



Altrad Generation UK Ltd, Manchester

Operational noise impact assessment

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Revision B



Altrad Generation UK Ltd, Manchester

Operational noise impact assessment

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1 Contents

1	Contents.....	2
2	Summary.....	3
3	Introduction	4
4	Planning policy and noise criteria	4
5	Assessment of Impacts	6
6	Conclusion.....	8
7	References	8
Appendix A	Noise exposure hierarchy	9
Appendix B	Professional qualifications and competence	10

2 Summary

- 2.1 This report focuses on the noise impact assessment related to the operational activities at Altrad Generation UK Ltd in Manchester (M22 4TF). Apex Acoustics conducted an environmental noise survey and assessment to ascertain compliance with the Manchester City Council (MCC) Planning & Noise Technical Guidance document, following the guidelines outlined in BS 4142.
- 2.2 A 3-hour noise survey was carried out during the early morning hours of January 24, 2024, to determine ambient background noise levels and noise specifically originating from Altrad's site at nearby noise sensitive receptors (NSRs). Measurements were taken at two positions - P1 near the residential receptors and P2 within Altrad's site.
- 2.3 During the site visit, it was observed that Altrad had installed a membrane barrier. This was implemented to ensure continuity with the existing barrier and to mitigate noise emissions in the vicinity of the identified NSRs.
- 2.4 The key findings are:
- Noise originating from Altrad's operations was deemed subjectively imperceptible at the residential properties, indicating that activities at Altrad's site did not significantly contribute to the ambient noise environment.
 - A comparative objective analysis between P1 and P2 revealed no discernible correlation in noise levels or spectral changes at P1 during louder events at P2. This lack of correlation suggests minimal noise impact from Altrad's current operations.
 - The absence of a noticeable noise contribution implies that Altrad's existing activities align with Manchester City Council's planning requirements without necessitating further mitigation.
 - In light of these findings, it can be concluded that Altrad's current operations exert a low noise impact on nearby noise-sensitive receptors. While potential future increases in operating hours or activities might elevate noise levels, the current noise emissions from the site are not anticipated to result in significant adverse impacts.
 - Should Altrad contemplate expansion or substantial changes to its on-site operations, it is advisable to conduct further noise assessments to determine if additional mitigation measures are warranted. Recognizing the potential for increased future noise underscores the importance of proactive engagement between Altrad and nearby residents, fostering a mutual understanding and addressing any emerging noise concerns at an early stage.

3 Introduction

- 3.1 This report addresses the evaluation of operational noise emanating from the daily activities conducted at Altrad Generation UK Ltd (Altrad), Manchester M22 4TF. The focus is on assessing potential impacts on nearby Noise Sensitive Receptors (NSRs).
- 3.2 Apex Acoustics Ltd (Apex) has been engaged to conduct a comprehensive noise assessment in accordance with the standards outlined in BS 4142:2014 (Reference 1). The primary objective is to ascertain the significance of potential impacts on the NSRs. The scope of our instruction includes:
- Conducting an on-site noise survey to establish typical early morning background and residual noise levels at pertinent sensitive receptors, along with specific noise levels originating from the site.
 - Evaluating potential noise impacts using the methodology outlined in BS 4142:2014 based on the recorded noise levels.
 - Providing recommendations for appropriate noise control measures to mitigate impacts as necessary
- 3.3 The geographical location of the site is depicted in Figure 1.



Figure 1: Altrad site (marked in red) and closest NSRs (indicated in green) (source: Google Earth)

4 Planning policy and noise criteria

4.1 National Planning Policy Framework (NPPF)

- 4.2 The National Planning Policy Framework (NPPF) (Reference 3) sets out the Government's planning policies for England and how these should be applied. It provides a framework within which locally-prepared plans for housing and other development can be produced. In respect of noise, Paragraph 180, 191 and 193 of the NPPF states the following:

4.3 Paragraph 180:

"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..."

