



NOISE ASSESSMENT

1 Darwin Close, Reading, RG2 0TB

for

The White Partnership Limited

November 2017

Noise Assessment

1 Darwin Close, Reading, Berkshire, RG2 0TB

for

The White Partnership

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1.0 Introduction

- 1.1 The Stilwell Partnership has been instructed by The White Partnership to prepare a Noise Assessment to accompany a Planning Application for the proposed re-development of a site with a dis-used industrial unit at 1 Darwin Close, Reading, Berkshire, RG2 0TB on the Basingstoke Industrial Estate.
- 1.2 The proposed re-development is for a new undesignated industrial unit on the same site together with on-site car parking. The new unit will comprise of workshops, offices, meeting rooms, etc. spread over two floors.
- 1.3 Within **Section 2.0** of this report we describe and introduce the site.
- 1.4 Within **Section 3.0**, we examine the relevant legislation and published government guidelines.
- 1.5 Within **Section 4.0** we survey the site and measure existing noise levels.
- 1.6 Within **Section 5.0** we assess the potential and predicted impacts of noise on the proposed residential development.
- 1.7 **Section 6.0** summarises and concludes the report and **Section 7.0** details the references utilised.

2.0 Site Description and Development Details

- 2.1 The site is located at the corner formed by the junction of Commercial Road and Darwin Close in Reading, Berkshire, within the Basingstoke Industrial Estate. The present building is a derelict industrial unit and the site is vacant.
- 2.2 To the north of Commercial Road and immediately opposite the site is an area of residential development consisting of relatively new 4-storey flats and 2-storey housing. South, east and west of the proposed industrial unit is the industrial estate of mixed use.
- 2.3 Commercial Road runs north-south through the industrial estate before turning towards the west at its northerly end and running east-west adjacent to the housing estate
- 2.4 The proposed new industrial unit is yet undesignated, but initial proposals suggest it will have an entrance/exit on to Darwin Close for commercial vehicles and cars. There will be on-site parking for 15 cars, as specified by the White Partnership in their Planning Drawing, No. 03, dated 1 August 2017. It is further suggested in the “Sustainability Report” the new unit will comprise of a workshop, offices, meeting rooms, etc. spread over two floors.

3.0 Significance Criteria

- 3.1 As the use of the proposed new unit has not been designated the source noise level is unquantifiable. The closest residential properties that are likely to be impacted by noise are those opposite the site along Commercial Road, this will be a mix of road traffic noise and any industrial noise from the estate.
- 3.2 In the absence of specific data many local authorities and other technical experts refer to the published data by the World Health Organisation (WHO) in “Guidelines for community noise”¹. This proposes noise levels in dwellings and hotels of 35 dB $L_{Aeq,t}$ and 30 dB $L_{Aeq,t}$ for daytime and night-time respectively, the latter to ensure the restorative process from sleep is ensured. These noise criteria have also been adopted in BS 8233: 2014 “Sound insulation and noise reduction for buildings – Code of practice”² and have been adopted in this assessment.

4.0 Baseline Noise Survey

4.1 The baseline noise levels were measured in terms of L_{Aeq} , L_{A10} , L_{A90} , and L_{Amax} . These parameters are defined in Annex A “Glossary of Acoustical Terminology”. The baseline noise survey was made in the daytime on 25 September 2017 applicable to general road traffic noise in the area using the procedures outlined in the Department of Transport publication “Calculation of Road Traffic Noise” 1987⁴.

4.2 Full details of the noise survey are given in **Annex B** attached and for ease of reference the noise results are also summarised in the table below:

Position	Time	Period	L_{Aeq}	L_{Amax}	L_{A10}	L_{A90}
1	14:00:00	03:00:00	59.1	70.8 – 86.4	62.2	48.0

4.3 The noise measurement position is shown on the drawing, **Figure 1**, attached. This position was chosen to give a representative noise from the mix from Basingstoke Industrial Estate and road traffic that would be similar to that from the proposed development once the development has been completed.

4.4 There were no individual noticeable loud noise events during the survey period, but there were a number of relatively noisy motorcycles and other interruptions from members of the public asking questions and also for directions.

