



**10 Gun Street,
Reading**
Noise Impact Assessment

On behalf of **PDR Ltd.**

Project Ref: 332511318/202 | Rev: 0 | Date: December 2022

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1 Introduction

1.1 Background

- 1.1.1 Stantec UK Ltd. has been commissioned by PDR Ltd. to undertake a noise impact assessment to support a full planning application for the proposed redevelopment of 10 Gun Street, Reading RG1 2JR to comprise new venue space and supporting facilities.
- 1.1.2 The proposed redevelopment is to consist of an extension to The Purple Turtle, located adjacent to the site at 9 Gun Street, Reading and will consist of a proposed venue space at ground floor, a café fronting onto Gun Street at both ground floor and first floor level and a roof terrace area.
- 1.1.3 A previous planning application was submitted to Reading Borough Council (RBC) in July 2015 for the *'change of use from office (Class B1) to café/restaurant (Class A3) at basement to second floor level, including replacement ground and first floor rear extension'* (Planning Reference No. 151281). The application was approved in August 2016. As no works commenced at the site, the applicant wishes to resubmit the application for a simpler scheme consisting of a *'two storey rear extension to no 10 Gun Street at basement and ground floor levels to create venue with additional two storey building to the rear of the brook for ancillary, storage, and escape route purposes'*.
- 1.1.4 This report presents the relevant results of the environmental sound surveys undertaken by Stantec UK Ltd. and considers the suitability of the site for the proposed development, having regard to planning policy, national and international standards and guidance documents, in relation to environmental noise.
- 1.1.5 A glossary of acoustic terminology used within the report is contained in **Appendix A**.

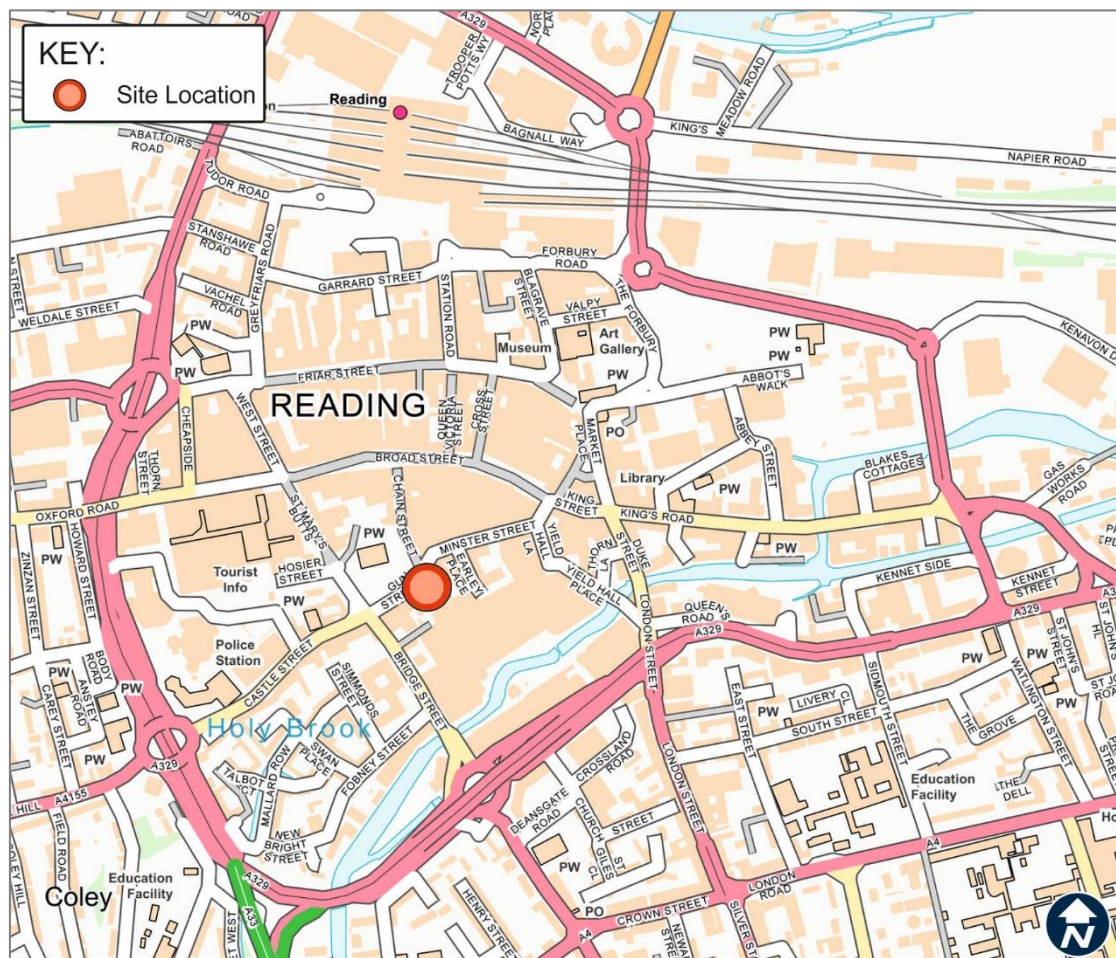
1.2 Scope of Assessment

- 1.2.1 The scope of the noise impact assessment report is as follows:
- Identify relevant national and local planning policy and guidance relevant to noise for the proposed redevelopment.
 - Present the results of the environmental sound surveys undertaken by Stantec UK Ltd.
 - Consider the suitability of the site for the proposed venue space and supporting facilities with respect to noise.

