From: Jodie Wilson
Sent: 28 December 2023 12:29
To: Cheryl Willett
Subject: FW: 107565 : Planning application 23/00815/FUL
Attachments: 1510.NIA.00 Land South of Sandhills Hermitage Noise Impact Assessment.pdf

Follow Up Flag: Follow up
Flag Status: Flagged

Hi Cheryl,

It looks like I can't reply via the portal, so I will respond below on the noise assessment attached and update my con land comments:

Noise

A noise assessment has been submitted to assess the potential for noise impacts due to the proximity to the M4 motorway and nearby children's play and ball pitch.

The noise assessment shows that the main source of noise impact comes from the M4 rather than the nearby playground and ball pitch. It demonstrates that with mobile homes of modern construction (meeting BS3632:2015), alongside an acoustic barrier to the north of each mobile home unit, it is possible to comply with internal noise recommendations with closed windows and meet the external amenity space noise recommended limits of BS8233:2019. However, unfortunately occasional opening windows for cooling and ventilation at times of overheating is not recommended due to the high external noise levels during night-time noise events and so alternative ventilation to bedrooms is required.

The noise assessment provided suggested condition wording. The provision of alternative ventilation to the bedrooms is not included in their suggested condition. This may be because overheating and ventilation is generally covered under Approved Document O in relation to Building Regs which covers all new build development. Building Regs are a separate regulatory regime to Planning. The noise assessment shows that the high noise exposure due to LAMax events cause the proposed dwellings to be categorised as 'windows to be closed the majority of the time' under ADO. I am unclear if Building Regs cover mobile homes or only cover more traditionally constructed dwellings. If they are covered by building regs, the developer will need to prove to the inspector that sufficient ventilation is provided to the bedrooms to avoid the need to open windows for cooling as open windows could expose occupants to unacceptable noise levels.

I have suggested a general noise attenuation scheme condition in which the applicant will need to provide specific details of the noise protection measures to be installed on the site, this will include the make, model, acoustic specifications, location and design of the mobile home units themselves, the ventilation and acoustic barriers to demonstrate compliance prior to occupation. This will prevent ventilation being missed if it is not covered by building regs in this case.

I recommend the following conditions (or alternative wording to similar effect would be acceptable):

The applicant shall submit to the local planning authority, for approval prior to commencement of works, a scheme for protecting the proposed development from noise from the nearby M4 Motorway in accordance with the recommendations of Noise Impact Assessment report 1510.NIA.00. Any works which form part of the approved scheme shall be completed before the development is occupied. Reason: To protect occupiers of the proposed development from noise.

All mobile homes on this site shall be BS3632:2015 compliant and be provided with local acoustic barriers situated to the north of each home, with a short wrap round at the east and west ends, as indicated in Figure 3 of Noise Impact Assessment report 1510.NIA.00, or any updated arrangement that may be subsequently agreed with the Local Authority. The specification of the acoustic barrier is that the height shall be sufficient to obscure line-of-sight to traffic using the M4 from a standing position within any of the mobile homes (estimated to be approximately 2.3m assuming a 0.5m under croft); the barrier shall be imperforate with no gaps or breaks and be constructed of a material that is at least 10kg/m2.
Reason: To protect occupiers of the proposed development from noise.

Contaminated land

I raised concerns in April about potential contamination risk to the site and that insufficient information has been supplied to satisfy me that the risks are low. Ideally a desk study phase I assessment would be submitted. As it is likely to be possible to remediate the site to make it suitable for the proposed use even if contamination is found to be present, if you are minded to give consent without this provided upfront, I recommend the following suite of contaminated land conditions:

Unless otherwise agreed by the Local Planning Authority, development other than that required to be carried out as part of an approved scheme of remediation must not commence until conditions 1 to 4 have been complied with. If unexpected contamination is found after development has begun, development must be halted on that part of the site affected by the unexpected contamination to the extent specified by the Local Planning Authority in writing until condition 4 has been complied with in relation to that contamination.

1. Site Characterisation
An investigation and risk assessment, in addition to any assessment provided with the planning application, must be completed in accordance with a scheme to assess the nature and extent of any contamination on the site, whether or not it originates on the site. The contents of the scheme are subject to the approval in writing of the Local Planning Authority. The investigation and risk assessment must be undertaken by competent persons and a written report of the findings must be produced. The written report is subject to the approval in writing of the Local Planning Authority. The report of the findings must include:

(i) a survey of the extent, scale and nature of contamination;

(ii) an assessment of the potential risks to:
- human health,
- property (existing or proposed) including buildings, crops, livestock, pets, woodland and service lines and pipes,
- adjoining land,

- groundwaters and surface waters,
- ecological systems,
- archeological sites and ancient monuments;

(iii) an appraisal of remedial options, and proposal of the preferred option(s).

This must be conducted in accordance with DEFRA and the Environment Agency's *'Model Procedures for the Management of Land Contamination, CLR 11'.*

2. Submission of Remediation Scheme
A detailed remediation scheme to bring the site to a condition suitable for the intended use by removing unacceptable risks to human health, buildings and other property and the natural and historical environment must be prepared, and is subject to the approval in writing of the Local Planning Authority. The scheme must include all works to be undertaken, proposed remediation objectives and remediation criteria, timetable of works and site management procedures. The scheme must ensure that the site will not qualify as contaminated land under Part 2A of the Environmental Protection Act 1990 in relation to the intended use of the land after remediation.

3. Implementation of Approved Remediation Scheme
The approved remediation scheme must be carried out in accordance with its terms prior to the commencement of development other than that required to carry out remediation, unless otherwise agreed in writing by the Local Planning Authority. The Local Planning Authority must be given two weeks written notification of commencement of the remediation scheme works.
Following completion of measures identified in the approved remediation scheme, a verification report that demonstrates the effectiveness of the remediation carried out must be produced, and is subject to the approval in writing of the Local Planning Authority.

4. Reporting of Unexpected Contamination
In the event that contamination is found at any time when carrying out the approved development that was not previously identified it must be reported in writing immediately to the Local Planning Authority. An investigation and risk assessment must be undertaken in accordance with the requirements of condition 1, and where remediation is necessary a remediation scheme must be prepared in accordance with the requirements of condition 2, which is subject to the approval in writing of the Local Planning Authority.
Following completion of measures identified in the approved remediation scheme a verification report must be prepared, which is subject to the approval in writing of the Local Planning Authority in accordance with condition 3.

<u>If required:</u>

5. Long Term Monitoring and Maintenance
A monitoring and maintenance scheme to include monitoring the long-term effectiveness of the proposed remediation over a period to be agreed with LPA, and the provision of reports on the same must be prepared, both of which are subject to the approval in writing of the Local Planning Authority. Following completion of the measures identified in that scheme and when the remediation objectives have been achieved, reports that demonstrate the effectiveness of the monitoring and maintenance carried out must be produced, and submitted to the Local Planning Authority.

This must be conducted in accordance with DEFRA and the Environment Agency's *'Model Procedures for the Management of Land Contamination, CLR 11'.*

Reason (common to all): To ensure that risks from land contamination to the future users of the land and neighbouring land are minimised, together with those to controlled waters, property and ecological systems, and to ensure that the development can be carried out safely without unacceptable risks to workers, neighbours and other offsite receptors.

B. Unforeseen Contaminated Land: to be used on any residential/commercial extensions built on potentially contaminated land. Or residential/commercial development adjacent to potentially contaminated land.
Should any unforeseen contamination be encountered during the development, the developer shall inform the Local Planning authority immediately. Any subsequent investigation/remedial/protective works deemed necessary by the LPA shall be carried out to agreed timescales and approved by the LPA in writing. If no contamination is encountered during the development, a letter confirming this fact shall be submitted to the LPA upon completion of the development.

Kind regards,

Jodie Wilson
Environmental Health Officer – Environmental Quality

Public Protection Partnership
Telephone: 01635 503542
Email: Jodie.wilson1@westberks.gov.uk

Website: www.publicprotectionpartnership.org.uk
Facebook: @PublicProtectionPartnershipUK
Twitter: @PublicPP_UK

Public Protection Partnership | Bracknell Forest West Berkshire

Bracknell Forest Council

A shared service provided by Bracknell Forest Council and West Berkshire Council

West Berkshire Council

From: Cheryl Willett <Cheryl.Willett@westberks.gov.uk>
Sent: Thursday, December 7, 2023 9:59 AM
To: EHAdvice <ehadvice@westberks.gov.uk>
Subject: Planning application 23/00815/FUL

Good morning,

In relation to the above planning application for 5 Gypsy and Traveller pitches on land south of Sandhill, Hampstead Norreys Road, Hermitage please see attached noise impact assessment for consideration. If you could kindly review and let me have any comments/any planning conditions, that would be great.

Many thanks
Cheryl

Cheryl Willett
Senior Planning Officer (Planning Policy)
Development and Regulation, West Berkshire Council, Market Street Newbury, RG14 5LD
(01635) 519386 | Ext 2386 | cheryl.willett@westberks.gov.uk planningpolicy@westberks.gov.uk
www.westberks.gov.uk
Planning Customer Services: 01635 519111

Please note my normal working days are Mondays to Fridays 9:15am to 2:35pm.

Find out more about the Local Plan Review and follow @WBerksPlanning on Twitter

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From: Felix Smithson <felix.smithson@wspa.co.uk>
Sent: Thursday, November 2, 2023 3:13 PM
To: Cheryl Willett <Cheryl.Willett@westberks.gov.uk>
Cc: wspa@emailmyjob.com; Peter Brownjohn <peter.brownjohn@wspa.co.uk>; Brian Woods <brian.woods@wspa.co.uk>
Subject: RE: Hermitage site visit today 23/00815/FUL - J004472

Dear Cheryl,

RE: Hermitage site visit today 23/00815/FUL - J004472

Thank you for the email and the details within which are noted. To update on our end:

We have received the NIA which I attach. I note the conclusions within, and note that the utilisation of modern mobile homes would be commensurate with BS8233:2014 guidelines. However, if it is the case that EH require compliance with BS8233:2014, mitigation by way of acoustic barriers will have to be utilised. Should this be necessary, a slight revision of the design to include these will be necessary.

With regard to contamination issues, we have been in touch with EH and have been given some very brief further feedback. Unfortunately, we are not much further along with the issue, as this was something originally provided directly through our client, and have had troubles contacting those who completed the testing originally.

With regard to the PEA, we are still liaising with the ecologist to have this amended. The report we have received raised nothing of concern, and suggested some minor enhancements to the site which will be incorporated. However, I have not had any correspondence from the ecologist for some time so have had trouble getting the necessary amendments to have this submitted.

Hope this is all clear, thanks again for the patience throughout.

