

Land at rear of 40 Victoria Road, Fleur-de-lis, Blackwood

# Noise Assessment

for Hannaby Planning Solutions Limited, Windrush, Marsh Hill, GL16 8JW

**Our Reference**  
21872R01SWPK

**Your Reference:**  
-

**Issue Date**  
27/04/2023

**Author**  
Sam Williams MIOA

**Approver**  
Paul Kelly MIOA

**Revision History**  
1<sup>st</sup> issue

# Table of Contents

Executive Summary .....	4
1 Criteria .....	6
1.1 Caerphilly County Borough Council .....	6
1.2 BS 4142+A1:2019 .....	6
1.3 TAN 11 .....	6
1.4 Internal Ambient Noise Levels .....	7
1.5 Outdoor Amenity Areas .....	7
2 Noise Survey .....	8
2.1 Site Description .....	8
2.2 Noise Survey Details .....	9
2.3 Ambient and Maximum Noise Levels .....	10
2.4 Background Noise Levels .....	10
3 Industrial Noise Impact Assessment .....	12
3.1 Assessment .....	12
3.2 Discussion .....	13
4 Noise Assessment .....	14
4.1 TAN 11 Assessment for NEC Categorization .....	14
4.2 Noise Ingress .....	14
4.3 Recommendations .....	15
4.4 Ventilation .....	16
5 Outdoor Amenity Noise .....	17
5.1 Assessment .....	17



---

## Table of Contents (continued)

Appendix A: Noise Data .....	18
Appendix B: Risk Management Schedule .....	20
References .....	22

## Executive Summary

Environoise Consulting Limited has been commissioned by Hannaby Planning Solutions Limited to undertake a noise impact assessment for the proposed 5-house residential development on land at the rear of 40 Victoria Road, Fleur-de-lis, Blackwood NP12 3UG. The assessment has been requested by Environmental Health at Caerphilly County Borough Council to inform the planning application.

A noise survey was undertaken between 10.30hrs, Wednesday 19<sup>th</sup> and 11.00hrs, Thursday 20<sup>th</sup> April 2023 to inform the assessment in accordance with BS 4142 assessment and noise ingress and outdoor amenity assessment for proposed dwellings to determine compliance with BS 8233:2014 and World Health Organisation guideline noise targets.

### Industrial Noise Impact

A noise impact assessment of the existing Tir-Y-Birth industrial estate to the proposed residential development has been done which predicts a 'significant impact, depending on the context'. However, BS 4142 allows for reference to alternative guidance to further inform the appropriateness of the proposals and the extent of noise mitigation required to mitigate the impact where sensitive development is proposed in proximity to existing industrial sources. We have therefore referred to the 'desirable' internal noise level targets for habitable spaces obtained from BS 8233 which can be met with the recommended glazing and ventilation specifications as follows:

### Glazing & Ventilation

Recommendations for glazing and ventilation sound insulation performances to all bedrooms and living spaces are summarised below:

#### House 1:

Bedrooms:	$\geq 27\text{dB } R_w + C_{tr}$ glazing / $\geq 25\text{dB } D_{ne,w}$ ventilation
Living Rooms / Dining Rooms	$\geq 25\text{dB } R_w + C_{tr}$ glazing / partially opened window or non-acoustic trickle vents

#### Houses 2 to 5:

Bedrooms:	$\geq 30\text{dB } R_w + C_{tr}$ glazing / $\geq 31\text{dB } D_{ne,w}$ ventilation
Living Rooms / Dining Rooms	$\geq 25\text{dB } R_w + C_{tr}$ glazing / $\geq 31\text{dB } D_{ne,w}$ ventilation

## Outdoor Amenity Areas

The daytime noise level in proposed gardens and will meet the upper limit of 55dB  $L_{Aeq,16hour}$  to prevent 'serious annoyance'. Additional shielding provided by the proposed houses and garden fencing may enable the lower limit of 50dB  $L_{Aeq,16hour}$  to prevent 'moderate annoyance' to also be met.

This document has been prepared by Environoise Consulting Limited for sole use of the Client named in this report in accordance with generally accepted consultancy principles, the budget for fees and the terms of reference agreed between Environoise Consulting Limited and the Client. Any information provided by third parties and referred to herein has not been checked or verified by Environoise Consulting Limited, unless otherwise expressly stated in this document. No third party may rely upon this document without the prior and express written agreement of Environoise Consulting Limited.

