



Updated Extract System at The Priory Hotel & Restaurant,
Caerleon

Noise Assessment for Planning Application

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CONTENTS

1.	INTRODUCTION	5
1.1.	OVERVIEW	5
1.2.	SCOPE AND OBJECTIVES	5
2.	LEGISLATION AND POLICY FRAMEWORK	6
2.1.	NATIONAL POLICY	6
2.2.	BRITISH STANDARDS	9
3.	SITE DESCRIPTION	10
3.1.	SITE AND SURROUNDING AREA	10
3.2.	PROPOSED DEVELOPMENT OVERVIEW	11
3.3.	EXTRACT SYSTEM OVERVIEW	11
4.	MEASUREMENT METHODOLOGY	13
4.1.	GENERAL	13
4.2.	MEASUREMENT DETAILS	13
4.3.	SOUND INDICES	15
4.4.	SUMMARY RESULTS	15
5.	CALCULATIONS	16
5.2.	RESULTS	17
6.	BS 4142:2014+A1:2019 ASSESSMENT	19
6.1.	RATING PENALTY	19
6.2.	UNCERTAINTY	21
6.3.	ASSESSMENT	23
7.	CONCLUSION	24
8.	APPENDICES	25
8.1.	APPENDIX A – DEFINITION OF TERMS	26
8.2.	APPENDIX B – SOUND MEASUREMENT RESULTS	29
8.3.	APPENDIX C – STATISTICAL ANALYSIS	30

FIGURES

FIGURE 1: THE SITE, NSRs AND SURROUNDING AREA	10
FIGURE 2: EXISTING EXTRACT SYSTEM	12
FIGURE 3: PROPOSED EXTRACT SYSTEM	12
FIGURE 4: MEASUREMENT POSITION & NSR	14
FIGURE 5: MEASURED TIME HISTORY – MP1	29
FIGURE 6: STATISTICAL ANALYSIS OF L_{A90} BACKGROUND – DAYTIME – MP1	30

TABLES

TABLE 1: SIGNIFICANCE CRITERIA FROM NPPG IN ENGLAND: NOISE	8
TABLE 2: SYSTEM ELEMENTS	11
TABLE 3: INVENTORY OF SOUND MEASUREMENT EQUIPMENT	13
TABLE 4: MEASUREMENT POSITION DESCRIPTION	14
TABLE 5: SUMMARY OF SOUND MEASUREMENT RESULTS	15
TABLE 6: EXTRACT SUPPLY FAN SOURCE DATA	16
TABLE 7: AIR SUPPLY FAN SOURCE DATA	16
TABLE 8: EXTRACT ATTENUATOR SOURCE DATA	16
TABLE 9: AIR SUPPLY ATTENUATOR SOURCE DATA	16
TABLE 10: EXTRACT SYSTEM CALCULATION	17
TABLE 11: SPECIFIC SOUND LEVEL CALCULATIONS FOR EXTRACT SYSTEM	17
TABLE 12: SUPPLY SYSTEM CALCULATION	18
TABLE 13: SPECIFIC SOUND LEVEL CALCULATIONS FOR AIR SUPPLY SYSTEM	18
TABLE 14: RATING PENALTY ASSESSMENT	20
TABLE 15: MEASUREMENT UNCERTAINTY FACTORS	21
TABLE 16: CALCULATION UNCERTAINTY FACTORS	22
TABLE 17: BS 4142:2014+A1:2019 ASSESSMENT	23

1. INTRODUCTION

1.1. Overview

inacoustic has been commissioned to prepare a noise assessment, assessing an updated kitchen extract system (the 'Proposed Development') at The Priory Hotel & Restaurant, Caerleon, Newport (the 'Site').

The following technical noise report has been produced for submission to Newport Council as part of a planning application (the 'Application').

This report details the existing background sound climate at the nearest noise-sensitive receptors (the 'NSRs'), as well as the sound emissions associated with the Proposed Development.

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

1.2. Scope and Objectives

The scope of the report and noise assessment can be summarised as follows:

- A baseline sound monitoring survey undertaken in the vicinity of the closest NSRs to the Site;
- An assessment of the suitability of the Site, in accordance with relevant standards in respect of sound from the proposed sources; and
- Recommendation of mitigation measures, where necessary, to comply with the requirements BS 4142:2014+A1:2019¹.

¹ British Standard Institution. BS 4142:2014+A1:2019: Methods for rating and assessing industrial and commercial sound.

2. LEGISLATION AND POLICY FRAMEWORK

The development proposals for the Site are guided by the following policy directives and guidance:

2.1. National Policy

2.1.1. National Planning Policy Framework, 2024

The *National Planning Policy Framework* (NPPF)² sets out the UK Government's planning policies for England. Planning policy requires that applications for planning permission must be determined in accordance with the development plan, unless material considerations indicate otherwise.

The NPPF is also a material consideration in planning decisions. It sets out the Government's requirements for the planning system and how these are expected to be addressed.

Under Section 15; *Conserving and Enhancing the Natural Environment*, in Paragraph 187, the following is stated:

"Planning policies and decisions should contribute to and enhance the natural and local environment by:

- e) 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."*

Paragraph 198 of the document goes on to state:

"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 198 refers to the Noise Policy Statement for England, which is considered overleaf.

² Ministry of Housing, Communities & Local Government (MHCLG), December 2024. National Planning Policy Framework. HMSO. London.

2.1.2. Noise Policy Statement for England, 2010

The underlying principles and aims of existing noise policy documents, legislation and guidance are clarified in *DEFRA: 2010: Noise Policy Statement for England* (NPSE)³. The NPSE sets out the “*Long Term Vision*” of Government noise policy as follows:

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

The NPSE outlines three aims for the effective management and control of environmental, neighbour and neighbourhood noise:

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

The guidance states that it is not possible to have a single objective noise-based measure that defines “*Significant Observed Adverse Effect Level (SOAEL)*” that is applicable to all sources of noise in all situations and that not having specific SOAEL values in the NPSE provides the necessary policy flexibility until further evidence and suitable guidance is available.