Kind Regards

Felix Smithson
Graduate Planner

WS PLANNING & ARCHITECTURE
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Surrey Office: 5 Pool House | Bancroft Road | Reigate | Surrey | RH2 7RP | **t:** 01737 225711

London Office: One Croydon | 11th Floor | 12-16 Addiscombe Road | Croydon | CR0 0XT | **t:** 020 3828 1180

Kent Office: Brouard Architects | 81 High Street | Farnborough Village | Kent | BR6 7BB | **t:** 01689 857253

www.wspa.co.uk | felix.smithson@wspa.co.uk | **dd:** 01737 949886

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Please consider the environment. Please don't print this e-mail unless you really need to.

From: Cheryl Willett <Cheryl.Willett@westberks.gov.uk>
Sent: Tuesday, October 31, 2023 4:15 PM
To: Felix Smithson <felix.smithson@wspa.co.uk>; Peter Brownjohn <peter.brownjohn@wspa.co.uk>; wspa@emailmyjob.com
Subject: Hermitage site visit today 23/00815/FUL

Hello Felix and Peter,

I hope this e-mail finds you well. Just to say, as I mentioned in our meeting that I needed to go out to site, that I went out with my colleague Adrian Munday this afternoon

(lunchtime). I did let Mr Black know I needed to go out as well when I last spoke to him a couple of weeks ago. We did knock on the caravans – we only saw a young woman on the middle pitch. It was useful and refreshed my memory of the site. I believe there are discussions regarding the injunction going on, about the toilet facilities and levelling of the land, but I'm not involved in this.

From my side, I am still trying to get a response from Paul Bacchus regarding drainage. I'll update you when I have more detail.

Many thanks
Cheryl

Cheryl Willett
Senior Planning Officer (Planning Policy)
Development and Regulation, West Berkshire Council, Market Street Newbury, RG14 5LD
(01635) 519386 | Ext 2386 | cheryl.willett@westberks.gov.uk planningpolicy@westberks.gov.uk
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Please note my normal working days are Mondays to Fridays 9:15am to 2:35pm.

Find out more about the Local Plan Review and follow @WBerksPlanning on Twitter

Land South of Sandhills,
Norreys Road, Hermitage, Thatcham RG18 9XU

Noise Impact Assessment Report 1510.NIA.00

For

Mr Randolf Black
C/O
WS Planning & Architecture
5 Pool House
Bancroft Road
Reigate
RH2 7RP

24 October 2023

By

dBA Acoustics

Acoustic Consultancy

Railway Cottage 49 Arnold Road

Woking Surrey GU21 5JX

david@dbaacoustics.co.uk

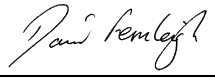
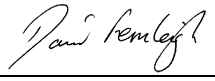
www.dbaacoustics.co.uk

01483 771282

Table of contents

List of Tables and Figures

Table 1. Author and Qualifications

Report	Signed	Name and Position	Relevant Qualification
Undertaken and Prepared By		David Fernleigh Director	MIOA
Checked By		David Fernleigh Director	MIOA

1.0 INTRODUCTION

1.1 Planning approval is sought for the siting of mobile homes on Land South of Sandhills, Norreys Road, Hermitage, Thatcham RG18 9XU.

1.2 The site is approximately 100m south of the M4 and adjacent to a Childrens Play Area and Ball Games Pitch.

1.3 dBA Acoustics have been commissioned to undertake an assessment of the prevailing environmental noise at site with regards to the likely noise impact based upon the proposed residential use and assess the suitability with regard to a mobile home type construction.

1.4 This report concerns the assessment and/or control of atmospheric noise affecting the development site for the purposes of planning. Detailed mechanical, structural, H,S&E and conservation considerations are beyond the expertise of this practice and should be dealt with accordingly.

2.0 SUMMARY

2.1 A 72hour environmental noise survey has been undertaken and the likely noise impact assessed based upon residential use. The noise impact assessment indicates that, unmitigated, the development site is exposed to environmental noise of a sufficient magnitude to cause a low to medium risk of adverse impact.

2.2 The in-situ outside to inside level difference acoustic performance of various mobile homes (previously measured by dBA Acoustics) have been used to predict the potential internal noise levels within a selection of mobile homes at this site. The results indicate that internal levels commensurate with the reasonable relaxation given in BS8233:2014 design limits are likely to be met within modern mobile homes.

2.3 Alternately, to achieve internal living conditions fully commensurate with the guidelines given in BS8233:2014 mitigation has been proposed by way of acoustic barriers. These barriers are proposed locally to each mobile home.

2.4 At times when windows are opened to provided ventilative cooling, internal noise levels above the guideline levels have been predicted. Based on Approved Document O advice it is expected that windows are likely to be closed at night due to excessive noise.

2.5 Accordingly, to maintain both thermal and acoustic comfort during overheating conditions alternative means of cooling and/or ventilation could be provided in bedrooms.

2.6 Noise in external amenity is predicted to exceed the upper guideline level although relatively quieter areas should be available immediately to the south of each home. However, installation of the proposed acoustic barriers is expected to reduce noise local to the homes to below the upper guideline level given in BS8233:2014.

2.7 The noise impact of the Children's Plat Area and Ball Games Pitch has been estimated using referenced voice effort noise levels. The assessment finds that use of these areas is not generally expected to lead to an adverse noise impact in the worst affected external amenity area.

2.8 It is therefore recommended that, from the perspective of noise impact, planning permission should be granted. It is expected that permission would be conditional, and some suggested wordings have been provided.

3.0 SITE

3.1 The development site lies alongside the B4009 and to the south of the M4. The site location is approximately as shown on the aerial image below:

Figure 1. Site Location– Image data © Google 2023

3.2 Automated environmental noise monitoring was undertaken at Positions 1 and 2. The relative location of the adjacent children's play area and ball games pitch is indicated below, along with the approximate location of the noise monitoring positions:

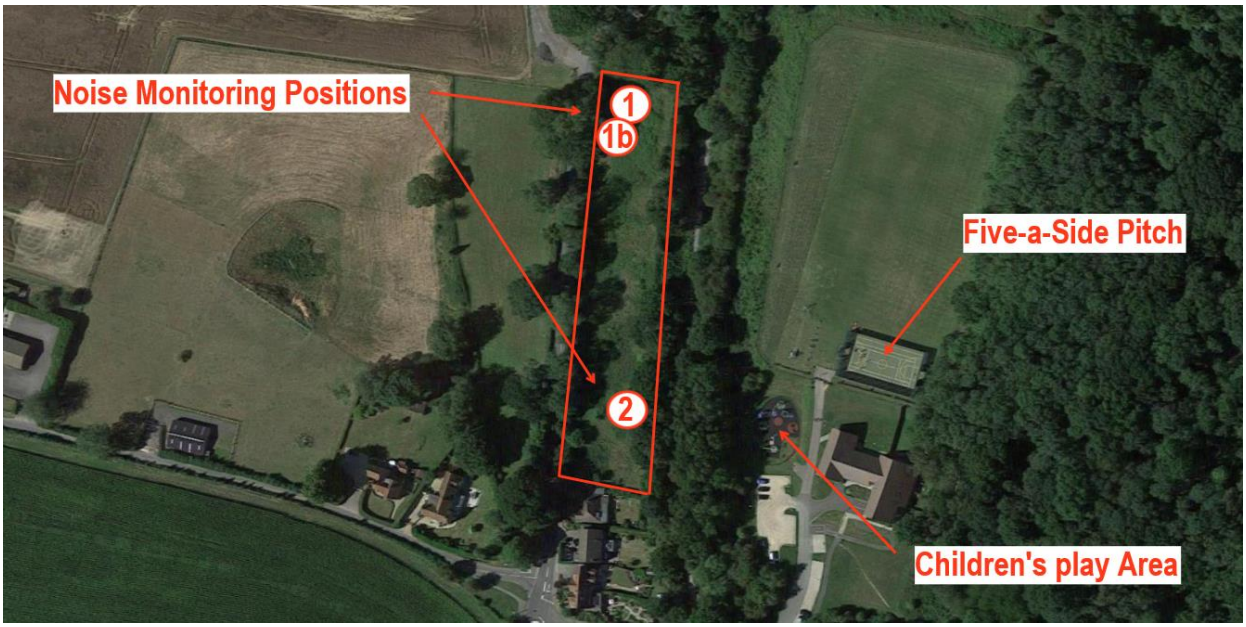


Figure 2. Noise Monitoring Positions – Image data © Google 2023

3.3 The automated monitoring positions 1 and 2 were selected to obtain measurements that would be representative of those likely to be incident at the facades of the proposed mobile homes. Position 1b was on the far side of a parked panel van from the M4/B4009 and was selected in order to indicate possible variations in noise levels where local screening is present.

4.0 GUIDANCE

4.1 There are no statutory numerical noise limit requirements with regards to residential development. However, there are planning policy, British Standard, and guidance documents applicable in this context. A detailed analysis of these documents is contained within the appendix with a summary given at the end of this section.

4.2 ProPG Planning and Noise 2017 draws on a wide range of policy, standards and guidance and offers a useful template for the assessment of noise impacts.

4.3 Local Planning.

The West Berkshire Council Environmental Health consultee comments for planning application 23/00815/ful dated 20 April 2023 reads as follows:

> *"Noise*
> *The proposed site is located approximately 100 meters from the busy M4 motorway and traffic noise may cause the site to be exposed to excessive noise.*
> *I would have liked to have seen a noise assessment submitted with the application to determine whether noise mitigation measures will be required.*
>
> *In addition there is a nearby children's nursery and play area marked on our map. This too may generate noise which the proposal site may be exposed too.*
>
> *I recommend refusal until a noise assessment has been submitted and a scheme to protect future occupants from noise, if necessary.*
>
> *Protection of mobile homes may be more challenging as glazing and ventilation options may be more limited than with traditional housing so I think it is sensible to refuse until further information is provided than to deal with submission of a noise assessment and scheme for noise by pre-commencement conditions."*

Guidance Summary

4.4 The policy and guidance quoted above and in the discussion contained within the appendix aim to avoid significant adverse noise impacts (SOAEL) where planning permission may be refused unless adequate mitigation is provided; and mitigate and reduce to a minimum observed noise impacts (LOAEL), where planning permission would normally be granted without conditions, by the selection of appropriate development sites and the implementation of good acoustic design.

4.5 To translate this into the context of residential development, in the first instance and where possible a development should aim to achieve the external noise limits given in WHO and BS8233:2014, but in any event achieve the internal noise limits given in BS8233:2014, along with a consideration of night-time noise events.

4.6 Government policy does allow for development where achieving these limits is not practicably feasible and BS8233:2014 gives an indication of reasonable relaxations that may be adopted.