# 1 Criteria

## 1.1 Caerphilly County Borough Council

1.1.1 In the Initial Policy Assessment, the Environmental Health department of Caerphilly County Borough Council have stated the following:

*It is noted that Environmental Health previously requested a BS:4142 Noise Assessment when consulted as part of planning application 21/1101/FULL. Whilst residential development on the enquiry site has been granted previously, there have been multiple noise complaints from local residents in respect of Tir-Y-Birth Industrial Estate and the position remains that a noise assessment would be required as part of any future application to ascertain the sites suitability for residential development. Noise mitigation measures may also be required.*

## 1.2 BS 4142+A1:2019

1.2.1 BS 4142:2014+A1:2019<sup>i</sup> provides a method of determining the 'impact of specific sound' on dwellings due to industrial and commercial noise sources through comparison between the measured background noise level ( $L_{A90}$ ) and the noise source rating level ( $L_{A,r,Tr}$ ) under consideration. The rating level is the specific noise level plus penalties of up to 18dB added for features to account for the character of the noise as follows:

- **Tonality:** +2dB penalty: Just perceptible; +4dB penalty: Clearly perceptible and +6dB penalty: Highly perceptible.
- **Impulsivity:** +3dB penalty: Just perceptible; +6dB penalty: Clearly perceptible and +9dB penalty: Highly perceptible.
- **Intermittency:** +3dB penalty: identifiable on/ off conditions.

1.2.2 When comparing the rating industrial noise level against the background noise level, BS 4142:2014+A1:2019 provides the following noise impact descriptors:

- +10dB(A) is likely to be an indicator of 'a significant impact, depending on the context'.
- +5dB(A) is likely to be an indicator of 'an adverse impact, depending on the context'.
- No excess of the background noise level is an indicator of 'a low impact, depending on the context'.

## 1.3 TAN 11

1.3.1 Technical Advice Note 11: Noise (1997) (TAN)<sup>ii</sup> provides guidance to local authorities on the use of their planning powers to minimise the adverse impact of noise by assessing the suitability of an application with respect to the suitability of the existing noise environment for residential development.

1.3.2 Paragraph 10 of TAN 11 states the following:

10. *Local planning authorities should consider whether proposals for new noise-sensitive development would be incompatible with existing activities, taking into account the likely level of noise exposure at the time of the application and any increase that may reasonably be expected in the foreseeable future. Such development should not normally be permitted in areas which are, or are expected to become, subject to unacceptably high levels of noise and should not normally be permitted where high levels of noise will continue throughout the night.*

## 1.4 Internal Ambient Noise Levels

- 1.4.1 We have referred to guidance given in Table 4 of BS 8233 'Guidance on sound insulation and noise reduction for buildings'<sup>iii</sup> and World Health Organisation (WHO) Guidelines; 'Community and Noise, 1999'<sup>iv</sup> to recommend internal ambient and maximum noise levels respectively to be achieved in habitable spaces, see Table 1.1.

**Table 1.1:** Recommended internal noise level targets.

Activity	Location	07:00 to 23:00	23:00 to 07:00
Dining	Dining Room	40dB L <sub>Aeq,16hour</sub>	N/A
Resting	Living Room	35dB L <sub>Aeq,16hour</sub>	
Sleeping (daytime resting)	Bedroom	35dB L <sub>Aeq,16hour</sub>	30dB L <sub>Aeq,8hour</sub> 45dB L <sub>Amax,fast</sub> *

\* not to be exceeded more than 10-15 times during the night-time period (23.00 – 07.00hrs).

## 1.5 Outdoor Amenity Areas

- 1.5.1 BS 8233:2014 states that it is desirable for the steady noise level in external amenity spaces (such as gardens or outdoor living areas) to be less than 50dB L<sub>Aeq,16hour</sub> to prevent moderate annoyance with 55dB L<sub>Aeq,16hour</sub> regarded as an upper limit in order to prevent serious annoyance for occupants. BS 8233:2014 recognises that guideline values are not achievable in all circumstances where development might be desirable, it states that:

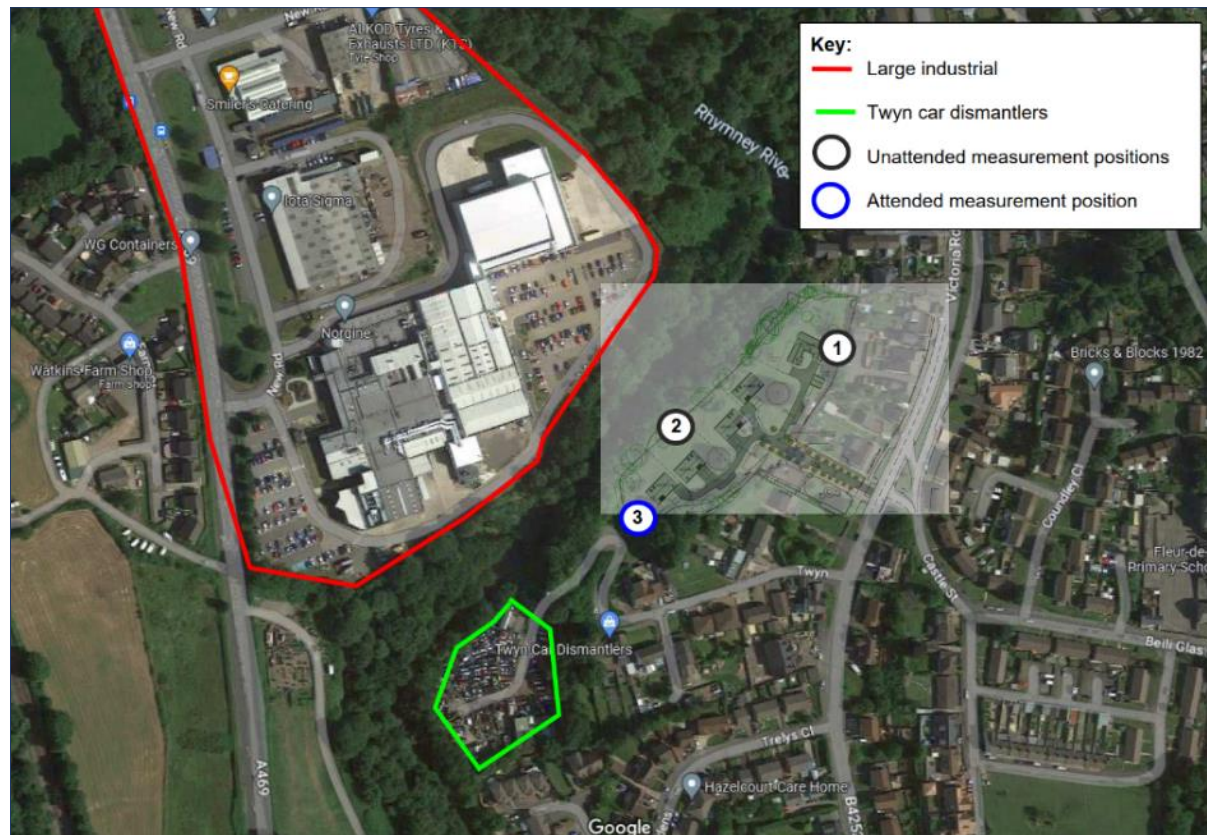
*'In higher noise areas, such as city centres or urban areas adjoining strategic transport network, a compromise between elevated noise levels and other factors, such as the convenience of living in these locations or making efficient use of land resources to ensure development need can be met, might be warranted. In such a situation, development should be designed to achieve the lowest practicable levels in these external amenity spaces, but should not be prohibited.'*

## 2 Noise Survey

### 2.1 Site Description

- 2.1.1 The proposal site is to comprise of 5 detached residential dwellings, including demolition of the existing dwelling and surrounding outbuildings to create a new pedestrian and vehicular access from Victoria Road to serve the proposed dwellings.
- 2.1.2 The eastern boundary of the proposal site runs alongside the Rhymney River, on the opposite bank of which is Tir-Y-Birth industrial estate. Approximately 70 metres southwest of the development site is Twyn Car Dismantlers along with residential premises to the south and east, see Figure 2.1.

**Figure 2.1:** Proposed site and noise survey positions.





## 2.2 Noise Survey Details

- 2.2.1 Unattended noise surveys were done between 10.30hrs, Wednesday 19<sup>th</sup> and 11.00hrs, Thursday 20<sup>th</sup> April 2023 at Positions 1 and 2 to obtain daytime and night-time baseline noise levels representative of the proposed houses. The location of Position 1 was chosen to minimise the contribution of the existing industrial noise. An attended noise survey was undertaken at Position 3 between 11.45 – 13.00hrs on Wednesday 19<sup>th</sup> April 2023 and notes taken regarding HGV movements on the Tir-Y-Birth industrial estate and noise associated with Twyn Car Dismantlers.
- 2.2.2 The dominant noise source at Position 1 was road traffic from A4049. Other sources of noise included road traffic along Victoria Road, trees rustling and birdsong.
- 2.2.3 The dominant noise source at Position 2 was road traffic from A4049 and compressor noise from large industrial site which was dominant whilst occurring although events lasted 2-3 minutes and were infrequent with two such events occurring whilst attending site. Other sources of noise included trees rustling, birdsong and river flow.
- 2.2.4 Attended noise level measurements were also taken at Position 3 in an attempt to capture noise from Tywn Car Dismantlers to the southwest; however, despite being operational, noise from the facility was not audible and therefore noise level measurements from this position have not been reported.

### Calibration

**Table 2.1:** Equipment list and calibration details.

Manufacturer	Equipment type	Serial number	Date of Laboratory Calibration
Rion	NL-52 sound level meter	00654072	12/10/2022
	NH-25 pre-amplifier	54117	
	UC-59 microphone	08333	
Pulsar	Model 105	78293	06/11/2021
Rion	NA-28 sound level meter	00501403	12/09/2022
	NH-23 pre-amplifier	22018	
	UC-59 microphone	07542	
	NC-74 calibrator	34904967	

- 2.2.5 The sound level meters were calibrated at the start and end of the noise surveys to 94.0dB at 1kHz with no recorded drift greater than 0.2dB at 1 kHz; therefore, the measurements are acceptable.

