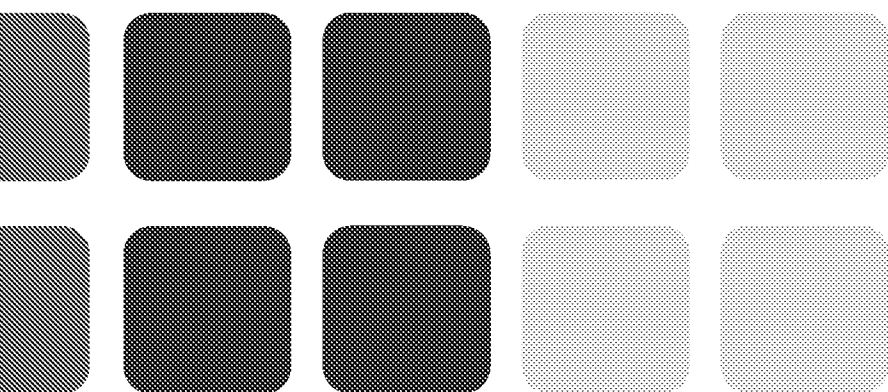




ASHLEY HOUSE – WEST WING BOGNOR REGIS

Noise Impact Assessment

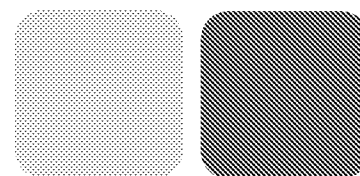
8812/NIA

Prepared: 8 August 2018

Revision Number: 1

Walsingham Planning
Bourne House
Cores End Road
Bourne End
SL8 5AR

Noise Impact Assessment



ASHLEY HOUSE – WEST WING

BOGNOR REGIS

REPORT 8812/NIA

Prepared: 8 August 2018

Revision	Comment	Date	Prepared By	Approved By
0	First issue of report	2 August 2018	Callum Brewer	Ignacio Alonso
1	Amended wording in Section 6	8 August 2018	Russell Richardson	Ignacio Alonso

Terms of contract:

RBA Acoustics Ltd has prepared this report in accordance with our Scope of Work 8812.SW01.0 dated 25 June 2018. RBA Acoustics Ltd shall not be responsible for any use of the report or its contents for any purpose other than that for which it was provided. Should the Client require the distribution of the report to other parties for information, the full report should be copied. No professional liability or warranty shall be extended to other parties by RBA Acoustics Ltd without written agreement from RBA Acoustics Ltd.

The recommendations within this report relate to acoustics performance only and will need to be integrated within the overall design by the lead designer to incorporate all other design disciplines such as fire, structural integrity, setting-out, etc. Similarly, any sketches appended to this report illustrate acoustic principles only and again will need to be developed in to full working drawings by the lead designer to incorporate all other design disciplines.

In line with our Environmental Policy, up to two hard copies of the report will be provided upon request. Additional copies of the report, or further hard copies of revised reports, would be subject to an administrative cost of £20.00 (+VAT) per copy.



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1.0 INTRODUCTION

It is proposed to provide additional accommodation for up to 30 Butlin's team members at the recently completed Ashley House scheme. A new accommodation block is proposed to be located at the west of the Ashley House site and will replace the existing garage. Until recently the site was used as a care home.

The recently consented and now completed Ashley House scheme currently provides 70 bed-spaces off-site for Butlin's staff. As part of the completed scheme, a shuttle bus service has been introduced which transfers staff between Ashley House and Butlins, this service runs during the day.

RBA Acoustics previously carried out a noise impact assessment for the consented Ashley House scheme, which is detailed in report reference 7252/AAR dated 30 March 2016.

In order to support the planning application of the new accommodation block, RBA Acoustics has carried out a noise impact assessment of the sites intensification of use. This assessment includes noise generated staff as well as activity from the shuttle bus service.

This report presents the results of the original noise survey, associated criteria and provides the required assessment.

2.0 ENVIRONMENTAL NOISE SURVEY

2.1 General

Monitoring of the prevailing background noise levels was undertaken over the following period:

Wednesday 24 to Thursday 25 February 2016

During the survey periods the weather conditions were generally appropriate for the noise measurement exercise, it being dry with light winds.

Measurements were made of the L_{A90} , L_{Amax} and L_{Aeq} noise levels over sample periods of 15 minutes duration.

2.2 Measurement Locations

Measurement Position 1

Measurements were undertaken with the microphone positioned 1m outside a first floor window to the front of Ashley house overlooking Aldwick Road. This measurement position was considered as being representative of the noise climate as experienced at the closest residential receptors to the front of the property. The prevailing noise climate was noted to be reasonably quiet despite being located within close proximity to road traffic on Aldwick Road (B2166). The results of the measurements at this position were subject to façade-reflections.

