



REPORT REFERENCE:

IMP7385-1

NOISE IMPACT ASSESSMENT

CLIENT:

Northney Tea Rooms

SITE:

Northney Tea Rooms

SURVEY DATE:

28th June – 3rd July 2023

Impact Acoustics Ltd

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1 EXECUTIVE SUMMARY

1.1 Instruction

Impact Acoustics Ltd have been instructed by Northney Tea Rooms to undertake a background noise survey at the existing premises at Northney Tea Rooms, Hayling Island, to understand the level of impact at the existing site in relation to the proposed external patron area and calculate the resultant noise level at the nearest affected residence to the proposed development.

1.2 Scope of Report

The measurements will be undertaken in accordance with ISO 1996 – Part 2: 2017 to determine the existing background noise levels. This report aims to establish the following:

- Existing background noise levels within the area;
- Assess the proposed operations from the proposed number of people using the external areas;
- Assess resultant noise levels at the nearest affected neighbouring residential properties;

1.3 Summary of Results

1.3.1 Measured Background Noise Levels

Continuous background noise measurements were undertaken between 28th June – 3rd July 2023 at the Assessment Position 1. The day time background noise levels between 10:00 – 17:00 were found to be $L_{A90,1 \text{ hour}}$ 38 dB. This background noise level has been assessed during daytime periods only.

		LAeq		LA90 (Modal)	
Assessment Position		Day	Night	Day	Night
		(0700 - 2300)	(2300 -0700)	(0700 - 2300)	(2300 -0700)
1	28/06/2023	44.7	45.6	38	
1	29/06/2023	45.4	39.9		
1	30/06/2023	45.5	44.1		
1	01/07/2023	46.6	39.4		
1	02/07/2023	45.5	40.9		
1	03/07/2023	48.9			

Arithmetical Average LAeq	Day	46.1 dB LAeq, 16hour
	Night	42.0 dB LAeq, 8hour

1.3.2 Hours of Operation

The proposed is general 10:00 – 17:00 latest worst case scenario for operation of proposed external area.

1.3.3 Number of Patrons

The proposed external area(s) will accommodate up to a maximum of 74 (north) and 26 (south) patrons at any one time.

1.4 Criterion on Noise Source and Context of Site

A working noise criterion factoring the main assessment methodologies has been set out below in accordance with the National Planning Policy Framework. Criterion has been set on the contextualisation of the environment where the noise sources are being proposed. From assessment and attendance at site; the site is considered urban a road that has a steady flow of traffic (as shown in the baseline time history) which forms the dominant residual noise climate (Average Daytime LAeq,16 hour circa 46 dB (A)) subject to position. It is therefore considered the below criterion applicable in order to safeguard the nearby residential amenity from noise emissions associated with the external development and in accordance with local planning policy (+/- at or below the representative measured LA90).

1.4.1 Recognisable Content of Source

For the application or adjustment to the working criterion or source level used for assessment to account for the recognisable content or characteristic of the source; the consideration of the contextualisation of the environment the sources are being introduced has been considered. The site includes both vehicle movements and noise from existing patrons under existing permission. On this basis there is no new noise source being introduced in the existing noise climate that would be subjectively different than that that is already present. Therefore, no adjustment to criterion nor noise source has been undertaken.

1.4.2 Daytime (1000 - 1700) (external area)

Operating Hours	Criterion	Assessment Position 1 Maximum (LAeq, hour)	Colour Code
Daytime (10:00 – 17:00)	No Observed Affect Level	20	
	Low Impact	38	
	Adverse Effect	43	
	Significant Adverse Effect	48	

1.5 Source Levels

Source	Operating Hours	Maximum Sound Power Level
Patron (Per)	(07:00 – 23:00)	L _{w(A)} 71 dB
Sound Power Level – British Standard 3744: 2010 (Engineering Grade 2 Accuracy)		

1.6 Mitigation

A 2 metre acoustic fence at site boundary has been installed to reduce the noise level from proposed development

1.7 Assessments

1.7.1 External Assessment

External Residential Assessment	100 Patrons (Max 26 Patrons in southern zone) with 2m screening
Calculated Level at Residential	43 dB
Background Noise Level	38 dB
Excess Over Background	+5 dB
Assessment Conclusion	Adverse Impact

1.7.2 Internal Assessment

Internal Residential Assessment	100 Patrons (Max 26 Patrons in southern zone) with 2m screening
Calculated Level at Residential	43 dB
Partially Open Window	-12 dB
Calculated Level Inside Residential	31 dB
BS 8233: 2014 Criteria	35 dB
Excess Over Target Level	-4 dB
Assessment Conclusion	Low Impact

1.8 Conclusion Summary

National Planning Policy Framework 2019 suggests that planning permission should be granted unless any adverse impacts of doing so would significantly and demonstrably outweigh the benefits, when assessed against the policies in the framework taken as a whole, or specific policies in the framework indicate the application should be restricted.

Measurements have been undertaken in accordance with British Standard 4142:2019 and ISO 1996 – Part 2: 2007. This report aims to establish: the existing background noise levels at the closest residential façade to the site. Criterion has then been set regarding maximum permissible rating levels from industrial noise in accordance with BS4142:2019.

Based on the calculations and assessments made within this report it is the professional opinion of Impact Acoustics Ltd that the proposed development can demonstrate compliance with the National Planning Policy Framework 2019, NPPF & NPSE and that, with regards to sound, planning permission can be granted.