4.7 The NPPF now includes the "Agent of Change" principle the onus is upon the developer to take reasonable steps to ensure that where appropriate, pre-existing commercial noise is adequately controlled. BS4142:2014 is generally considered to provide an appropriate framework for this.

4.8 From the above, the internal noise limits considered applicable for this development are as follows:

Table 2 BS8233:2014 Internal Guideline Levels

Activity	Location	07:00-23:00	23:00-07:00
Resting	Living Room	35 dB $L_{Aeq\ 16hr}$	-
Dining	Dining room/area	40 dB $L_{Aeq\ 16hr}$	-
Sleeping (daytime resting)	Bedroom	35 dB $L_{Aeq\ 16hr}$	30 dB $L_{Aeq\ 8hr}$

"NOTE 4 Regular individual noise events… can cause sleep disturbance. A guideline value may be set in terms of SEL or L_{AFmax}, depending on the character and number of events per night."

"NOTE 5 If relying on closed windows to meet the guide values, there needs to be an appropriate alternative ventilation that does not compromise the facade insulation or the resulting noise level." (From BS8233)

4.9 In certain circumstances a 5dB relaxation of the limits shown in the table above is considered reasonable in BS8233:2014 note 7:

4.10 "Where development is considered necessary or desirable, despite external noise levels above WHO guidelines, the internal target levels may be relaxed by up to 5 dB and reasonable internal conditions still achieved."

4.11 With respect to the night-time L_{AFmax} noise levels, the WHO Guidelines for Community Noise states:

'For a good sleep, it is believed that indoor sound pressure levels should not exceed approximately 45 dB L_{Amax} more than 10–15 times per night'

4.12 In BS8233 the design limit for noise affecting external amenity areas is given as 50 dB $L_{Aeq,T}$ with an upper guideline of 55 dB $L_{Aeq,T}$. It is further noted that in areas where achieving these levels is deemed to be not realistically feasible developments should be designed to achieve the lowest practicable levels in amenity areas.

5.0 METHODOLOGY

5.1 An automated environmental noise survey was undertaken from 12:00hrs on 10 October 2023 for approximately 72hours. The L_{Aeq}, $L_{Amax,}$ L_{A10} and L_{A90} noise levels were measured continuously and logged every 15 minutes. Individual L_{Afmax} noise events were measured continuously and logged every 5 seconds. Supplementary short term manned measurements were also undertaken at the end of the survey. The following equipment was deployed:

Table 3. Noise Monitoring Equipment Position 1

Position 1	SLM	Preamplifier	Microphone	Calibrator
Manufacturer	Norsonic AS	Norsonic AS	Gras	Norsonic AS
Type	140	1209	40AF	1255
Serial No.	1403413	12821	207390	125525261
Latest Calibration	14/03/2023			25/11/2022
Certificate No.	43668			U42618

Table 4. Noise Monitoring Equipment Position 2

Position 2	SLM	Preamplifier	Microphone	Calibrator
Manufacturer	Norsonic AS	Norsonic AS	Norsonic AS	Norsonic AS
Type	140	1209	1225	1255
Serial No.	1405947	15793	355507	125525261
Latest Calibration	08/07/2022			25/11/2022
Certificate No.	41442			U42618

Table 5. Noise Monitoring Equipment Position 1b

Positions 1a and 1b	SLM	Preamplifier	Microphone	Calibrator
Manufacturer	Norsonic AS	Norsonic AS	Norsonic AS	Norsonic AS
Type	140	1209	1227	1255
Serial No.	1406112	20299	151737	125525261
Latest Calibration	25/11/2022			25/11/2022
Certificate No.	U42620 and U42621			U42618

5.2 The calibration of the sound level meters used comply with IEC 61672-1:2003 class 1.

5.3 For the outdoor measurements proprietary windshields and extensions cable were deployed. The microphones were fixed to tripods or poles in the conditions given in the following table:

Table 6. Noise Monitoring Locations

Position	Period	Location	Mounting	Environment	Comments
1	72hrs	Last pitch to the north	Pole at 2.1m	Freefield	M4 dominant
2	72hrs	Last pitch to the south	Pole at 2.1m	Freefield	M4 dominant
1b	1hrs	Close to position 1 on far side of panel van screening road noise	Tripod at 1.7m	Freefield	B4009 and M4 Partially screened

5.4 The monitoring positions were as indicated in Figures 2 in section 3, above.

5.5 The entire signal path was checked for calibration at the beginning and end of the survey. No significant fluctuation (greater than 0.2dB) was detected in any noise monitor.

5.6 The following table details the weather conditions for the survey period:

Table 7. Weather Conditions

Condition	Start	End
Wind Speed ms^{-1}	<1.1	<1.0
Wind Direction (from)	southwest	north
Precipitation or Fog	nil	rain
Wet Ground	nil	yes
Frozen Ground or Snow	nil	nil
Temperature ° C	22	13
Cloud Cover %	20	100

5.7 It is understood that the weather during the unattended part of the survey was generally fine with no high winds or rainfall until the last night and morning when there was significant rain. Although shown in the time history graphs consequent analysis has therefore excluded data for the last night and morning.

5.8 The monitoring positions and field calibration noted above were deemed suitable for obtaining measurements representative of the prevailing environmental noise levels.

5.9 The dominant environmental noise sources at the beginning and end of the survey were noted to be road traffic.

5.10 Following the survey, the SD memory card from the sound level metre at position 2 was found to be corrupted and the data could not be extracted. Therefore, this assessment relies on noise data from position 1.

5.11 In-situ inside vs outside level difference surveys have previously been undertaken by dBA Acoustics. For comparison the level difference measurements undertaken of standard (i.e. non upgraded) mobile homes at various sites, are referenced.

5.12 The following table details outline construction of mobiles previously surveyed by dBA Acoustics:

Table 8. Various Standard Mobile Homes and Construction

Make/Model	Serial No	Construction Standard	Construction details	Wall min Rw dB
Delta Nordstar	Not known	Not known	Lightweight, single glazed	no
Pemberton Mystique 3B	PL008500	EN1647	Lightweight, double glazed	no
Stately Albion	SA09.552402E	BS3632:2005	9mm ply either side of 89mm timber frame, void containing mineral wool batts, flexible render externally	Rw35
Stately Albion	19SA131602	BS3632:2015	9mm ply either side of 70mm timber frame, 15mm battens forming void containing 10mm superquilt, flexible render externally	Rw35
Delta Superior	SO3672207	EN1647	4.5mm fibreboard+3.5mm ply on 50mm timber frame, void containing 50mm insulation. 14mm PVC external cladding	No

6.0 RESULTS

6.1 The uncorrected 15minute interval time history graphs are contained within the appendix. The table below shows the summary of the measured daytime and night-time noise levels:

Table 9. Automated Survey Results

Position	Day	dB L_{den}	dB L_{Aeq}		dB L_{Amax}	dB L_{A10}	dB L_{A90}	
		24hr	Day 16hr	Night 8hr	Highest	18hr	Day 16hr	Night 8hr
1	Monday night /Tuesday	64.6	61.5	57.2	79.7	62.4	51.0	46.1
	Tuesday night /Wednesday	64.3	61.5	56.3	77.9	62.5	53.3	41.9
1	Monday 12:00-13:00	-	61.7	-	-	-	-	-
1b	Monday 12:00-13:00	-	56.4	-	-	-	-	-
2		Data corrupted – no results						

6.2 The uncorrected 5 second resolution L_{Amax} night-time noise event time history graphs are contained within the appendix. The 10th worst LAmax night time noise event during nights was approximately 68.5dB whilst the 15th worst LAmax night time noise event during both nights wes approximately 68.0dB.

6.3 The following table details the results of the in-situ outside to inside level difference measurements undertaken of mobile units previously measured at other sites:

Table 10. Mobile Home in-situ Level Difference Results

Mobile and year of construction	Habitable Space	External Noise Source	External Level dB	Internal Level dB	Level Difference dB (rounded)
Delta Nordstar Pre 2005	Living	Road	61.8	44.1	17
	Bed		64.7	45.4	19
	Bed Noise Events		74.5	57.1	17
Pemberton Mystique 2006	Living	Road	61.5	38.7	23
	Bed		62.8	39.9	23
	Bed Noise Events		69.4	50.3	19
Stately Albion 2009	Living	Air and Road	60.9	36.0	25
	Bed		56.9	30.7	26
	Bed Noise Events		76.2	56.4	25
Stately Albion 2019	Living	Air and Road	52.2	29.5	23
	Bed		48.3	21.1	27
	Bed Noise Events		66.0	39.2	26
Delta Superior	Living	Air and Road	67.8	41.4	27
	Bed		estimated		28
	Bed Noise Events		89.0	61.1	28

7.0 ASSESSMENT

7.1 Analysis of the results indicates that the site would not achieve the WHO 2018 guideline levels for exposure to road traffic noise for both a 24-hour period (L_{den}) nor at night (L_{night}).

7.2 Comparing to the ProPG noise risk assessment chart (Figure 1, see appendix) it can be seen that the site surveyed is broadly low to medium risk for average daytime and medium risk for night-time noise levels.

7.3 The 10th worst L_{Amax} noise event at both positions was greater than 60dB indicating that noise events should be considered in the design.

7.4 Transportation noise affecting noise exposed amenity is predicted to exceed the lower and upper guideline level recommended in BS8233:2014.

7.5 The assessment indicates that consideration of mitigation is necessary in order to ensure adequate living conditions are achieved.

7.6 Measurements undertaken at position 1b were partially screened from the B4009 and M4 on the far side of a parked panel van. The measurement undertaken at position 1 over the same period as the measurement undertaken at position 1b was approximately 5 dB higher.

8.0 ACOUSTIC DESIGN

Internal Noise Levels in Habitable Rooms (with windows closed)

8.1 Modern mobile homes should meet the BS3632:2015 requirement that external walls are at least Rw35 dB in sound insulation performance (required since the 2005 version of BS3632). In order to determine the potential achievable internal noise levels indicative calculations have been undertaken using the actual in-situ level difference performance of various mobile homes located on other sites.