Measurement Position 2

Measurements were undertaken with the microphone positioned 1m outside a 1st floor window to the rear of Ashley house. This measurement position was considered as being representative of the noise climate as experienced at the closest residential receptors to the rear of the property. The prevailing noise climate was noted to be quiet due to the acoustic screening of road traffic noise from the building. The results of the measurements at this position were subject to façade-reflections.

The measurement positions are illustrated on the attached Site Plan 8812/SP1 and 8812/P1-P2.

2.3 Instrumentation

The following equipment was used for the measurements.

Table 8812/T1 – Equipment Details

Manufacturer	Model Type	Serial No.	Calibration	
			Certificate No.	Expiry Date
01dB A&V Type 1 Sound Level Meter	Blue Solo 01	60611	02003/2	26 September 2016
01dB A&V Pre Amplifier	PRE 21 S	13678		
01dB A&V ½" Microphone	MCE 212	84967		
01dB-Stell Calibrator	Cal 21	50441920	02003/1	26 September 2016
01dB A&V Type 1 Sound Level Meter	Black Solo 01	65678	U20636 / U20637(RT's)	3 February 2018
01dB A&V Pre Amplifier	PRE 21 S	16316		
01dB A&V ½" Microphone	MCE 212	153459		
01dB-Stell Calibrator	Cal 21	35242481	U20634	2 February 2018

The sound level meters were calibrated both prior to and on completion of the survey with no calibration drifts observed.

2.4 Results

The noise levels at the measurement positions are shown as time-histories on the attached charts 8812/G1 to G4.

In order to ensure a worst case assessment the typical $L_{A90,15mins}$ (dB) and the period averaged L_{Aeq} (dB) noise levels measured are summarised below. It should be noted that the measured $L_{Aeq,period}$ noise levels have been façade-corrected.

Table 8812/T2 – Measured Levels

Measurement Period	Measurement Position 1		Measurement Position 2	
	$L_{Aeq,period}$ (dBA)	Typical $L_{A90,15mins}$ (dBA)	$L_{Aeq,period}$ (dBA)	Typical $L_{A90,15mins}$ (dBA)
Daytime (07:00 – 19:00 hours)	69	52	50	42
Evening (19:00 – 23:00 hours)	65	40	44	41
Night-time (23:00 – 07:00 hours)	60	28	44	31

4.0 CRITERIA

No specific noise limits have been set by Arun Council's Environmental Health department. However it has been requested that all potential sources of noise disturbance be considered and that a noise management plan be produced in order to mitigate potential noise disturbance to the neighbouring residential properties. Factors which have been taken into account include the following:

- Associated noise produced by the proposed shuttle bus service which will be transferring staff to and from Ashley House to the Butlin's resort throughout the daytime periods.
- Speech noise from bedrooms.
- Potential noise disturbance caused by speech in the rear outdoor amenity area.

RBA Acoustics has based the assessment criteria on the following:

"Predicted $L_{Aeq,period}$ (dB) noise levels from speech or the Shuttlebus movement should generally not exceed the measured typical background $L_{A90,15min}$ (dB) levels specified in Table 8812/T2."

5.0 NOISE IMPACT ASSESSMENT

5.1 Current Operation of Ashley House Noise Management Plan

Butlins undertook a review of the current Ashley House management plan on Thursday 26 July 2018. As part of the review, the operation of the noise management plan was looked at and a summary of this is outlined below:

- The live-in management team has a system to record any noise complaints from nearby residents. Since the schemes operation there have been no noise complaints recorded by the management team.
- The peak periods of Ashley House staff movement occur during the day between 07:00 – 09:30 and 18:00 – 19:00 hours.
- The shuttle bus service has been rarely used by staff. The service ran for four weeks but has now been suspended due to the lack of demand. Ashley House residents generally commute using a combination of the local bus service, bicycle and via foot.

5.2 Anticipated Changes in Operation due to the Additional Accommodation

As part of the review, the consideration of the anticipated change in the current operation of the shuttle bus as a result of to the additional accommodation has been carried out. It has been confirmed by Butlins and the transport consultant, Systra, that it is very unlikely for there to be a requirement for the shuttle bus to make more than three visits per hour with the additional accommodation. This is due to the fact there has been a very low demand for the shuttlebus service since its operation as Ashley House residents have been commuting via other means of transport.

5.3 Location of Nearest Residential Windows

The following noise-sensitive receptors have been used for the assessment, these receptors being considered the potentially worst-affected noise-sensitive properties.

- 118 Aldwick Road (east site boundary)
- 115 Aldwick Road (south site boundary)
- Rear façades of properties located on Richmond Avenue (north façade site boundary)
- Ashbury Care Home (west site boundary)

The noise-sensitive receptors are illustrated on the attached Site Plan 8812/SP1.

5.4 Shuttle Bus Noise Assumptions

The below assumptions have been used in the shuttle bus noise prediction during each visit to Ashley House. Our analyses of the shuttle bus movements within the development site are based on information from our internal database detailed in the attached Appendix B.