2 SITE LOCATION

2.1 Position of Site and Proposed Development



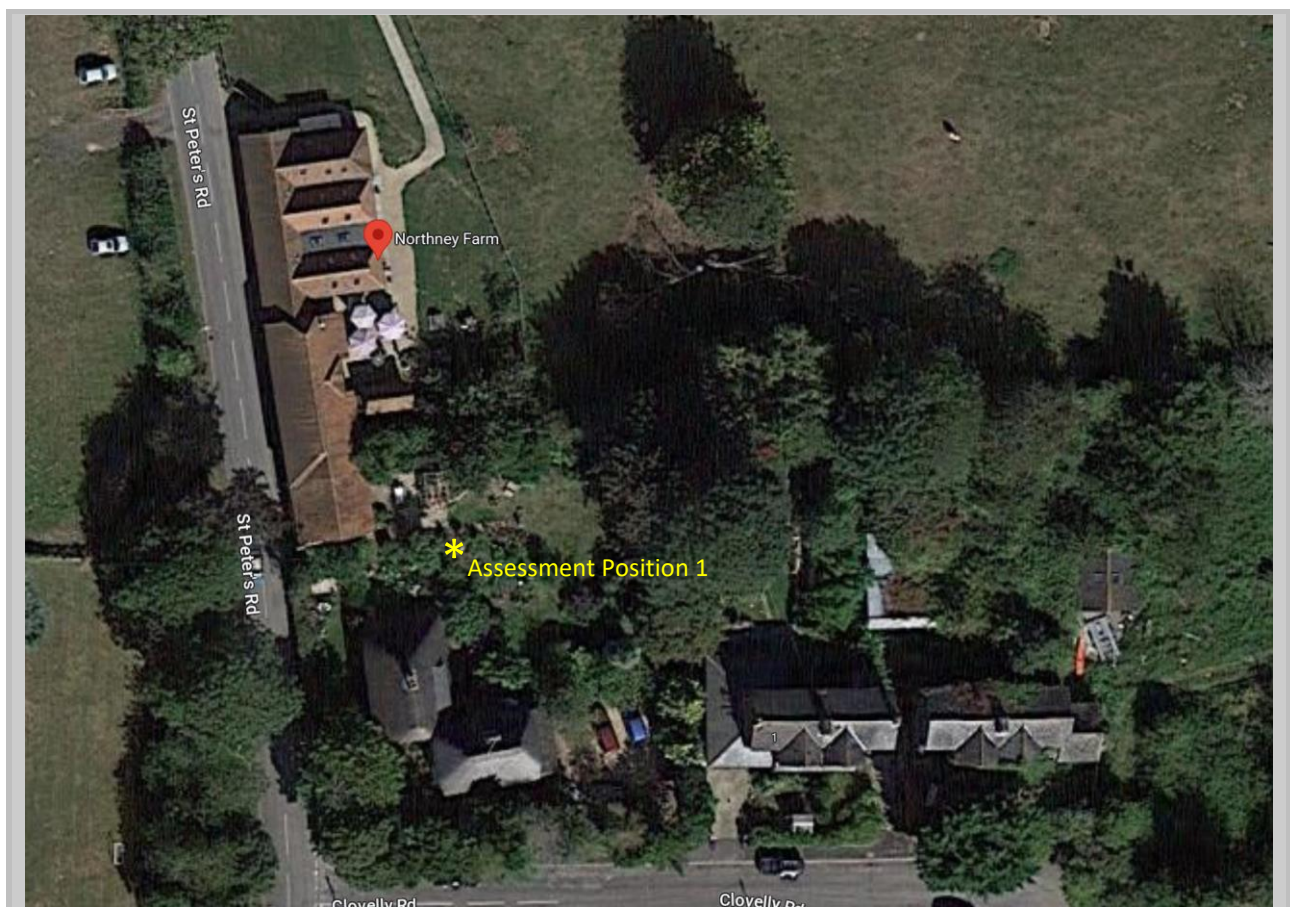
2.2 Assessment Position and Background Position

Continuous measurement was undertaken at representative assessment position 1 between 28th June – 3rd July 2023. Noise levels were measured by a competent person for environmental noise monitoring, in accordance with ISO1996-2:2007 and BS 7445: 1991 (Description & measurement of environmental noise).

For the continuous measurements; the Sound Level Meter was calibrated at 94dB at 1kHz before and after the measurement period. The survey was carried out by Ian Broom BSc (Hons) AMIOA. The microphone with windshield was positioned at a distance of 1m from the first floor façade and results corrected for façade incident.

Precautions were put into place to minimize the influence on the readings from sources of interference:

- A wind shield was used to minimize interference due to wind passing over the diaphragm of the microphone



3 BACKGROUND NOISE LEVELS

3.1.1 Measured Background Noise Levels

Continuous background noise measurements were undertaken between 28th June – 3rd July 2023 at the Assessment Position 1. The day time background noise levels between 10:00 – 17:00 were found to be $L_{A90,1 \text{ hour}}$ 38 dB. This background noise level has been assessed during daytime periods only.

Assessment Position		LAeq		LA90 (Modal)	
		Day	Night	Day	Night
		(0700 - 2300)	(2300 -0700)	(0700 - 2300)	(2300 -0700)
1	28/06/2023	44.7	45.6	38	
1	29/06/2023	45.4	39.9		
1	30/06/2023	45.5	44.1		
1	01/07/2023	46.6	39.4		
1	02/07/2023	45.5	40.9		
1	03/07/2023	48.9			