2.1.3. National Planning Practice Guidance in England: Noise, 2019

Further guidance in relation to the NPPF and the NPSE has been published in the *National Planning Practice Guidance in England: Noise* (NPPG Noise)⁴, which summarises the noise exposure hierarchy, based on the likely average response. The following three observed effect levels are identified below:

- **Significant Observed Adverse Effect Level:** This is the level of noise exposure above which significant adverse effects on health and quality of life occur;
- **Lowest Observed Adverse Effect Level:** This is the level of noise exposure above which adverse effects on health and quality of life can be detected; and
- **No Observed Adverse Effect Level:** This is the level of noise exposure below which no effect at all on health or quality of life can be detected.

³ Department for Environment, Food and Rural Affairs (DEFRA), 2010. Noise Policy Statement for England. DEFRA.

⁴ Department for Communities and Local Government (DCLG), 2019. National Planning Practice Guidance for England: Noise. DCLG.

Criteria related to each of these levels are reproduced in Table 1.

TABLE 1: SIGNIFICANCE CRITERIA FROM NPPG IN ENGLAND: NOISE

Perception	Examples of Outcomes	Increasing Effect Level	Action
No Observed Effect Level			
Not Noticeable	No Effect	No Observed Effect	No specific measures required
No Observed Adverse Effect Level			
Noticeable and Not Intrusive	Noise can be heard, but does not cause any change in behaviour, attitude or other physiological response. Can slightly affect the acoustic character of the area but not such that there is a change in the quality of life.	No Observed Adverse Effect	No specific measures required
Lowest Observed Adverse Effect Level			
Noticeable and Intrusive	Noise can be heard and causes small changes in behaviour, attitude or other physiological response, e.g. turning up volume of television; speaking more loudly; where there is no alternative ventilation, having to close windows for some of the time because of the noise. Potential for some reported sleep disturbance. Affects the acoustic character of the area such that there is a small actual or perceived change in the quality of life.	Observed Adverse Effect	Mitigate and reduce to a minimum
Significant Observed Adverse Effect Level			
Present and Disruptive	The noise causes a material change in behaviour, attitude or other physiological response, e.g. avoiding certain activities during periods of intrusion; where there is no alternative ventilation, having to keep windows closed most of the time because of the noise. Potential for sleep disturbance resulting in difficulty in getting to sleep, premature awakening and difficulty in getting back to sleep. Quality of life diminished due to change in acoustic character of the area.	Significant Observed Adverse Effect	Avoid
Present and Very Disruptive	Extensive and regular changes in behaviour, attitude or other physiological response and/or an inability to mitigate effect of noise leading to psychological stress, e.g. regular sleep deprivation/awakening; loss of appetite, significant, medically definable harm, e.g. auditory and non-auditory.	Unacceptable Adverse Effect	Prevent

2.2. British Standards

2.2.1. BS 4142:2014+A1:2019

BS 4142:2014+A1:2019 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 BS 4142:2014+A1:2019 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.

BS 4142:2014+A1:2019 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 low impact, depending on the context."*

3. SITE DESCRIPTION

3.1. Site and Surrounding Area

The Site is located directly to the south of High Street and lies to the north of the River Usk and the M4. The Site is surrounded by a mixture of commercial and residential properties, with farmland to the south.

The closest NSR to the Site is NSR1; a neighbouring residential dwelling located approximately 18 metres to the east.

The sound environment at the Site is primarily influenced by residents in The Priory Hotel's beer garden to the south of the building. The existing extractor unit was audible from the measurement position and operating between 06:00 and 23:00. Additional contributions include intermittent traffic from Broadway and High Street, as well as vehicle activity in the Priory car park.

The location of the Site, NSRs and surrounding area, can be seen below in Figure 1.

FIGURE 1: THE SITE, NSRs AND SURROUNDING AREA



3.2. Proposed Development Overview

The proposals aim to amend unauthorised alterations and ensure full compliance with the Historic Environment (Wales) Act 2023. A key component of this restoration involves the modification of the kitchen extraction system, which currently includes external duct work installations.

To align with heritage requirements, the development proposals will include relocating the extract fan internally, which will reduce unwanted sound breakout and remove the visible flue and pipework from external elevations. This approach both preserves the visual integrity of the listed structure and forms the basis for a revised noise assessment.

The hotel's restaurant is expected to operate between 06:00 and 23:00 daily.

3.3. Extract System Overview

An extract system and an air supply system are proposed to serve the hotel restaurant. Specific details of these systems are provided in Table 2, with corresponding drawings of the existing extract system in Figure 2 and the proposed extract system in Figure 3.

It is noted that the air supply system remains unchanged and that the changes are to the extract system.

TABLE 2: SYSTEM ELEMENTS

Extract System Elements	Specific Product
Extract Fan	MUB/T 062 639 D4
Extract Attenuator	TBC
Supply Fan	TCBTx2 /4-500
Supply Fan Attenuator x 2	TBC