- *Two passbys (vehicle arriving and leaving)*
- *Passenger door opening for passengers to board and then slammed shut.*
- *A single manoeuvre within the front driveway.*

Our calculation method for predicting noise levels from shuttle bus noise at the nearest residential windows considers the following:

- Source term SEL / $L_{Amax,t}$
- Duration of event
- Acoustic screening
- Distance attenuation

5.5 Speech Noise Assumptions (from within Bedrooms)

The following assumptions have been used in the assessment of speech due to activities within bedrooms.

- *Up to 4 residents conversing at normal speech level in a single bedroom with one window open. The 'worst case', i.e. closest windows have been assessed in each case.*

Our calculation method for predicting levels of speech noise at the nearest residential windows considers the following:

- Source term SWL
- Reverberant sound power to reverberant sound pressure level (assuming typical bedroom absorption)
- SRI of open window
- Area of window
- Reverberant to free-field correction
- Acoustic screening
- Distance attenuation

5.6 Speech Noise Assumptions (from Rear Outdoor Amenity Space)

The following assumptions have been used in the assessment of speech due to activities within the rear outdoor amenity space.

- Up to 8 residents conversing at normal speech level, the 'worst case', i.e. closest windows have been assessed in each case.
- Reflections from the nearby walls will increase the overall level of noise produced in this space in the order of 1 to 2dB.

Our calculation method for predicting levels of speech noise at the nearest residential windows considers the following:

- Source term SWL
- Contribution of reflections
- Acoustic screening
- Distance attenuation

5.7 Predicted Levels of Noise

Table 8812/T3 details the predicted noise levels from speech and shuttle bus movements at the nearest noise-sensitive windows. It should be noted that the assumptions stated in Sections 5.3 to 5.6 have been used in the predictions.

Table 8812/T3 – Predicted Levels at Nearest Receiver Windows

Receiver	Predicted Sound Pressure Levels At Nearest Receiver Window Leq,90dB (dB)		Proposed Limit (dB) Criteria for Daytime and Evening hours (07:00 – 23:00)
	Speech Noise	Shuttle Bus Noise	
<u>118 Aldwick Road, East facade</u>	35	N/A	40
<u>115 Aldwick Road, front facade</u>	21	N/A	40
<u>Rear façades of properties located on Richmond Avenue</u> Speech noise from bedrooms (speech noise from rear amenity space)	19 (40)	N/A	41
<u>Ashbury Care Home, West facade</u>	36	38	40

5.8 Discussion of Results

It can be seen from Table 8812/T3 that in all instances, the predicted noise levels produced by speech and shuttle bus movements achieve the target noise criteria during the daytime and evening periods.

It should be noted that the level of speech noise calculated at the nearest Ashbury Care Home windows has increased as the closest windows belonging to the new block of Ashley House will be located around 3m away, however, we would not consider this increased level of speech noise to cause adverse impact as the level will still be in line with the target criteria.

The predicted level of noise generated by shuttle bus movements calculated at the nearest Ashbury Care Home windows is expected to decrease due to the fact that the new accommodation block will acoustically screen shuttle bus movements occurring within the front drive.

6.0 INTERNAL SOUND INSULATION

Randell Design Group have advised that the new accommodation block will be freestanding of the existing wall which, we understand, is formed from a traditional masonry construction. Construction details of the new accommodation block have not yet been developed, however, considering that the existing wall is a masonry construction, we would consider it highly likely for the minimum requirements of the current Building Regulations (45 dB and 43 dB $D_{nT,w} + C_{tr}$ for new-build and conversions, respectively) to be achieved with some comfort.

We therefore suggest this should be considered acceptable for residential use, as proposed.

7.0 MITIGATION MEASURES

As a result of the noise impact assessment, RBA Acoustics has arrived at the following conclusions which should be used in the noise management plan, this incorporates additional suggestions received from other members of the team:

- *Use of the rear garden / Amenity Space will be restricted between 22:00 to 07:00 hours. Instead, smokers will use the Courtyard Rm 0.32 during this period and are encouraged to keep conversation minimal. This is in order to prevent potential noise disturbance from residents using this space to the rear of the properties located on Richmond Avenue. Signage will be used to instruct this and will be overseen by site management.*
- *The opening of the ground floor windows will be restricted in rooms 0.25, 0.28, 0.29, 0.39, 0.40, 0.41 and 0.42 (located on the Eastern façade, facing 118 Aldwick Road). No visitors, resident or otherwise will be permitted in the rooms after 19:00 hours. The windows located on the Eastern façade in Room 1.16, on the first floor are to be sealed. Natural ventilation from the windows located on the Northern and Western façades of this room will still be possible. This is in order to mitigate potential noise disturbance to 118 Aldwick Road.*
- *The windows belonging to the first floor communal room, which are located on the Eastern façade, are to be sealed. The windows on the remaining façades of the communal room (including skylights) will not require sealing. This is in order to mitigate potential noise disturbance to 118 Aldwick Road as their First and Ground Floor windows are overlooked by those belonging to Ashley House.*
- *The shuttle bus will aim to make its last drop-off at Ashley House by 23:30 hours. In order to reduce the potential noise disturbance caused by shuttle bus movement, a low noise (hybrid or electric) vehicle will be used. Drivers will be instructed to switch off the engine during pick-up and drop-off. Ashley House residents are required to wait in the Ground Floor Communal Room 0.19 and not to wait outside for the shuttle bus between 20:00 – 08:00 hours. Signage will be used to instruct this. No more than three visits per hour to Ashley House are to be made. An online booking system will be in place to ensure no unnecessary trips between the two sites; shuttle bus trips will be monitored and adjusted as required.*