4.4 Paragraph 191:

"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 life⁶⁵ [See Explanatory Note to the Noise Policy Statement for England];

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;

4.5 Paragraph 193:

"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. "

4.6 Noise Policy Statement for England (NPSE)

- 4.7 The Noise Policy Statement for England (Reference 4) states three policy aims as follows:

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

- avoid significant adverse impacts on health and quality of life;
 - mitigate and minimise adverse impacts on health and quality of life; and
 - where possible, contribute to the improvement of health and quality of life."
- 4.8 The NPSE defines adverse noise impact as follows:
- **No Observed Effect Level (NOEL)**
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.
 - **Lowest Observed Adverse Effect Level (LOAEL)**
This is the level above which adverse effects on health and quality of life can be detected.
 - **Significant Observed Adverse Effect Level (SOAEL)**
This is the level above which significant adverse effects on health and quality of life occur
- 4.9 The first two aims of the NPSE require that no significant adverse impact should occur and that, where a noise level which falls between a level which represents the lowest observable adverse effect and a level which represents a significant observed adverse effect, then according to the explanatory notes in the statement:
- "... all reasonable steps should be taken to mitigate and minimise adverse effects on health and quality of life whilst also taking into consideration the guiding principles of sustainable development. This does not mean that such effects cannot occur."
- 4.10 **Planning Practice Guidance – Noise**
- 4.11 Further Government guidance on how planning can manage potential noise impact in new development is outlined in Planning Practice Guidance (PPG-N) notes on the Government website: www.gov.uk/guidance/noise--2
- 4.12 **BS 4142**
- 4.13 BS 4142 defines an assessment method to quantify the potential level for adverse impact from commercial and / or industrial noise sources impacting upon sound sensitive receptors i.e. residential properties.
- 4.14 The method estimates the impact significance by comparing the Rated noise against the background sound levels, as summarised below:
- a) Typically, the greater this difference, the greater the magnitude of the impact.
 - b) A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context.
 - c) A difference of around + 5dB is likely to be an indication of an adverse impact, depending on the context.
- 4.15 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 sources having a low impact, depending on the context.
- 4.16 The terminology used in BS 4142 to describe the various levels of potential adverse impact in respect to the PPG-N noise hierarchy, are summarised Appendix A.
- 4.17 **Manchester City Council Planning & Noise Technical Guidance document**
- 4.18 Regarding industrial and commercial developments, the Manchester City Council (MCC) Planning & Noise Technical Guidance document (Reference 2) states the following:
- 4.19 Section 3.6.1.5 Industrial/Commercial Developments:
- "BS 4142 should be used to assess the likely impact of noise from industrial and commercial sources at noise sensitive premises (section 3.5). One of the indications of the impact of a BS 4142 assessment is 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.
- The Council consider that new developments should contribute and enhance the area in which they are located and where possible, contribute to the improvement of people's health and quality of life as per the NPSE [4]. With this in mind, the design objective should be:
- The development should be designed so as to achieve a rating level of 5dB (L_{Aeq}) below the typical background (L_{A90}) level at the nearest noise sensitive location".

5 Assessment of Impacts

5.1 Site survey

5.2 The residential properties on Roundwood Road, situated closest to Altrad's site, are anticipated to experience the highest noise impact. Notably, the dwellings to the southwest face an increased vulnerability to elevated noise levels due to the existing gap in the concrete barrier at Altrad's facility.

5.3 To determine the relevant background and specific noise levels at the Noise Sensitive Receptors (NSRs), Apex conducted an environmental noise survey on January 24, 2024. The survey spanned a 3-hour duration, specifically from 6:30 to 9:30 am, chosen to capture the time of day when background noise is anticipated to be at its lowest - a choice reflective of a worst-case scenario assessment. The survey was strategically conducted at Position P1, illustrated in Figure 2, where a microphone was positioned 2.5 meters above ground near the existing rear garden dwelling fences. Position P1 is deemed a representative location for capturing typical ambient and background sound levels at the identified NSRs.

5.4 To identify noise specifically originating from Altrad's site, concurrent measurements were taken within the site from 7-9 am. A second synchronized sound level meter was placed at Position P2, approximately 15 meters from the noisiest on-site activities during the measurement period. The P2 meter was mounted on a tripod with the microphone at 2 meter height. Both sound levels meters recorded audio.

5.5 During the site inspection, it was noticed that Altrad had installed a membrane barrier with the aim of maintaining consistency with the existing barrier and minimizing noise emissions around the identified NSRs.