Arithmetical Average LAeq	Day	46.1 dB LAeq, 16hour
	Night	42.0 dB LAeq, 8hour

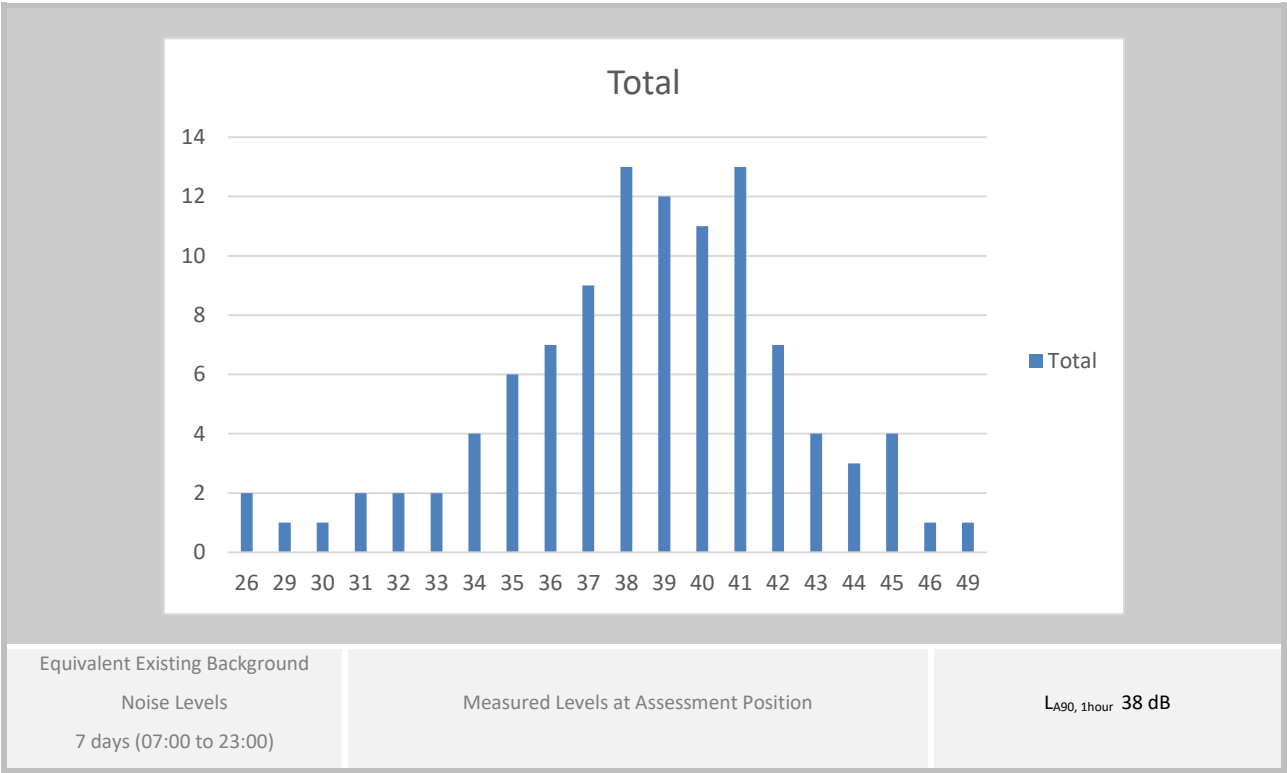
3.2 Discussion of measured time history

It can be seen from the stepped formation of the time history that the existing noise climate measured at assessment positions it is dominated by low level existing road traffic / commercial noise.

3.3 BS4142:2014 Modal Analysis of Background Noise (LA90)

3.3.1 Modal Background Analysis during Operating Times Assessment Position 1

3.3.1.1 Day Time (07:00 to 23:00 Monday to Sunday)



4 APPARATUS

4.1 Equipment Calibration

The equipment was calibrated using a sound pressure level of 114.0 dB at an octave band centre frequency of 1000Hz with reference to $2 \times 10^{-5} \text{ Nm}^{-2}$ before and after the tests and the equipment set to have no inaccuracy greater than 0.2 dB.

All the following equipment was calibrated in accordance with the laboratory accreditation requirements of the United Kingdom Accreditation Service (UKAS) on the following dates.

4.2 Position 1 – Side of Site

Description	Make	Type	Serial No.	Calibration Intervals	Last Calibrated	Next Due Calibration
Integrated Sound Level Meter	Norsonic	118	<u>31632</u>	2 YEARS	01.05.2022	01.05.2024
12.5mm Microphone (with windshield)	Norsonic	1225	<u>91720</u>	2 YEARS	01.05.2022	01.05.2024
Microphone Pre – Amplifier	Norsonic	1201	<u>29307</u>	2 YEARS	01.05.2022	01.05.2024

The noise meter was calibrated before and after the assessment period and found to be within the tolerance of the manufacturer's guidance. Full Calibration certificates are available upon request.

5 CRITERION

5.1 National Planning Policy Framework (“NPPF”)

5.1.1 Scope of Document

The National Planning Policy Framework (“NPPF”) published in March 2012 sets out the Government’s National Planning Policies for England and how these can be applied by local communities when developing their local plans or deciding planning application to best reflect the needs and priorities of the local communities. Current planning law requires Local Authorities to determine planning applications in accordance with the local development plan unless there are material considerations which require them to reach a different decision.

5.1.2 Section 109 (Policy Aims)

Section 109 of the NPPF which falls under the title “*Conserving and enhancing the natural environment*” provides the following aims:

“The planning system should contribute to and enhance the natural and local environment by:
Protecting and enhancing valued landscapes, geological conservation interests and soils; Recognising the wider benefits of ecosystem services; Minimising impacts on biodiversity and providing net gains in biodiversity where possible, contributing to the Government’s commitment to halt the overall decline in biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures; Preventing both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of soil, air, water or noise pollution or land instability; and Remediating and mitigating despoiled, degraded, derelict, contaminated and unstable land, where appropriate.”

5.1.3 Section 123 (Policy Aims)

Section 123 of the NPPF also falls under the title “*Conserving and enhancing the natural environment*” and provides the following aims:

“Planning Policies and decisions should aim to:
Avoid noise from giving rise to significant adverse impacts on health and quality of life as a result of new development;
Mitigate and reduce to a minimum other adverse impacts on health and quality of life arising from noise from new development, including through the use of conditions;
Recognise that development will often create some noise and existing businesses wanting to develop in continuance of their business should not have unreasonable restrictions put on them because of changes in nearby land uses since they were established...”

5.2 British Standard 4142:2014 ("BS4142")

5.2.1 BS 4142: 2019

Patron noise (human noise) fall outside the scope of BS 4142: 2019 as stated in Paragraph 1.3 section f.

5.2.2 Scope of BS 4142:2019

In the assessment of the site, consideration has been given to the scope of British Standard 4142:2019, which in section 1, details applicability of this standard to rating assessing sound of an industrial and/or commercial nature.

"The determination of noise amount to a nuisance is beyond the scope of this British Standard.

The standard is not intended to be applied to the derivation of indoor sound levels arising from sound levels outside, or the assessment of indoor sound levels."

It is considered appropriate that both the background noise levels and the rating noise levels obtained fall within the scope of British Standard 4142:2019 by using outdoor sound levels to assess the effect of sound on local residents.

5.2.3 Assessment Position(s)

The assessment positions were established as the nearest residential property to the proposed commercial site.

5.2.4 Assessment Position

In line with the requirements of British Standard 4142:2019 the background noise levels should be measured at the assessment position where possible. Where this is not possible, a suitable representative location should be used.

5.2.5 Rating Levels (Character Corrections)

It is appropriate to add a character correction where there is a new source that cannot be measured in line with BS4142:2014. There are 3 methods for approaching this.

- a) Subjective method
- b) Objective method (for tonality)
- c) Reference method

5.3 British Standard 8233: 2014

Calculations are to be made in accordance with BS 8233: 2014 Sound Insulation and Noise Reduction for Buildings Code of Practice.

BS 8233: 2014 set the following parameters as target levels that should be designed to within rooms such as Living Rooms and Bedrooms.

Indoor ambient noise levels in spaces when they are unoccupied and privacy is also important		
Objective	Typical situations	Design Range L _{Aeq,t} dB
Typical noise levels for acoustic privacy in shared spaces	Living room	35 – 40
NOTE: See Noise control in building services [28] and BS EN ISO 3382.		

Indoor ambient noise levels for dwellings			
Activity	Location	07:00 – 23:00	23:00 – 07:00
Resting	Living Room	35 dB L _{Aeq} 16 HOUR	--
Dining	Dining Room / Area	40 dB L _{Aeq} 16 HOUR	--
Sleeping (daytime resting)	Bedroom	35 dB L _{Aeq} 16 HOUR	30 dB L _{Aeq} 8 HOUR

Calculations and assessments are therefore to be carried out in order to satisfy the above requirements of BS8233: 2014.