FIGURE 2: EXISTING EXTRACT SYSTEM

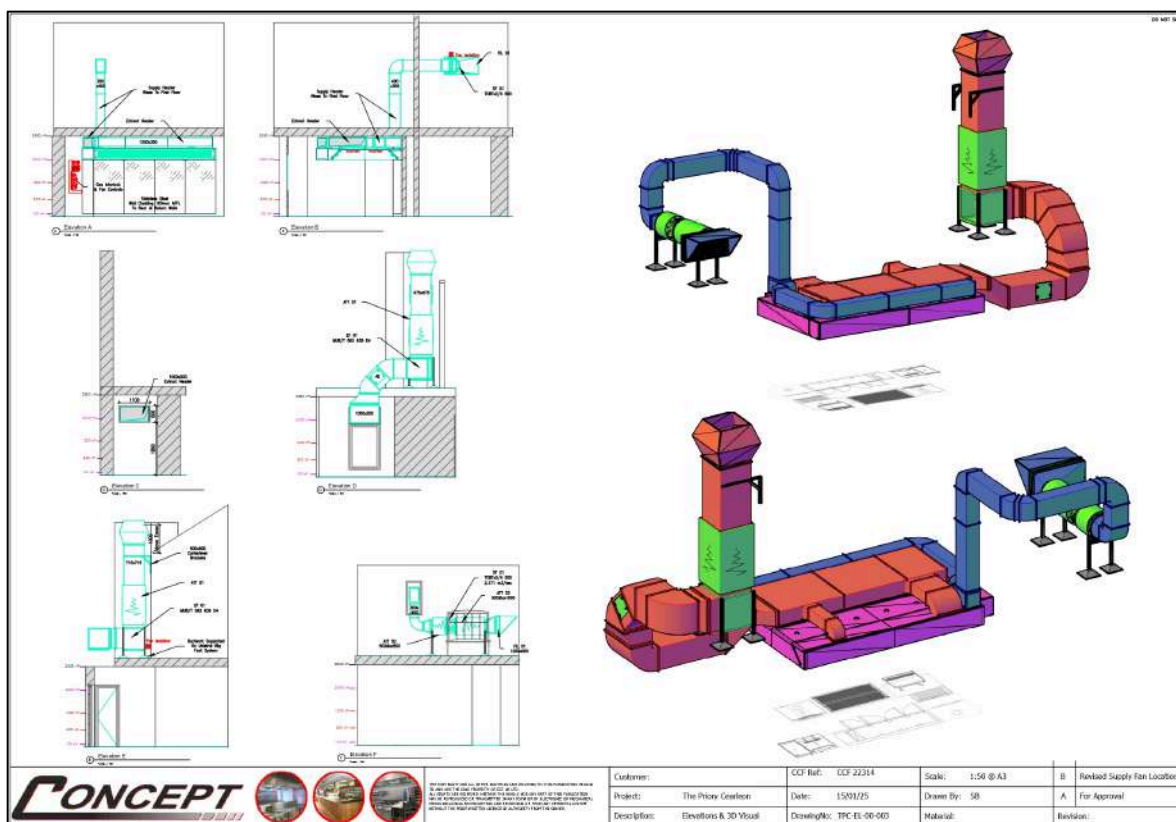
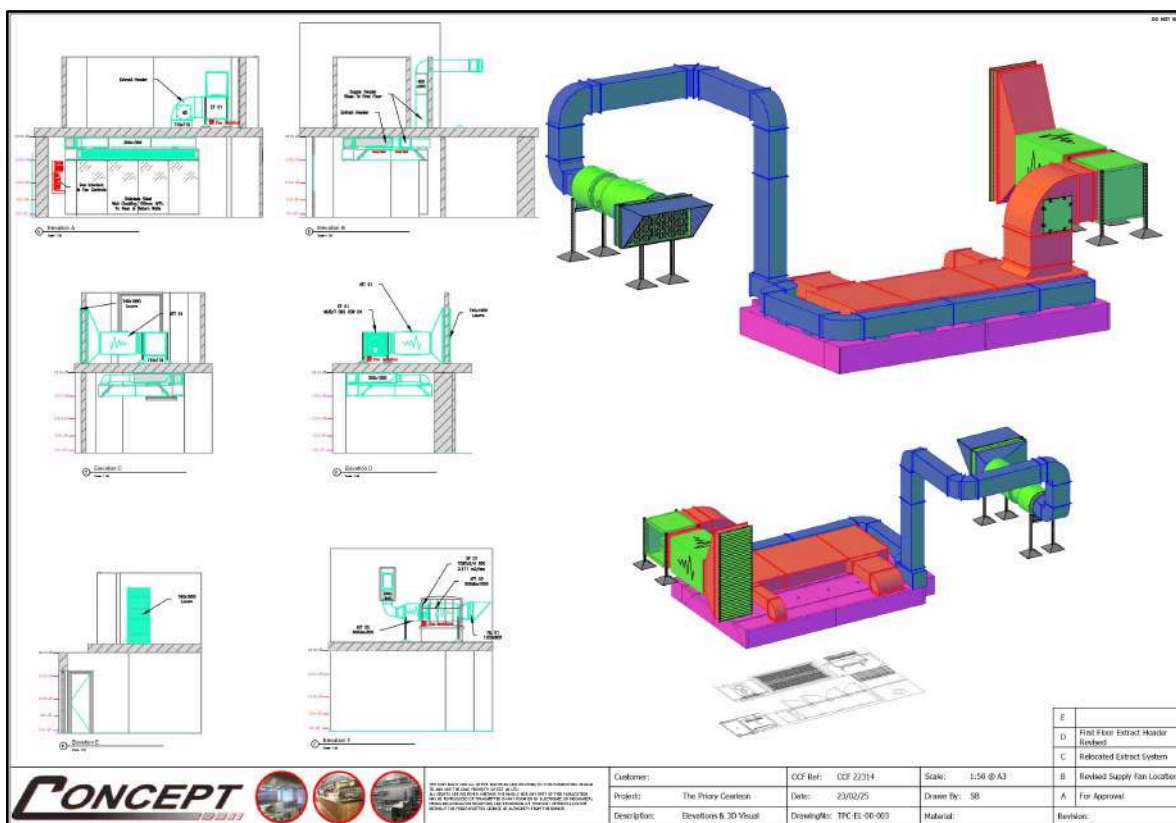


FIGURE 3: PROPOSED EXTRACT SYSTEM



4. MEASUREMENT METHODOLOGY

4.1. General

The prevailing noise conditions in the area have been determined by an environmental noise survey conducted during both daytime and night-time periods between Thursday 26th July 2025 to Friday 27th July 2025.

4.2. Measurement Details

All sound measurements were undertaken by a consultant certified as competent in environmental sound monitoring, and, in accordance with the principles of BS 7445⁵.

