulsivity; intermittency; and other sound characteristics, which are defined as:

a) Tonality

A rating penalty of +2 dB is applicable for a tone which is "just perceptible", +4 dB where a tone is "clearly perceptible", and +6 dB where a tone is "highly perceptible".

b) Impulsivity

A rating penalty of +3 dB is applicable for impulsivity which is "just perceptible", +6 dB where it is "clearly perceptible", and +9 dB where it is "highly perceptible".

c) Other Sound Characteristics

BS4142:2014 states that where "the specific sound features characteristics that are neither tonal nor impulsive, though otherwise are readily distance against the residual acoustic environment, a penalty of +3 dB can be applied."

d) Intermittency

BS4142:2014 states that when the "specific sound has identifiable on/off conditions, the specific sound level ought to be representative of the time period of length equal to the reference time interval which

contains the greatest total amount of on time ... if the intermittency is readily distinctive against the residual acoustic environment, a penalty of +3 dB can be applied.”

Background Sound Level

The background sound level is the underlying level of sound over a period, T, and is indicative of the relative quietness at a given location. It does not reflect the occurrence of transient and/or higher sound level events and is generally governed by continuous or semi-continuous sounds.

To ensure the background sound level values used within the assessment are reliable and suitably represent both the particular circumstance and periods of interest, efforts have been made to quantify a ‘typical’ background sound level for a given period. The purpose has not been to simply select the lowest measured value. Diurnal patterns have also been considered as they can have a major influence on background sound levels, for example, 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.

Since the intention is to determine a background sound level in the absence of the specific sound that is under consideration, it is necessary to understand that the background sound level can in some circumstances legitimately include industrial and/or commercial sounds that are present as separate to the specific sound.

Assessment of Impact

BS4142:2014 states: “The significance of sound of an industrial and/or commercial nature 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”. An estimation of the impact of the specific sound can be obtained by the difference of the rating sound level and the background sound level and considering the following:

- “Typically, the greater this difference, the greater the magnitude of the impact.”
- “A difference of around +10dB or more is likely to be an indication of a significant adverse impact, depending on the context.”
- “A difference of around +5dB is likely to be an indication of an adverse impact, depending on the context.”
- “The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a negligible impact, depending on the context.”

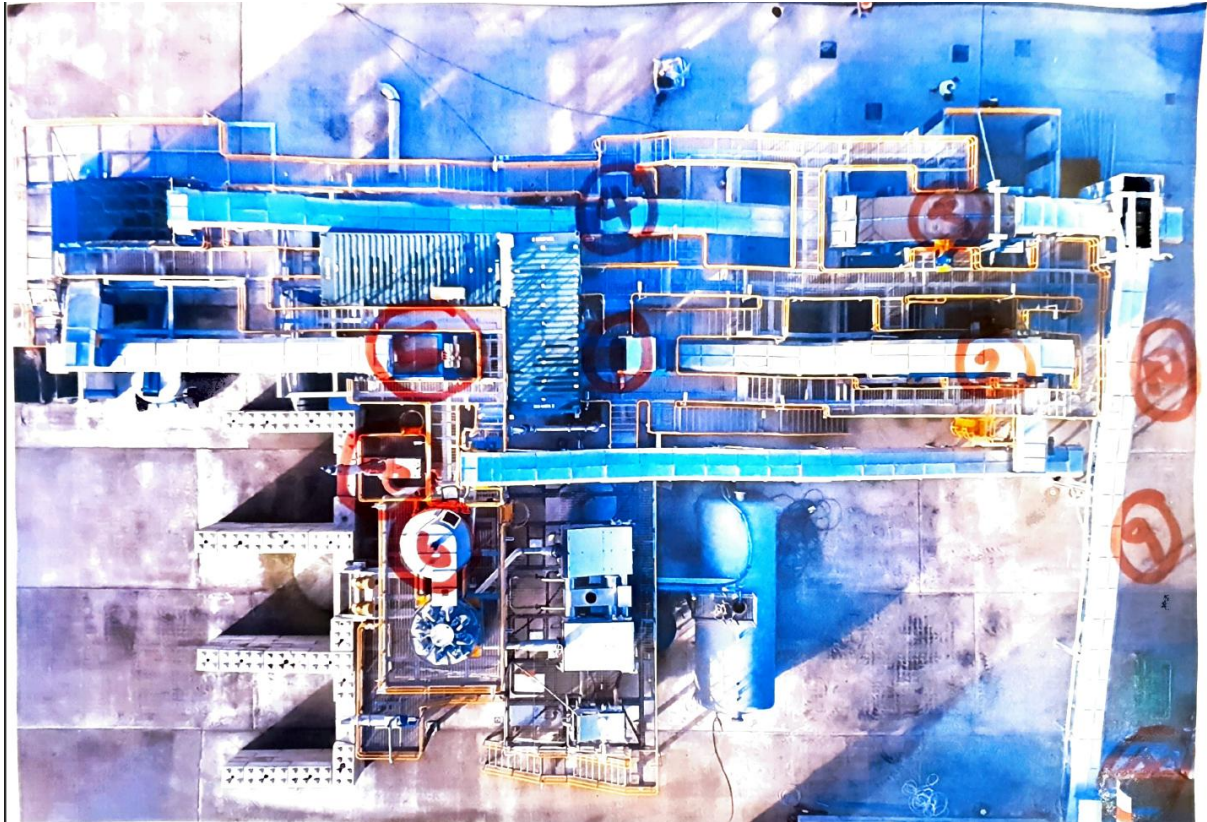
Interpreting the guidance given in BS4142:2014, with consideration of the guidance given in the NPSE and NPPG Noise, an estimation of the impact of the rating sound is summarised in the following text:

- A rating sound level that is +10 dB above the background sound level is likely to be an indication of a Significant Observed Adverse Effect Level;
- A rating sound level that is +5 dB above the background sound level is likely to be an indication of a Lowest Observed Adverse Effect Level;
- The lower the rating sound level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse

impact. Where the rating sound level does not exceed the background sound level, this is an indication of the specific sound source having a negligible impact and would therefore be classified as No Observed Adverse Effect Level.

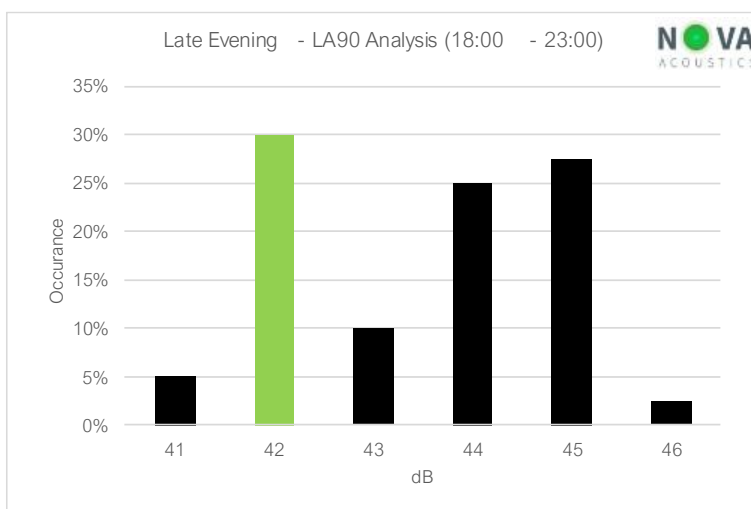
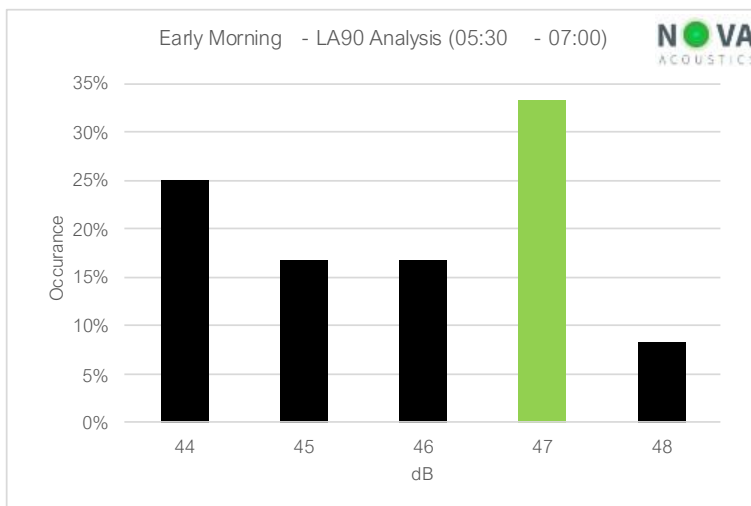
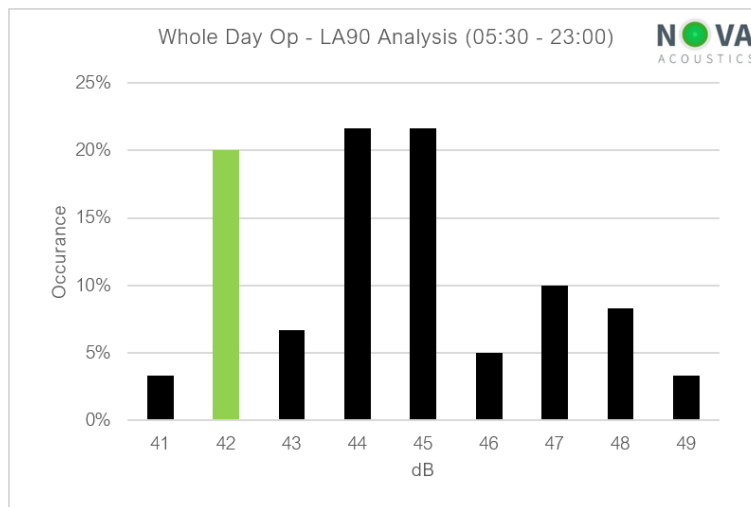
During the daytime, the assessment is carried out over a reference time period of 1-hour. The periods associated with day or night, for the purposes of the Standard, are 07.00 to 23.00 and 23.00 to 07.00, respectively.