## Weather Conditions

- 2.2.6 There was no rain and periods where wind speeds were  $\leq 5\text{m/s}$  were investigated with no apparent elevation in noise levels; therefore, all measurement data has been used.

## 2.3 Ambient and Maximum Noise Levels

- 2.3.1 Tables 2.2 and 2.3 present the logarithmically averaged daytime and night-time ambient ( $L_{Aeq}$ ) and night-time maximum ( $L_{Amax,fast}$ ) noise levels together with associated octave band noise levels obtained at Position 1 and 2. Although WHO Guidelines criteria allows 10 – 15 excesses of the maximum noise level criteria, the fifth highest maximum noise level has been used from each position in the assessment due to multiple events potentially occurring in a 15-minute measurement period. Noise level time histories are given in Appendix A.

**Table 2.2:** Averaged ambient noise levels.

Position	Period	$L_{eq,T}$ at octave band centre frequency (Hz) dB							$L_{Aeq,T}$ (dB)
		63	125	250	500	1k	2k	4k	
1	Daytime (07.00 – 23.00hrs)	53	47	44	42	42	40	38	47
	Night-time (23.00 – 07.00hrs)	50	44	40	39	40	40	45	49
2	Daytime (07.00 – 23.00hrs)	54	49	47	48	48	45	45	53
	Night-time (23.00 – 07.00hrs)	53	47	47	48	46	43	45	52

**Table 2.3:** Fifth highest measured night-time maximum ( $L_{Amax}$ ) noise levels.

Position	Period	$L_{max,fast}$ at octave band centre frequency (Hz) dB							$L_{Amax,fast}$ (dB)
		63	125	250	500	1k	2k	4k	
1	Night-time (23.00 – 07.00hrs)	51	47	41	40	44	40	66	68
2		54	45	48	47	47	51	68	69

## 2.4 Background Noise Levels

- 2.4.1 To assess the impact of industrial noise sources, BS 4142 requires the use of a 'representative' background noise level. We have considered this to be the modal value for the daytime and night-time periods for at both positions. Noise levels have been given to achieve a 'low impact, depending on the context', as per BS 4142, see Table 2.4.

**Table 2.4:** Measured background noise levels and industrial noise limits to achieve BS 4142 'low impact' criteria.

Position	Period	Measured background noise level [ $L_{A90}$ (15min) (dB)]		BS 4142 'low impact' criteria [ $L_{A,r}$ ,Tr (dB)]
		Range	Representative value	
1 (Houses 2 to 5)	Daytime (07.00 – 23.00 hrs)	42 – 46	45	45
	Night-time (23.00 – 07.00hrs)	41 – 46	42	42
2 (House 1)	Daytime (07.00 – 23.00 hrs)	49 – 51	51	51
	Night-time (23.00 – 07.00hrs)	49 – 51	49	49

## 3 Industrial Noise Impact Assessment

### 3.1 Assessment

3.1.1 We have assessed industrial noise in accordance with BS 4142 to determine the potential impact on the proposed development with consideration of the existing Tir-Y-Birth industrial estate and Dismantlers sites. Background noise levels measured at the position least affected by industrial noise (Position 1) and presented in Table 2.4 have been used. The cumulative industrial noise level has been determined with consideration of the following sources:

- Measured ambient noise level during industrial estate operations with steady state night-time noise level logarithmically subtracted from this (51dB  $L_{Aeq,T}$ ).
- Typical sound power level data for metal crushing plant (109dB  $L_{wA}$ ) has been used to account for car crushing in lieu of significant noise emitting operations within Twyn Car Dismantlers during the survey period. Corrections for distance to nearest proposed house (162 metres) and considered 'on-time' of crushing (20%) have been applied. The predicted noise level at the nearest proposed dwelling is 49dB  $L_{Aeq,T}^1$ . Twyn Car Dismantlers is open 09.00 – 18.00hrs, therefore, crushing has not been considered during the night-time period.

3.1.2 We have applied a +3dB acoustic feature correction for 'other' characteristics that are readily distinctive against the residual acoustic environment as per section 1.2. Table 3.1 presents the noise impact assessment to the development site.

**Table 3.1:** Noise impact assessment at the development site.

	Noise impact at NSRs	
	Daytime (07.00 – 23.00hrs)	Night-time (23.00 – 07.00hrs)
Highest predicted specific noise level at NSR (dBA)	53	51
Acoustic feature correction (dBA)	+3	+3
Rating industrial noise level ( $L_{Ar,Tr}$ [dB])	56	54
Target criterion (dBA)	45	42
Level of excess (dB)	11	12
BS4142 impact descriptor	'Significant adverse impact, depending on the context'	'Significant adverse impact, depending on the context'

<sup>1</sup>  $(109 - 20 \times \log(162) - 8) + 10 \times \log(10/60)$

## 3.2 Discussion

- 3.2.1 As shown in Table 3.1, the industrial noise level at the development site exceeds the limiting noise level target for the daytime and night-time periods, indicating a 'significant adverse impact, depending on the context'.