1.3 Site Location and Description

- 1.3.1 The proposed development site is located at 10 Gun Street, Reading, Berkshire RG1 2JR, in Reading town centre and falls within the jurisdiction of RBC.
- 1.3.2 The site consists of an existing vacant building and brownfield land. The site is bound by Gun Street to the north west, residential apartments at 11-12 Gun Street to the north east, an access road from Bridge Street to the south east and The Purple Turtle bar at 9 Gun Street to the south. The Oracle shopping centre lies to the east of the site, pedestrian access of which lies approximately 30 m to the east of the site.
- 1.3.3 The location of the proposed site is detailed in **Figure 1**.

Figure 1: Site Location



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2 Policy, Standards, Guidance and Criteria

2.1 Local Policy

2.1.1 The Environmental Health Department (EHD) at the Local Authority was contacted to discuss and agree the survey and assessment methodology.

2.1.2 It was agreed that¹:

- An environmental sound survey would be undertaken at the site for a 24-hour period that repeats the survey undertaken to support the previous planning application.
- A preliminary assessment of the likely noise impact from patrons using the proposed new terrace area would be undertaken at the nearest noise sensitive receptors; and
- Plant noise emission limits would be provided based on the results of the environmental sound survey and the requirements of the Local Authority.

2.1.3 With regards to plant noise emission limit criteria, the EHD advised that:

“The predicted specific sound level ($L_{Aeq,Tr}$) (with reference to BS:4142) as measured at a point 1 metre external to the nearest noise-sensitive facade shall be at least 10dB below the pre-existing background sound level, $L_{A90,T}$ when all plant/equipment (or any part of it) is in operation. The predicted rating level, $L_{Ar,Tr}$ (specific sound level plus any adjustment for the characteristic features of the sound) as measured at a point 1 metre external to the nearest noise-sensitive facade (habitable window of a dwelling) shall not exceed the pre-existing background sound level, $L_{A90,T}$ when all plant/equipment (or any part of it) is in operation.”

2.2 National Policy

The National Planning Policy Framework (NPPF)

2.2.1 The revised National Planning Policy Framework (NPPF) was published in July 2021. In respect of noise, paragraph 174 states that in relation to conserving and enhancing the natural environment:

“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 ... noise pollution...”*

2.2.2 In relation to ground conditions and pollution, paragraph 185 states that:

“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:

¹ Email correspondence received from Rebecca Moon, Senior Environmental Health Officer at Reading Borough Council, dated 07 November 2022.

- *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 quality of life;*
- *Identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason...*

2.2.3 In relation to the integration of new development with existing premises and community facilities, paragraph 187 states that:

“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.”

National Planning Practice Guidance

2.2.4 The Planning Practice Guide (PPG) was launched in 2014 (with the latest update being in 2019) and provides additional guidance and interpretation to the Government’s strategic policies outlined within the NPPF in a regularly updated, web-based resource.

2.2.5 The PPG provides guidance on the effects of noise exposure, relating these to people’s perception of noise, and linking them to the no observed effect level (NOEL) and, as exposure increases, the lowest observed adverse effect level (LOAEL) and significant observed adverse effect level (SOAEL).

2.2.6 As exposure increases above the LOAEL, the noise begins to have an adverse effect and consideration needs to be given to mitigating and minimising those effects, taking account of the economic and social benefits being derived from the activity causing the noise. As the noise exposure increases, it will then at some point cross the SOAEL boundary.

2.2.7 Exposure to noise above the LOAEL is described in PPG (Paragraph: 005 Reference ID: 30-005-20190722) as:

“...noise starts to cause small changes in behaviour and/or attitude, for example, having to turn up the volume on the television or needing to speak more loudly to be heard. The noise therefore starts to have an adverse effect and consideration needs to be given to mitigating and minimising those effects (taking account of the economic and social benefits being derived from the activity causing the noise).”

2.2.8 Exposure to noise above SOAEL is described as:

“...noise causes a material change in behaviour such as keeping windows closed for most of the time or avoiding certain activities during periods when the noise is present. If the exposure is predicted to be above this level the planning process should be used to avoid this effect occurring, for example through the choice of sites at the plan-making stage, or by use of appropriate mitigation such as by altering the design and layout. While such decisions must be made taking account of the economic and social benefit of the activity causing or affected by the noise, it is undesirable for such exposure to be caused.”

Noise Policy Statement for England

2.2.9 The Noise Policy Statement for England (NPSE) was published in March 2010 and clarifies the underlying principles and aims of existing policy documents that relate to noise. It also sets out the long-term vision of Government noise policy which is: *“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”.