8.2 In order to estimate the internal 16hr day and 8hr night-time internal levels the measured level difference results (inside to outside) of the mobile homes have been applied to the prevailing worst case external noise levels measured at this site. This results in indicative internal levels that are compared to the preferred guideline levels in the table below:

Table 11. Predicted Internal Levels with Windows Closed

Internal level	Daytime Living $L_{Aeq,16hr}$	Daytime Bedroom $L_{Aeq,16hr}$	Night-time Bedroom $L_{Aeq,8hr}$	Noise Events 10th worst L_{Amax}	Comment
External Level	62	62	57	69	External Level
BS8233 Guideline	35	35	30	45	BS8233 Guideline
Delta Nordstar pre 2005	45	43	39	52	Not Commensurate
Pemberton Mystique 2006	39	39	35	50	"Reasonable" with 5dB exceedance of night-time noise event limit
Stately Albion 2009	37	36	32	44	"Reasonable"
Stately Albion 2019	39	35	31	43	"Reasonable"
Delta Superior	35	34	30	41	Fully commensurate
Colour Key:		More than 5dB above guideline – not commensurate with BS8233			
		No more than 5dB above guideline – BS8233 reasonable relaxation			
		No higher than guideline – fully commensurate with BS8233			

8.3 From the above it can be seen that on the whole there is a general trend towards better sound insulation the more recent the production of the mobile home. This is considered to be at least partly as a result of incremental improvements of both thermal and acoustic conditions as required by the 2005 and 2015 editions of BS3632.

8.4 As can be seen in the above table mobile homes (from 2009 onwards) are shown to be commensurate with the reasonable relaxation clause given in the guidelines of BS8233:2014.

8.5 From the above it is concluded that reasonable internal living conditions should be achievable at this site without the need of additional mitigation provided modern mobile units are adopted that comply with BS3632:2015 onwards, assuming windows are closed.

8.6 With an acoustic screen situated immediately to the north of each mobile home a nominal noise reduction of approximately -5dB is expected, provided the top of the screen obscures line-of-sight between the M4 and standing head height within the mobile (estimated to be approximately 2.3m, assuming a 0.5m undercroft below the mobile). The As Proposed Site Plan below has been marked up to indicate the optimum position of local acoustic screening:

Figure 3. As Proposed Site Plan Marked up with Local Acoustic Screening

8.7 The following table gives an indication of internal noise levels incorporating the 5dB improvement expected from the proposed boundary screening:

Table 12. Predicted Internal Levels with Windows Closed and Acoustic Barrier Mitigation

Internal level	Daytime Living $L_{Aeq,16hr}$	Daytime Bedroom $L_{Aeq,16hr}$	Night-time Bedroom $L_{Aeq,8hr}$	Noise Events 10th worst L_{Amax}	Comment
External Level	62	62	57	69	External Level
BS8233 Guideline	35	35	30	45	BS8233 Guideline limit
Delta Nordstar pre 2005	40	38	34	47	"Reasonable" with 2 dB exceedance of noise event limit
Pemberton Mystique 2007	34	34	30	45	Fully commensurate
Stately Albion 2009	32	31	27	39	Fully commensurate
Stately Albion 2019	34	30	26	38	Fully commensurate
Delta Superior 2021	30	29	25	36	Fully commensurate

Colour Key:		
		More than 5dB above guideline – not commensurate with BS8233
		No more than 5dB above guideline – BS8233 reasonable relaxation
		No higher than guideline – fully commensurate with BS8233

8.8 As can be seen in the above table that more modern mobile homes (from 2007 onwards) are shown to be fully commensurate with the guidelines given in BS8233:2014.

8.9 From the above it is concluded that good internal living conditions should be achievable at this site provided the mitigation of local acoustic barriers and modern mobile units that comply at least with BS3632:2005 onwards, assuming windows are closed.

Internal Noise Levels in Habitable Rooms (with windows open)

8.10 With regard to overheating the current Approved Document O states the following:

"3.2 In locations where external noise may be an issue (for example, where the local planning authority considered external noise to be an issue at the planning stage), the overheating mitigation strategy should take account of the likelihood that windows will be closed during sleeping hours (11pm to 7am).

3.3 Windows are likely to be closed during sleeping hours if noise within bedrooms exceeds the following limits.

a. 40dB LAeq,T, averaged over 8 hours (between 11pm and 7am).

b. 55dB LAFmax, more than 10 times a night (between 11pm and 7am)."

8.11 The ADO limits quoted above suggest that in an overheating situation night-time internal noise levels up to 10dB higher than the BS8233:2014 guideline levels may be tolerable but where internal levels are higher than this it should be expected that windows would be closed due to noise. The following table compares the Approved Document O limits and the predicted internal noise levels with windows open (assuming a reduction of -10dB for noise passing through an open window):

Table 13. Predicted Internal Noise Levels with Windows Open

	Daytime $L_{Aeq,16hr}$	Night-time $L_{Aeq,8hr}$	Night-time L_{Amax}	Comment
Approved Document O limit	n/a	40	55	Approved Document O limit
Predicted internal level	47-52	42-47	54-59	Windows likely to be closed at night

8.12 The above table shows that when windows are open internal noise levels are predicted to be exceed the night-time ADO limits. According to ADO it therefore follows that windows are likely to be kept closed at night-time because of the prevailing noise.

8.13 To maintain both acoustic and thermal comfort during night-time overheating conditions alternative means of cooling/ventilation can be provided in bedrooms such that windows can optionally be kept closed.

External Amenity

8.14 The results indicate that without mitigation noise levels in external amenity areas are predicted to exceed the upper guideline level by approximately 7dB.

8.15 Assuming the undercroft is suitably boxed off e.g. imperforate timber panelling at least 10kg/m^2 the local acoustic screening provided by the mobile home building itself it is expected to reduce noise levels in the amenity immediately to the south of the mobiles by approximately 5dB, as demonstrated by the site measurement at position 1b. This results in a level that is approximately 2 dB above the upper guideline level of BS8233:2014.

8.16 Alternately, with local acoustic barrier screening provided to the north of each mobile, as detailed in para 8.6 Figure 3 above, it is expected noise levels in the amenity immediately to the south of the barriers should be reduced by approximately 8dB. This results in a level that is approximately 1 dB below the upper guideline level of BS8233:2014 and therefore commensurate with the upper guideline level.

8.17 It is noted that section 7.7.3.2 of BS8233:2014 states:

"For traditional external areas that are used for amenity space, such as gardens and patios, it is desirable that the external noise level does not exceed 50 dB LAeq,T, with an upper guideline value of 55 dB LAeq,T which would be acceptable in noisier environments. However, it is also recognized that these guideline values are not achievable in all circumstances where development might be desirable. In higher noise areas, such as city centres or urban areas adjoining the 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 needs 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."

Children's Play Area and Ball Games Pitch

8.18 Due to a corrupted memory sd card there is no data from position 2, the automated noise monitoring position nearest to the Children's Play Area and Ball Games Pitch. Therefore, as is often the case, an analysis will be presented based upon standard commonly accepted source data (ref: Voice Effort Levels at 1m from BB93).

8.19 Indicative calculations have been undertaken based on the following input data:

- Normal Voice Effort Level of 60dB
- Raised Voice Effort Level of 70dB
- Shouting Voice Effort Level of 80dB
- Typically, 12 participants using Childrens Play Area
- Assumed 10 participants on "five-a-side" sized pitch
- All Participants speaking/shouting for 45mins in a given hour

8.20 The table below presents the results for a notional hour of children using the Play Area:

Table 14. Noise Impact from Children's Play Area

Voice Effort Level	No of Participants	Duration Seconds	Distance	Level at Receptor
	12	2100/3600	50m	
60	10.8	-2.3	-34.0	34.5
70	10.8	-2.3	-34.0	44.5
80	10.8	-2.3	-34.0	54.5

Comparing the results from the table above the upper and lower guidelines from BS8233:2014 (also ref: WHO 1999) it can be seen that for children playing with normal or raised voice the noise impact is calculated to be below the lower guideline level at the nearest mobile. Similarly, even with all the children shouting this would be just below the upper guideline level.

8.21 The table below presents the results for a notional hour of the Ball Games Pitch use (assuming 5-a-side):

Table 15. Noise Impact from Ball Games Pitch

Voice Effort Level	No of Participants	Duration Seconds	Distance	Level at Receptor
	10	2100/3600	80m	
60	10.0	-2.3	-38.1	29.6
70	10.0	-2.3	-38.1	39.6
80	10.0	-2.3	-38.1	49.6

Comparing the results from the table above with the upper and lower guidelines it can be seen that with all participants shouting the noise impact is calculated to be just below the lower guideline level at the nearest mobile.

8.22 In reality the noise levels will vary and it will be likely that both areas will not be used at all for a greater part of the day (there were no participants in either area during the installation and retrieval of noise monitoring equipment). It is therefore considered that the assessment presented above is sufficient to demonstrate that use of the Children's Play Area and Ball Games Pitch are unlikely to lead to an adverse noise impact to future residents on the development site.

Suggested Condition Wording

8.23 A choice of two condition wording options are given below. They are suggested in order to achieve either "reasonable" or "fully commensurate" internal living conditions in terms of the design guidelines given in BS8233L2014:

Either,

8.24 To achieve internal living conditions commensurate with the *reasonable relaxation* detailed in the BS8233:2014 guidelines:

"All mobile homes on this site should be BS3632:2015 compliant, be installed parallel with the M4 as indicated in the site plan and have the undercroft closed off with a material that is at least 10kg/m^2."

OR,

8.25 To achieve internal living conditions *fully commensurate* with the design guidelines given in BS8233:2014

"All mobile homes on this site should be BS3632:2015 compliant and be provided with local acoustic barriers situated to the north of each home, with a short wrap round at the east and west ends, as indicated in Figure 3 of Noise Impact Assessment report 1510.NIA.00, or any updated arrangement that may be subsequently agreed with the Local Authority. The specification of the acoustic barrier is that the height should be sufficient to obscure line-of-sight to traffic using the M4 from a standing position within any of the mobile homes (estimated to be approximately 2.3m assuming a 0.5m under croft); the barrier should be imperforate with no gaps or breaks and be constructed of a material that is at least 10kg/m^2. "

9.0 CONCLUSION

9.1 A 72hour environmental noise survey has been undertaken and the likely noise impact assessed upon residential use. The noise impact assessment indicates that, unmitigated, the development site is exposed to environmental noise of a sufficient magnitude to cause a low to medium risk of adverse impact.

9.2 The in-situ outside to inside level difference acoustic performance of various mobile homes (previously measured by dBA Acoustics) have been used to predict the potential internal noise levels within a selection of mobile homes at this site. The results indicate that internal levels commensurate with the reasonable relaxation given in BS8233:2014 design limits are likely to be met within modern mobile homes.

9.3 Alternately, to achieve internal living conditions fully commensurate with the guidelines given in BS8233:2014 mitigation has been proposed by way of acoustic barriers. These barriers are proposed locally to each mobile home.

9.4 At times when windows are opened to provided ventilative cooling, internal noise levels above the guideline levels have been predicted. Based on Approved Document O advice it is expected that windows are likely to be closed at night due to excessive noise.