### Context

- 3.2.2 It should be noted that this is a proposed residential site adjacent to an existing industrial noise source. Section 8.5 of BS 4142 states the following:

*Where a new noise-sensitive receptor is introduced and there is extant industrial and/or commercial sound, it ought to 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.*

- 3.2.3 In accordance with this, reference has been made to satisfying alternative 'desirable' absolute noise targets of BS 8233 in section 4 of this report; with recommendations for the façade strategy of proposed dwellings provided to protect the amenity of occupants. The impact of industrial-type noise sources will be suitably mitigated where our recommendations are implemented.

## 4 Noise Assessment

### 4.1 TAN 11 Assessment for NEC Categorization

4.1.1 TAN 11 provides noise exposure categories (NEC) which are intended to assist in decisions for new residential developments, see Table 4.1 for NECs for road traffic/mixed sources. The recommended action specific to applications for planning permission are reproduced in Table 4.2.

**Table 4.1:** Noise levels corresponding to NECs for new dwellings [ $L_{Aeq,T}$  (dB)]

Noise Source	Period	Noise Exposure Category (NEC)			
		A	B	C	D
Mixed Sources	07:00hrs – 23:00hrs	<55	55 - 63	63 - 72	>72
	23:00hrs – 07:00hrs	<45	45 - 57	57 - 66	>66

**Table 4.2:** Noise exposure category (NEC) descriptions

NEC	Determination
A	Noise need not be considered as a determining factor in granting planning permission, although the noise level at the high end of the category should not be regarded as a desirable level.
B	Noise should be taken into account when determining planning applications and, where appropriate, conditions imposed to ensure an adequate level of protection against noise.
C	Planning permission should not normally be granted. Where it is considered that permission should be given, for example because there are no alternative quieter sites available, conditions should be imposed to ensure a commensurate level of protection against noise.
D	Planning permission should normally be refused.

4.1.2 It can be seen from Tables 4.1 and 4.2 that the site falls into NEC Category A during the daytime Category B during the night-time which means that the façade strategy should be designed to adequately control noise ingress.

### 4.2 Noise Ingress

4.2.1 Noise ingress calculations have been done in accordance with BS EN 12354-3:2000<sup>v</sup> using noise level data measured at Position 1 for House 1 and data from Position 2 for Houses 2 to 5. Reverberation times of 0.6 and 0.5 seconds have been considered for living spaces and bedrooms respectively.

## Building Envelope Constructions

4.2.2 Detailed building envelope constructions have not been proposed at this stage. Therefore, expected construction types and corresponding predicted octave-band sound reduction indices are given in Table 4.3.

**Table 4.3:** Considered building envelope constructions.

Building element	Construction	Sound reduction indices [R (dB)] at octave-band frequency (Hz)							[R <sub>w</sub> + C <sub>tr</sub> (dB)]
		63	125	250	500	1k	2k	4k	
External wall	• 102.5mm brick								
	• ≥50mm cavity with 50mm mineral wool insulation								
	• 100mm blockwork	39	46	42	47	57	67	77	49
	• 1 layer of standard plasterboard on mortar dabs								
Roof	• 7mm roofing slates								
	• Pitched roof with 90mm timber joists								
	• Underlining of 1 layer of 12.5mm standard plasterboard (≥7.5kg/m <sup>2</sup> )	14	31	43	50	56	56	58	37

## Room Dimensions

4.2.3 Typical living room and bedroom room dimensions have been considered. A glazing area of 2m<sup>2</sup> has been considered; higher specification glazing may be required where glazing is to exceed this.

## 4.3 Recommendations

4.3.1 Minimum window glazing and passive ventilation sound insulation performances and example suitable specifications are recommended in Table 4.4.

**Table 4.4:** Recommended minimum glazing and ventilation specifications.

House	Room	Glazing Performance [ $\geq R_w + C_{tr}$ (dB)]	Example glazing spec	Vent Performance [ $\geq D_{ne,w}$ (dB)]	Example vent type
2 to 5	Bedrooms	30	10mm pane / 16mm cavity / 4mm pane	31	Titon TV90 Hi-Lift
	Living Room and Dining Room	28	6mm pane / 16mm cavity / 4mm pane		
1	Bedrooms	30	10mm pane / 16mm cavity / 4mm pane	-	Non-acoustic trickle vent or partially open window
	Living Room and Dining Room	25	4mm pane / 16mm cavity / 4mm pane		

## 4.4 Ventilation

### Purge (Approved Document F)

- 4.4.1 Openable windows to all habitable spaces for the purpose of purge ventilation is permitted as internal noise level targets are not applicable during these conditions. The openable window specification should comply with the requirements given in Appendix B of The Building Regulations 'Approved Document F: Ventilation'<sup>vi</sup>.