- 2.2.10 The NPSE states that noise should not be considered in isolation of the wider benefits of a scheme or development, and that the intention is to minimise noise and its effects as far as is reasonably practicable having regard to the underlying principles of sustainable development.
- 2.2.11 Paragraphs 2.20 and 2.21 define ‘significant adverse’ and ‘adverse’ impacts as applied to noise as follows:

“There are two established concepts from toxicology that are currently being applied to noise impacts, for example, by the World Health Organisation. They are:

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.

LOAEL – Lowest Observed Adverse Effect Level

This is the level above which adverse effects on health and quality of life can be detected.

Extending these concepts for the purpose of this NPSE leads to the concept of a significant observed adverse effect level.

SOAEL – Significant Observed Adverse Effect Level

This is the level above which significant adverse effects on health and quality of life occur.”

- 2.2.12 Paragraph 2.22 clarifies that:

“It is not possible to have a single objective noise-based measure that defines SOAEL that is applicable to all sources of noise in all situations. Consequently, the SOAEL is likely to be different for different noise sources, for different receptors and at different times. It is acknowledged that further research is required to increase our understanding of what may constitute a significant adverse impact on health and quality of life from noise. However, not having specific SOAEL values in the NPSE provides the necessary policy flexibility until further evidence and suitable guidance is available.”

- 2.2.13 The three aims of the NPSE are defined as follows:

“Avoid significant adverse impacts on health and quality of life from environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development.”

“Mitigate and minimise adverse impacts on health and quality of life from environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development.” (Note: Applies when the impact lies somewhere between the LOAEL and SOAEL and does not mean that adverse effects cannot occur).”

“Where possible, contribute to the improvement of health and quality of life through the effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development.”

2.3 Guidance

Guidelines for Environmental Noise Impact Assessment

- 2.3.1 The Institute of Environmental Assessment (IEMA) Guidelines for Environmental Noise Impact Assessment detail an assessment process applicable to a wide range of potential environmental noise sources where a specific assessment method either does not exist or is not considered to be appropriate.

- 2.3.2 The guidelines suggest that by defining the sensitivity of receptors, the change in noise environment as a result of the source under consideration, and considering the type of noise, an assessment of the potential noise impact can be undertaken.
- 2.3.3 Receptors are those aspects of the environment sensitive to changes in baseline conditions. The sensitivity of a particular receptor depends upon the extent to which it is susceptible to such changes. Residential receptors are typically considered to have a high sensitivity with commercial and industrial receptors considered to have a low or negligible sensitivity.
- 2.3.4 Based on the IEMA guidelines, **Table 2.1** details the relative change in sound level and the corresponding magnitude of change at a typical receptor of high sensitivity (e.g. a residential receptor).

Table 2.1: Magnitude of Change and Description of Effect at a Receptor with High Sensitivity

Relative Change in Sound Level	Magnitude of Change	Description of Effect
Greater than 10 dB change	Large	Noticeable and Very Disruptive Very Substantial Impact
5 to 9.9 dB change	Medium	Noticeable and Disruptive Substantial Impact
3 to 4.9 dB change	Small	Noticeable and Intrusive Moderate Impact
2.9 dB or less change	Negligible	Noticeable and Not Intrusive

- 2.3.5 The assessment of noise associated with patrons at the proposed redevelopment has been undertaken in accordance with the above guidance.

2.4 Standards

British Standard 4142:2014+A1:2019 Methods for Rating and Assessing Industrial and Commercial Sound

- 2.4.1 BS 4142:2014+A1:2019 describes methods for rating and assessing sound of an industrial and/or commercial nature. The methods described in the standard use outdoor sound levels to assess the likely effects of sound on people who might be inside or outside a dwelling or premises used for residential purposes upon which sound is incident.
- 2.4.2 The standard is used to determine the rating levels for sources of sound of an industrial and/or commercial nature and the ambient, background and residual sound levels at outdoor locations. These levels could be used for the purposes of investigating complaints; assessing sound from proposed, new, modified or additional source(s) of sound of an industrial and/or commercial nature; and assessing sound at proposed new dwellings or premises used for residential purposes. However, the determination of noise amounting to a nuisance is beyond the scope of the standard.
- 2.4.3 The standard should not be used to assess sound from the passage of vehicles on public roads and railway systems; recreational activities; music and other entertainment; shooting grounds; construction and demolition; domestic animals; people; public address systems for speech and other sources falling within the scopes of other standards or guidance. The standard cannot be applied to the derivation of indoor sound levels arising from sound levels outside, or the assessment of indoor sound levels.
- 2.4.4 The procedure contained in BS 4142 assesses the significance of sound which depends upon the margin by which the rating level of the specific sound sources exceeds the background

sound level and the context in which the sound occurs/will occur. It is noted that a BS 4142 assessment is reliant on measuring relevant background sound levels.

2.4.5 An initial estimate of the impact of the specific sound is obtained by subtracting the measured background sound level from the rating level and considering the following:

- Typically, the greater this difference, the greater the magnitude of the impact.
- A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context.
- A difference of around +5 dB is likely to be an indication of an adverse impact, depending on the context; and
- 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.

2.4.6 When considering the introduction of a new noise sensitive receptor Section 8.5 states:

“Measure the background sound at the intended location of any new noise-sensitive receptor(s) in the absence of any specific sound.