5.4 ISO 1996 – Part 2:2007

5.4.1 Scope of ISO 1996 – Part 2:2007

Part 2 of ISO 1996 describes the determination and assessment of environmental noise levels through either direct measurement, by extrapolation of measurement results, or by means of calculation.

5.4.2 Measurement Time Interval and Instrumentation

The selection of the measurement time interval has been chosen in accordance to this standard. The measurements have been taken over a continuous period and includes both the day and night time period. The instrumentation and all components associated with the instrument used to measure the sound levels comply with the instrumentation system given in section 5.1 of this standard.

5.4.3 Calculation Methods

Although there are no internationally recognised calculation methods other national standards have been used for this assessment.

5.5 Night Noise Guidelines (“NNGL”)

The European Union and the World Health Organisation jointly published a document entitled “Night Noise Guidelines” in 2009 (“NNGL”). The overall goal of the document was detailed within the summary pages:

“The goal of the NNGL project was to provide and expand scientific advice to the European Commission and its Member States in developing future legislation in the area of night noise exposure, control and surveillance. The key objective of the project was to reach a consensus of experts and key stakeholders on the following subjects:

a) Guideline values for night noise to protect the public from adverse health effects.....”

5.5.1 No Observed Adverse Effect Level (NOAEL)

The section entitled “*Threshold for Observed Effects*” within the executive summary of the NNGL a list of the absolute level at which there is sufficient evidence available for the no observed adverse effect level (NOAEL):

Effect of Noise	Description	Indicator	Threshold (NOAEL)
Biological Effects	EEG awakening	L _{Amax,inside}	35 dB
	Motility, onset of motility	L _{Amax,inside}	32 dB
	Changes in duration of various stages of sleep, in sleep structure and fragmentation of sleep	L _{Amax,inside}	35 dB
Sleep Quality	Waking up in the night and / or too early in the morning	L _{Amax,inside}	42 dB

5.5.2 Vulnerable Groups

In setting the LOAEL and the SOAEL within the scope of the NPSE consideration has been made for the statement made under the title “*Vulnerable Groups*” which indicates that young children, elderly adults and shift workers should be considered vulnerable groups and more likely to be effected by unwanted noise.

5.5.3 Attenuation of an Open Window

The NNGL indicates an attenuation of around 10 – 15 dB(A) through an open window. It could therefore be appropriate to consider an overall reduction of 15 dB(A) through a partially open window.

6 CRITERION FOR ASSESSMENT

6.1 Criterion on Noise Source and Context of Site

A working noise criterion factoring the main assessment methodologies has been set out below in accordance with the National Planning Policy Framework. Criterion has been set on the contextualisation of the environment where the noise sources are being proposed. From assessment and attendance at site; the site is considered urban a road that has a steady flow of traffic (as shown in the baseline time history) which forms the dominant residual noise climate (Average Daytime LAeq,16 hour circa 46 dB (A)) subject to position. It is therefore considered the below criterion applicable in order to safeguard the nearby residential amenity from noise emissions associated with the external development and in accordance with local planning policy (+/- at or below the representative measured LA90).

6.1.1 Recognisable Content of Source

For the application or adjustment to the working criterion or source level used for assessment to account for the recognisable content or characteristic of the source; the consideration of the contextualisation of the environment the sources are being introduced has been considered. The site includes both vehicle movements and noise from existing patrons under existing permission. On this basis there is no new noise source being introduced in the existing noise climate that would be subjectively different than that that is already present. Therefore, no adjustment to criterion nor noise source has been undertaken.

6.1.2 Daytime (1000 - 1700) (external area)

Operating Hours	Criterion	Assessment Position 1 Maximum (LAeq, hour)	Colour Code
Daytime (10:00 – 17:00)	No Observed Affect Level	20	
	Low Impact	38	
	Adverse Effect	43	
	Significant Adverse Effect	48	

7 NOISE FROM PATRONS

7.1 Calculation of Internal level

The resulting noise source is calculated in accordance with ISO9613-2:1996. The sound data has been taken on the basis of a distributed noise level of 60dBA (LAeq,T) from 20 conversations with normal voices (ref. 57dBA @ 1m BS8233) distributed internally. Noise levels are calculated based on capacity to show worst case scenario.

A noise level spectrum obtained from real speech recordings of 50% male 50% female voices over 20 languages listed in ITU-T P50 (BS7827:1996) and corrected to 60dBA:

Vocal noise spectrum used for noise breakout calculations (BS7827:1996)	Octave band (Hz) sound pressure level (dB)								
	63	125	250	500	1000	2000	4000	8000	Total
Occupational noise (worst case)	28	45	55	57	52	44	37	31	60

This is further reinforced when assessing the noise impact from raised voices; Impact Acoustics have used the values indicated in (Handbook of Acoustical Measurements and Noise Control, Harris, Cyril.):

Type of Communication	Noise Levels LAeq, T at 1m (dBA)	
	Male	Female
Casual	53	50
Normal	58	55
Raised	65	62
Loud	75	71
Shout	88	82

7.2 Inputted Noise Levels

A total; worst case scenario has been assessed with all 100 patrons speaking at a level of 60 dB(A) each (Lw 71 dB(A)). This also assumes that all 100 Patrons are speaking at exactly the same moment in time, **which is unlikely**.

Industry	
Source name	Day dB(A)
Patrons	71.0
Patrons	71.0
Patrons	71.0
Patrons	71.0
Patrons	71.0
Patrons	71.0
Patrons	71.0
Patrons	71.0
Patrons	71.0
Patrons	71.0
INPUTTED NOISE LEVELS	

8 ASSESSMENT OF OPERATION OF SITE

8.1 Calculation Formulas - ISO 9613:1996

8.1.1 Source Directivity (D_c)

A correction is made to account for the location of the source and the effect of additional reflective surfaces excluding the ground and is contained within section 6 of ISO 9613 - Part 2:1996.

Number of Surfaces	Correction in dB (D_c)
No Reflective Surfaces	+0 dB
1 Reflective Surface	+3 dB
2 Reflective Surfaces	+6 dB

8.1.2 Geometric Divergence (A_{div})

A correction is made for the distance between the source and assessment position using the following formula defined in section 7.1 of ISO 9613-Part 2:1996.