8.0 CONCLUSION

An assessment has been undertaken using a number of worst-case assumptions to calculate the potential noise impact from the proposed additional accommodation to nearby noise-sensitive receptors situated around the recently completed Ashley House scheme site.

The results of the assessment indicate that the potential noise impact caused by the additional accommodation will be minimal and should not adversely affect nearby residents, providing the mitigation measures stated in the proposed noise management plan are employed.

Appendix A - Acoustic Terminology

dB	Decibel - Used as a measurement of sound pressure level. It is the logarithmic ratio of the noise being assessed to a standard reference level.
dB(A)	The human ear is more susceptible to mid-frequency noise than the high and low frequencies. To take account of this when measuring noise, the 'A' weighting scale is used so that the measured noise corresponds roughly to the overall level of noise that is discerned by the average human. It is also possible to calculate the 'A' weighted noise level by applying certain corrections to an un-weighted spectrum. The measured or calculated 'A' weighted noise level is known as the dB(A) level. Because of being a logarithmic scale noise levels in dB(A) do not have a linear relationship to each other. For similar noises, a change in noise level of 10dB(A) represents a doubling or halving of subjective loudness. A change of 3dB(A) is just perceptible.
L_{eq}	L_{eq} is defined as a notional steady sound level which, over a stated period of time, would contain the same amount of acoustical energy as the actual, fluctuating sound measured over that period (1 hour).
L_{Aeq}	The level of notional steady sound which, over a stated period of time, would have the same A-weighted acoustic energy as the A-weighted fluctuating noise measured over that period.
L_n (e.g. L_{A10} , L_{A90})	If a non-steady noise is to be described it is necessary to know both its level and the degree of fluctuation. The L_n indices are used for this purpose, and the term refers to the level exceeded for n% of the time, hence L_{10} is the level exceeded for 10% of the time and as such can be regarded as the 'average maximum level'. Similarly, L_{90} is the average minimum level and is often used to describe the background noise.
$L_{max,T}$	The instantaneous maximum sound pressure level which occurred during the measurement period, T. It is commonly used to measure the effect of very short duration bursts of noise, such as for example sudden bangs, shouts, car horns, emergency sirens etc. which audibly stand out from the general level of, say, traffic noise, but because of their very short duration, maybe only a very small fraction of a second, may not have any effect on the L_{eq} value.

Appendix B – Noise Data Used In the Assessment.

Table 8812/T4 – Noise Data Used for Shuttle Bus Assessment

Noise Source	SEL (dB)	L _{max} (dB)	Distance (m)
Car Door Slamming at 3m	64	72	3
Shuttle Bus Vehicle Passby	79	88	3
Shuttle Bus Manoeuvre	89	88	3

Table 8812/T5 – Noise Data Used for Speech Noise Assessment

Noise Source	Sound Power Level (dB) at Octave Band Centre Frequency (Hz)							
	63	125	250	500	1k	2k	4k	8k
Normal Voice	45	55	65	69	63	56	50	45
Raised Voice	48	59	70	75	72	64	57	48
Loud Voice	52	63	72	80	80	73	66	55
Shouted Voice	52	63	73	84	89	82	75	64

