



**2-4 Alexandra Road
Reading**

Noise Impact Assessment Report

27 July 2021

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SUMMARY

It is proposed to change the use of the property at 2-4 Alexandra Road in Reading to create a children's care home (ages ranging from 11-18). The proposals involve staff car parking behind an adjacent residential building, therefore an acoustic assessment has been undertaken to assess the potential noise impact.

auricl has undertaken a detailed environmental noise survey to determine existing baseline ambient and background noise levels representative of the nearest noise sensitive (residential) properties, over daytime and night-time periods and weekday and weekend periods.

auricl has undertaken calculations to predict the change in noise levels due to vehicle movements during staff changeover periods.

The predicted noise level changes associated with the staff vehicles correspond with no worse than a **negligible/moderate** noise impact.

Project Number	14320	Issue Date	27 July 2021
Document Reference	R/NIA/1/210727	Version	01
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1.0 Introduction

It is proposed to change the use of the property at 2-4 Alexandra Road in Reading to create a children's care home (ages ranging from 11-18). The proposals involve staff car parking behind an adjacent residential building, therefore an acoustic assessment has been undertaken to assess the potential noise impact.

This report presents the methodology and results of a baseline noise survey and an assessment of the noise impact of the proposals.

Appendix A presents an explanation of the various acoustic terminology used in this report.

2.0 Description of Site and Proposals

The site is located at 2-4 Alexandra Road in Reading and is occupied by a discussed centre for adults with learning difficulties and respite home.

The site is bounded by Alexandra Road to the east and residential properties to the north, south and west.

Figure 2.1 shows the approximate brewery site extent in **red**, the Malthouse building indicated in **blue**, the nearest noise sensitive property indicated in **green**, and the other surrounding properties.

Figure 2.1 Existing Site Extent and Surrounding Properties



It is proposed to change the use of the building to a children's care home (ages ranging from 11 to 18). A car park is proposed to the south-west of the building, to the rear/west of the adjacent residential property at 1-3 Alexandra Road.

It is expected that up to 12 staff will be employed. They will work in shifts at different times of the day as follows (Monday to Friday):

- 07:00 – 09:00 hours 8-10 staff present
- 09:00 – 15:00 hours 3-4 staff present
- 15:00 – 21:00 hours 6-8 staff present
- 21:00 – 07:00 hours 4 staff present

On Saturdays and Sundays, 6-8 staff are expected to be present.

3.0 Noise Impact Assessment Criteria

Noise due to staff car movements will be assessed at the nearest existing noise sensitive receptors, based on the predicted vehicle quantities and relevant periods.

The noise impact will be assessed against the criteria shown in Table 3.1, which are based on the IEMA document "*Guidelines for Environmental Noise Impact Assessment*" (November 2014).

Table 3.1 Noise Impact Assessment Criteria

Noise Level Change (dB, $L_{Aeq,T}$)	Noise Impact
< 3	Negligible
3 – 5	Moderate
5 – 10	Substantial
> 10	Very Substantial

Daytime and evening activities (07:00 – 23:00) will be considered over a reference period of 1 hour; night-time activities (23:00 – 07:00) will be considered over a reference period of 15 minutes, as is common.

We will also assess night-time L_{Amax} noise levels against existing baseline levels.

4.0 Noise Survey

4.1 Methodology

An unmanned environmental noise survey was undertaken at the site at an external position between Friday 16 July 2021 and Tuesday 20 July 2021.

The noise survey period was selected to determine existing baseline ambient and background noise levels over daytime and night-time periods, including a weekday and weekend period.

The measurement position was located with the measurement microphone protruding from a first-floor level window of the building near to the south-western corner, as indicated in **purple** on Figure 4.1.

Figure 4.1 Site Plan Indicating Approximate Location of Measurement Position



The measurement position was selected as being representative of existing baseline ambient and background noise levels at the nearest noise sensitive properties in the adjacent residential property at 1-3 Alexandra Road.

The equipment used for the noise survey is listed in Table 4.1.

Table 4.1 Description of Equipment used for Internal and External Noise Survey

Item	Make & Model	Serial Number
Type 1 automated logging sound level meter	01dB FUSION	11388
Type 1 ½" microphone	GRAS 40CE	259634
Calibrator	01 dB CAL21	34375252

L_{Amax} , L_{Aeq} and L_{A90} sound pressure levels were measured throughout the noise survey over contiguous 125-millisecond intervals.

Due to the nature of the noise survey, i.e. unmanned, we are unable to comment on the weather conditions throughout the entire noise survey period. However, at the beginning and end of the survey period, there was noted to be no rainfall, a clear sky and only light wind. These conditions are understood to be representative of the survey period and are considered appropriate for undertaking environmental noise measurements.

The noise monitoring equipment was calibrated before and after the noise survey period. No significant change was found. Laboratory equipment calibration certificates can be provided upon request.

4.2 Noise Survey Results

Appendix B presents time history graphs showing the L_{Amax} , L_{Aeq} and L_{A90} sound pressure levels at the measurement position throughout the noise survey.

We would consider the levels measured to be reasonable, considering the location of the measurement position and the dominant nearby noise sources.

In accordance with BS 8233: 2014, the measured noise levels have been corrected by -2 dB to approximate free-field conditions, since the measurement position was within 2m of the existing building façade.

Due to the nature of the unmanned noise survey we are unable to comment on the exact external noise climate throughout the entire survey period. However, at the beginning and end of the survey period the daytime noise climate at the external measurement position was noted to be affected by road traffic using Alexandra Road to the east and London Road to the north.

During our site visits, construction activities were noted to be taking place to the rear of 1-3 Alexandra Road, which affected the measurement position from 07:00 – 16:00 hours on the weekday survey periods and 08:00 – 15:00 hours on the Saturday of the survey period.