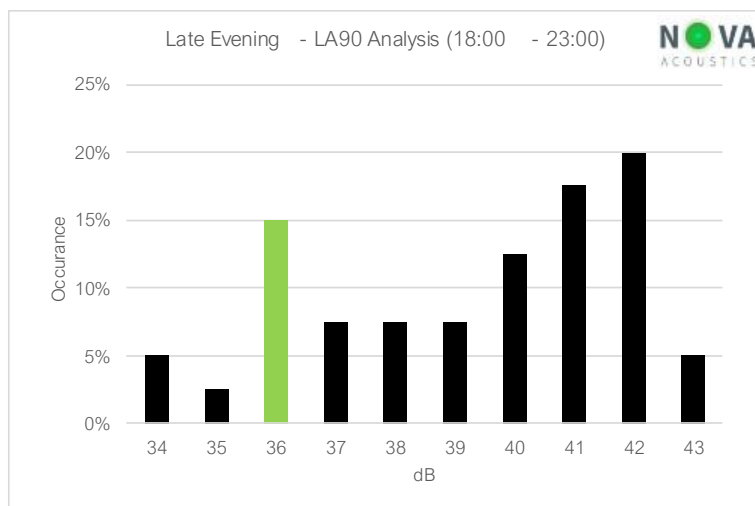
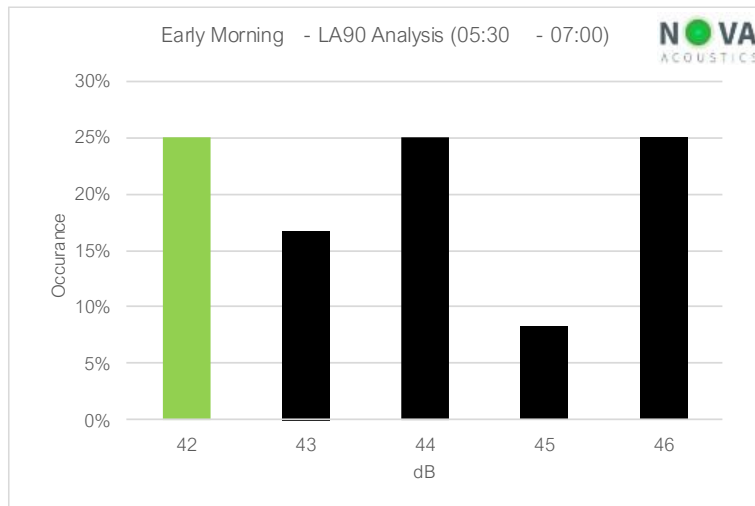
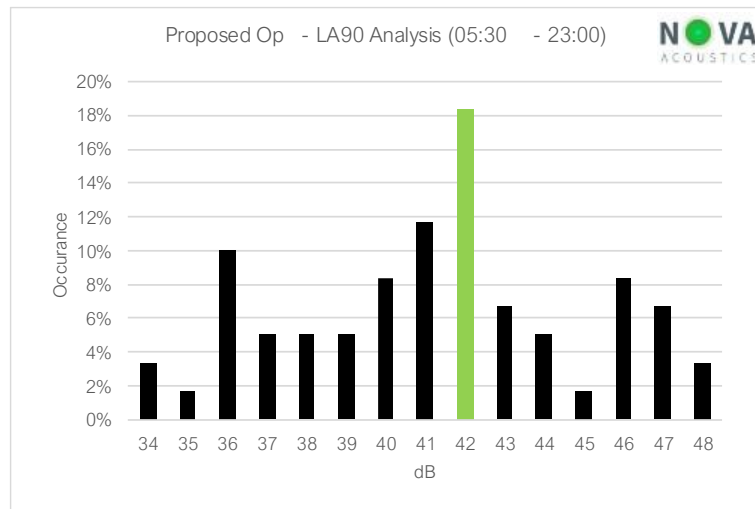
Appendix C – Site Plans