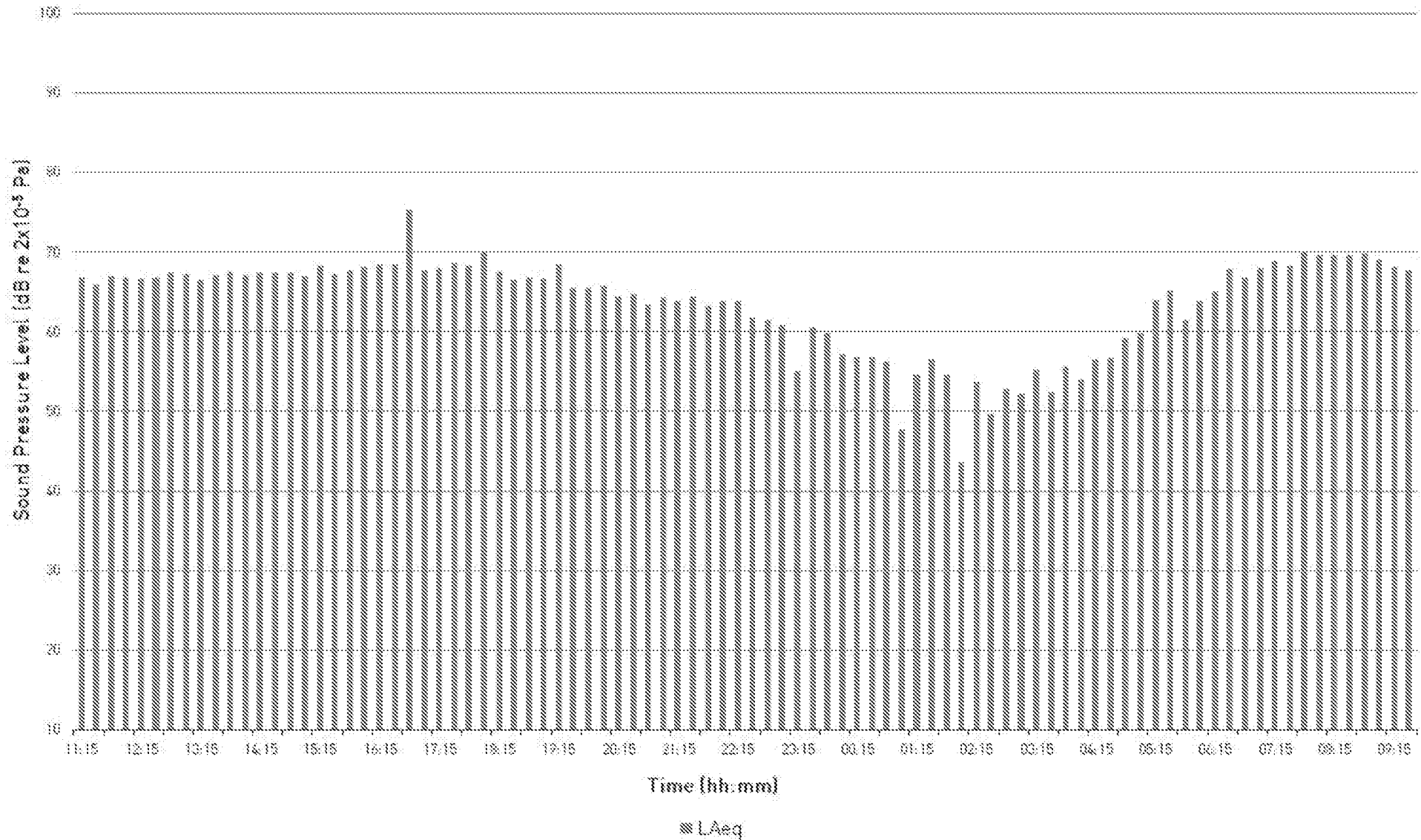
Ashley House, Bognor Regis

L_{Aeq} Time History

Measurement Position 1 - Wednesday 24th to Thursday 25th February 2016



Graph 8812/G1



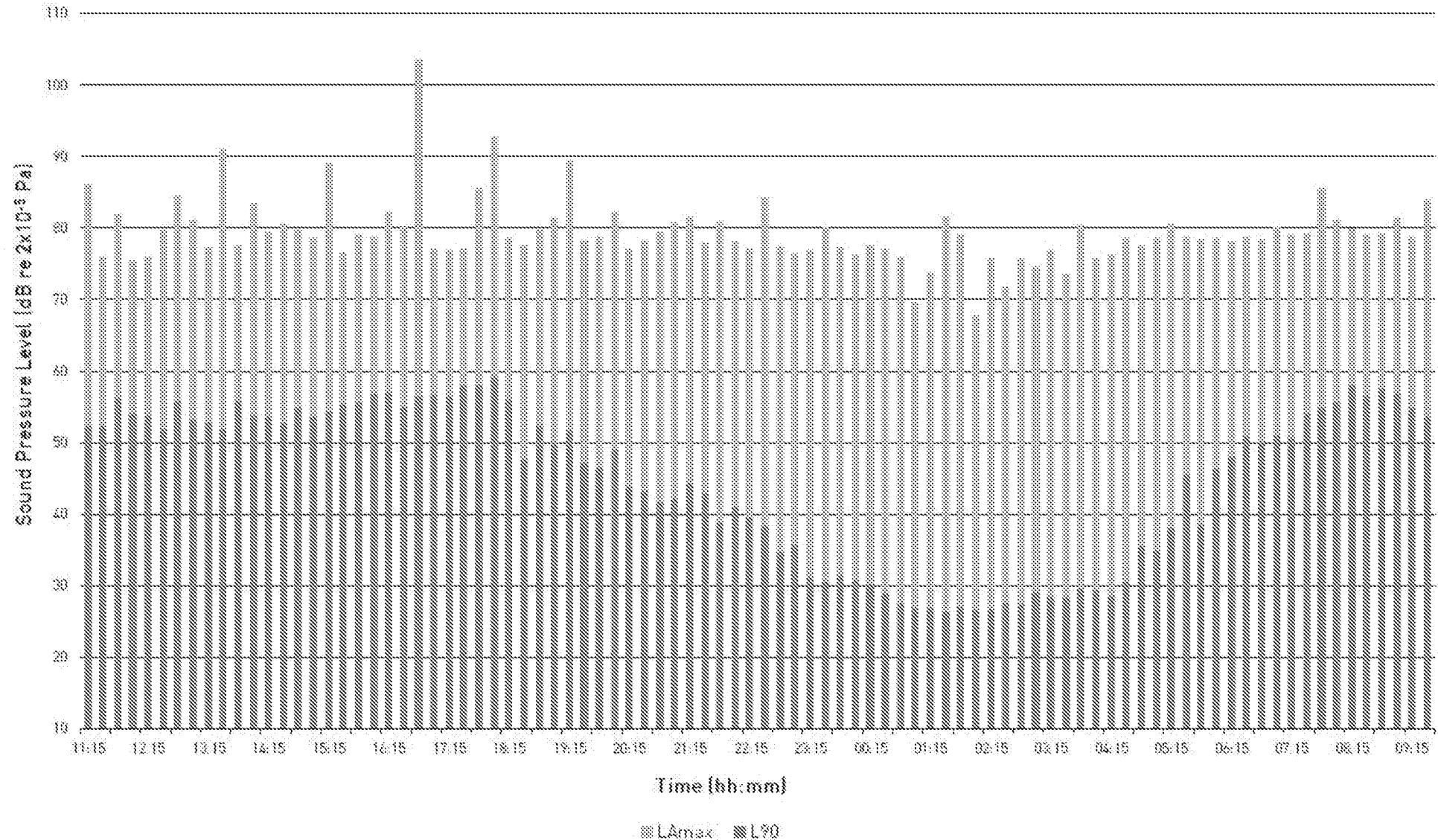
Ashley House, Bognor Regis

L_{Amax} and L_{A90} Time History