NOTE Where a new noise-sensitive receptor is introduced and there is extant industrial and/or commercial sound, it should be recognized that the industrial and/or commercial sound forms a component of the acoustic environment. In such circumstances other guidance and criteria in addition to or alternative to this standard can also inform the appropriateness of both introducing a new noise-sensitive receptor and the extent of required noise mitigation.”

2.4.7 To consider the context, BS 4142 advises that the following factors should be considered:

- The absolute level of sound.
- The character and level of the residual sound compared to the character and level of the specific sound; and
- The sensitivity of the receptor and whether dwellings or other premises used for residential purposes will already incorporate design measures that secure good internal and/or outdoor acoustic conditions such as:
 - Façade insulation treatment.
 - Ventilation and/or cooling that will reduce the need to have windows open to provide rapid or purge ventilation; and

2.4.8 Plant noise emission limits for the proposed redevelopment have been suggested in accordance with the above standard, whilst having regard for the requirements of the Local Authority.

3 Environmental Sound Survey

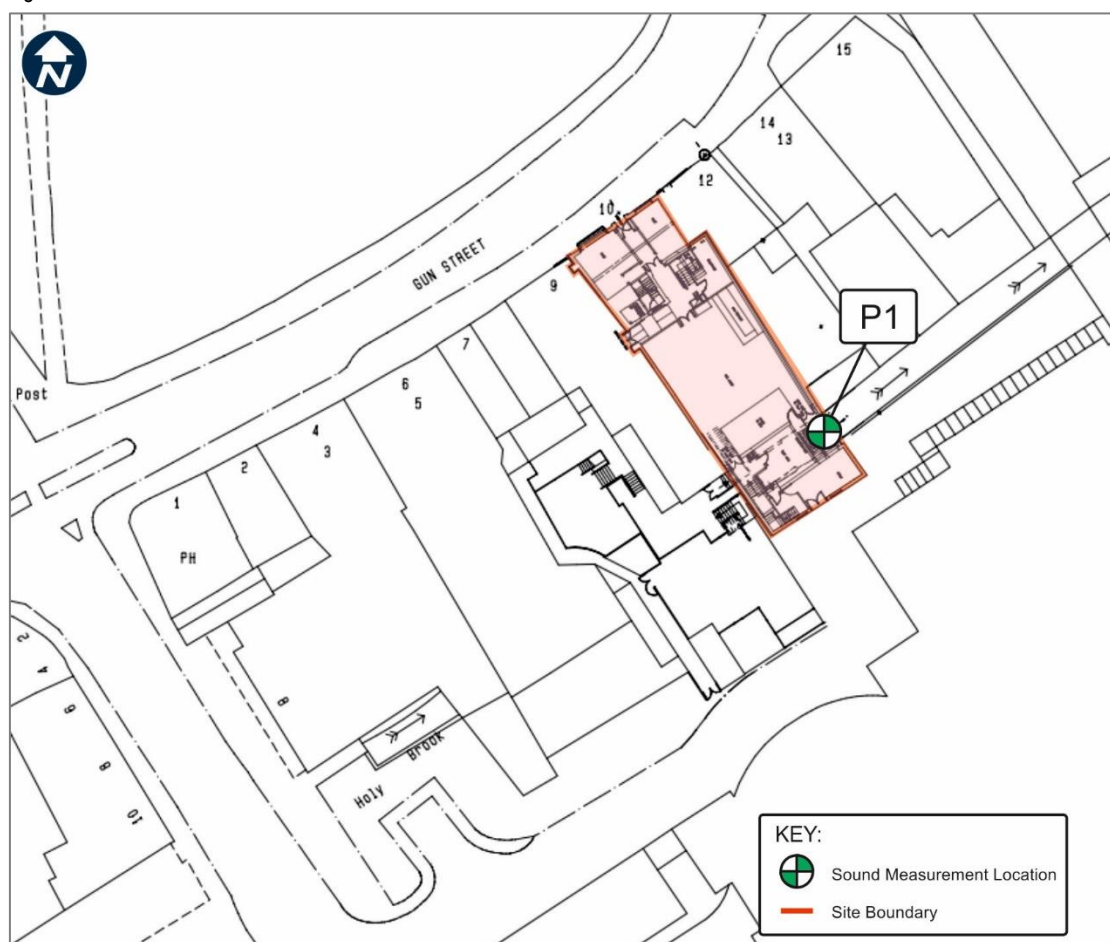
3.1 Procedure

- 3.1.1 An unattended environmental sound survey was undertaken at position P1 from approximately 12:15 hours on Thursday 17 November 2022 to approximately 13:15 hours on Friday 18 November 2022. Measurements were logged in 15-minute periods of the L_{Aeq} , L_{A90} and L_{AFMax} sound levels.
- 3.1.2 The measurements were undertaken to determine the existing sound climate at a location considered representative of sound levels incident at the nearest noise sensitive receptor during an event occurring at The Purple Turtle. The sound level meter was located in an environmental case. The microphone was connected to the meter via an extension cable and fitted with the manufacturer's windshield.
- 3.1.3 The instrumentation used in the survey (including calibration information) is listed in **Appendix B**. Field calibrations were performed before and after the measurements with no significant fluctuations recorded (< 0.5 dB). Calibration certificates are available upon request.