### Overheating (AVOG)

- 4.4.2 An overheating assessment in accordance with Association of Noise Consultants 'Acoustics Ventilation and Overheating - Residential Design Guide'<sup>vii</sup> (AVOG) has not been completed. Adverse effect in residential spaces can occur where openable windows are used as part of the overheating (rapid cooling) strategy. The external noise levels at the site represent a 'negligible' to 'low' risk of adverse effect during the daytime (07.00 – 23.00hrs) and a 'low' to 'medium' risk for the night-time (23.00 – 07.00hrs); therefore, a Level 2 assessment is 'not required' for the daytime and 'optional' for the night-time as per AVOG. If a Level 2 assessment is required by the planning authority then this can be provided as a further review.



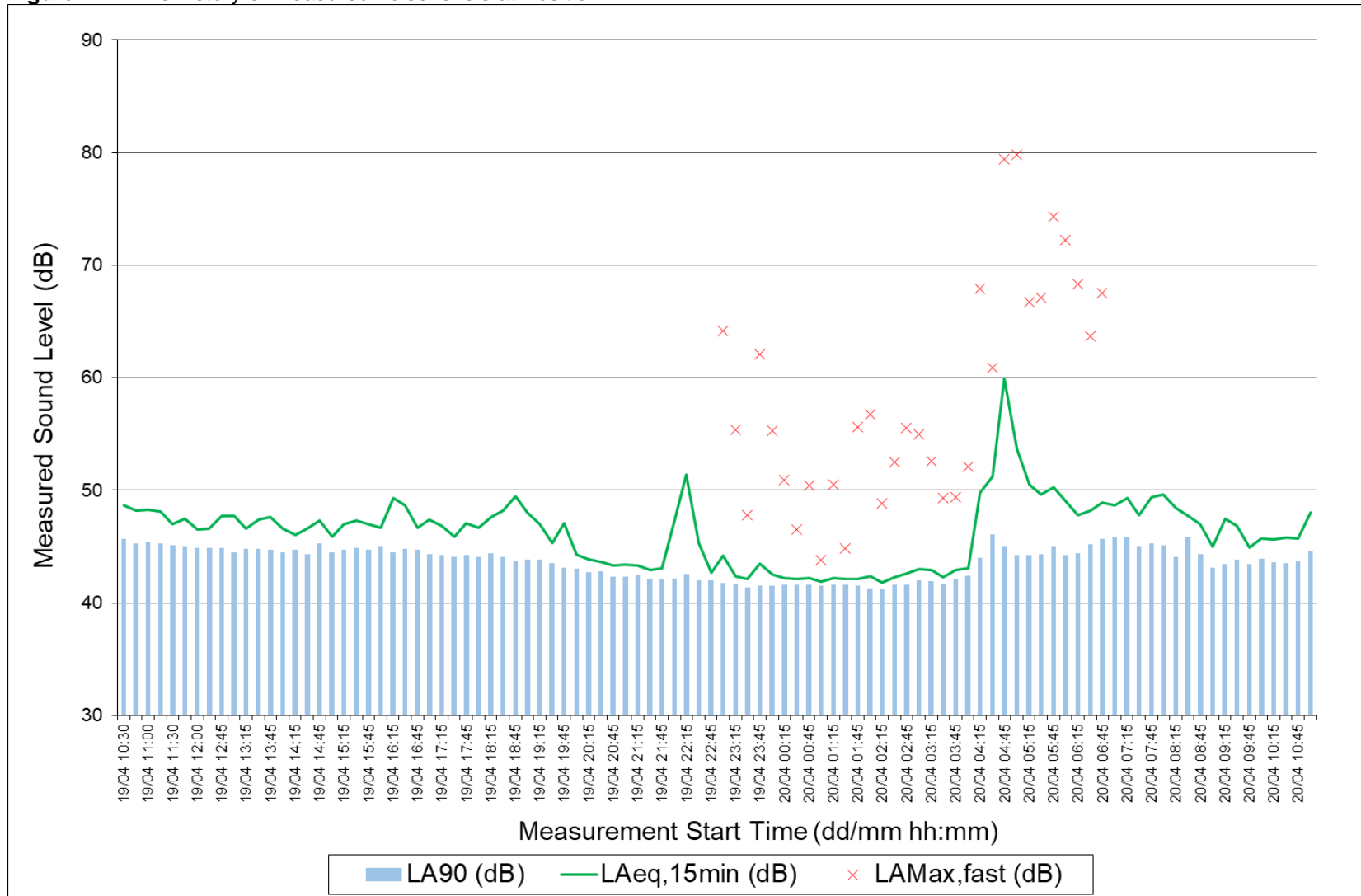