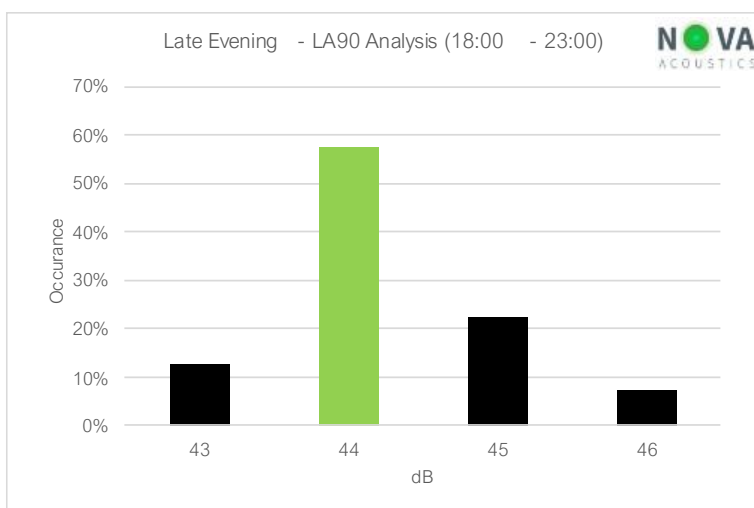
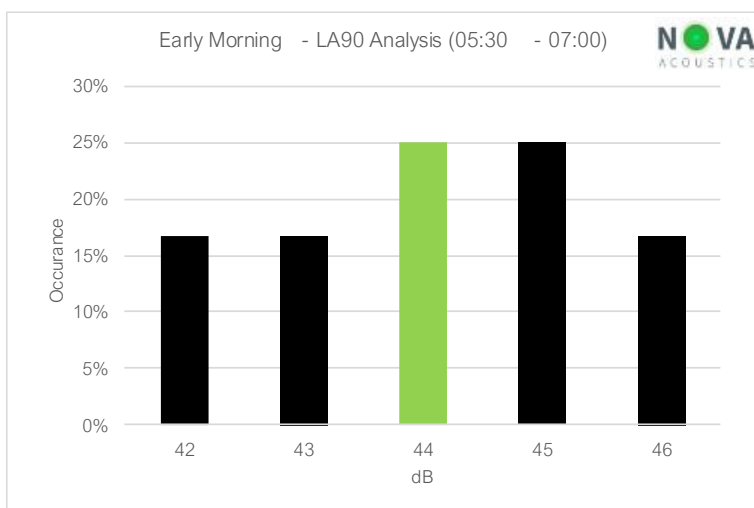
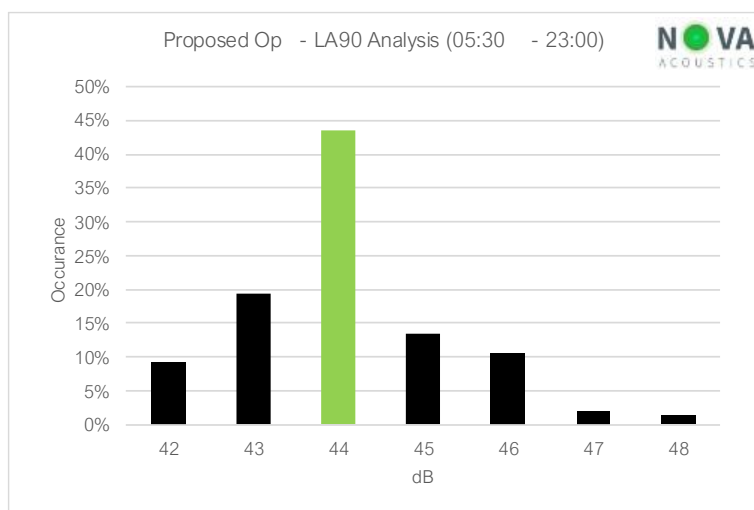