All acoustic measurement equipment used during the sound survey conformed to Type 1 specification of BS 61672⁶. A full inventory of this equipment is shown in Table 3 below.

TABLE 3: INVENTORY OF SOUND MEASUREMENT EQUIPMENT

Position	Make, Model & Description	Serial Number	Calibration Certificate Number	Calibration Due Date
MP1	Rion NL-53 Sound Level Meter	01041454	CONF012505	20/01/2027
	Rion NH-25 Preamplifier	44409		
	Rion UC-59 Microphone	26331		
All	Rion NC-74 Acoustic Calibrator	34904966	1178397	20/03/2026

The sound measurement equipment used during the survey was field calibrated at the start and end of the measurement period. A calibration laboratory has calibrated the field calibrator used within the twelve months preceding the measurements. A drift of less than 0.2 dB in the field calibration was found to have occurred on the sound level meter.

The weather conditions during the survey were conducive to sound measurement; it being predominantly dry, with low wind speeds, as measured on-site using a rain-tipping gauge. No periods of inclement weather occurred. The wind direction was variable, but was predominantly from the southwest.

⁵ British Standard 7445: 2003: *Description and measurement of environmental noise*. BSI.

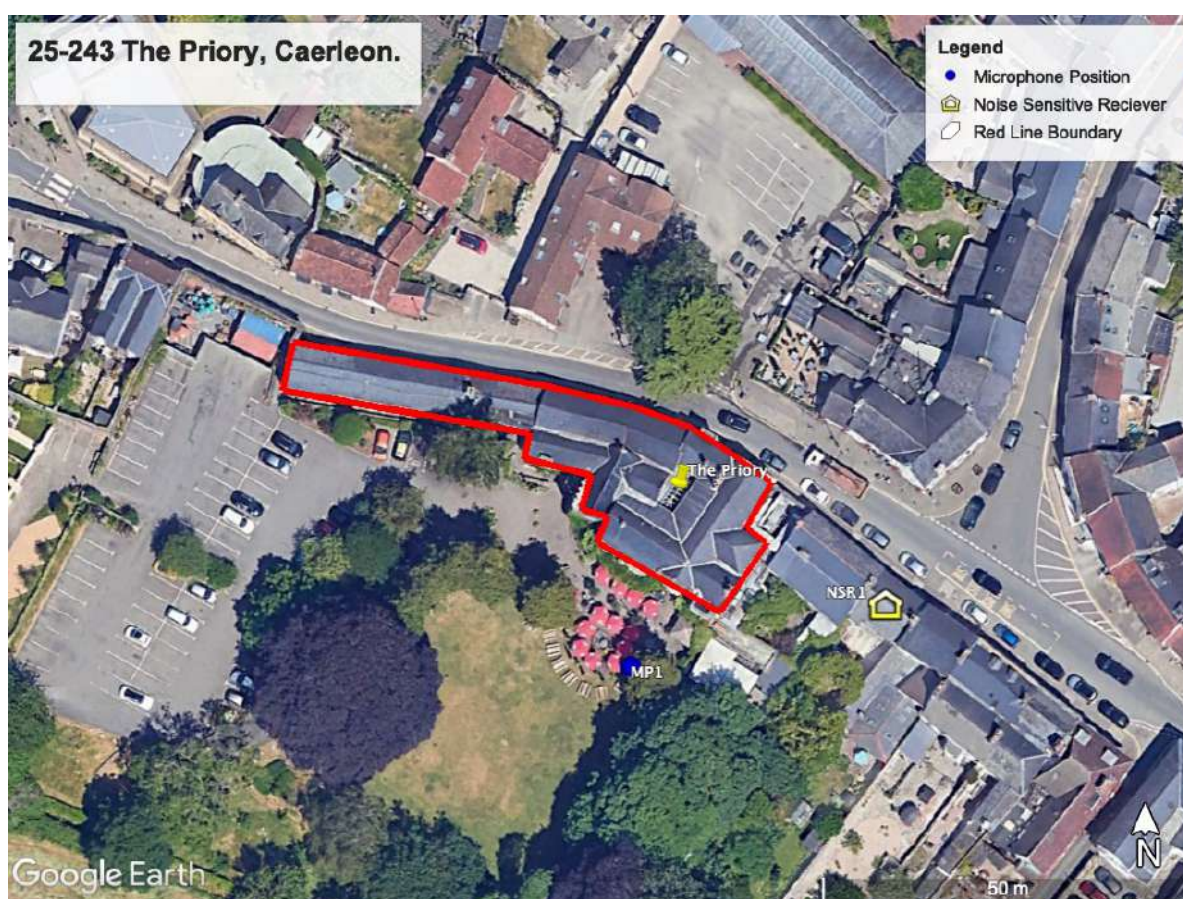
⁶ British Standard 61672: 2013: *Electroacoustics. Sound level meters. Part 1 Specifications*. BSI.

The microphone was fitted with a protective windshield for the measurements, which is described in Table 4, with an aerial photograph indicating the location shown in Figure 4.

TABLE 4: MEASUREMENT POSITION DESCRIPTION

Measurement Position	Description
MP1	Largely unattended daytime and night-time measurement of sound under free-field conditions, at a height of 1.5 metres above local ground level and located in the rear garden of the Priory Hotel & Restaurant. The sound environment at the Site is primarily influenced by residents in the Priory Hotel's beer garden and restaurant. The existing extract system was also a dominant source, audible from the measurement position and operating between 06:00 and 23:00. Additional contributions included intermittent traffic from Broadway and High Street, as well as vehicle activity in the Priory car park. This measurement position is considered representative of NSR1, the nearest residential receptor.

FIGURE 4: MEASUREMENT POSITION & NSR



4.3. Sound Indices

The parameters reported are the average Equivalent Continuous Sound Level, $L_{Aeq,T}$, the statistical index (typical) Background Sound Level, $L_{A90,T}$, as well as the and the typical Maximum Sound Pressure Level, L_{AFmax} . An explanation of the sound units presented is given in Appendix A.