## 5 Outdoor Amenity Noise

### 5.1 Assessment

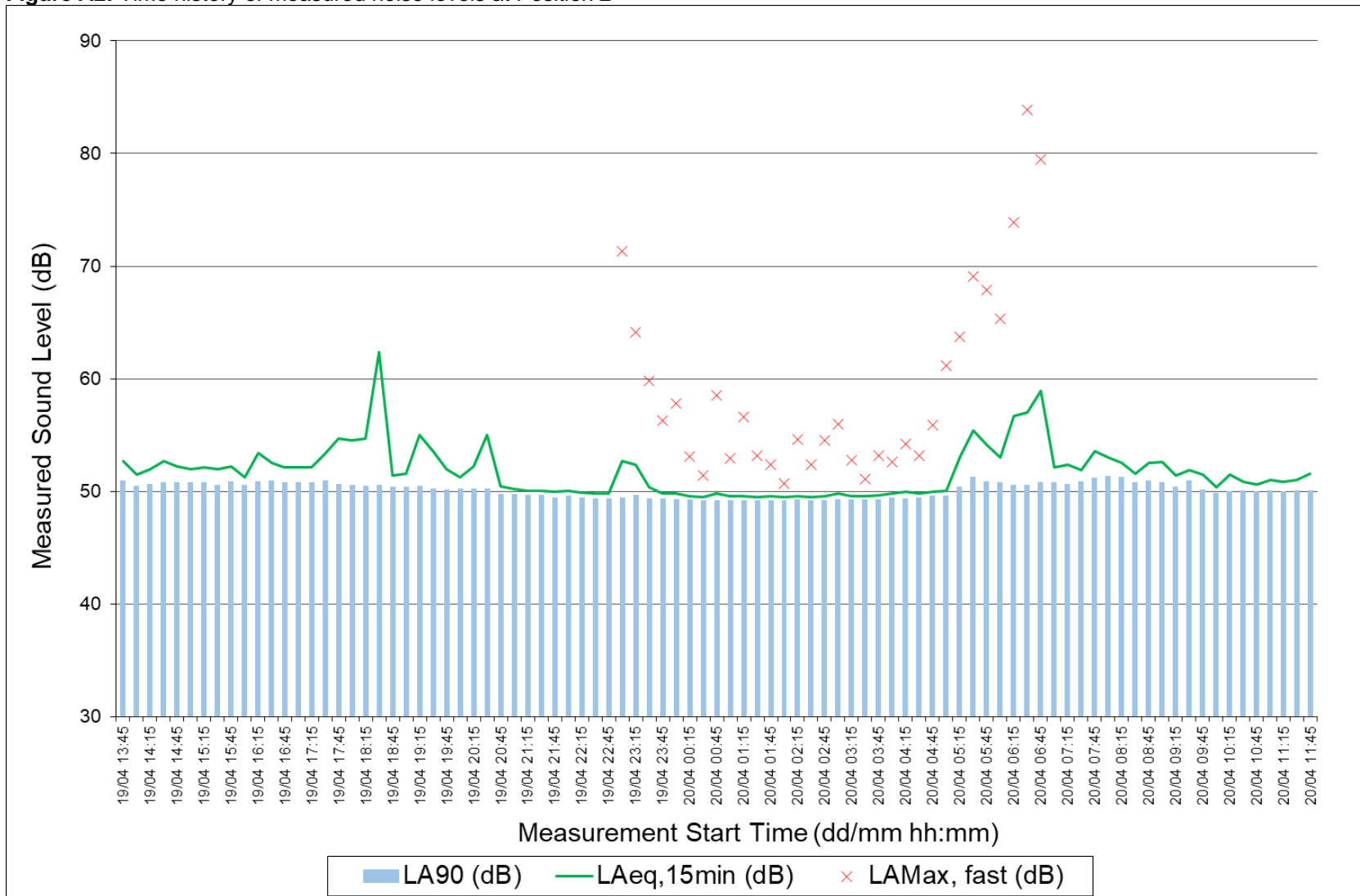
- 5.1.1 Guidance given in BS 8233 states that it is desirable for the steady noise level in external amenity spaces (such as gardens, balconies, or outdoor living areas) to be less than 50dB  $L_{Aeq,16hour}$  to prevent moderate annoyance with 55dB  $L_{Aeq,16hour}$  regarded as an upper limit in order to prevent serious annoyance for occupants.
- 5.1.2 The daytime noise level of 53dB  $L_{Aeq,16hour}$  taken at Position 2 is considered representative of proposed gardens and will meet the upper limit of 55dB  $L_{Aeq,16hour}$  to prevent 'serious annoyance'. Additional shielding provided by the proposed houses and garden fencing may enable the lower limit of 50dB  $L_{Aeq,16hour}$  to prevent 'moderate annoyance' to also be met.