The measured existing $L_{Aeq, T}$ ambient noise levels during relevant periods that were not affected by construction noise are shown in Table 4.2.

Table 4.2 Measured $L_{Aeq, T}$ Ambient Noise Levels

Period	Measured $L_{Aeq, T}$ Ambient Noise Level (dB)				
	Friday	Saturday	Sunday	Monday	Tuesday
06:30 – 06:45	-	39	42	42	43
06:45 – 07:00	-	41	43	41	43
07:00 – 08:00	-	-	40	-	-
08:00 – 09:00	-	-	42	-	-
09:00 – 10:00	-	-	43	-	-

Period	Measured $L_{Aeq, T}$ Ambient Noise Level (dB)				
	Friday	Saturday	Sunday	Monday	Tuesday
10:00 – 11:00	-	-	46	-	-
11:00 – 12:00	-	-	42	-	-
12:00 – 13:00	-	-	44	-	-
13:00 – 14:00	-	-	43	-	-
14:00 – 15:00	-	-	42	-	-
15:00 – 16:00	-	47	45	-	-
16:00 – 17:00	-	43	43	-	-
17:00 – 18:00	-	44	43	-	-
18:00 – 19:00	-	42	43	-	-
19:00 – 20:00	-	47	45	-	-
20:00 – 21:00	-	44	47	-	-
21:00 – 22:00	-	42	42	-	-

In addition, typical L_{Amax} noise levels from 06:30 – 07:00 hours ranged from 45-74 dB L_{Amax} (5 min) (58 dB L_{Amax} (5 mins) average).

The measured noise levels have been used as the existing baseline ambient noise levels, against which the predicted noise impact will be compared.

5.0 Noise Impact Assessment

5.1 Basis of Assessment

Based on the staff shift changeover times described in Section 2.0, we have assumed the following scenarios:

- 06:45 – 07:00 hours 2 cars arrive
- 07:00 – 08:00 hours 3 cars depart
- 09:00 – 10:00 hours 3 cars depart, 3 cars arrive
- 15:00 – 16:00 hours 3 cars depart, 3 cars arrive
- 21:00 – 22:00 hours 3 cars depart, 3 cars arrive

auricl has previously measured car movement noise levels as follows:

- Car arrive, manoeuvre and park 70 dB L_{AE} at 5m / 76 dB L_{Amax} at 5m
- Car manoeuvre and depart 67 dB L_{AE} at 5m / 72 dB L_{Amax} at 5m

Note: L_{AE} = Sound Exposure Level of complete event = L_{Aeq} (1 sec)

For each period of our assessment, we have estimated the contribution to existing ambient noise levels due to future vehicle noise, to assess the difference between existing and future noise levels.

5.2 Predictions – Ambient Noise Levels

We have undertaken calculations to predict vehicle noise levels at the nearest noise sensitive properties. Our calculations compare the measured existing baseline ambient noise levels with predicted future ambient noise levels over the same periods.

Our noise calculations for the specified staff car movement scenarios are presented in Table 5.1.

Table 5.1 Car Movement Calculations

Element	06:45 – 07:00	07:00 – 08:00	9:00 – 10:00		15:00 – 16:00		21:00 – 22:00	
	Arrive	Depart	Depart	Arrive	Depart	Arrive	Depart	Arrive
Car Movement SEL at 5m (dB)	70	67	67	70	67	70	67	70
Time Correction (dB)	-30	-36	-36	-36	-36	-36	-36	-36
Quantity Correction (dB)	+3	+5	+5	+5	+5	+5	+5	+5
Predicted $L_{Aeq, T}$ Contribution due to Future Cars (dB)	43	36	36	39	36	39	36	39
			41		41		41	
Existing Measured Ambient $L_{Aeq, T}$ Noise Level (dB)	43	40	43		45		42	
Predicted Total $L_{Aeq, T}$ Including Future Cars (dB)	46	42	45		46		45	
Predicted Difference in $L_{Aeq, T}$ during Relevant Period	+3	+2	+2		+1		+3	

By comparison of the future noise level differences with the noise impact criteria in Section 3.2, it can be seen that the predicted noise impact of the various vehicle movements during various periods is no worse than **negligible/moderate**.

5.3 Predictions – Maximum Noise Levels

By comparison of the measured L_{Amax} night-time noise levels between 06:30 and 07:00 hours (45-74 dB L_{Amax} (5 mins), 58 dB L_{Amax} (5 mins) average) and the typical car movement noise levels previously measured by ourselves, it can be seen that future L_{Amax} noise levels would be similar to existing, resulting in a predicted **negligible** noise impact.

Appendix A – Acoustic Terminology

Parameter	Description
Decibel (dB)	A logarithmic scale representing the sound pressure or power level relative to the threshold of hearing (20×10^{-6} Pascals).
Sound Pressure Level (L_p)	The sound pressure level is the sound pressure fluctuation caused by vibrating objects relative to the threshold of hearing.
A-weighting (L_A or dBA)	The sound level in dB with a filter applied to increase certain frequencies and decrease others to correspond with the average human response to sound.
$L_{Aeq,T}$	The A-weighted equivalent continuous noise level over the time period T (typically T= 1 hour for noise impact assessments during daytime periods and T = 15 minutes for night-time periods). This is the sound level that is equivalent to the average energy of noise recorded over a given period.
$L_{A90,T}$	The noise level exceeded for 90% of the time (also referred to as the background noise level), measured over the time period, T (typically T= 1 hour for noise impact assessments during daytime periods and T = 15 minutes for night-time periods)

Appendix B – Time History Graph