The measured L_{Aeq} , L_{AFmax} , and L_{AF90} sound levels are presented as time histories in a graph in Appendix B. Furthermore, the statistical distribution of the measured background sound levels to derive the typical representative $L_{A90,T}$ values are presented in a graphical format in Appendix C.

4.4. Summary Results

The summarised results of the environmental sound measurements, during the night-time period can be seen below in Table 5. Values have been rounded to the nearest whole number.

It is to be noted that the background sound level was determined from the shoulder period after the existing extraction systems were no longer operational, ensuring that typical background sound levels are derived from a worst-case data set.

TABLE 5: SUMMARY OF SOUND MEASUREMENT RESULTS

Measurement Position	Period	$L_{Aeq,T}$ (dB)	$L_{AF90,T}$ (dB)	L_{AFmax} (dB)
MP1	Night-time Period (23:00-00:00)	42	39	57

5. CALCULATIONS

5.1.1. Fan Source Data

The octave band sound power levels, associated with the extract and air supply fan have been obtained from the manufacturer and are set out below in Table 6 and Table 7

TABLE 6: EXTRACT FAN SOURCE DATA

Source	Octave Band Sound Power Level, Hz (dB)						
	125	250	500	1000	2000	4000	8000
MUB/T 062 639 D4	77	81	83	82	79	74	67

TABLE 7: AIR SUPPLY FAN SOURCE DATA

Source	Octave Band Sound Power Level, Hz (dB)						
	125	250	500	1000	2000	4000	8000
TCBTx2 /4-500	73	84	81	83	79	71	64

5.1.2. Attenuator Source Data

The octave band static loss figures, associated with the attenuators required for the extract and air supply system are shown below.

TABLE 8: EXTRACT ATTENUATOR SOURCE DATA

Source	Octave Band Static Loss Figures, Hz (dB)						
	125	250	500	1000	2000	4000	8000
Attenuator	0	10	17	20	20	17	12

TABLE 9: AIR SUPPLY ATTENUATOR SOURCE DATA

Source	Octave Band Static Loss Figures, Hz (dB)						
	125	250	500	1000	2000	4000	8000
Attenuator	0	6	4	7	7	0	0

5.2. Results

5.2.1. Extract System Sound Power Level at Termination

In order to calculate the specific sound level at the nearest and most impacted NSR; namely NSR1, the sound power level at the termination point from the extract system has been calculated based on the levels shown on the previous page. The derivation of the sound power level at the termination point from the extract system can be seen below in Table 10.

TABLE 10: EXTRACT SYSTEM CALCULATION

Source	Octave Band Sound Level, Hz (dB)						
	125	250	500	1000	2000	4000	8000
Extract Fan	77	81	83	82	79	74	67
Attenuator	-	10	17	20	20	17	12
End Reflection Loss	0	0	0	0	0	0	0
SWL @ Termination	77	71	66	62	59	57	55

5.2.2. Specific Sound Level from Extract System at NSR1

The calculation of the specific sound level at NSR1, arising from the extract system can be seen below in Table 11. The distance from the grille to NSR1 has been measured to be approximately 10 metres.

TABLE 11: SPECIFIC SOUND LEVEL CALCULATIONS FOR EXTRACT SYSTEM

Source	Octave Band Sound Level, Hz (dB)						
	125	250	500	1000	2000	4000	8000
SWL @ Termination	77	71	66	62	59	57	55
Additional Nearby Source Correction	-3	-3	-3	-3	-3	-3	-3
Divergence	33	33	33	33	33	33	33
Specific Sound Level	44	38	33	29	26	24	22

The specific sound level from the extract system at NSR1 is therefore predicted to be L_{Aeq} 36 dB.

5.2.3. Supply System Sound Power Level at Termination

In order to calculate the specific sound level at NSR1, the sound power level at the termination point from the supply system has been calculated. The calculation of the sound power level at the termination point from the supply system can be seen below in Table 12.

TABLE 12: SUPPLY SYSTEM CALCULATION

Source	Octave Band Sound Level, Hz (dB)						
	125	250	500	1000	2000	4000	8000
Supply Fan	73	84	81	83	79	71	64
Screening	-5	-5	-5	-5	-5	-5	-5
Attenuator	-	6	4	7	7	-	-
End Reflection Loss	2	0	0	0	0	0	0
SWL @ Termination	66	73	72	71	67	66	59

5.2.4. Specific Sound Level from Supply System at NSR1

The calculation of the specific sound level at NSR1, arising from the supply system can be seen below in Table 13. The distance from the grille to NSR1, has been measured to be approximately 15 metres.

TABLE 13: SPECIFIC SOUND LEVEL CALCULATIONS FOR AIR SUPPLY SYSTEM

Source	Octave Band Sound Level, Hz (dB)						
	125	250	500	1000	2000	4000	8000
SWL @ Termination	66	73	72	71	67	66	59
Directivity	0	-1	-5	-8	-7	-7	-7
Divergence	34	34	34	34	34	34	34
Specific Sound Level	47	40	35	31	28	26	24

The specific sound level from the supply system at NSR1 is therefore predicted to be L_{Aeq} 36 dB.

5.2.5. Cumulative Specific Sound Level at NSR1

The cumulative specific sound level at NSR1 from the supply system (L_{Aeq} 36 dB) and the air supply system (L_{Aeq} 36 dB) is predicted to be L_{Aeq} 39 dB.

6. BS 4142:2014+A1:2019 ASSESSMENT

6.1. Rating Penalty

Section 9 of BS 4142:2014+A1:2019 describes how the rating sound level should be derived from the specific sound level, by deriving a rating penalty.

BS 4142:2014+A1:2019 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.”*

Given that the new extraction system is not operational, 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 BS 4142:2014+A1:2019, 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.”