3.2 Measurement Locations

- 3.2.1 Sound measurements were undertaken at a single position as illustrated in **Figure 2**.

Figure 2: Sound Measurement Locations



Courtesy of Alan Brown Design.

- 3.2.2 The microphone was located approximately 2.5 m above ground level, in a free-field position on the eastern boundary of the site, approximately 30 m from Gun Street, approximately 70 m from Bridge Street and approximately 5 m from the window of the nearest noise sensitive receptor.

3.3 Meteorological Conditions

- 3.3.1 Due to the nature of the survey (i.e. unattended), it is not possible to comment on the weather conditions for the entire duration of the survey. However, at the beginning of the survey period, the temperature was cool (11°C) with a gentle breeze from the west (approx. 5 m/s) and approximately 70% cloud cover with no precipitation.
- 3.3.2 At the end of the survey period, the temperature was cool (11°C) with a gentle breeze from the west (approx. 5 m/s) and approximately 90% cloud cover with no precipitation.
- 3.3.3 These weather conditions, as described above, are considered to be suitable for obtaining representative sound level measurements.

3.4 Assumptions/Limitations

- 3.4.1 The engineer noticed nothing unusual in terms of the sound climate at the time of the survey. This report refers, within the limitations stated, to the environment of the Site in the context of the surrounding area at the time of the inspections. Environmental conditions can vary. No warranty is given as to the possibility of changes in the environment of the Site and surrounding area at differing times.

3.5 Environmental Sound Climate

- 3.5.1 Due to the nature of the survey (i.e. unattended) it is not possible to accurately comment on the dominant noise sources or specific noise events during the entire survey period. However, the dominant noise source was noted to be vehicular movements on the surrounding road network. Noise associated with pedestrians accessing the nearby Oracle shopping centre was audible when occurring.
- 3.5.2 A review of the environmental sound survey data indicated that noise associated with patrons in the external area of The Purple Turtle was audible between approximately 00:00 and 02:45 hours.
- 3.5.3 During the survey, the sound climate was noted to be dominated by vehicle movements. During their time on-site, the engineer did not consider natural sound sources (e.g. tree leaves or grass rustling in the wind, birdsong, sound from water flow etc.) to have a significant impact on the overall measured sound level at the measurement locations.

3.6 Environmental Sound Survey Results

- 3.6.1 A summary of the unattended sound survey results is presented in **Table 3.1**. Time-history graphs detailing the full results of the unattended sound survey are contained in **Appendix C**.
- 3.6.2 A review of the environmental sound survey data indicated that the results were likely affected by noise associated with the operation of vehicles and/or mobile equipment on the nearby access road between 06:00 and 07:30 hours. This is considered to not be representative of the typical environmental sound climate at the site. Therefore, this data has been excluded from the assessment and the summary results table below.

Table 3.1: Summary of Environmental Sound Survey Results

Position	Period, T	Measured Environmental Sound Levels (dB)		
		Minimum L _{Aeq,15mins}	L _{Aeq,T}	Minimum L _{A90} *
P1	Daytime (07:00 to 23:00)	49	54	47
	Night-time (23:00 to 07:00)	44	55	41