5.0 Potential and Predicted Impacts

- 5.1 To assess the potential impact of noise at the site the measured levels have been converted to appropriate equivalent continuous noise levels in **Annex C** attached. These are worst case noise levels are for the façade of the residential properties to the north and facing on to the Commercial Road. the noise levels are predicted to be 55.7 dB $L_{Aeq,16hr}$ in the daytime and 48.7 dB $L_{Aeq,8hr}$ at night.
- 5.2 As the residential properties are relatively “new built”, to meet the thermal insulation requirements of the U.K. Building Regulations, a certain standard of window is required, that is both double glazed and with openable lights weather-stripped. These windows will provide a reasonable level of façade sound insulation and referring to PPG24 Annex 6³, this would be typically 33 dB(A) for closed windows in a masonry facade. The facades subjected to the highest noise levels from the road are those facing on to the road, hence, the internal noise levels would be of 22.7 dB $L_{Aeq,16hr}$ daytime and 15.7 dB $L_{Aeq,8hr}$ at night.
- 5.3 Referring to the publications by WHO and BS8233: 2014, as identified in the Section 3 on Significance Criteria above. These both propose acceptable levels for internal noise in habitable rooms of 35 dB $L_{Aeq,16hr}$ in the daytime and 30 dB $L_{Aeq,8hr}$ at night. The predicted internal noise levels in the proposed development fall well below these criteria.
- 5.4 Opening windows in habitable rooms of the façade facing on to the road could have an adverse influence on the sound attenuation characteristics, but internal noise and the designers should still meet the criteria of acceptability.

6.0 Summary and Conclusions

- 6.1 A Noise Assessment has been undertaken of the proposed re-development of the site at 1 Darwin Close, Reading, Berkshire, RG2 0TB. The re-development is to provide a new, as yet undesignated, industrial unit and assumed to comprise of workshop, offices, meeting room, etc. on two floors. From this Assessment, the following conclusions can be drawn.
- 6.2 The development proposed is in an urban location impacted by road traffic noise from Commercial Road and any noise from the Basingstoke Industrial Estate. This road passes immediately outside the south facing facades of the residential units to the north of the proposed industrial building and the latter is surrounded by the industrial estate on its other three sides. Because the site proposed for development is no longer in use, noise levels measured further to the east along Commercial Road adjacent to the ongoing activities on the Industrial Estate. From the noise survey, the prevailing internal noise levels in the residential units were predicted.
- 6.3 Comparison of the predicted noise with the recommended levels published by WHO and in BS8233: 2014 of 35 dB $L_{Aeq,16hr}$ in the day and no greater than 30 dB $L_{Aeq,8hr}$ at night show the noise should fall below these criteria for all the proposed residential properties.
- 6.4 In view of the findings in this Noise Assessment, providing the new industrial unit is not used for high noise level activities, there should be no reason on noise grounds why planning permission should not be given.

7.0 References

1. World Health Organisation. Guidelines for Community Noise. WHO, 1999.
2. BS 8233: 2014. Sound insulation and noise reductions for buildings – Code of Practice. Bisk 2014.
3. Department of the Environment (1994). Planning Policy Guidance PPG 24. Planning and Noise. The Stationery Office, 1994.
4. Department of Transport. Calculation of Road Traffic Noise (CRTN). The Stationery Office, 1988.



Annex A

Glossary of Acoustical Terminology

GLOSSARY OF ACOUSTICAL TERMINOLOGY

1. **Sound Level (L_{pA})**

Sound level is the value measured with a sound level meter, which incorporates frequency weighting networks. These attenuate the signal at some frequencies and amplify it at others. Sound levels measured with the A-weighting network are expressed in dB(A). The A-weighting network approximately corresponds to the frequency response of the human ear.

2. **Equivalent Continuous Sound Level (L_{Aeq})**

Sound levels invariably fluctuate. A summation can be made of the sound energy in the fluctuating sound and a steady level of the same total energy calculated. This steady level is termed the equivalent continuous sound level. L_{Aeq} can be determined over any time period, which is indicated as $L_{Aeq,T}$ where T is the time period (e.g. $L_{Aeq,1 \text{ hour}}$, $L_{Aeq,12 \text{ hour}}$, etc.).

In mathematical terms, L_{Aeq} is given by:

$$L_{Aeq} = 10 \log \left\{ \frac{1}{T} \int_{t=0}^{t=T} (p_A(t)/p_0)^2 dt \right\}$$

where L_{Aeq} = equivalent continuous sound level in dB over a time period T; $P_A(t)$ = instantaneous sound pressure in Pa varying with time t; and p_0 = reference sound pressure (20 mPa).

3. **Background Noise ($L_{A90,t}$)**

Background noise is the noise level exceeded for 90% of the time over the specified period t. It is the basic noise level in a locality and does not include the effects of short duration noise.