BS 4142:2014+A1:2019 defines four characteristics that should be considered when deriving a rating penalty, namely; tonality; impulsivity; intermittency; and other sound characteristics, which are defined as:

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”*.

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”*.

Other Sound Characteristics

BS 4142:2014+A1:2019 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.”*

Intermittency

BS 4142:2014+A1:2019 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.”*

6.1.1. Rating Penalty Assessment

Considering the above content, an assessment of the combined extract and supply system associated with the Proposed Development, in terms of whether any rating penalties are applicable, and has been detailed in Table 14 below.

TABLE 14: RATING PENALTY ASSESSMENT

Source	Tonality	Impulsivity	Intermittency	Other Sound Characteristics	Discussion
Extract System	0 dB	0 dB	0 dB	0 dB	The proposed extract system will not be tonal, impulsive or intermittent, therefore no penalty has been applied.
Air Supply System	0 dB	0 dB	0 dB	0 dB	The proposed supply system will not be tonal, impulsive or intermittent, therefore no penalty has been applied.

Summarising the above, no rating penalty has been included in the assessment.

6.2. Uncertainty

BS 4142:2014+A1:2019 requires that the level of uncertainty in the measured data and associated calculations is considered in the assessment. The standard recommends that steps should be taken to reduce the level of uncertainty.

6.2.1. Measurement Uncertainty

BS 4142:2014+A1:2019 states that measurement uncertainty depends on a number of factors, including the following, which are applicable to the Proposed Development:

- “ ...
- b) the complexity and level of variability of the residual acoustic environment;*
 - “ ...
 - d) the location(s) selected for taking the measurements;*
 - “ ...
 - g) the measurement time intervals;*
 - h) the range of times when the measurements have been taken;*
 - i) the range of suitable weather conditions during which measurements have been taken;*
 - “ ...
 - k) the level of rounding of each measurement recorded; and*
 - l) the instrumentation used.”*

Each of the measurement uncertainty factors outlined above have been considered and discussed in Table 15 below.

TABLE 15: MEASUREMENT UNCERTAINTY FACTORS

Measurement Uncertainty Factor Reference	Discussion
b)	Residual acoustic environment is simple, hence no further correction for uncertainty.
d)	Measured adjacent to the nearest NSRs.
g)	Measurement time intervals were set in accordance with BS 4142:2014+A1:2019, hence no further correction needs to be made.
h)	Measurements were undertaken during a typical mid-week period.
i)	A rain gauge was deployed for the duration of the background sound survey. The periods of data used to derive the typical background sound levels had neutral weather conditions; therefore, the impact on the measured values would have been minimal.
k)	Measured values were rounded to 0.1 dB, therefore rounding would not have had a significant impact on the overall typical background sound levels.
l)	The acoustic measurement equipment accorded with Type 1 specification of BS 61672, and were deployed with appropriate wind shields.

In summary, no correction for measurement uncertainty has been included in the assessment.

6.2.2. Calculation Uncertainty

BS 4142:2014+A1:2019 states that calculation uncertainty depends on a number of factors, including the following, which are applicable to the Development:

- “ ...
- b) uncertainty in the operation or sound emission characteristics of the specific sound source and any assumed sound power levels;*
 - c) uncertainty in the calculation method;*
 - d) simplifying the real situation to “fit” the model (user influence on modelling); and*
 - e) error in the calculation process.”*

Each of the calculation uncertainty factors outlined above have been considered and discussed in Table 16 below.

TABLE 16: CALCULATION UNCERTAINTY FACTORS

Measurement Uncertainty Factor Reference	Level of Uncertainty	Discussion
b)	0 dB	Simple design, therefore no uncertainty associated with characteristics, and manufacturers data used for plant equipment.
c)	0 dB	Calculations were undertaken in accordance with ISO 9613-2, which is considered a “ <i>validated method</i> ” by BS 4142:2014+A1:2019.
d)	0 dB	The real situation has been simplified for the purposes of this assessment. In reality, factors such as air absorption, ground absorption, and topography screening will reduce the specific sound level further.
e)	0 dB	ISO 9613-2 indicates that there is a ± 3 dB accuracy to the prediction method, however, the calculations are based on the simplest scenario, with no additional corrections for; air absorption; ground absorption; screening; or meteorological conditions.

In summary, no correction for calculation uncertainty has been included in the assessment.

6.3. Assessment

The rating sound level, as calculated from the cumulative specific sound level, and in accordance with the previous sections, has been assessed in accordance with BS 4142:2014+A1:2019.

The most affected NSR, namely NSR1, has been assessed to demonstrate a worst-case scenario.

The BS 4142:2014+A1:2019 assessment at NSR1, for the proposed operational daytime period (09:00-17:00), can be seen below in Table 17.

TABLE 17: BS 4142:2014+A1:2019 ASSESSMENT

Results	Sound Level (dB)	Notes
Cumulative Specific Sound Level	39	As shown in Table 8.
Rating Penalty	0	As discussed in Table 14.
Rating Sound Level	39	-
Night-time Background Sound Level	39	As shown in Table 5.
Excess of Rating over Night-time Background Sound Level	0	Assessment indicates a <i>“Low Impact”</i> .

The assessment indicates that, during the Night-time period, the Proposed Development is likely to have a ‘Low Impact’ in BS 4142-terms.

7. CONCLUSION

inacoustic has been commissioned to prepare a noise assessment, assessing an updated kitchen extract system at The Priory Hotel & Restaurant, Caerleon, Newport.

The assessment identifies that the Proposed Development will not result in noise rating levels exceeding the existing background sound level at the nearest sensitive receptor (NSR1) during the worst-case night-time.

It is therefore asserted that, taking account of the operational profile of the Site, that the assessment demonstrates that the Proposed Development can be brought forward without the need for operating restrictions.

Consequently, the assessment demonstrates that the Proposed Development will give rise to noise impacts that would be within the range of '*No Observed Adverse Effect Level (NOAEL)*' of the NPPG England guidance.