5.6 The equipment utilized for the survey is detailed in Table 1 below.

Equipment	Model	Serial no.
Sound Level Meter	NTi XL2	A2A-11062-E0
Calibrator	Larson Davies Cal 200	13403
Sound Level Meter	NTi XL2	A2A-20287-E0
Calibrator	Larson Davies Cal 200	19379

Table 1: Equipment used

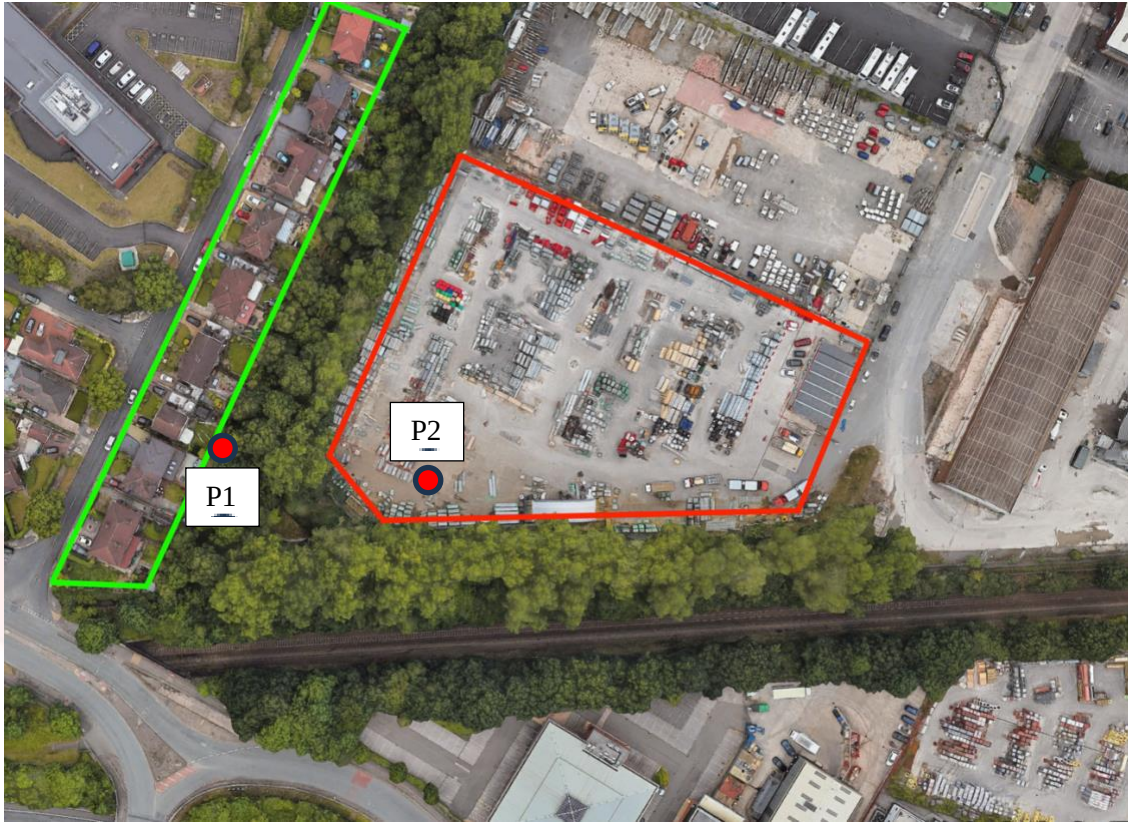


Figure 2: Site survey measurement position

5.7 Subjective impressions and description of noise sources

5.8 At Position P1, the predominant sources of discernible noise emanated from road and rail traffic. Throughout the assessment period, the noise generated by Altrads operations remained inaudible at all times, with no noticeable noise impacts.

5.9 At Position P2, the primary identifiable noise sources were attributed to the movements of on-site workers engaged in various tasks, such as carrying tools and materials. The ambient noise was further influenced by the operation of four forklifts transporting scaffolding materials and the occasional transit of transport lorries at the entrance of the site.

5.10 Background sound level

5.11 An analysis of the recorded background noise data was undertaken to determine the minimum recorded background noise levels for the day and night-time periods.