# Appendix A: Noise Data

**Figure A1:** Time history of measured noise levels at Position 1



**Figure A2: Time history of measured noise levels at Position 2**



## Appendix B: Risk Management Schedule

**Table B1:** Assessment of risks with control measures.

Severity Classifications (S)	Probability Classifications (P)	Degree of Risk (R)
1. Minor – Minor accident, resulting in no serious injuries or lost time; little or no damage to property or the environment.	1. Improbable – no known instances of such an event occurring.	0 – 5 = Low Risk; ensure controls are adhered to and activity need not alter.
2. Moderate – Potential injury necessitating less than 3 days off work; damage to property or the environment requiring remedial work.	2. Remote – past experience suggests that event rarely occur.	6 – 10 = Moderate Risk; tolerable, but efforts should be made to reduce the risk where cost effective and reasonably practicable.
3. Serious – Accident reportable under RIDDOR 95; serious damage to property or the environment.	3. Possible – experience shows that events occur on occasions.	11 – 15 = Substantial Risk; all practicable measures must be taken to reduce the level of risk; tolerable only where further risk reduction is impracticable or disproportionate to the risk involved.
4. Major – Accident resulting in serious or permanent injury; major or permanent damage to property or the environment.	4. Probable – experience shows that events occur frequently.	16 – 25 = Extreme Risk; Unacceptable except in extraordinary circumstances; all control measures must be taken regardless of cost.
5. Catastrophic – Accident resulting in death or severe disablement; destruction of property; irreversible damage to the environment.	5. Likely – very likely to happen unless actively prevented.	>26. Works must be aborted and project need to be reviewed.

**Table B1 (continued):** Assessment of risks with control measures.

Activity	Hazard	Consequence	Degree of Risk			Risk Control Measures	Residual Risk			Risk Owner
			S	P	R		S	P	R	
Access to/ from site	Tripping or slipping hazards and falling objects.	Low risk	2	2	4	Take due care and attention to avoid tripping hazards. Do not work externally at height. Always sign in and out of site if required.	2	1	2	Contractor and consultant
Lifting or moving blockwork	injury through heavy load or improper lifting technique	Low risk	2	3	6	Blocks should be less than 20kg. Workers should wear gloves, steel toe cap boots and protective glasses. Workers must lift by bending their knees not their back. Make sure path is not obstructed by items being carried.	2	2	4	Contractor
Handling sheets of plasterboard	Injury through heavy load or improper lifting technique	Low risk	2	3	6	Plasterboard handled should be less than 20kg per sheet. Regardless of the mass several contractors may be needed to carry boards. Workers should wear gloves, steel toe cap boots and protective glasses. Workers must lift by bending their knees not their back. Make sure path is not obstructed by items being carried.	2	2	4	Contractor
Handling sheets of glass	Injury through heavy load/ improper lifting technique or laceration	Moderate	3	3	9	Detailed review of handling and positioning of glass to be done before installation by contractor. Glazing may need to be craned into position due to high mass. All glazed units must be clearly marked with tape/ marker to avoid people walking into the glass. Glazing must be handled with appropriate gloves only. Regardless of the weight, several contractors may be needed to carry units. Workers should wear gloves, steel toe cap boots and protective glasses. Workers must lift by bending their knees not their back. Make sure path is not obstructed by items being carried.	3	2	6	Contractor
Dust inhalation	Injury through being temporarily blinded or damage to lungs	Low risk	2	3	6	Only work in well-ventilated space and wear appropriate PPE including dust mask. If cutting material make sure gloves are worn. Signage may be required to prevent other workers entering the space.	2	2	4	Contractor
Hearing damage	Injury to hearing or consequence of verbal communication not being heard	Moderate	3	3	9	Review of construction or demolition methods and all workers exposed to high levels of noise to be provided with suitable hearing protection. In the case of sound insulation testing, suitable signage should be used to warn contractors of high noise risk to certain rooms.	3	2	6	Contractor. Contractor and acoustic consultant for sound insulation tests.

## References

---

- <sup>i</sup> BS 4142:2014+A1:2019 'Methods for rating or assessing industrial and commercial sound', 2014.
- <sup>ii</sup> Technical Advice Note (TAN)11: Noise (1997).
- <sup>iii</sup> BS 8233 'Guidance on sound insulation and noise reduction for buildings', 2014.
- <sup>iv</sup> World Health Organisation (WHO) Guidelines; 'Community and Noise, 1999'
- <sup>v</sup> BS EN 12354-3:2000 'Building acoustics. Estimation of acoustic performance in buildings from the performance of elements. Airborne sound insulation against outdoor sound', 2000.
- <sup>vi</sup> The Building Regulations 'Approved Document F: Ventilation' (2010 edition incorporating 2010 and 2013 amendments).
- <sup>vii</sup> Association of Noise Consultants 'Acoustics Ventilation and Overheating - Residential Design Guide', Version 1.1, January 2020.