Formula	Symbols
$A_{div} = 20 \cdot \log_{10} (d/d_0) + 11$	A_{div} = Reduction due to Geometric Divergence (dB) d = Distance from source to receiver (m) d_0 = reference distance (1m)

8.1.3 Ground Absorption (A_{gr})

A correction is made for the effect of the ground between the source and receiver depending on whether it is considered hard or soft ground.

Type of ground	Correction in dB (A_{gr})
Hard Ground	+ 3 dB

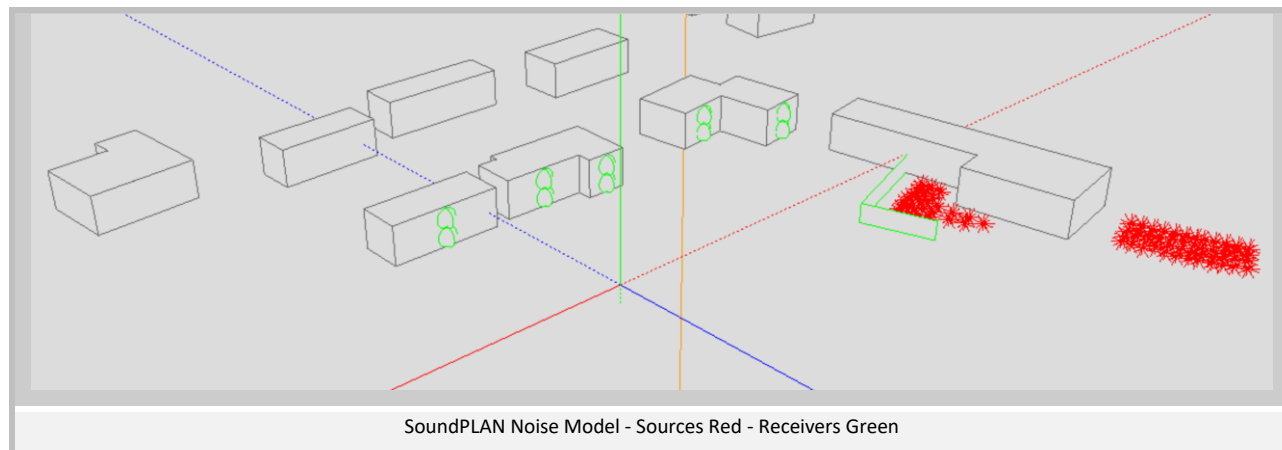
8.1.4 Barrier Effect (A_{bar})

A correction is made for any barrier in the direct line of site between the source and the assessment position and is detailed in section 7.4 of ISO 9613-Part 2:1996. For clarity the K_{met} meteorological correction has been ignored and C_2 equals 40 and C_3 equals 1.

Formula	Symbols
$A_{bar} = 10 \cdot \log_{10} [3 + (40 \cdot \delta / \lambda) - A_g]$ *Note1 where $\delta = a + b - r$ and $\lambda = c / f$	A_{bar} = Effective barrier attenuation (dB) A_g = Total Ground Absorption (dB) *Note 1: Only apply the A_g correction if $A_g > 0$ δ = Path difference (m) a = Distance from source to barrier head (m) b = Distance from barrier head to assessment position (m) r = Distance from source to assessment position (m) λ = Wavelength of sound (m) c = Speed of sound – Assumed to be 342 ms ⁻¹

8.1.5 SoundPLAN Model (ISO9613-2)

Specialist noise modelling software has been used to predict the resulting noise emissions from the site in accordance with ISO9613-2. All sources sound powers have been entered with source heights and ground topography/cover. For receivers; both ground floor and first floor levels have been considered.



8.2 Summary of Calculations

The resulting specific noise source has been calculated and predicted using noise modelling software in accordance with ISO9613-2 and the parameters set out above.

8.2.1 Resulting Levels (ISO9613-2 predicted with SoundPLAN)

Model Number	Receiver name	Building	Floor	No screening	With 2m screening	Insertion loss
1	1	North	GF	39.7	37.9	-1.8
1	1	North	1.FI	40.4	38.6	-1.8
2	2	North	GF	41.1	38.5	-2.6
2	2	North	1.FI	42.1	39.4	-2.7
3	3	North	GF	42.4	38.9	-3.5
3	3	North	1.FI	43.7	40.3	-3.4
4	4	North	GF	44.1	40	-4.1
4	4	North	1.FI	45.9	41.4	-4.5
5	5	North	GF	45.8	41.1	-4.7
5	5	North	1.FI	47.8	42.9	-4.9

8.3 3D Noise Maps

8.3.1 Day Time Levels 07:00 to 23:00 hours



8.3.2 External Assessment

External Residential Assessment	100 Patrons (Max 26 Patrons in southern zone) with 2m screening
Calculated Level at Residential	43 dB
Background Noise Level	38 dB
Excess Over Background	+5 dB
Assessment Conclusion	Adverse Impact

9 ELEMENT 4 – ASSESSMENT OF OTHER RELEVANT ISSUES

The National Planning Policy Framework 2019 (NPPF) and assessments to the Noise Policy Statement for England 2010 (NPSE) should be made in conjunction with each other. Paragraphs 180 - 183 of the National Planning Policy Framework 2019 (NPPF) states the following:

Paragraph 180 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 impacts 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.

Paragraph 181 Planning policies and decisions should sustain and contribute towards compliance with relevant limit values or national objectives for pollutants. So far as possible these opportunities should be considered at the plan-making stage, to ensure a strategic approach and limit the need for issues to be reconsidered when determining individual applications.

Paragraph 182 Planning policies and decisions should ensure that new development can be integrated effectively with existing businesses and community facilities (such as places of worship, pubs, music venues and sports clubs). Existing businesses and facilities should not have unreasonable restrictions placed on them as a result of development permitted after they were established. Where the operation of an existing business or community facility could have a significant adverse effect on new development (including changes of use) in its vicinity, the applicant (or 'agent of change') should be required to provide suitable mitigation before the development has been completed.

Paragraph 183 The focus of planning policies and decisions should be on whether proposed development is an acceptable use of land, rather than the control of processes or emissions (where these are subject to separate pollution control regimes). Planning decisions should assume that these regimes will operate effectively. Equally, where a planning decision has been made on a particular development, the planning issues should not be revisited through the permitting regimes operated by pollution control authorities

The Noise Policy Statement for England gives various levels of effect as detailed within this report.

Based on the assessment and analysis undertaken within this report, the development can be implemented within the guidelines of the aforementioned documents and ensure a conclusion of **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.