5.12 Based on the measurement results, the minimum background sound level, which occurs during the day and night-time periods, is shown in Table 2.

Assessment period	Measurement period	Minimum L _{A90} (dB)
Daytime	07:00 to 09:30 am	58
Night-time	06:30 to 07:00 am	61

Table 2: Minimum day and night time background noise levels

5.13 Specific sound level

5.14 To pinpoint the specific noise levels recorded at Position P1, a detailed analysis of the audio captured at both Position P1 and Position P2 was undertaken. Given the synchronization of the time stamps on both sound level meters, a comparative analysis was conducted to streamline this process.

5.15 Figure 3 and Figure 4 depict the L_{Aeq} and L_{AFmax} time history graphs, complemented by their corresponding spectrograms. Table 3 shows the periods, duration and recorded L_{Aeq} values at each position for any relevant activities at Altrad’s site. The audio analysis revealed no discernible correlation between the recorded noise levels at Position P1 and Position P2, indicating an absence of quantifiable noise levels originating from Altrad's site. Moreover, a thorough examination of the spectrograms at both positions supports this conclusion, as there were no observable spectral changes at Position P1, even during instances of louder events registered at Position P2. The L_{Aeq} differences at each position shown in Table 3 further support this view. Hence, the specific noise level at the NSR cannot be quantified from the noise level measurements at P1, as the existing residual noise environment is significantly greater than any of the specific noise generated by activities at the Altrad site.

5.16 This underscores the robustness of the findings and supports the assertion that the activities at Altrad's site did not contribute to the ambient noise levels at Position P1.

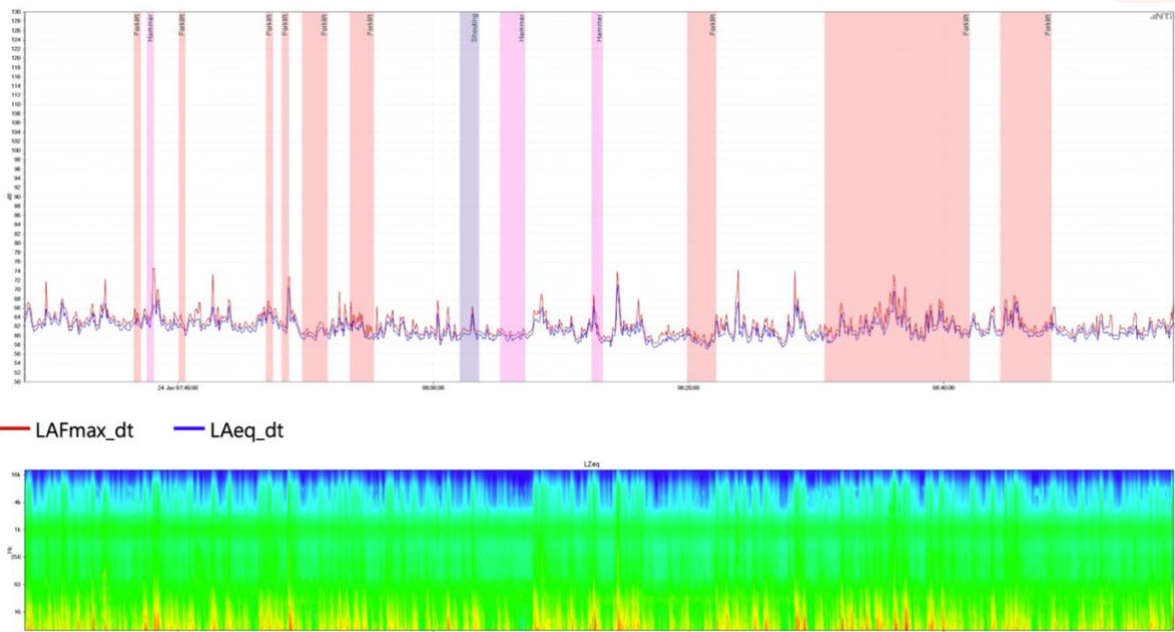


Figure 3: Time History of L_{Aeq,5sec} and L_{AFmax,5sec} alongside corresponding spectrogram at Position P1