4 Noise Impact Assessment

4.1 Overview

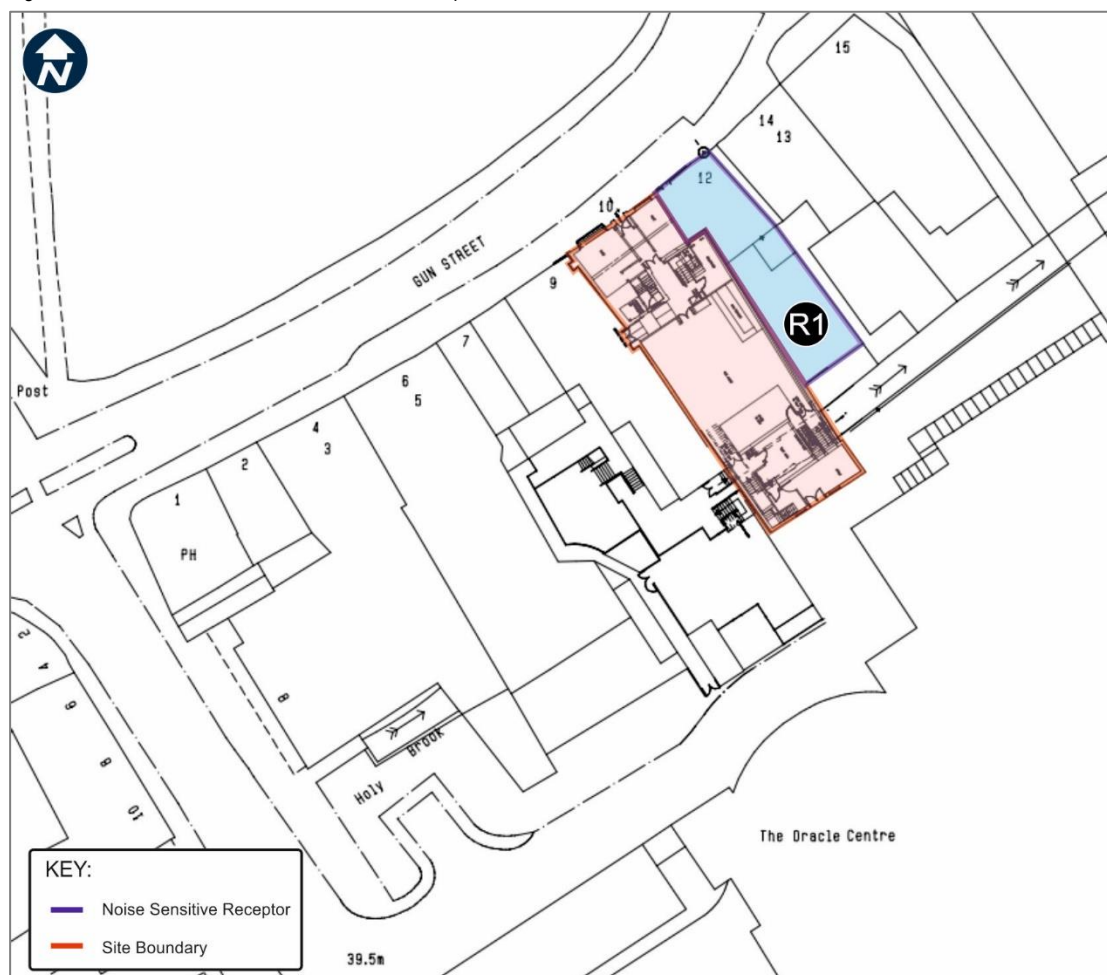
- 4.1.1 An assessment has been undertaken to determine the likely noise impact associated with patrons making use of the proposed new outdoor roof terrace area.

4.2 Patron Noise

Noise Sensitive Receptors

- 4.2.1 The nearest noise sensitive receptor is considered to be the residential apartments located to the east of the proposed development at 11-12 Gun Street, Reading RG1 2JR. **Figure 3** illustrates the location of the receptor in relation to the proposed redevelopment.

Figure 3: Location of Nearest Noise Sensitive Receptor



Courtesy of Alan Brown Design.

Source Sound Levels

- 4.2.2 **Table 4.1** details the measured source sound levels used within the assessment. Based on the proposed plans, an outdoor roof terrace with a capacity of 22 people has been considered.

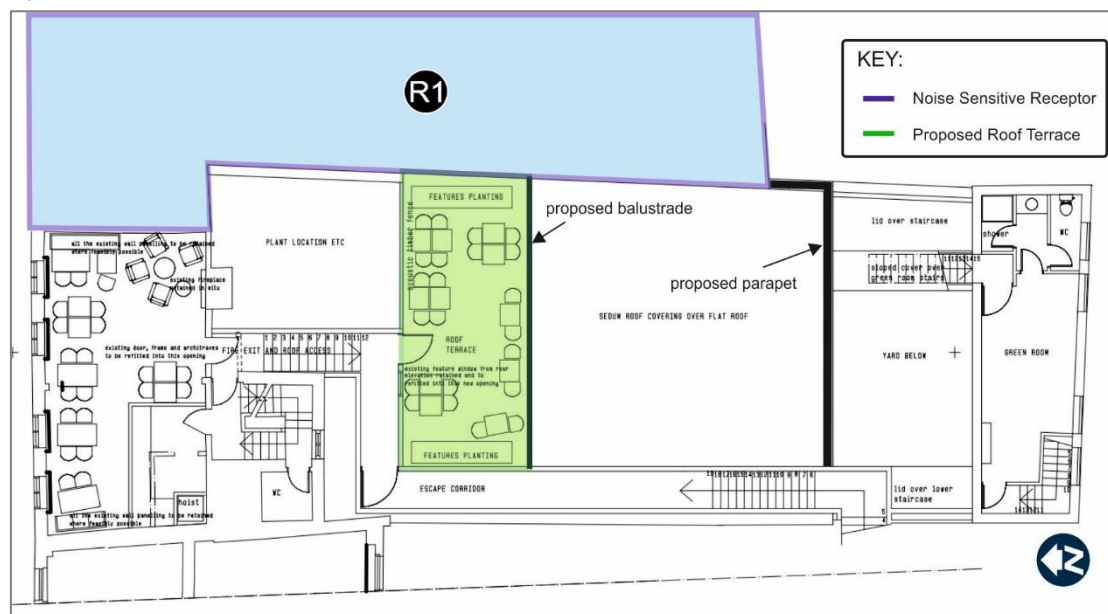
Table 4.1: Source Sound Levels

Description	Source Sound Level (dBA)
1 Person Speaking with a Raised Voice	60

Roof Terrace Location

4.2.3 **Figure 4** illustrates the location of the proposed outdoor roof terrace at first floor level in relation to the nearest noise sensitive receptor.

Figure 4: Proposed Roof Terrace Locations



Courtesy of Alan Brown Design.