10 CONCLUSION

10.1 Summary of Results

10.1.1 Measured Background Noise Levels

Continuous background noise measurements were undertaken between 28th June – 3rd July 2023 at the Assessment Position 1. The day time background noise levels between 10:00 – 17:00 were found to be $L_{A90,1 \text{ hour}}$ 38 dB. This background noise level has been assessed during daytime periods only.

Assessment Position		LAeq		LA90 (Modal)	
		Day	Night	Day	Night
		(0700 - 2300)	(2300 - 0700)	(0700 - 2300)	(2300 - 0700)
1	28/06/2023	44.7	45.6	38	
1	29/06/2023	45.4	39.9		
1	30/06/2023	45.5	44.1		
1	01/07/2023	46.6	39.4		
1	02/07/2023	45.5	40.9		
1	03/07/2023	48.9			

Arithmetical Average LAeq	Day	46.1 dB LAeq, 16hour
	Night	42.0 dB LAeq, 8hour

10.1.2 Hours of Operation

The proposed is general 10:00 – 17:00 latest worst case scenario for operation of proposed external area.

10.1.3 Number of Patrons

The proposed external area(s) will accommodate up to a maximum of 74 (north) and 26 (south) patrons at any one time.

10.2 Criterion on Noise Source and Context of Site

A working noise criterion factoring the main assessment methodologies has been set out below in accordance with the National Planning Policy Framework. Criterion has been set on the contextualisation of the environment where the noise sources are being proposed. From assessment and attendance at site; the site is considered urban a road that has a steady flow of traffic (as shown in the baseline time history) which forms the dominant residual noise climate (Average Daytime LAeq,16 hour circa 46 dB (A)) subject to position. It is therefore considered the below criterion applicable in order to safeguard the nearby residential amenity from noise emissions associated with the external development and in accordance with local planning policy (+/- at or below the representative measured LA90).

10.2.1 Recognisable Content of Source

For the application or adjustment to the working criterion or source level used for assessment to account for the recognisable content or characteristic of the source; the consideration of the contextualisation of the environment the sources are being introduced has been considered. The site includes both vehicle movements and noise from existing patrons under existing permission. On this basis there is no new noise source being introduced in the existing noise climate that would be subjectively different than that that is already present. Therefore, no adjustment to criterion nor noise source has been undertaken.

10.2.2 Daytime (1000 - 1700) (external area)

Operating Hours	Criterion	Assessment Position 1 Maximum (LAEQ, hour)	Colour Code
Daytime (10:00 – 17:00)	No Observed Affect Level	20	
	Low Impact	38	
	Adverse Effect	43	
	Significant Adverse Effect	48	

10.3 Source Levels

Source	Operating Hours	Maximum Sound Power Level
Patron (Per)	(07:00 – 23:00)	L _{w(A)} 71 dB
Sound Power Level – British Standard 3744: 2010 (Engineering Grade 2 Accuracy)		

10.4 Mitigation

A 2 metre acoustic fence at site boundary has been installed to reduce the noise level from proposed development

10.5 Assessments

10.5.1 External Assessment

External Residential Assessment	100 Patrons (Max 26 Patrons in southern zone) with 2m screening
Calculated Level at Residential	43 dB
Background Noise Level	38 dB
Excess Over Background	+5 dB
Assessment Conclusion	Adverse Impact

10.5.2 Internal Assessment

Internal Residential Assessment	100 Patrons (Max 26 Patrons in southern zone) with 2m screening
Calculated Level at Residential	43 dB
Partially Open Window	-12 dB
Calculated Level Inside Residential	31 dB
BS 8233: 2014 Criteria	35 dB
Excess Over Target Level	-4 dB
Assessment Conclusion	Low Impact

10.6 Conclusion Summary

National Planning Policy Framework 2019 suggests that planning permission should be granted unless any adverse impacts of doing so would significantly and demonstrably outweigh the benefits, when assessed against the policies in the framework taken as a whole, or specific policies in the framework indicate the application should be restricted.

Measurements have been undertaken in accordance with British Standard 4142:2019 and ISO 1996 – Part 2: 2007. This report aims to establish: the existing background noise levels at the closest residential façade to the site. Criterion has then been set regarding maximum permissible rating levels from industrial noise in accordance with BS4142:2019.

Based on the calculations and assessments made within this report it is the professional opinion of Impact Acoustics Ltd that the proposed development can demonstrate compliance with the National Planning Policy Framework 2019, NPPF & NPSE and that, with regards to sound, planning permission can be granted.

11 APPENDIX A – RESULTS

		Lmax	min Laeq	min La90	Laeq,1hour	L90,1hour
28/06/2023	13:00	58.3	42.7	38.3	43.1	38.7
28/06/2023	14:00	65.2	42.1	37.9	43.1	38.6
28/06/2023	15:00	66.7	42.0	37.2	43.2	38.4
28/06/2023	16:00	63.1	42.2	37.5	43.3	38.6
28/06/2023	17:00	61.8	42.3	36.9	42.5	37.1
28/06/2023	18:00	76.0	43.2	34.7	49.7	35.8
28/06/2023	19:00	70.7	41.0	34.8	45.8	35.8
28/06/2023	20:00	61.9	40.1	31.8	42.2	33.0
28/06/2023	21:00	71.2	31.1	27.2	46.7	29.1
28/06/2023	22:00	52.3	28.5	24.9	34.5	26.0
28/06/2023	23:00	64.4	27.6	23.7	36.2	24.8
29/06/2023	00:00	45.8	24.7	22.7	25.9	23.5
29/06/2023	01:00	42.5	23.8	22.3	26.7	22.8
29/06/2023	02:00	71.4	36.5	22.6	46.9	39.2
29/06/2023	03:00	72.2	31.8	25.8	39.1	29.6
29/06/2023	04:00	69.1	31.2	25.2	50.3	30.3
29/06/2023	05:00	70.3	45.0	40.9	47.8	43.0
29/06/2023	06:00	76.1	44.2	38.1	47.8	39.7
29/06/2023	07:00	69.0	45.1	39.8	45.5	40.8
29/06/2023	08:00	61.3	43.7	39.7	46.9	40.5
29/06/2023	09:00	63.1	42.6	36.9	44.2	38.4
29/06/2023	10:00	68.8	42.9	37.0	45.1	39.2
29/06/2023	11:00	60.0	43.3	39.1	44.0	39.7
29/06/2023	12:00	80.6	42.0	37.9	50.7	39.0
29/06/2023	13:00	62.5	42.7	38.0	44.2	39.0
29/06/2023	14:00	60.9	42.1	37.2	44.5	37.9
29/06/2023	15:00	64.9	40.6	34.8	42.1	36.7
29/06/2023	16:00	64.2	40.3	35.4	43.7	37.6
29/06/2023	17:00	73.9	39.9	33.9	44.3	34.7
29/06/2023	18:00	72.1	43.8	35.7	46.4	37.3
29/06/2023	19:00	68.2	39.8	34.5	44.2	35.4
29/06/2023	20:00	68.3	44.6	33.0	48.1	33.9
29/06/2023	21:00	59.6	36.0	32.0	41.0	33.3
29/06/2023	22:00	56.4	32.4	30.7	35.8	31.2
29/06/2023	23:00	53.4	33.5	30.4	36.7	31.2
30/06/2023	00:00	48.8	33.3	31.1	34.8	31.6
30/06/2023	01:00	45.1	31.2	28.0	32.5	29.6
30/06/2023	02:00	48.6	30.4	26.5	32.1	28.5
30/06/2023	03:00	46.7	28.5	25.9	30.8	27.3
30/06/2023	04:00	69.6	40.6	27.0	43.3	33.4
30/06/2023	05:00	67.1	40.8	36.1	43.8	37.1
30/06/2023	06:00	66.9	41.8	34.6	43.1	36.9
30/06/2023	07:00	72.7	45.3	34.8	48.0	36.5
30/06/2023	08:00	67.3	43.2	35.6	44.9	36.7
30/06/2023	09:00	61.9	42.0	36.4	43.7	37.6
30/06/2023	10:00	71.0	45.5	39.1	47.4	40.6
30/06/2023	11:00	63.4	45.2	39.6	46.8	41.5
30/06/2023	12:00	66.6	44.9	40.0	47.1	41.7