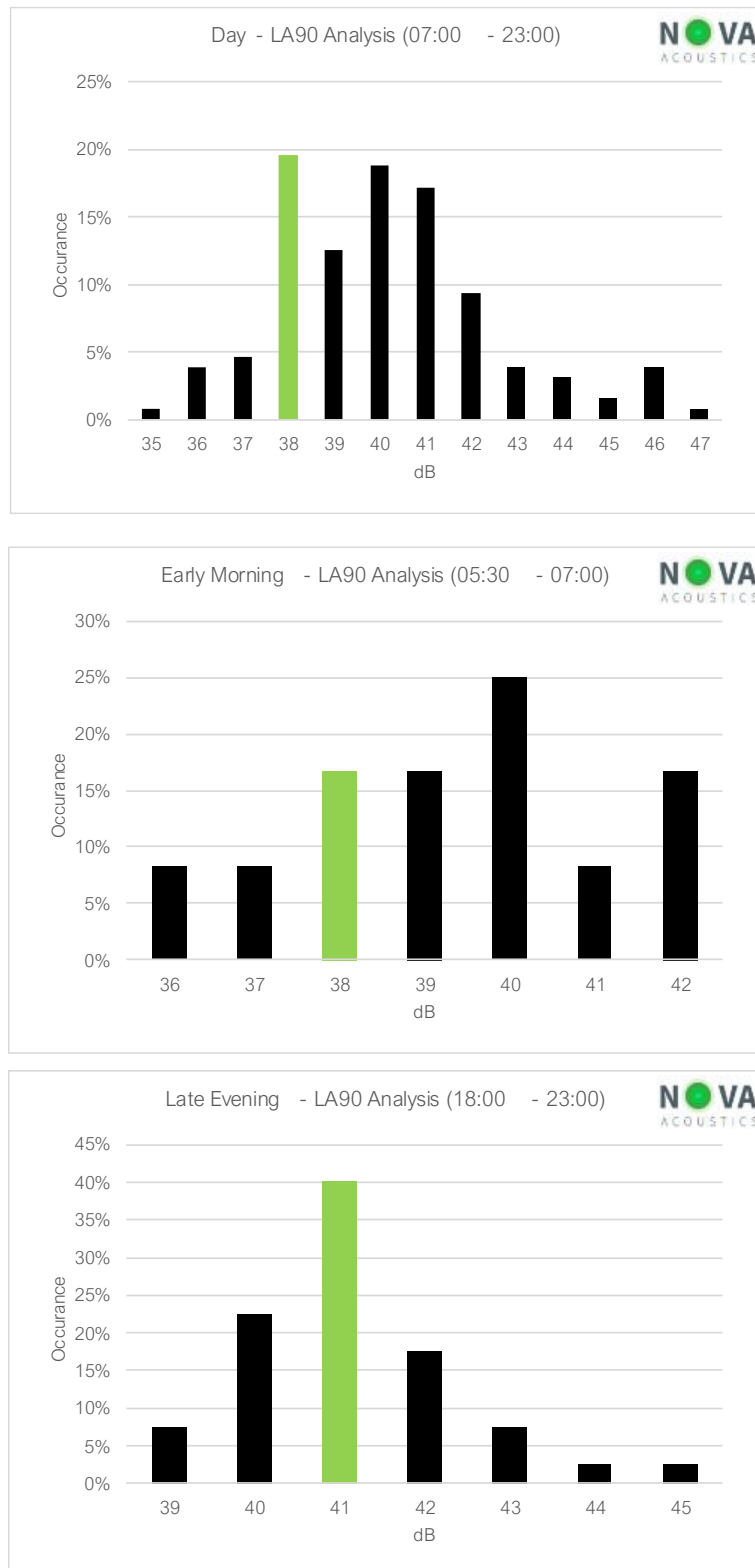
D.2 – $L_{A90,15min}$ Histograms

Weekday Only MP1



Weekday Only MP2

Weekend Only MP1

Weekend Only MP2Figure 7 – $L_{A90,15min}$ Histograms

D.2 – Surveying Equipment

Piece of Equipment	Serial No.	Calibration Deviation
Svantek 971A Class 1 Sound Level Meter	141420	≤0.1
Svantek SV33B Class 1 Calibrator	125636	
Svantek 971A Class 1 Sound Level Meter	141417	
Svantek SV33B Class 1 Calibrator	125636	

Table 9 – Surveying Equipment

All equipment used during the survey was field calibrated at the start and end of the measurement period with negligible deviation noted. All sound level meters are calibrated every 24 months and all calibrators are calibrated every 12 months by a third-party calibration laboratory. All microphones were fitted with a protective windshield for the entire measurements period. Calibration certificates can be provided upon request.

D.3 – Meteorological Conditions

As the environmental noise survey was carried out over a long un-manned period no localised records of weather conditions were taken. However, all measurements have been compared with met office weather data of the area, specifically the closest weather station, and the data from the weather station is outlined in the table below. When reviewing the time history of the noise measurements, any scenarios that were considered potentially to be affected by the local weather conditions have been omitted. The analysis of the noise data includes statistical and percentile analysis and review of minimum