4. **Ambient Noise ($L_{Aeq,t}$)**

Ambient noise is a measure of the average noise level over the specified time period t and includes contributions of all noise sources

5. **Maximum Noise (L_{Amax})**

This is the highest A-weighted sound pressure level recorded by the sound level meter during the measurement period.

6. **Level Exceeded for 10% of the Time ($L_{A10,t}$)**

This is a measure of the higher noise levels to which a locality is exposed during time t. The noise produced from road traffic is generally expressed in terms of $L_{A10,18 \text{ hour}}$.

Annex B

Baseline Noise Survey

BASELINE NOISE SURVEY

Dates and times of Surveys

The noise survey was made on 25 September 2017. As the primary noise source appeared to be due to road traffic, the survey was made on Commercial Road for a 3-hr duration in accordance with the shortened measurement procedure in the Department of Transport publication "Calculation of Road Traffic Noise" (CRTN). The measurements were commenced at 14.00 hours.

Equipment Used

The equipment used for the noise survey was a Rion type NL-52 Class 1 integrating sound level meter fitted with a type UC-59 condenser microphone, a type NH-25 preamplifier and windshield. A Rion type NC-74 sound calibrator was employed to check the calibration of the meter. The serial numbers of the equipment used are listed below:

Meter No.	Microphone No.	Preamplifier No.	Calibrator No.
00775939	11659	76056	00830790

All equipment has current calibration certificates and was calibrated on site before and after use.

The microphone was protected by a proprietary windshield throughout the measurements.

Weather Conditions

The prevailing weather conditions at the time of the survey were as follows:

Weather was dry and overcast during the measurements. There was a very light north-westerly breeze of 1.7m/s, and the air temperature was about 19°C.

Measurement Positions

The measurement position on Commercial Road was on the pavement 3.1m from the nearside kerb, with no obvious obstructions or reflecting surfaces within 3.5m of the microphone, as shown on **Figure 1**. At this position, the microphone was mounted on a tripod on the ground, directed horizontally and set at a height of 1.35m above ground level.

Measurement Parameters

Although not essential, noise measurements were made in dB in one or more of the following parameters:

L_{Aeq} – the equivalent continuous noise level or ambient noise level.

L_{A90} – the noise level exceeded for 90% of the time, the background noise level.

L_{A10} – the noise level exceeded for 10% of the time.

L_{Amax} – the maximum noise level.

Results

The measured noise levels recorded continuously over a 3-hour period on 25 September 2017, primarily from general road traffic noise in the locality, are given in dB in the following table below:

Position	Time	Period	L_{Aeq}	L_{Amax}	L_{A10}	L_{A90}
1	14:00:00	03:00:00	59.1	70.8-86.4	62.2	48.0

The noise measured generally was the result of road traffic including a number of motorcycles, there was also a number of people asking questions and seeking directions.

Annex C

Noise Level Predictions

NOISE LEVEL PREDICTIONS

Methodology

The prediction methodology for the road traffic noise impacting the proposed site is in accordance with the Department of Transport publication “Calculation of Road Traffic Noise” (CRTN).

The road traffic noise prediction has been made firstly for the residential dwelling façades facing on to Commercial Road north of the proposed site, as these were the closest to the noise source and would demonstrate a worst-case scenario.

The measured “free-field” noise level in the daytime was 59.1 dB $L_{Aeq,t}$. As the measured noise level was at a position 3.1 m from the nearside kerb, corrections are necessary to derive the predicted noise level at facades of the residential properties that are 7.5m from the northerly kerb, the correction is only for distance, screening and height are not significant and can be neglected.

Utilising Chart 7 in CRTN the corrected daytime noise level will be 56.7 dB $L_{Aeq,3hr}$. The corresponding night-time level, adopting the usual convention that night-time noise level is 7 dB(A) below the daytime level would be 49.7 dB $L_{Aeq,t}$.

In accordance with CRTN the correction for time from 3 hours to 16 hours is a reduction of 1dB(A). Correcting the measured noise level for this above and adopting a similar correction for night-time gives the following “free-field” noise levels at the south facing facades onto the High Street:

Daytime noise level	Night-time noise level
$L_{Aeq,16hr}$	$L_{Aeq,8hr}$
55.7	48.7

These are “worst case” and noise levels for the facades in the residential units facing onto Commercial Road, the noise level at the facades facing away from Basingstoke Industrial Estate and positioned to the rear of those adjacent to Commercial Road will be lower due to fortuitous noise screening.

London – Twickenham

London – Central

Birmingham

Chester

Manchester

Huddersfield

Newcastle upon Tyne

Glasgow

Guildford

Dubai

Sydney