Measurement Position 1 - Wednesday 24th to Thursday 25th February 2016



Graph 8812/G2



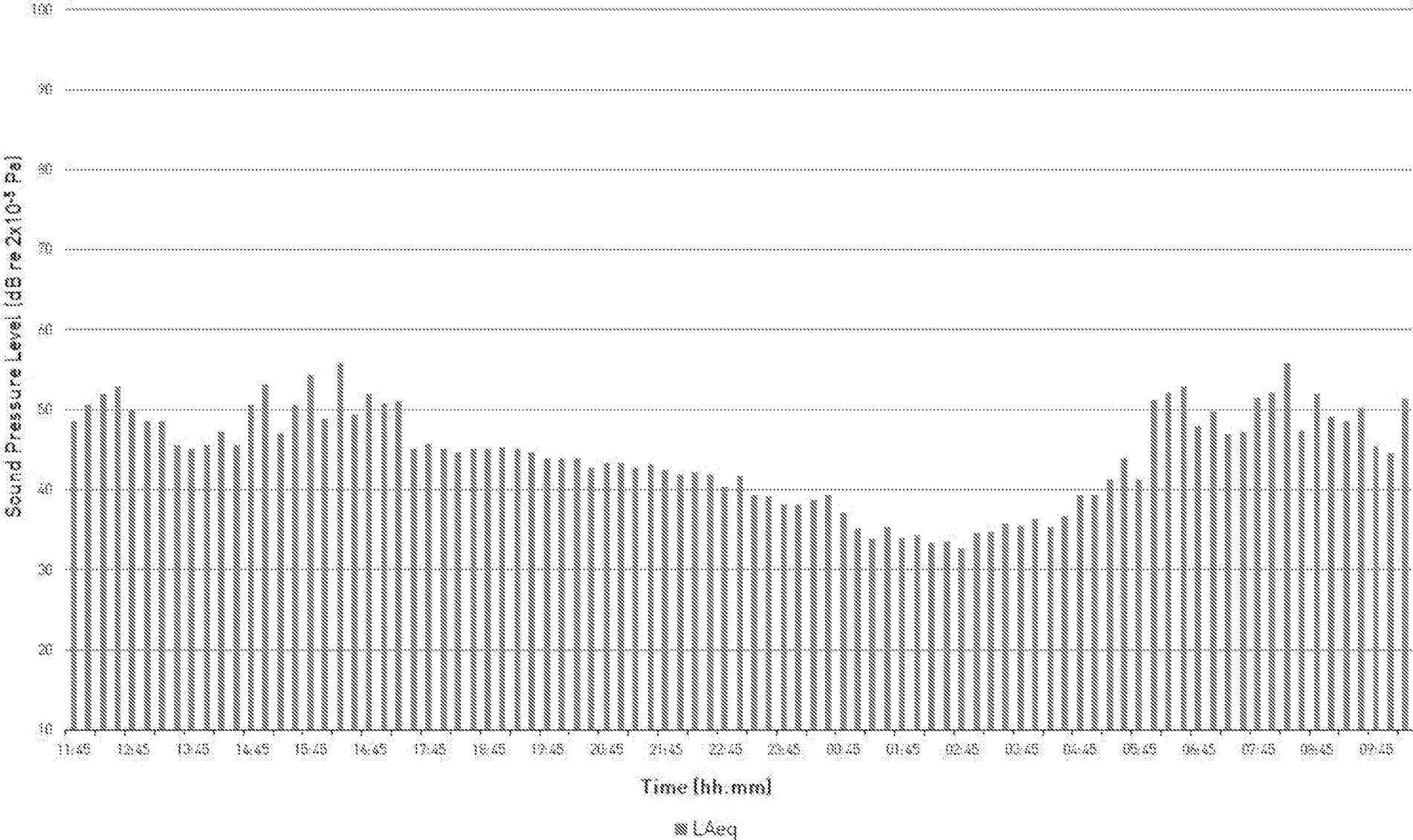
Ashley House, Bognor Regis

L_{Aeq} Time History

Measurement Position 2 - Wednesday 24th to Thursday 25th February 2016



Graph 8812/G3



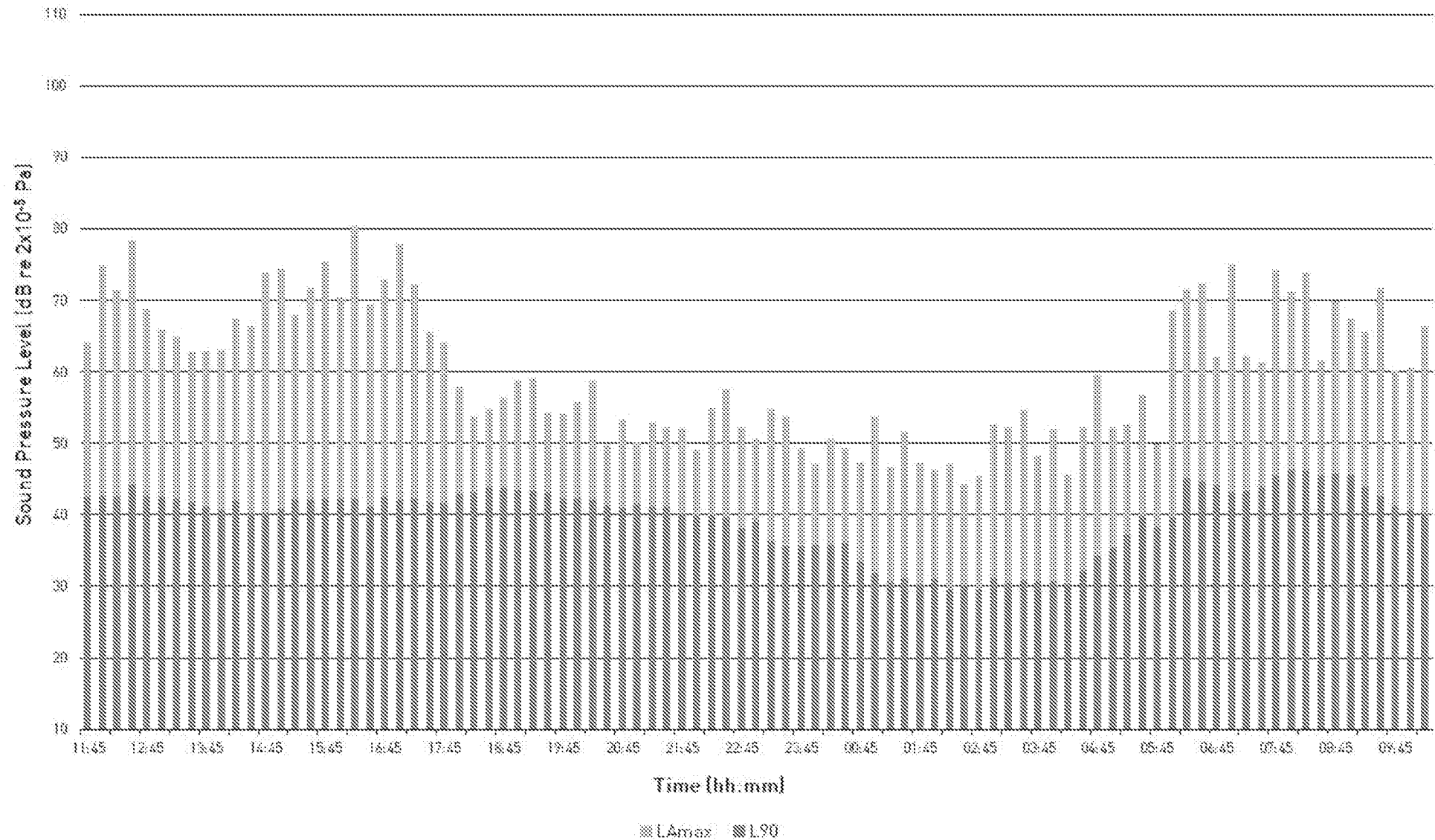
Ashley House, Bognor Regis