and maximum values, which aids in the preclusion of any periods of undesirable weather conditions. The weather conditions were deemed suitable for the measurement of environmental noise in accordance with BS7445 Description and Measurement of Environmental Noise. The table below presents the average temperature, wind speed and rainfall range for each 24-hour period during the entire measurement.

Weather Conditions – Lynxclose (Approx. 1.4km NE of Site)				
Time Period	Air Temp (°C)	Rainfall (mm/h)	Prevailing Wind Direction	Wind Speed (m/s)
19/09/25: 00:00 – 23:59	13.1 – 25.5	0.0	W	0.0 – 2.5
20/09/25: 00:00 – 23:59	10.4 – 19.5	0.0 – 1.8	W	0.0 – 2.5
21/09/25: 00:00 – 23:59	5.8 – 16.2	0.0	SW	0.0 – 2.0
22/09/25: 00:00 – 23:59	4.4 – 16.1	0.0	W	0.0 – 2.0
23/09/25: 00:00 – 23:59	2.9 – 17.3	0.0	WSW	0.0 – 2.9

Table 10 – Weather Conditions

Appendix E – Full On-Site Measurement Calculations

Description	Item	Source Term	Parameter	dBA	1/1 Octave Frequency Band (Hz, dB)								Lp Dist (m)	Q Factor
					63	125	250	500	1k	2k	4k	8k		
Model / Unit	Sec Crusher	Octave-Band Lp	Lp at 1m, Q factor (Q=1)	86	98	95	89	81	77	76	74	73	1	1
No. of	1													
Data Type	Empirical Data		Total Lw	97	109	106	100	92	88	87	85	84		

Description	Item	Source Term	Parameter	dBA	1/1 Octave Frequency Band (Hz, dB)								Lp Dist (m)	Q Factor
					63	125	250	500	1k	2k	4k	8k		
Model / Unit	Sec Screener	Octave-Band Lp	Lp at 1m, Q factor (Q=1)	82	87	84	88	75	72	69	68	64	1	1
No. of	1													
Data Type	Empirical Data		Total Lw	93	98	95	99	86	83	80	79	75		