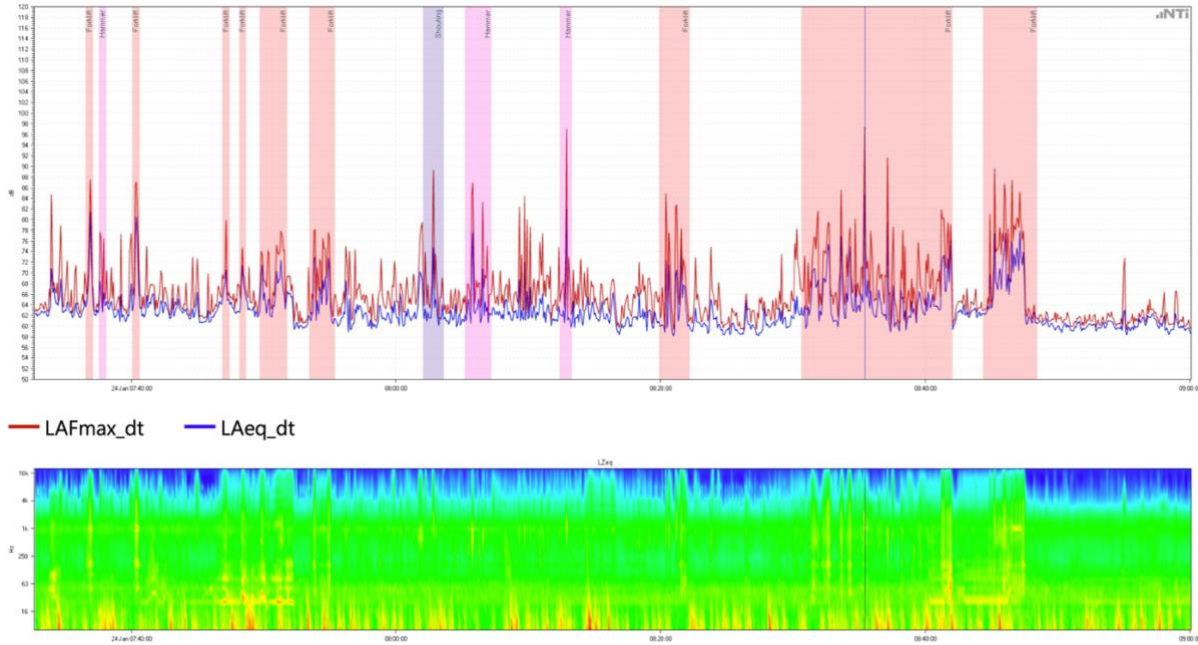


Figure 4: Time History of L_{Aeq,5sec} and L_{AFmax,5sec} alongside corresponding spectrogram at Position P2

Activity	Time period	Duration	Position P1	Position P2	P2 L _{Aeq,T} – P1 L _{Aeq,T}
			L _{Aeq,T}	L _{Aeq,T}	
Forklift	07:36:35	00:00:30	63	75	12
Forklift	07:40:04	00:00:30	62	76	14
Forklift	07:46:51	00:00:30	65	67	2
Forklift	07:48:10	00:00:30	65	68	3
Forklift	07:49:42	00:02:00	60	67	7
Forklift	07:53:30	00:01:50	61	67	6
Forklift	08:19:55	00:02:15	59	66	7
Forklift	08:30:40	00:11:20	62	69	7
Forklift	08:44:25	00:04:00	62	71	9
Hammering	07:37:35	00:00:30	64	66	2
Hammering	08:05:15	00:01:55	60	67	7
Hammering	08:12:25	00:00:50	62	72	10
Shouting	08:02:05	00:01:30	61	65	4

Table 3: Recorded noise levels (L_{Aeq,T}) at monitoring points P1 and P2 during registered noise events at Altrad site

5.17 Results

5.18 The noise survey conducted by Apex found that noise from Altrad's site was imperceptible at the nearby residential properties (Position P1) and therefore, the typical activities carried out at Altrad's site did not noticeably contribute to the noise environment at the receptors when in operation.