Assessment Assumptions

4.2.4 Our assessment has been based on the following:

- The proposed opening hours of the venue are at this stage unknown. Therefore, the assessment considers the use of the roof terrace area at any time during a daytime and night-time period.
- Based on the proposed plans, an outdoor roof terrace has a capacity of 22 people. As such, the assessment considers the source sound level occurring 22 times simultaneously during the assessment period.
- The assessment has been undertaken at the nearest first-floor window on the southern facing façade at the noise sensitive receptor.
- The proposed outdoor roof terrace will be open with no roof.
- The proposed outdoor roof terrace is to be bound by a balustrade to the south. However, the exact height and construction (e.g. solid, post and rail) are at this stage unknown. Therefore, it has been assumed that this provides no acoustic screening in the calculation of patron noise.
- The proposed sedum roof to the south of the proposed outdoor roof terrace is to be bound by a parapet. However, the exact height and construction are at this stage unknown.

Therefore, it has been assumed that this provides no acoustic screening in the calculation of patron noise.

- Screening provided by the façade forming the receptor building has been considered within the calculation of patron noise.

Results of Assessment

4.2.5 Calculations have been undertaken to determine the likely noise levels associated with patron noise at the nearest noise sensitive receptor.

4.2.6 The likely noise levels during both the daytime (07:00 to 23:00 hours) and night-time periods (23:00 to 07:00 hours) has been considered. The assessment considers the minimum measured 15-minute ambient sound level during these periods.

4.2.7 **Table 4.2** presents the results of the assessment.

Table 4.2: Results of Patron Noise Assessment

Description	Time Period	
	Daytime (07:00 to 23:00 hours)	Night-Time (23:00 to 07:00 hours)
Calculated Patron Noise at Receptor 1, dB $L_{Aeq,15minutes}$	40	
Minimum Measured Ambient Noise Level at Position P1, dB $L_{Aeq,15minutes}$	49	44
Calculated Cumulative Ambient Sound Level at Receptor 1, dB $L_{Aeq,15minutes}$	50	46
Change in Noise Level (dB)	+1	+2
Magnitude of Impact	Negligible	Negligible

4.2.8 The results of the assessment indicate that the use of the proposed outdoor roof terrace area by patrons is likely to have a negligible impact at the nearest noise sensitive receptor when in use during the daytime and night-time periods.

4.2.9 It should be noted that the assessment considers the minimum measured ambient sound level during the daytime and night-time period. The ambient noise level at the nearest noise sensitive receptor has the potential to be higher. This is likely to reduce the impact of patron noise at the receptor further.

4.2.10 Therefore, when considering the above, noise levels from patron use of the proposed outdoor roof terrace area should be considered acceptable.

4.3 Internal Noise Breakout

4.3.1 Internal noise associated with the operation of the proposed redevelopment (e.g. music, event noise) has the potential to impact the nearby noise sensitive receptor through the breakout of noise through the separating wall.

4.3.2 Noise generated by the proposed use should adhere to the standards and requirements routinely imposed by RBC through the use of suitable planning conditions.

4.3.3 The proposed operators would be responsible for controlling noise by limiting their activities and/or providing additional attenuation and insulation, where required.

- 4.3.4 Through a combination of appropriate design secured by planning obligations, additional planning restrictions, licensing restrictions and lease agreements, the breakout of noise through the separating wall is likely to be suitably controlled.

5 Plant Noise Emission Limits

5.1 Overview

- 5.1.1 The exact specification and location of plant to be installed at the proposed redevelopment is at this stage unknown. Therefore, plant noise emission limits have been proposed based on the results of the environmental sound survey and the requirements of the Local Authority.

5.2 Local Authority Requirements

- 5.2.1 RBC has advised through consultation that:

“The predicted specific sound level ($L_{Aeq,TR}$) (with reference to BS:4142) as measured at a point 1 metre external to the nearest noise-sensitive facade shall be at least 10dB below the pre-existing background sound level, $L_{A90,T}$ when all plant/equipment (or any part of it) is in operation. The predicted rating level, $L_{Ar,Tr}$ (specific sound level plus any adjustment for the characteristic features of the sound) as measured at a point 1 metre external to the nearest noise-sensitive facade (habitable window of a dwelling) shall not exceed the pre-existing background sound level, $L_{A90,T}$ when all plant/equipment (or any part of it) is in operation.”

5.3 Proposed Plant Noise Emission Limits

- 5.3.1 Based on the results of the environmental sound surveys and the typical requirements of the local authority the plant noise emission limits are proposed in **Table 5.1**.
- 5.3.2 The proposed plant noise emission limits should be achieved at 1 m from the window of the residential building located at Receptor 1.