9.5 Accordingly, to maintain both thermal and acoustic comfort during overheating conditions alternative means of cooling and/or ventilation could be provided in bedrooms.

9.6 Noise in external amenity is predicted to exceed the upper guideline level although relatively quieter areas should be available immediately to the south of each home. However, installation of the proposed acoustic barriers is expected to reduce noise local to the homes to below the upper guideline level given in BS8233:2014.

9.7 The noise impact of the Children's Plat Area and Ball Games Pitch has been estimated using referenced voice effort noise levels. The assessment finds that use of these areas is not generally expected to lead to an adverse noise impact in the worst affected external amenity area.

9.8 It is therefore recommended that, from the perspective of noise impact, planning permission should be granted. It is expected that permission would be conditional, and some suggested wordings have been provided.

Report end

dBA Acoustics

APPENDIX A – GUIDANCE DOCUMENTS DISCUSSION

Introduction

A.1.1 There are no statutory numerical noise limit requirements with regards to residential development. However, there follows a summary of a number of relevant planning policy, British Standard and guidance documents applicable in this context.

Planning Policy Documents

Noise Policy Statement for England 2010 (NPSE)

A.1.2 The NPSE defines government policy aims for noise management 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. "

A.1.3 The Explanatory Note of NPSE introduces the concept of observable effect levels.

- 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.
- SOAEL – Significant Observed Adverse Effect Level This is the level above which significant adverse effects on health and quality of life occur.

National Planning Policy Framework 2018 (NPPF)

A.2.1 Following on from the NPSE, NPPF describes how noise should be considered in relation to planning applications. Section 180 of the NPPF dated July 2018 states as follows:

"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"

* for the definition of adverse impacts reference is made here to the Explanatory Note to the NPSE 2010 i.e. the observable effect levels.

A.2.2 Paragraph 182 introduces the "Agent of Change" principle as follows:

"Planning policies and decisions should ensure that new development can be integrated effectively with existing businesses and community facilities….. Existing businesses and facilities should not have unreasonable restrictions placed upon 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 development has been completed.

Planning Practice Guide (PPG)

A.3.1 The following table from PPG identifies the increasing noise effect levels and action guidance outlined in the NPSE and NPPF:

Table 16. PPG Noise Effect Levels

Perception	Examples of Outcomes	Increasing Effect Level	Action
Noticeable and not intrusive	Noise can be heard, but does not cause any change in behaviour or attitude. Can slightly affect the acoustic character of the area but not such that there is a perceived change in the quality of life.	No Observed Adverse Effect **(NOAEL)**	No specific measures required
Noticable and Intrusive	Noise can be heard and causes small changes in behaviour and/or attitude, 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 perceived change in the quality of life.	Observed Adverse Effect **(LOAEL)**	Mitigate and reduce to the minimum
Noticable and Disruptive	The noise causes a material change in behaviour and/or attitude, 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 **(SOAEL)**	Avoid
Noticeable and very disruptive	Extensive and regular changes in behaviour and/or an inability to mitigate effect of noise leading to psychological stress or physiological effects, e.g. regular sleep deprivation/awakening; loss of appetite, significant, medically definable harm, e.g. auditory and non- auditory	Unacceptable Adverse Effect **(UOAEL)**	Prevent

A.3.2 The PPG also states that noise impact may be partially off set if the residents of dwellings have access to:

- a relatively quiet façade as part of their dwelling;
- a relatively quiet amenity space for their sole use (eg a garden or balcony);
- a relatively quiet amenity space for shared use;
- a relatively quiet public park or green space nearby (eg within 5 minutes).

A.3.3 In section 1 of the guidance, PPG also notes that although Noise can override other planning considerations neither the Noise Policy Statement for England nor the National Planning Policy Framework (which reflects the Noise Policy Statement) expects noise to be considered in isolation, separately from the economic, social and other environmental dimensions of proposed development.

Further Guidance and British Standards

World Health Organisation 1999 and 2018

A.4.1 WHO Environmental Noise Guidelines for the European Region (2018) partially supersede the previously published Community Noise Guidelines (1999) and compliment the intervening Night Noise Guidelines (2009)

A.4.2 The following noise limit recommendations for health protection are in the form of average noise levels, found external at the worst affected facade:

Table 17. WHO 2018 Noise Limits Recommendations

Noise source	L_{den} dB[1]	L_{night} dB[2]
Road Traffic Noise	53	45
Railway Noise	54	44
Aircraft Noise	45	40

[1] compound day, evening and night time yearly average

[2] night time yearly average

A.4.3 The WHO noise guidelines further state:

"In many situations, average noise levels like the L_{den} or L_{night} indicators may not be the best to explain a particular noise effect. Single-event noise indicators – such as the maximum sound pressure level (L_{AMax}) and its frequency distribution – are warranted in specific situations, such as in the context of night-time railway or aircraft noise events that can clearly elicit awakenings and other physiological reactions that are mostly determined by L_{AMax}. Nevertheless, the assessment of the relationship between different types of single-event noise indicators and long-term health outcomes at the population level remains tentative. The guidelines therefore make no recommendations for single-event noise indicators."

A.4.4 The following guidelines are considered to carry over from the previous WHO1999 publication Guidelines for Community Noise:

Table 18. WHO 1999 Guidelines for Community Noise

Environment	Critical Health Effect	$L_{Aeq,T}$ dB	$L_{AfmaxdB}$	Time base
Outdoor living area (noise from sources other than road traffic, railways, aircraft or wind turbines)	Serious annoyance, daytime and evening	55	-	16 hours 07:00-23:00
	Moderate annoyance, daytime and evening	50	-	16 hours 07:00-23:00
Dwellings indoors	Speech intelligibility and moderate annoyance, daytime and evening	35	-	16 hours 07:00-23:00
	Sleep disturbance, night time	30	45	8 hours 23:00-07:00

BS8233:2014 Guidelines on Sound Insulation and Noise

A.5.1 The guidance relating to residential development as set out in BS8233:2014 is closely aligned with WHO and specifically provides guideline limits for noise within internal living spaces and external residential amenity areas.

A.5.2 Table 4 from BS8233:2014 gives the following internal guideline values:

Table 19. BS8233:2014 Internal Guideline Levels

Activity	Location	07:00-23:00	23:00-07:00
Resting	Living Room	35 dB $L_{Aeq\ 16hr}$	
Dining	Dining room/area	40 dB $L_{Aeq\ 16hr}$	
Sleeping (daytime resting)	Bedroom	35 dB $L_{Aeq\ 16hr}$	30 dB $L_{Aeq\ 8hr}$

A.5.3 In certain circumstances a 5dB relaxation of the limits shown in the table above is considered reasonable in BS8233:2014 note 7:

"Where development is considered necessary or desirable, despite external noise levels above WHO guidelines, the internal target levels may be relaxed by up to 5 dB and reasonable internal conditions still achieved."

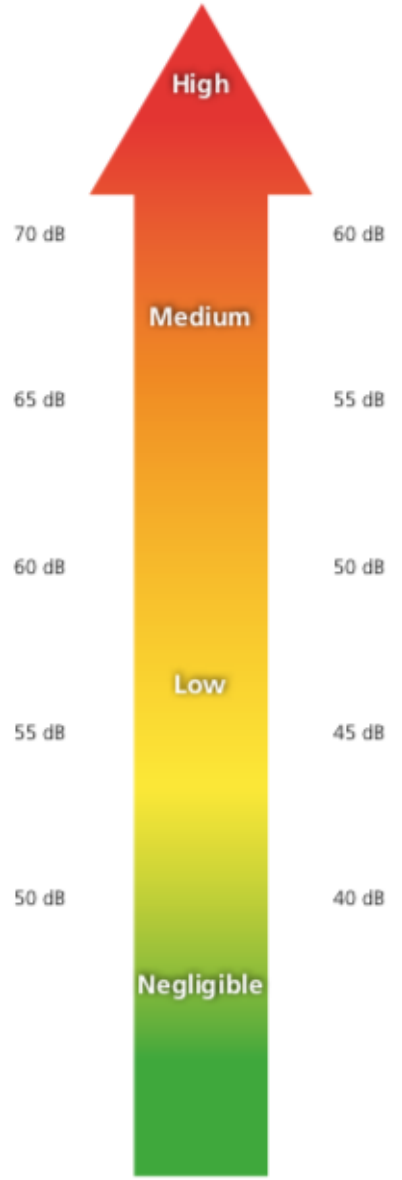
A.5.4 In BS8233 design limits for noise affecting external amenity areas is given as 50 dB $L_{Aeq,T}$ with an upper guideline of 55 dB $L_{Aeq,T}$. It is further noted that in areas where achieving these levels is deemed to be not realistically feasible (e.g. city centres or urban areas adjoining a strategic transportation network) developments should be designed to achieve the lowest practicable levels in these amenity areas.

A.5.5 In Section 7.7.3.2 of BS8233:2014, Design Criteria for External Use, it is noted that in developments such as flats and apartment blocks "*Specification of noise limits is not necessarily appropriate. Small balconies may be included for uses such as drying washing or growing pot plants, and noise limits should not be necessary for these uses*"

ProPG Planning and Noise 2017

A.6.1 ProPG 2017 sets out a two-stage approach. Firstly, a noise survey is undertaken to identify the prevailing noise levels and provide an initial risk assessment of the likely noise impact excluding design mitigation. Where necessary this is followed by a full assessment and Acoustic Design Statement to include the likely internal and external noise levels including any design mitigation.

A.6.2 Figure 4 below, (Figure 1 excerpt from ProPG) sets out the site noise risk assessment:



NOISE RISK ASSESSMENT	POTENTIAL EFFECT WITHOUT NOISE MITIGATION	PRE-PLANNING APPLICATION ADVICE
	Increasing risk of adverse effect	High noise levels indicate that there is an increased risk that development may be refused on noise grounds. This risk may be reduced by following a good acoustic design process that is demonstrated in a detailed ADS. Applicants are strongly advised to seek expert advice. As noise levels increase, the site is likely to be less suitable from a noise perspective and any subsequent application may be refused unless a good acoustic design process is followed and is demonstrated in an ADS which confirms how the adverse impacts of noise will be mitigated and minimised, and which clearly demonstrate that a significant adverse noise impact will be avoided in the finished development. At low noise levels, the site is likely to be acceptable from a noise perspective provided that a good acoustic design process is followed and is demonstrated in an ADS which confirms how the adverse impacts of noise will be mitigated and minimised in the finished development.
	No adverse effect	These noise levels indicate that the development site is likely to be acceptable from a noise perspective, and the application need not normally be delayed on noise grounds.