Description	Item	Source Term	Parameter	dBA	1/1 Octave Frequency Band (Hz, dB)								Lp Dist (m)	Q Factor
					63	125	250	500	1k	2k	4k	8k		
Model / Unit	Prim Screener	Octave-Band Lp	Lp at 1.5m, Q factor (Q=1)	81	88	91	81	75	72	70	72	68	1.5	1
No. of	1													
Data Type	Empirical Data		Total Lw	95	103	106	96	90	87	85	87	83		

Description	Item	Source Term	Parameter	dBA	1/1 Octave Frequency Band (Hz, dB)								Lp Dist (m)	Q Factor
					63	125	250	500	1k	2k	4k	8k		
Model / Unit	Prim Crusher	Octave-Band Lp	Lp at 1.5m, Q factor (Q=1)	79	95	80	82	74	72	69	68	71	1.5	1
No. of	1													
Data Type	Empirical Data		Total Lw	94	110	95	97	89	87	84	83	86		

Description	Item	Source Term	Parameter	dBA	1/1 Octave Frequency Band (Hz, dB)								Lp Dist (m)	Q Factor
					63	125	250	500	1k	2k	4k	8k		
Model / Unit	Cub Parts Sep	Octave-Band Lp	Lp at 1.5m, Q factor (Q=1)	84	83	83	78	73	74	74	76	82	1.5	1
No. of	1													
Data Type	Empirical Data		Total Lw	99	98	98	93	88	89	89	91	97		

Description	Item	Source Term	Parameter	dBA	1/1 Octave Frequency Band (Hz, dB)								Lp Dist (m)	Q Factor
					63	125	250	500	1k	2k	4k	8k		
Model / Unit	Grit Vorts Motor	Octave-Band Lp	Lp at 1.5m, Q factor (Q=1)	76	91	84	74	70	69	66	65	65	1.5	1
No. of	1													
Data Type	Empirical Data		Total Lw	90	106	99	89	85	84	81	80	80		

Description	Item	Source Term	Parameter	dBA	1/1 Octave Frequency Band (Hz, dB)								Lp Dist (m)	Q Factor
					63	125	250	500	1k	2k	4k	8k		
Model / Unit	Tipping Glass Load	Octave-Band Lp	Lp at 3.5m, Q factor (Q=2)	79	92	80	78	72	70	71	72	70	3.5	2
No. of	1													
Data Type	Empirical Data		Total Lw	98	111	99	97	91	89	90	91	89		

Description	Item	Source Term	Parameter	dBA	1/1 Octave Frequency Band (Hz, dB)								Lp Dist (m)	Q Factor
					63	125	250	500	1k	2k	4k	8k		
Model / Unit	Water Screen	Octave-Band Lp	Lp at 4m, Q factor (Q=2)	81	85	80	79	75	74	73	73	71	4	2
No. of	1													
Data Type	Empirical Data		Total Lw	101	105	100	99	95	94	93	93	91		

Description	Item	Source Term	Parameter	dBA	1/1 Octave Frequency Band (Hz, dB)								Lp Dist (m)	Q Factor
					63	125	250	500	1k	2k	4k	8k		
Model / Unit	Rever Front Loader	Octave-Band Lp	Lp at 4m, Q factor (Q=2)	77	83	82	77	73	71	68	67	66	4	2
No. of	1													
Data Type	Empirical Data		Total Lw	97	103	102	97	93	91	88	87	86		

Description	Item	Source Term	Parameter	dBA	1/1 Octave Frequency Band (Hz, dB)								Lp Dist (m)	Q Factor
					63	125	250	500	1k	2k	4k	8k		
Model / Unit	Truck Dump Glass	Octave-Band Lp	Lp at 5m, Q factor (Q=2)	80	81	78	74	72	72	73	73	72	5	2
No. of	1													
Data Type	Empirical Data		Total Lw	102	103	100	96	94	94	95	95	94		

Table 11 – On-Site Sound Pressure Level Measurements



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