Since the Proposed Development conforms to British Standard and National Planning Policy requirements, it is recommended that noise should not be a considered constraint to the approval of this Planning Application.

8. APPENDICES

8.1. Appendix A – Definition of Terms

Sound Pressure	Sound, or sound pressure, is a fluctuation in air pressure over the static ambient pressure.
Sound Pressure Level (Sound Level)	The sound level is the sound pressure relative to a standard reference pressure of 20µPa (20x10 ⁻⁶ Pascals) on a decibel scale.
Decibel (dB)	A scale for comparing the ratios of two quantities, including sound pressure and sound power. The difference in level between two sounds s1 and s2 is given by 20 log ₁₀ (s1 / s2). The decibel can also be used to measure absolute quantities by specifying a reference value that fixes one point on the scale. For sound pressure, the reference value is 20µPa.
A-weighting, dB(A)	The unit of sound level, weighted according to the A-scale, which takes into account the increased sensitivity of the human ear at some frequencies.
Noise Level Indices	Noise levels usually fluctuate over time, so it is often necessary to consider an average or statistical noise level. This can be done in several ways, so a number of different noise indices have been defined, according to how the averaging or statistics are carried out.
$L_{eq,T}$	A noise level index called the equivalent continuous noise level over the time period T. This is the level of a notional steady sound that would contain the same amount of sound energy as the actual, possibly fluctuating, sound that was recorded.
$L_{max,T}$	A noise level index defined as the maximum noise level during the period T. L_{max} is sometimes used for the assessment of occasional loud noises, which may have little effect on the overall L_{eq} noise level but will still affect the noise environment. Unless described otherwise, it is measured using the 'fast' sound level meter response.
$L_{90,T}$	A noise level index. The noise level exceeded for 90% of the time over the period T. L_{90} can be considered to be the "average minimum" noise level and is often used to describe the background noise.
$L_{10,T}$	A noise level index. The noise level exceeded for 10% of the time over the period T. L_{10} can be considered to be the "average maximum" noise level. Generally used to describe road traffic noise.
Free-Field	Far from the presence of sound reflecting objects (except the ground), usually taken to mean at least 3.5m
Facade	At a distance of 1m in front of a large sound reflecting object such as a building façade.
Fast Time Weighting	An averaging time used in sound level meters. Defined in BS 5969.

In order to assist the understanding of acoustic terminology and the relative change in noise, the following background information is provided.

The human ear can detect a very wide range of pressure fluctuations, which are perceived as sound. In order to express these fluctuations in a manageable way, a logarithmic scale called the decibel, or dB scale is used. The decibel scale typically ranges from 0 dB (the threshold of hearing) to over 120 dB. An indication of the range of sound levels commonly found in the environment is given in the following table.

TABLE A1: TYPICAL SOUND LEVELS FOUND IN THE ENVIRONMENT

Sound Level	Location
0dB(A)	Threshold of hearing
20 to 30dB(A)	Quiet bedroom at night
30 to 40dB(A)	Living room during the day
40 to 50dB(A)	Typical office
50 to 60dB(A)	Inside a car
60 to 70dB(A)	Typical high street
70 to 90dB(A)	Inside factory
100 to 110dB(A)	Burglar alarm at 1m away
110 to 130dB(A)	Jet aircraft on take off
140dB(A)	Threshold of Pain

The ear is less sensitive to some frequencies than to others. The A-weighting scale is used to approximate the frequency response of the ear. Levels weighted using this scale are commonly identified by the notation dB(A).

In accordance with logarithmic addition, combining two sources with equal noise levels would result in an increase of 3 dB(A) in the noise level from a single source.

A change of 3 dB(A) is generally regarded as the smallest change in broadband continuous noise which the human ear can detect (although in certain controlled circumstances a change of 1 dB(A) is just perceptible). Therefore, a 2 dB(A) increase would not be normally be perceptible. A 10 dB(A) increase in noise represents a subjective doubling of loudness.

A noise impact on a community is deemed to occur when a new noise is introduced that is out of character with the area, or when a significant increase above the pre-existing ambient noise level occurs.

For levels of noise that vary with time, it is necessary to employ a statistical index that allows for this variation. These statistical indices are expressed as the sound level that is exceeded for a percentage of the time period of interest. In the UK, traffic noise is measured as the L_{A10} , the noise level exceeded for 10% of the measurement period. The L_{A90} is the level exceeded for 90% of the time and has been adopted to represent the background noise level in the absence of discrete events. An alternative way of assessing the time varying noise levels is to use the equivalent continuous sound level, L_{Aeq} .