Figure 1 Notes:

a. Indicative noise levels should be assessed without inclusion of the acoustic effect of any scheme specific noise mitigation measures.

b. Indicative noise levels are the combined free-field noise level from all sources of transport noise and may also include industrial/commercial noise where this is present but is "not dominant".

c. $L_{Aeq,16hr}$ is for daytime 0700 – 2300, $L_{Aeq,8hr}$ is for night-time 2300 – 0700.

d. An indication that there may be more than 10 noise events at night (2300 – 0700) with $L_{Amax,F}$ > 60 dB means the site should not be regarded as negligible risk.

Figure 4. Figure 1 from ProPG - Noise Risk Assessment

The Noise Insulation Regulations 1975

A.7.1 Although not applicable in this instance the Noise Insulation Regulations are a useful guide indicating where noise levels at the façade would be considered significantly excessive. The Noise Insulation Regulations define the conditions under which habitable rooms are eligible for noise insulation to control internal noise levels. The conditions relate to the level of traffic noise at the façade, the increase in noise levels as a result of the highway and the contribution of the new or altered scheme to the noise level received at the façade. Noise insulation qualification criteria must abide by a few tests that include the following two:

- The facade noise threshold of 68dB $L_{A10,18h}$ is met or exceeded;
- That there must be a noise increase of at least 1dB compared to the prevailing noise level immediately before the construction of a highway or an additional carriageway were begun.

BS EN ISO 4142:2014 Methods for Rating and Assessing Industrial and Commercial Sound

A.8.1 In the assessment of commercial sound, BS4142: 2014 Methods for Rating and Assessing Industrial and Commercial Sound is a key guidance document. The standard sets out a methodology that considers the likely impact of a commercial or industrial noise source when measured and/or predicted against the acoustic environment. Corrections are given for times, duration and the presence of acoustic feature characteristics that could make the sound intrusive.

A.8.2 The magnitude of the corrections that can be applied to the noise in question are dependent upon its severity/prominence. A penalty of between 0dB to +3dB may be applied for sound that is intermittent; 0dB to +6dB for sound that is tonal and 0dB to +9dB for sound that is impulsive. The maximum levels are applied where the acoustic feature is highly perceptible. The corrections are additive with the maximum correction being +15dB in any given case.

A.8.3 The standard states that generally, the greater the margin by which the specific sound emerges above the background sound level, the greater the magnitude of impact.

Guidance is given on the assessment of impact as follows:

- 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 or more 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 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.

A.8.4 In summary, for planning purposes it should normally be demonstrated that adverse noise impacts have been avoided and /or mitigated and reduced to a minimum. Ideally low noise impact would be achieved although this is not always possible.

Approved Document O

A.9.1 With regard to overheating the current Approved Document O states the following:

> *"3.2 In locations where external noise may be an issue (for example, where the local planning authority considered external noise to be an issue at the planning stage), the overheating mitigation strategy should take account of the likelihood that windows will be closed during sleeping hours (11pm to 7am).*
> *3.3 Windows are likely to be closed during sleeping hours if noise within bedrooms exceeds the following limits.*
> *a. 40dB LAeq,T, averaged over 8 hours (between 11pm and 7am).*
> *b. 55dB LAFmax, more than 10 times a night (between 11pm and 7am)."*

Guidance Summary

A.10.1 The policy and guidance documents quoted above aim to avoid significant adverse noise impacts (SOAEL),and mitigate and reduce to a minimum observed noise impacts (LOAEL) with the selection of appropriated development sites and the implementation of good acoustic design.

A.10.2 To translate this into the context of residential development, in the first instance and where possible a development should aim to achieve the external noise limits given in WHO and BS8233:2014, and in any event achieve the internal noise limits given in BS8233:2014, along with a consideration of night-time noise events.

A.10.3 Government policy does allow for development where achieving these limits is not practicably feasible and BS8233:2014 gives an indication of reasonable relaxations that may be adopted.

A.10.4 Since the update of the NPPF to include the "Agent of Change" principal the onus is upon the developer to take reasonable steps to ensure that where appropriate, pre-existing commercial noise is adequately controlled. BS4142:2014 is generally considered to provide an appropriate framework for this.