Table 5.1: Proposed Plant Noise Emission Limits

Receptor	Receptor Type	Time Period	Proposed Rating Sound Level, dB $L_{Ar,Tr}$
Receptor 1	Residential	Daytime (07:00 to 23:00 hours)	47
		Night-Time (23:00 to 07:00 hours)	41

6 Conclusions

- 6.1.1 Stantec UK Ltd. has been commissioned by PDR Ltd. to undertake a noise impact assessment to support a full planning application for the proposed redevelopment of 10 Gun Street, Reading RG1 2JR to comprise new venue space and supporting facilities.
- 6.1.2 The proposed redevelopment is to consist of an extension to The Purple Turtle, located adjacent to the site at 9 Gun Street, Reading and will consist of a proposed venue space at ground floor, a café fronting onto Gun Street at both ground floor and first floor level and a roof terrace area.
- 6.1.3 A previous planning application was submitted to Reading Borough Council (RBC) in July 2015 for the 'change of use from office (Class B1) to café/restaurant (Class A3) at basement to second floor level, including replacement ground and first floor rear extension' (Planning Reference No. 151281). The application was approved in August 2016. As no works commenced at the site, the applicant wishes to resubmit the application for a simpler scheme consisting of a 'two storey rear extension to no 10 Gun Street at basement and ground floor levels to create venue with additional two storey building to the rear of the brook for ancillary, storage, and escape route purposes'.
- 6.1.4 This report presents the relevant results of the environmental sound surveys undertaken by Stantec UK Ltd. and considers the suitability of the site for the proposed development, having regard to planning policy, national and international standards and guidance documents, in relation to environmental noise.
- 6.1.5 The results of the assessment indicate that the use of the proposed outdoor roof terrace area by patrons is likely to have a negligible impact at the nearest noise sensitive receptor when in use during a daytime and night-time period. Therefore, noise levels from patron use of the proposed outdoor roof terrace area should be considered acceptable.
- 6.1.6 Through a combination of appropriate design secured by planning obligations, additional planning restrictions, licensing restrictions and lease agreements, the breakout of noise through the separating wall is likely to be suitably controlled.
- 6.1.7 Plant noise emission limits have been proposed based on the results of the environmental sound survey and the requirements of the Local Authority.

Appendix A Glossary of Acoustic Terminology

Table A.1: Glossary of Acoustic Terminology

Parameter	Description
Ambient Noise Level	The totally encompassing sound in a given situation at a given time, usually composed of a sound from many sources both distant and near ($L_{Aeq,T}$).
Daytime	The period 07:00-23:00 hours.
Decibel (dB)	A scale for comparing the ratios of two quantities, including sound pressure and sound power. The difference in level between two sounds S_1 and S_2 is given by $20 \log_{10} (S_1/S_2)$. 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 $20\mu\text{Pa}$. The threshold of normal hearing is in the region of 0 dB and 140 dB is the threshold of pain. A change of 1 dB is only perceptible under controlled conditions.
dB(A), L_{Ax}	Decibels measured on a sound level meter incorporating a frequency weighting (A weighting) which differentiates between sounds of different frequency (pitch) in a similar way to the human ear. Measurements in dB(A) broadly agree with people's assessment of loudness. A change of 3 dB(A) is the minimum perceptible under normal conditions, and a change of 10 dB(A) corresponds roughly to halving or doubling the loudness of a sound. The background noise in a living room may be about 30 dB(A); normal conversation about 60 dB(A) at 1 metre; heavy road traffic about 80 dB(A) at 10 metres; the level near a pneumatic drill about 100 dB(A).
Fast Time Weighting	Setting on sound level meter, denoted by a subscript F, that determines the speed at which the instrument responds to changes in the amplitude of any measured signal. The fast time weighting can lead to higher values than the slow time weighting when rapidly changing signals are measured. The average time constant for the fast response setting is 0.125 (1/8) seconds.
Free-field	Sound pressure level measured outside, far away from reflecting surfaces (except the ground), usually taken to mean at least 3.5 metres
Façade	Sound pressure level measured at a distance of 1 metre in front of a large sound reflecting object such as a building façade.
L_{AE} or SEL	A noise level which, if maintained for a period of 1 second, would cause the same A-weighted sound energy to be received as is actually received from a given noise event.
$L_{Aeq,T}$	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 recorded during a noise event with a 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.
$L_{90,T}$ or Background Sound Level	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.
LOAEL	Lowest Observed Adverse Effect Level. This is the noise level above which adverse effects on health and quality of life can be detected.
Night-time	The period 23:00-07:00 hours.
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.

Parameter	Description
SOAEL	Significant Observed Adverse Effect Level. This is the level above which significant adverse effects on health and quality of life occur.
Sound Pressure	Sound, or sound pressure, is a fluctuation in air pressure over the static ambient pressure.
Sound Pressure Level, L_p	The sound pressure level, L_p is the sound pressure relative to a standard reference pressure of 20 μPa (20×10^{-6} Pascals) on a decibel scale.

Appendix B Instrumentation

B.1.1 The instrumentation used in the environmental sound survey is listed in **Table B.1**.

Table B.1: Environmental Sound Survey Instrumentation

Description	Manufacturer	Type	Serial Number	Laboratory Calibration Date
Sound Level Meter	Rion	NL-52	542901	10/01/2022
½" Pre-polarised microphone		UC-59	06478	
Pre-amplifier		NH-25	42929	
Calibrator	Rion	NC-74	34746691	15/08/2022

Appendix C Sound Time History Graphs