30/06/2023	13:00	65.9	46.2	41.3	46.9	42.7
30/06/2023	14:00	63.8	46.0	40.5	46.8	41.7
30/06/2023	15:00	64.5	45.7	40.3	46.1	40.9
30/06/2023	16:00	64.7	44.0	38.2	45.2	39.7
30/06/2023	17:00	59.4	43.1	37.6	43.9	38.1
30/06/2023	18:00	61.4	43.5	35.7	43.9	37.7
30/06/2023	19:00	67.3	42.3	36.0	44.2	36.6
30/06/2023	20:00	65.0	40.1	34.4	45.6	35.5
30/06/2023	21:00	60.0	36.7	31.5	39.7	34.3
30/06/2023	22:00	50.3	35.5	29.0	36.5	30.5
30/06/2023	23:00	54.4	33.6	28.4	35.0	29.2
01/07/2023	00:00	51.2	32.7	27.6	37.3	30.5
01/07/2023	01:00	46.8	34.7	28.6	35.8	29.4
01/07/2023	02:00	45.8	29.7	24.0	33.3	26.3
01/07/2023	03:00	47.9	33.8	27.1	35.9	28.8
01/07/2023	04:00	62.8	37.3	25.7	42.0	33.0
01/07/2023	05:00	72.1	45.4	36.0	51.6	37.1
01/07/2023	06:00	70.4	39.5	35.1	44.1	35.5
01/07/2023	07:00	64.1	43.5	37.2	44.4	37.4
01/07/2023	08:00	69.0	43.9	39.5	46.4	42.9
01/07/2023	09:00	75.3	45.4	37.4	48.4	38.3
01/07/2023	10:00	70.4	42.3	37.2	45.4	38.1
01/07/2023	11:00	68.4	44.8	39.4	47.4	40.6
01/07/2023	12:00	70.7	47.1	39.7	48.1	40.7
01/07/2023	13:00	62.8	45.6	40.1	48.3	41.9
01/07/2023	14:00	67.1	46.8	40.1	47.8	41.0
01/07/2023	15:00	64.3	45.9	40.1	46.9	41.2
01/07/2023	16:00	65.2	47.6	40.4	47.9	41.6
01/07/2023	17:00	63.9	46.0	40.1	46.5	40.8
01/07/2023	18:00	67.7	45.6	39.7	47.1	40.5
01/07/2023	19:00	63.0	44.7	38.1	46.4	38.7
01/07/2023	20:00	77.4	43.3	37.1	47.4	37.7
01/07/2023	21:00	55.1	36.2	32.8	39.1	34.5
01/07/2023	22:00	59.8	33.3	30.8	35.2	31.3
01/07/2023	23:00	48.3	34.6	30.9	35.3	31.2
02/07/2023	00:00	46.4	30.4	27.7	32.9	29.6
02/07/2023	01:00	46.8	31.3	27.4	32.8	28.1
02/07/2023	02:00	49.2	29.7	26.2	31.5	27.3
02/07/2023	03:00	47.0	28.4	25.9	31.2	27.3
02/07/2023	04:00	64.0	39.3	30.6	41.4	35.0
02/07/2023	05:00	62.7	41.2	36.3	44.1	36.7
02/07/2023	06:00	65.4	42.8	36.0	43.2	36.3
02/07/2023	07:00	69.1	42.8	36.1	45.9	38.0
02/07/2023	08:00	62.5	41.2	36.0	45.6	42.1
02/07/2023	09:00	64.4	40.0	34.6	42.6	36.1
02/07/2023	10:00	74.8	42.8	38.6	45.2	39.4
02/07/2023	11:00	75.1	43.9	39.4	46.9	40.3
02/07/2023	12:00	72.4	45.8	37.7	47.6	38.8
02/07/2023	13:00	70.3	44.8	39.1	45.4	39.9
02/07/2023	14:00	62.4	44.3	38.8	45.1	39.9
02/07/2023	15:00	67.3	46.0	39.3	47.2	40.4