APPENDIX B – TIME HISTORY GRAPHS

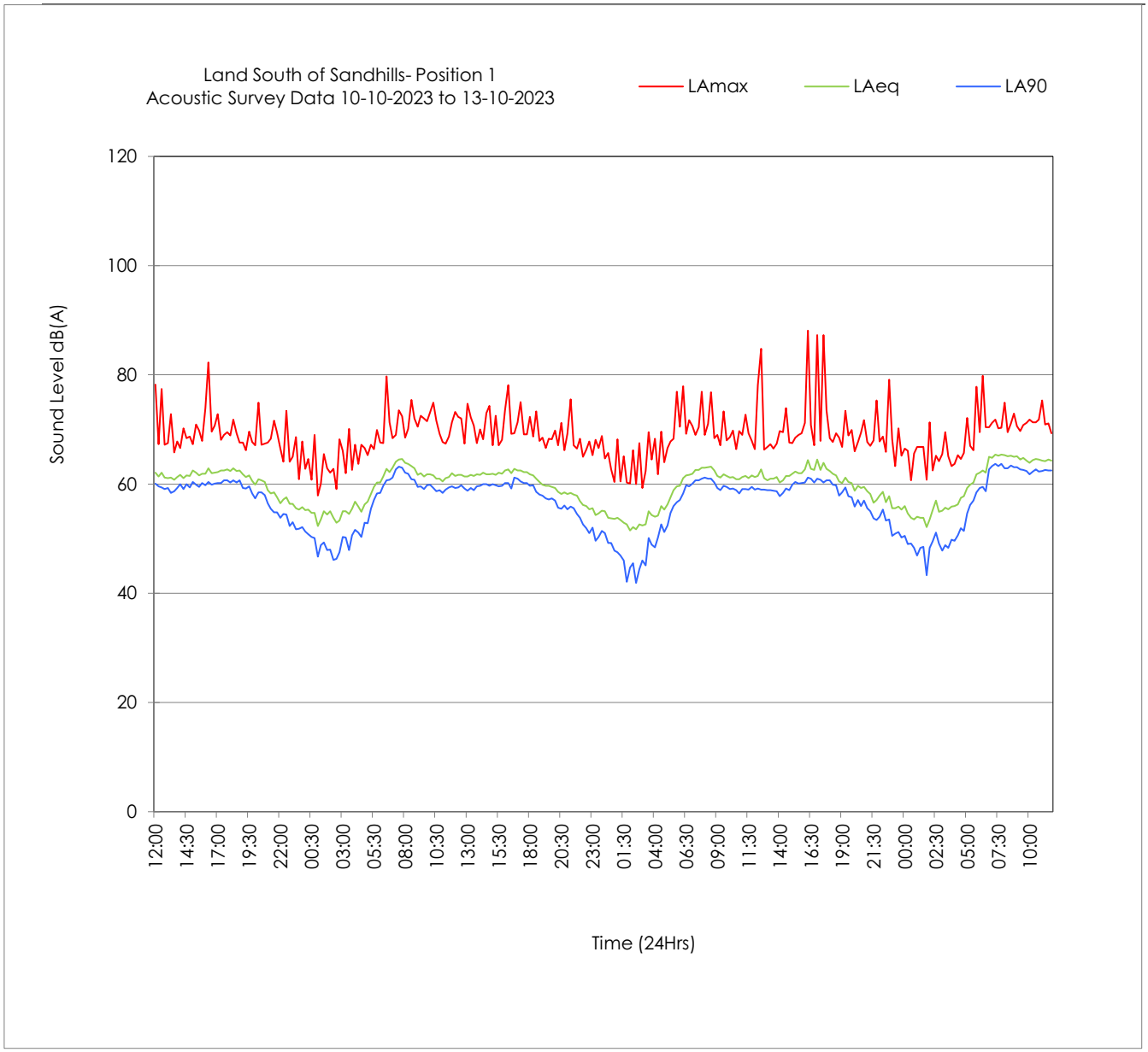


Figure 5. Time History Graph – Position 1

APPENDIX C - DETAILED NIGHT-TIME NOISE EVENT TIME HISTORY GRAPHS

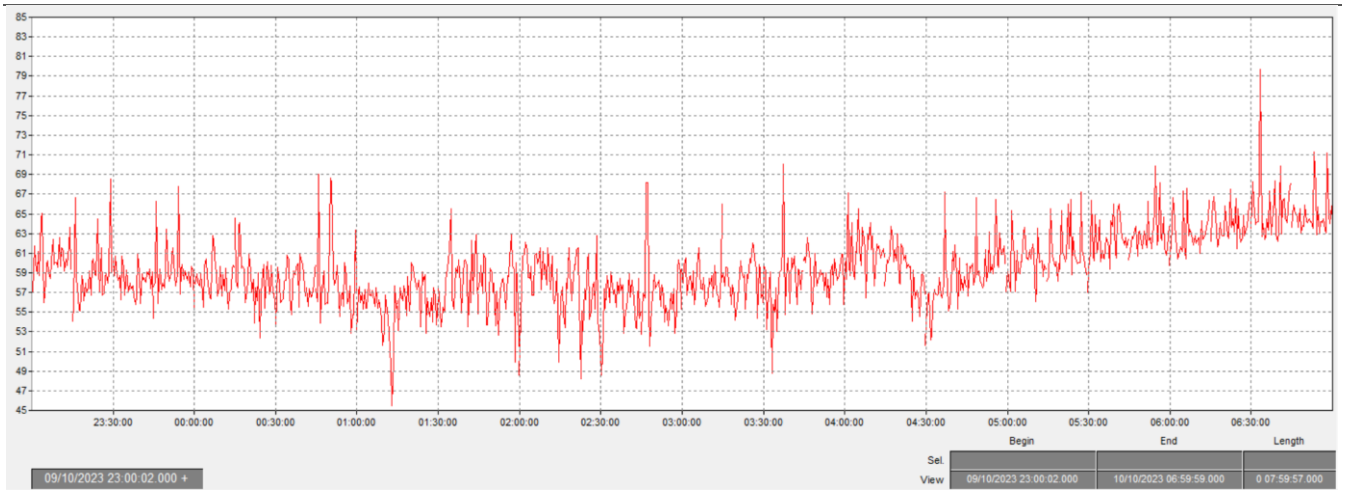


Figure 6. Night-time Noise Event Time History 1st night, Position 1

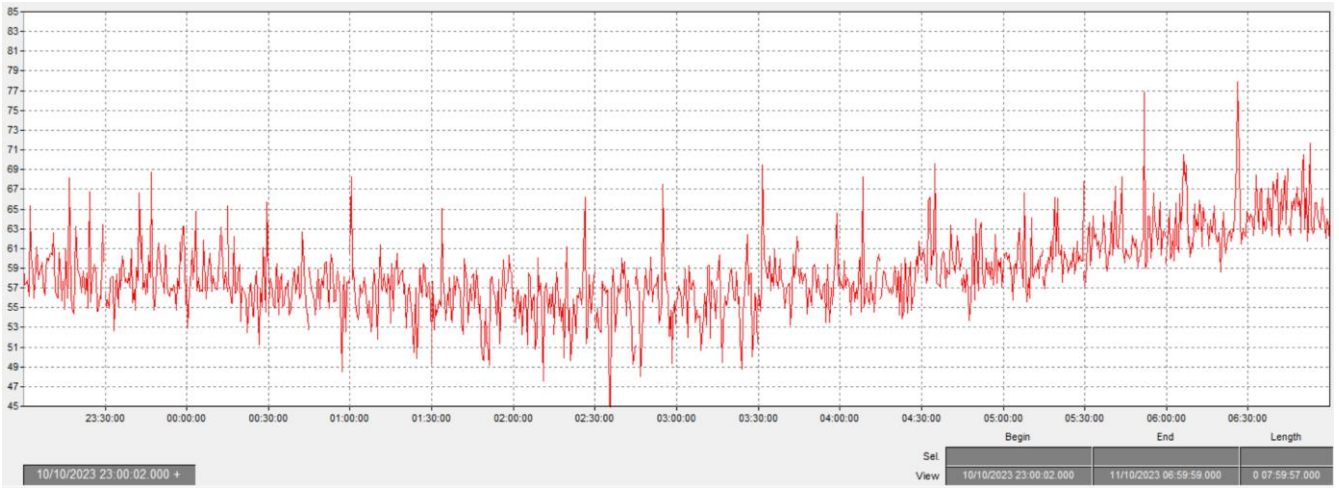


Figure 7. Night-time Noise Event Time History 2nd night, Position 1

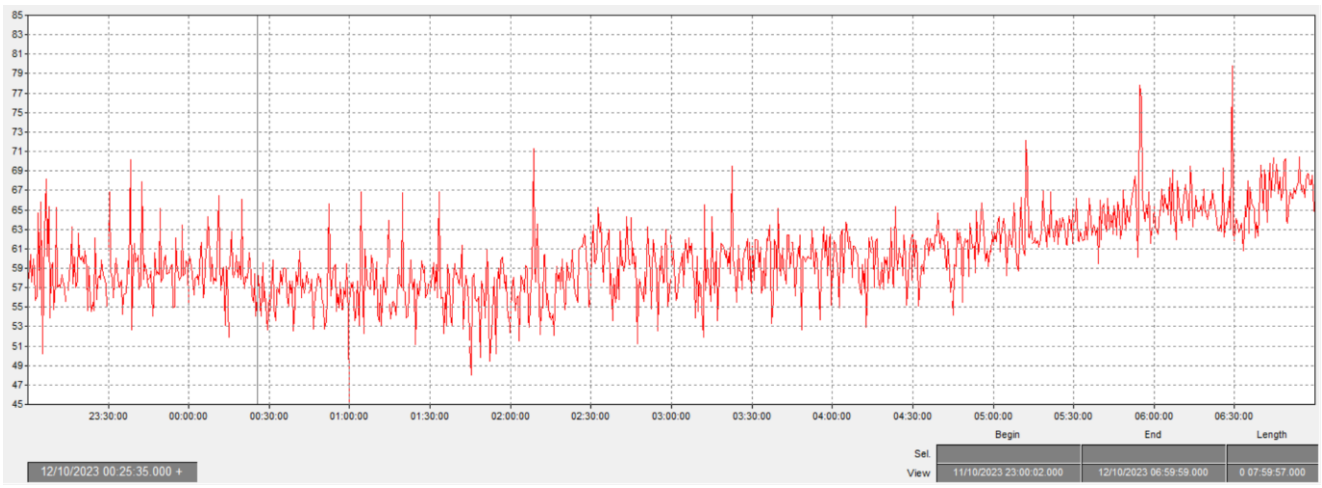
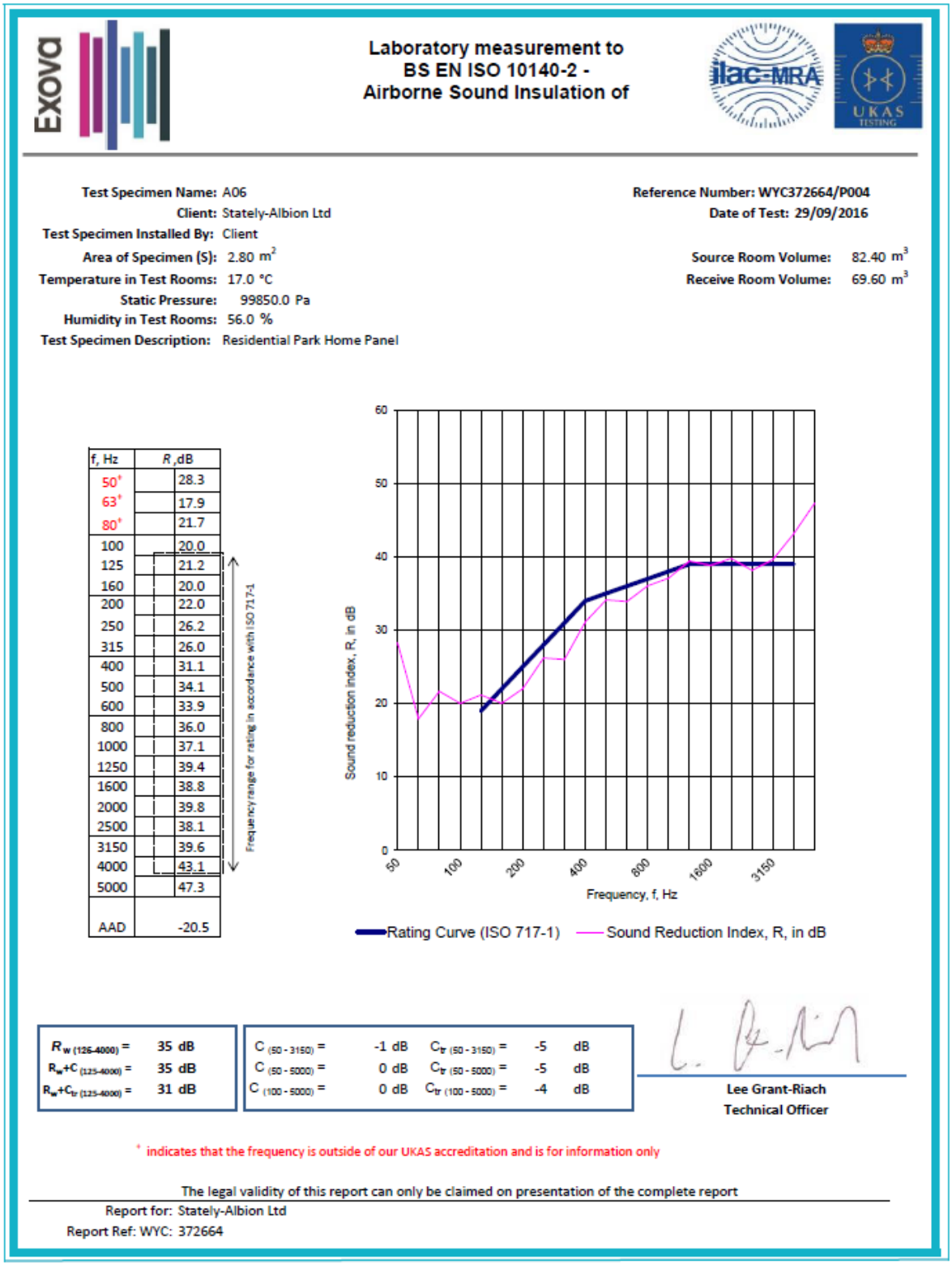


Figure 8. Night-time Noise Event Time History 3rd night, Position 1

APPENDIX D – MOBILE HOME EXTERNAL WALL PERFORMANCE (TEST RESULT GRAPHS)



Laboratory measurement to BS EN ISO 10140-2 - Airborne Sound Insulation of

Test Specimen Name: A06
Client: Stately-Albion Ltd
Test Specimen Installed By: Client
Area of Specimen (S): 2.80 m²
Temperature in Test Rooms: 17.0 °C
Static Pressure: 99850.0 Pa
Humidity in Test Rooms: 56.0 %
Test Specimen Description: Residential Park Home Panel

Reference Number: WYC372664/P004
Date of Test: 29/09/2016

Source Room Volume: 82.40 m³
Receive Room Volume: 69.60 m³

f, Hz	R ,dB
50+	28.3
63+	17.9
80+	21.7
100	20.0
125	21.2
160	20.0
200	22.0
250	26.2
315	26.0
400	31.1
500	34.1
600	33.9
800	36.0
1000	37.1
1250	39.4
1600	38.8
2000	39.8
2500	38.1
3150	39.6
4000	43.1
5000	47.3
AAD	-20.5

Frequency range for rating in accordance with ISO 717-1

$R_{w\ (126\text{-}4000)}$ =	35 dB	$C_{(50\text{-}3150)}$ =	-1 dB	$C_{tr\ (50\text{-}3150)}$ =	-5 dB
$R_w+C_{(125\text{-}4000)}$ =	35 dB	$C_{(50\text{-}5000)}$ =	0 dB	$C_{tr\ (50\text{-}5000)}$ =	-5 dB
$R_w+C_{tr\ (125\text{-}4000)}$ =	31 dB	$C_{(100\text{-}5000)}$ =	0 dB	$C_{tr\ (100\text{-}5000)}$ =	-4 dB