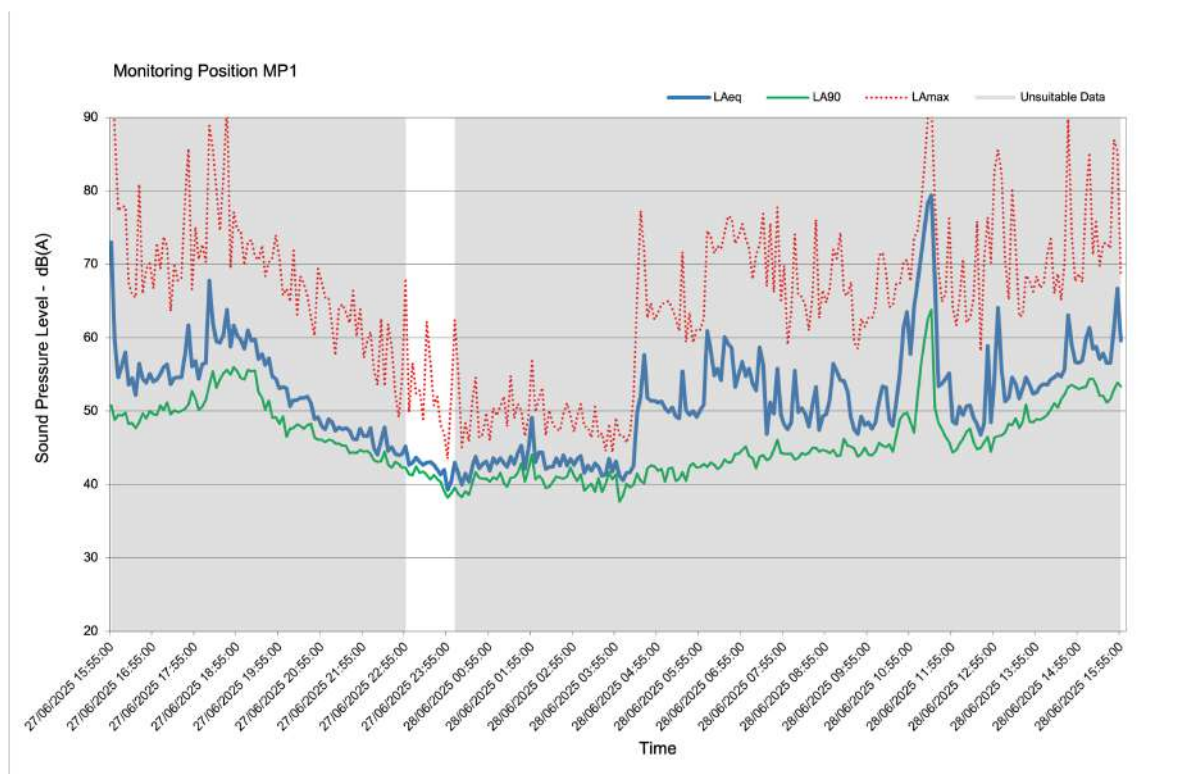
This is a notional steady level that would, over a given period of time, deliver the same sound energy as the actual fluctuating sound.

To put these quantities into context, where a receiver is predominantly affected by continuous flows of road traffic, a doubling or halving of the flows would result in a just perceptible change of 3 dB, while an increase of more than 25%, or a decrease of more than 20%, in traffic flows represent changes of 1 dB in traffic noise levels (assuming no alteration in the mix of traffic or flow speeds).

Note that the time constant and the period of the noise measurement should be specified. For example, BS 4142 specifies background noise measurement periods of 1 hour during the day and 15 minutes during the night. The noise levels are commonly symbolised as $L_{A90,1\text{hour}}$ dB and $L_{A90,15\text{mins}}$ dB. The noise measurement should be recorded using a 'FAST' time response equivalent to 0.125 ms.

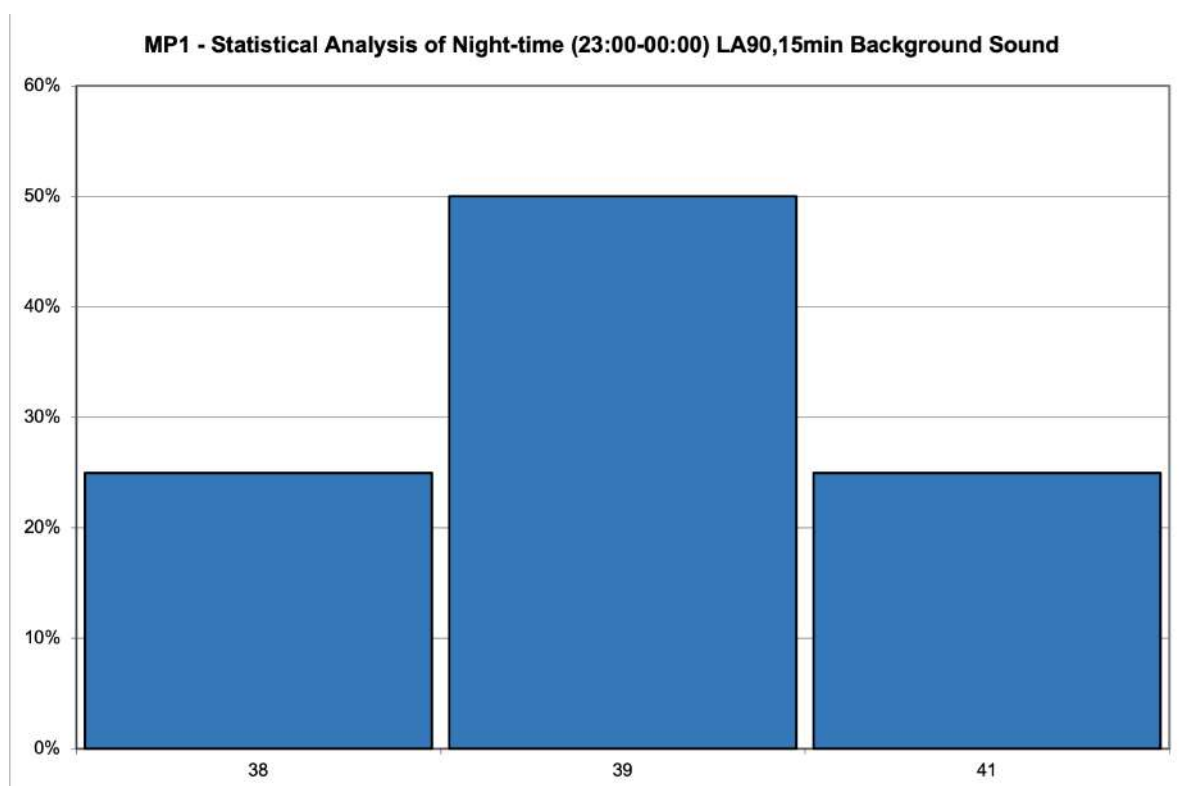
8.2. Appendix B – Sound Measurement Results

FIGURE 5: MEASURED TIME HISTORY – MP1



8.3. Appendix C – Statistical Analysis

FIGURE 6: STATISTICAL ANALYSIS OF L_{A90} BACKGROUND – NIGHT-TIME - MP1



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