02/07/2023	16:00	66.8	44.1	39.0	46.3	40.1
02/07/2023	17:00	63.5	45.2	39.8	47.2	41.7
02/07/2023	18:00	67.2	47.3	39.8	48.4	41.2
02/07/2023	19:00	64.2	44.4	35.4	47.4	37.5
02/07/2023	20:00	73.8	41.8	34.8	44.5	35.7
02/07/2023	21:00	72.0	35.3	29.6	41.3	32.5
02/07/2023	22:00	72.3	28.1	24.9	44.5	26.4
02/07/2023	23:00	63.4	30.0	25.6	36.4	27.7
03/07/2023	00:00	45.9	31.6	26.1	32.8	27.2
03/07/2023	01:00	46.0	31.0	24.7	33.0	27.3
03/07/2023	02:00	54.8	34.7	26.9	37.7	29.4
03/07/2023	03:00	48.0	31.8	25.2	34.3	27.5
03/07/2023	04:00	65.4	35.7	28.0	45.5	33.1
03/07/2023	05:00	73.0	40.3	34.5	43.4	35.5
03/07/2023	06:00	64.8	41.9	35.5	43.6	36.1
03/07/2023	07:00	69.4	42.0	36.7	45.7	38.8
03/07/2023	08:00	68.9	45.4	38.0	48.2	42.5
03/07/2023	09:00	70.7	44.5	38.4	49.0	39.0
03/07/2023	10:00	69.3	43.0	37.9	46.1	40.0
03/07/2023	11:00	62.1	45.5	40.7	46.6	41.6
03/07/2023	12:00	64.4	49.0	43.0	49.8	43.7
03/07/2023	13:00	64.3	49.0	42.6	49.9	43.8
03/07/2023	14:00	65.7	51.3	45.2	52.1	45.8
03/07/2023	15:00	65.9	51.4	44.1	51.7	45.2
03/07/2023	16:00	63.8	50.8	44.0	51.4	45.2
03/07/2023	17:00	74.3	48.5	42.0	52.1	43.5
03/07/2023	18:00	59.7	46.6	40.0	47.2	40.8
03/07/2023	19:00	65.4	45.3	37.6	46.4	39.2
03/07/2023	20:00	65.5	38.4	32.2	44.5	33.7
03/07/2023	21:00	59.4	41.0	32.6	43.9	36.1
03/07/2023	22:00	55.4	37.0	30.9	40.7	32.4
03/07/2023	23:00	57.8	42.9	33.1	43.5	34.8
04/07/2023	00:00	57.3	36.5	30.2	39.9	32.1
04/07/2023	01:00	50.3	33.4	27.4	37.5	29.8
04/07/2023	02:00	56.4	38.6	29.8	39.7	31.1
04/07/2023	03:00	55.6	35.4	28.9	38.7	29.9
04/07/2023	04:00	67.7	38.3	31.2	42.9	33.7
04/07/2023	05:00	58.9	41.0	34.5	41.9	36.2
04/07/2023	06:00	61.8	41.9	34.8	42.9	35.8
04/07/2023	07:00	63.1	43.7	37.3	46.4	41.2
04/07/2023	08:00	67.6	43.0	35.8	46.0	40.2
04/07/2023	09:00	65.1	40.9	34.7	42.0	35.1
04/07/2023	10:00	67.1	43.1	37.2	47.6	38.3
04/07/2023	11:00	59.2	45.1	40.6	46.5	42.6
04/07/2023	12:00	62.8	44.1	38.0	45.1	39.7
04/07/2023	13:00	66.1	42.6	37.7	44.2	37.9

12 APPENDIX B – UNCERTAINTY BUDGET

Sources of Uncertainty	Uncertainty Notes	Commentary	Value (half Width)	Convert to Same Units (dB)	Distribution Divisor			Standard Uncertainty (u) dB
					Normal	Rectangular	Other	
Measurement Position	Choice of position, ,	1m in 20m		0.2		rect($\sqrt{3}$)		0.13
	microphone orientation	Type 1 0 - 30deg	0.4		Normal			0.50
Instrumentation	Calibration	Calibration Drift	0.1		Normal			0.10
	Accuracy and precision (type 1)	Type 1 practical	1.9			rect($\sqrt{3}$)		0.50
Background Noise Level	Timing of Measurement							
Background Noise Level	Modal Analysis Day	Calculated Standard Deviation	3.7				s/ $\sqrt{n}$	0.39
Background Noise Level	Modal Analysis Night	Calculated Standard Deviation	2.2				s/ $\sqrt{n}$	0.16
Combined Uncertainty (root sum of squares)								1.05
Expanded Uncertainty U = Kuc (95% Confidence K =2)								2.1
Final Answer Expressed as Value +/- U dB with a confidence Level of 95%								
REFERENCE: Uncertainty Budget Calculated in line with M3003: The Expression of Uncertainty and Confidence in Measurement Edition 3, November 2012 and A Good Practice Guide on the Sources and Magnitude of Uncertainty Arising in the Practical Measurement of Environmental Noise N J Craven, G Kerry Edition 1a – May 2007.								

13 APPENDIX C– INFORMATION TO BE REPORTED

13.1 a) Competency

1)	Name	Role	Competency
	I.Broom	Noise Consultant	IoA Diploma Acoustics Noise Control Associate Member of the Institute of Acoustics (AMIOA)

13.2 d) Existing Contexts

1)	Type of Receptor	Period	Sensitivity	Description
	Residential	Day	Moderate	Noise can disturb outside amenity space Noise can disturb inside living space
		Night	High	Noise can disturb sleeping

13.3 e) Relative Positions

1)	Assessment Position			
		BS 4142:2014 Criteria	Details	Compliance with Criteria
		Section 6	1.0m from façade (external)	Assessment position is valid
2)	Source Measurement	It is believed the sound power levels were established in accordance with BS EN 13487:2003		
	Justification	The site has yet to be developed or the source installed.		
3)	Background Measurement	At assessment position in report		
	Justification	BS 4142:2014 Criteria	Details	Compliance with Criteria
		Section 6.2	3.5m to any reflecting surface	Does comply with Criteria
		Section 6.2	Height 1.2m to 1.5m	Does comply with Criteria
		Section 6.2	1 st floor 1m to facade	Does comply with Criteria
		Section 6.2	Measurement Height	3
			Distance to Reflecting Surface	1
4)	Topography, surfaces etc.	Hard		

13.4 g) Noise Measurement Equipment Operation Test

1)	Ref. Level of Calibrator	94 dB@1000Hz
2)	Meter Reading Before	94 dB – Meter operation checked. Meter in good working order.
	Meter Reading After	94 dB - Meter operation checked. Meter in good working order.

13.5 h) Weather Conditions

1)	Weather Conditions	
		Measurements that experienced adverse wind speeds (>4ms were removed from assessment)

13.6 i) Date and Time of Measurements

	Background Measurements	28 th June 3 rd July
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13.7 j) Measurement Time Interval

1)	Source Measurements	$T_m = 15$ minutes	
	Background Measurements	Day Time	Night Time
		(07:00 – 23:00)	(2300 - 0700)
		$T_m = 16$ hours	$T_m = 8$ hours

13.8 k) Reference Time Interval

1)	Reference Time Interval	Day Time	Night Time
		(07:00 – 23:00)	(2300 - 0700)
		$T_r = 1$ hour	$T_r = 15$ minutes

#END OF REPORT#