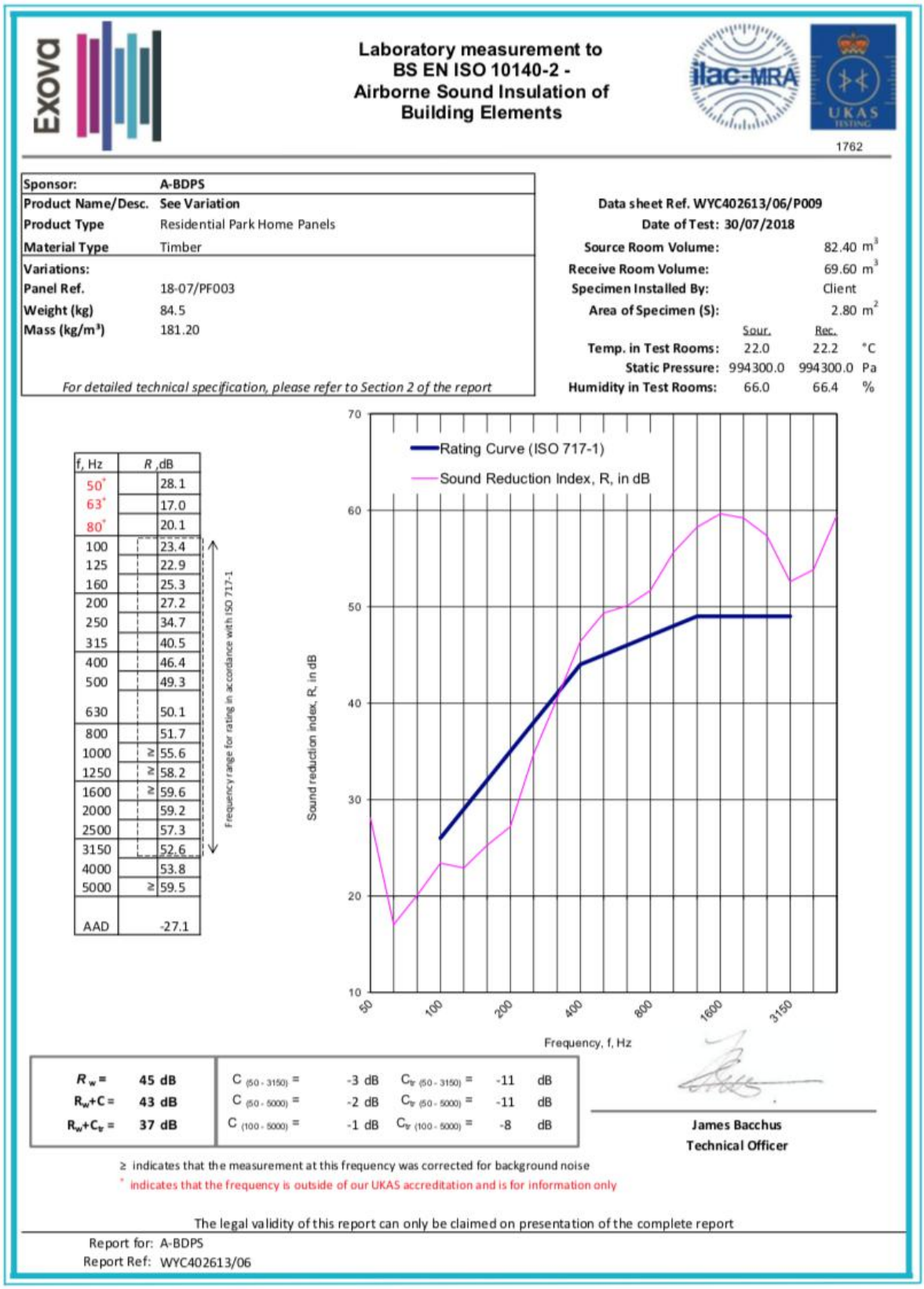
Lee Grant-Riach
Technical Officer

+ indicates that the frequency is outside of our UKAS accreditation and is for information only

The legal validity of this report can only be claimed on presentation of the complete report

Report for: Stately-Albion Ltd
Report Ref: WYC: 372664

Figure 9. Example of a Standard Rw35dB Mobile Home Wall Panel meeting BS3632:2015



Laboratory measurement to BS EN ISO 10140-2 - Airborne Sound Insulation of Building Elements

1762

Sponsor:	A-BDPS
Product Name/Desc.	See Variation
Product Type	Residential Park Home Panels
Material Type	Timber
Variations:	
Panel Ref.	18-07/PF003
Weight (kg)	84.5
Mass (kg/m³)	181.20

For detailed technical specification, please refer to Section 2 of the report

Data sheet Ref. WYC402613/06/P009
Date of Test: 30/07/2018

Source Room Volume:		82.40	m³
Receive Room Volume:		69.60	m³
Specimen Installed By:		Client	
Area of Specimen (S):		2.80	m²
	Sour.	Rec.	
Temp. in Test Rooms:	22.0	22.2	°C
Static Pressure:	994300.0	994300.0	Pa
Humidity in Test Rooms:	66.0	66.4	%

f, Hz		R ,dB
50*		28.1
63*		17.0
80*		20.1
100		23.4
125		22.9
160		25.3
200		27.2
250		34.7
315		40.5
400		46.4
500		49.3
630		50.1
800		51.7
1000	≥	55.6
1250	≥	58.2
1600	≥	59.6
2000		59.2
2500		57.3
3150		52.6
4000		53.8
5000	≥	59.5
AAD		-27.1

Frequency range for rating in accordance with ISO 717-1

R_w =	45 dB	$C_{(50-3150)}$ =	-3 dB	$C_{tr\ (50-3150)}$ =	-11 dB
R_w+C =	43 dB	$C_{(50-5000)}$ =	-2 dB	$C_{tr\ (50-5000)}$ =	-11 dB
R_w+C_{tr} =	37 dB	$C_{(100-5000)}$ =	-1 dB	$C_{tr\ (100-5000)}$ =	-8 dB

James Bacchus
Technical Officer

≥ indicates that the measurement at this frequency was corrected for background noise
* indicates that the frequency is outside of our UKAS accreditation and is for information only

The legal validity of this report can only be claimed on presentation of the complete report

Report for: A-BDPS
Report Ref: WYC402613/06

Figure 10. Example of Enhanced Rw45dB Mobile Home External Wall Test Result Graph

Exova

Laboratory measurement to BS EN ISO 10140-2 - Airborne Sound Insulation of Building Elements

ilac-MRA UKAS TESTING 1762

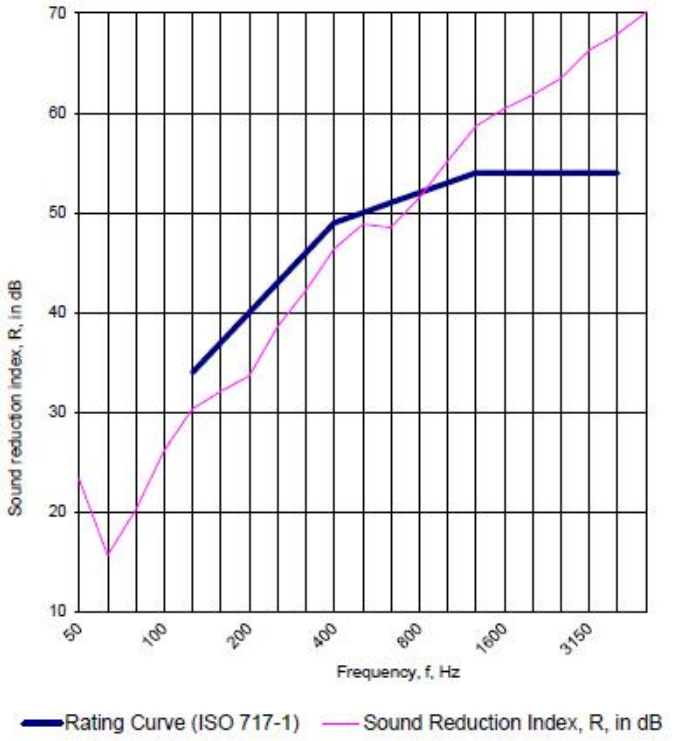
Test Specimen Name: A-BDPS
Client: Residential Park Home Panels
Test Specimen Installed By: Client
Area of Specimen (S): 2.80 m^2
Temperature in Test Rooms: 22.0 °C
Static Pressure: 994300.0 Pa
Humidity in Test Rooms: 66.0 %
Test Specimen Description: 18-07/PF001, 99kg, 181.89kg/m^3

Ref. Number: WYC402613/06/P007
Date of Test: 30/07/2018

Source Room Volume: 82.40 m^3
Receive Room Volume: 69.60 m^3

f, Hz		R ,dB
50+		23.3
63+		15.7
80+		20.3
100		26.2
125		30.4
160		32.1
200		33.7
250		38.6
315		42.2
400		46.4
500		48.8
600		48.5
800		51.5
1000	≥	55.2
1250	≥	58.7
1600	≥	60.4
2000		61.8
2500	≥	63.5
3150	≥	66.3
4000	≥	67.9
5000	≥	70.1
AAD		-29.7

Frequency range for rating in accordance with ISO 717-1



$R_{w\,(126\text{-}4000)}$ =	50 dB
$R_w+C_{(125\text{-}4000)}$ =	49 dB
$R_w+C_{tr\,(125\text{-}4000)}$ =	44 dB

$C_{(50\text{-}3150)}$ =	-4 dB	$C_{tr\,(50\text{-}3150)}$ =	-15 dB
$C_{(50\text{-}5000)}$ =	-3 dB	$C_{tr\,(50\text{-}5000)}$ =	-15 dB
$C_{(100\text{-}5000)}$ =	-1 dB	$C_{tr\,(100\text{-}5000)}$ =	-8 dB

James Bacchus
Technical Officer

+ indicates that the frequency is outside of our UKAS accreditation and is for information only

The legal validity of this report can only be claimed on presentation of the complete report

Report for: A-BDPS
Report Ref: WYC402613/06

Figure 11. Example of Enhanced Rw50dB Mobile Home External Wall Test Result Graph

APPENDIX F - DEFINITION OF TERMS

$L_{Aeq,T}$: Defined in WHO as exposure to noise for the duration of a given time interval T (a 24-hour period, a night, a day, an evening) is expressed as an equivalent sound pressure level (measured in dB(A)) over the interval in question.

L_{Amax} : Defined in WHO as the maximum outdoor sound pressure level associated with an individual noise event.

L_{Afmax} : Defined in WHO as the maximum outdoor sound pressure level associated with an individual noise event, measured with fast time constant option.

L_{A90} : The background sound level as defined in BS4142: 2014 as the A-weighted sound pressure level that is exceeded by the residual sound at the assessment location for 90% of a given time interval, *T*, measured using time weighting F and quoted to the nearest whole number of decibels.

L_{A10} : The A-weighted sound pressure level that is exceeded by the residual sound at the assessment location for 10% of a given time interval, *T*, measured using time weighting F and quoted to the nearest whole number of decibels.

L_{day} : is the A-weighted long-term average sound level as defined in ISO 1996-1: 2016, determined over all the day periods of a year.

$L_{evening}$: is the A-weighted long-term average sound level as defined in ISO 1996-1: 2016, determined over all the evening periods of a year.

L_{night} : is the A-weighted long-term average sound level as defined in ISO 1996-1: 2016, determined over all the night periods of a year.

L_{den} : is an average sound pressure level over all days, evenings and nights in a year (EEA, 2010), a compound indicator of the above mentioned L_{day}, $L_{evening}$, and L_{night}.

Measurement time interval, T: The total time over which each individual measurements are taken.