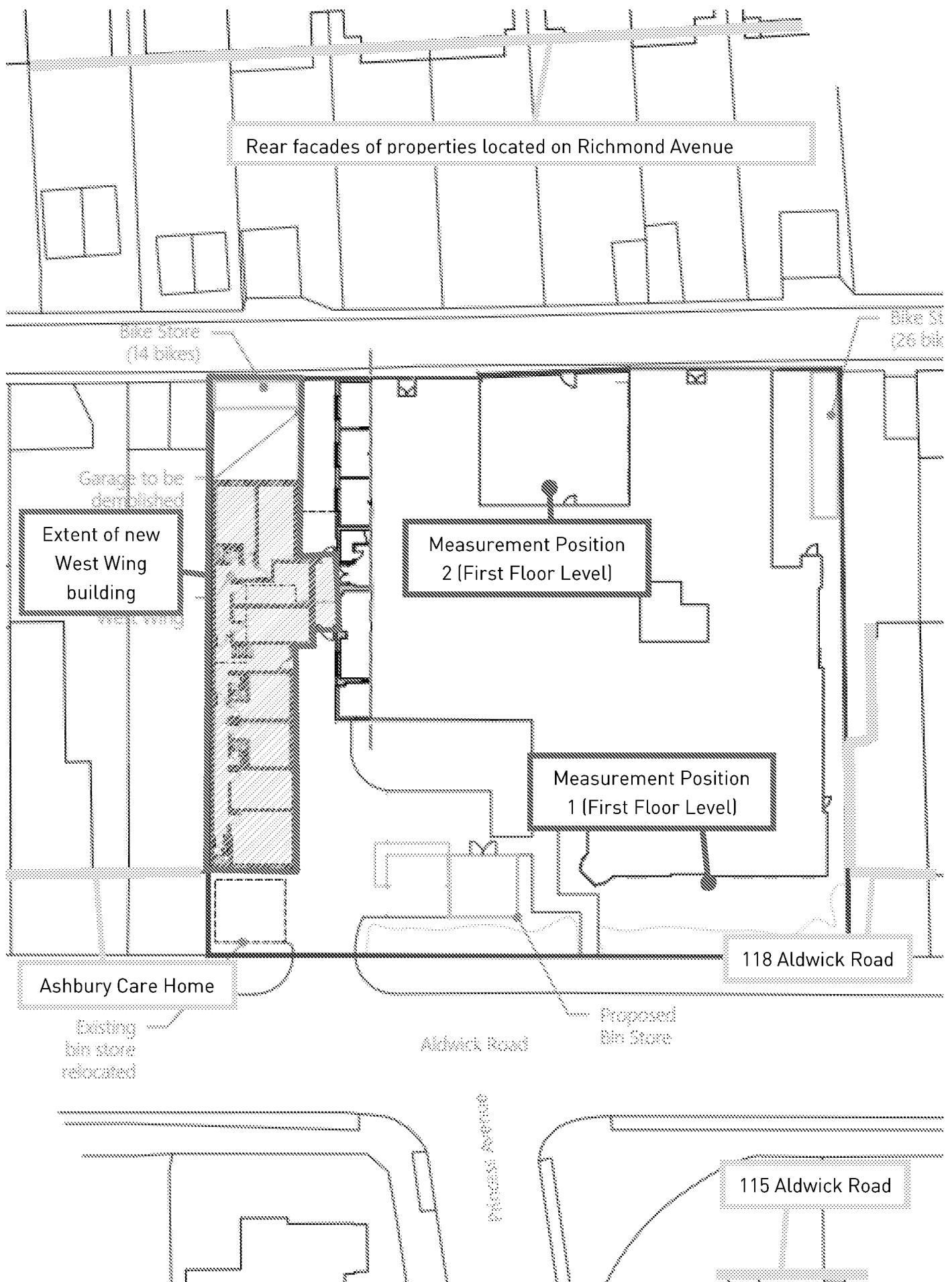
L_{Amax} and L_{A90} Time History

Measurement Position 2 - Wednesday 24th to Thursday 25th February 2016



Graph 8812/G4





Ashley House – West Wing, Bognor Regis
 Site plan showing measurement positions
 and receiver locations

Site Plan 8812/SP1
 2 August 2018
 Not to scale





Ashley House – West Wing, Bognor Regis

Photograph of Measurement Position 1

Photograph 8812/P1

2 August 2018





Ashley House – West Wing, Bognor Regis
Photograph of Measurement Position 2

Photograph 8812/P2
2 August 2018

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