- 5.19 The comparative analysis between positions P1 and P2 showed no discernible correlation in noise levels. Even during louder events at P2 on Altrad's site, there were no observable spectral changes at P1 near the residential properties.
- 5.20 This lack of noticeable noise contribution from Altrad's suggests low noise impacts on the nearby noise-sensitive receivers (NSRs). Based on these findings, it is considered that Altrad's operations do meet Manchester City Council's planning requirements without the need for further mitigation measures.
- 5.21 While the current survey did not indicate significant noise contributions from Altrad's existing activities, there remains some uncertainty regarding potential future increases in noise levels. If Altrad substantially increases its operating hours, introduces much louder equipment, or expands the nature of its on-site operations, noise impacts at the nearby receptors may increase. Particularly noise from high-impact intermittent activities like loading/unloading could become more noticeable. However, based on current operations, such increases in noise levels from the site are not anticipated to be more than of short-term duration.

6 Conclusion

- 6.1 The noise survey conducted by Apex found that under current operating conditions, noise from Altrad Generation UK Ltd's site does not cause noticeable or adverse impacts on nearby residential properties. The ambient noise environment at the receptors is dominated by the surrounding transportation noise sources.
- 6.2 Comparative analysis showed minimal correlation between Altrad's on-site activities and noise levels at the residential location. The results demonstrate that Altrad's existing operations meet Manchester City Council's planning noise limits without requiring additional mitigation measures.
- 6.3 While future increases in operating hours or activities could potentially raise noise emissions, current noise levels are deemed unlikely to result in significant adverse effects on health and quality of life at nearby receptors. Provided on-site operations remain consistent, Altrad's noise contributions are considered to have low impacts on the surrounding community.

7 References

- 1 BS 4142 2014: A1+2019, Method for rating and assessing industrial and commercial sound.
- 2 Manchester City Council. (2022, October). *Planning and Noise Technical Guidance*. https://www.manchester.gov.uk/download/downloads/id/28749/noise_and_planning_guidance.pdf
- 3 National Planning Policy Framework, Ministry of Housing, Communities & Local Government, July 2021.
- 4 Noise Policy Statement for England, Department for Environment, Food and Rural Affairs, March 2010.
- 5 Association of Noise Consultants (ANC) BS 4142:2014+A1:2019 Technical Note.
- 6 Mechanical engineer's drawing RP-ARL-DECARB-R1-DR-M-5912.
- 7 BS EN ISO 3740:2019 Determination of sound power levels of noise sources.
- 8 Fläkt Woods, Practical guide to noise control, Fifth Edition, published by Fläkt Woods Limited
- 9 OTL Suite noise modelling software, version 4.0, PEMARD.
- 10 ISO 9613: Acoustics - Attenuation of sound during propagation outdoors.
- 11 ISO 12913-1:2014 Acoustics, Soundscape, Part 1: Definition and conceptual framework

Appendix A Noise exposure hierarchy

Planning Practice Guidance - Noise				Significant adverse effect + 10 dB Adverse effect + 5 dB Low Impact 0 dB An initial estimate of the impact of the specific sound may be obtained by subtracting the measured background sound level from the rating level. Typically, the greater this difference, the greater the magnitude of impact
Noise	Example of outcomes	Increasing effect level	Action	
Present and very distributive	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	
Present and distributive	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	
Significant Observed Adverse Effect Level (SOAEL)				
Present 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	
Lowest Observed Adverse Effect Level (LOAEL)				
Present 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	
No Observed Adverse Effect Level (NOAEL)				
Not present	No effect	No Observed Effect	No specific measures required	
No Observed Effect Level (NOEL)				

Table 4: PPG-N Noise Exposure Hierarchy and BS 4142 initial estimate of impact

Appendix B Professional qualifications and competence

- B.1 All Apex Acoustics consultants work under the close supervision of a member who holds a qualification in acoustics and is a member of the IOA.
- B.2 This can be verified by searching the Institute of Acoustics' list of Members, available here, with the surname of the consultant.
- <http://www.ioa.org.uk/membership-check>
- B.3 Apex Acoustics is a member of the Association of Noise Consultants (ANC). The ANC is a trade organisation which seeks to raise the standards of acoustic consultancy and as such there are barriers to entry to ensure members' competency.
- B.4 This report has been completed by an appropriately qualified and experienced acoustic consultant.