

Noise Assessment

Proposed Hours of Use
Headley Park 9 (units 1-7)
Headley Park, RG5 4SQ

Rookman Properties Ltd

1st September 2026

Ref NG2026/48-01

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Acronyms/Abbreviations

BSP	Building Services Plant
CADNA	Computer Aided Noise Abatement
HGV	Heavy Goods Vehicle
PPG	Planning Practice Guidance
NPPF	National Planning Policy Framework
NPSE	Noise Policy Statement for England
UOAEI	Unacceptable Observed Adverse Effect Level
SOAEI	Significant Observed Adverse Effect Level
LOAEI	Lowest Observed Adverse Effect Level
NOAEI	No Observed Adverse Effect Level

EXECUTIVE SUMMARY

This report presents the findings of a noise assessment to support an application to remove conditions allowing for potential 24 hr operational use of the commercial units, Units 1 – 7 Headley Park 9, Headley Road, Reading, RG5 4SQ. A description of the existing noise environment on and around the site is provided, together with an assessment of the effects of potential 24-hour operations, (including internal operations and customer and staff use of the car parking area).

Noise sources associated with the proposals are limited to external customer parking and loading together with staff parking noise. On that basis of keeping doors, shutters and windows closed during the night-time (23:00 to 07:00) there will be no discernible noise break out from internal operations. A background noise comparison has been undertaken which shows that worst-case average noise levels are predicted to be all below background sound levels at all identified noise sensitive receptors during daytime and night-time periods.

Noise intrusion assessments at nearby sensitive receptors from operational noise sources have been undertaken. The assessment shows that noise in internal locations (including worst-case door slam noise) at nearby receptors (even with windows open) will be within the planning tests of Significant Observed Adverse Effect levels (SOAEL).

In relation to NPPF policy test in P3, no '*significant adverse effects*' are predicted to occur and thus has been met. Similarly, the Wokingham CC06 45 dB night-time external NOEL criteria has also been comfortably met.

1.0 INTRODUCTION

1.1 PURPOSE OF THIS REPORT

This report presents the findings of a noise assessment to support an hours-of-use planning application for the commercial units, Units 1 – 7 Headley Park 9, Headley Road East, Reading, RG5 4SQ. A description of the existing noise environment on and around the site is provided, together with an assessment of the effects of 24-hour operations (customer and staff use of the car parking area).

A list of acoustic terminology used in this report is provided in Appendix A.

1.2 LEGISLATIVE CONTEXT

This report is intended to provide information relevant to the local planning authority and their consultees in support the removal of condition 13 of planning permission 13397 (Units 2-7) and condition 5 of planning permission 131945 (Unit 1).

Policy guidance with respect to noise is found in the Noise Policy Statement for England (March 2010)¹ and the revised National Planning Policy Framework (NPPF), published on 17th August 2026. Section 17, of the National Planning Policy Framework, 'Pollution, public protection and security' provides the following guidance in relation to noise impacts.

Developments should :

[NPPF P3 a] Provide healthy living conditions for occupiers and users in terms of adequate access to light and avoiding exposure to levels of air, noise, artificial light or other sources of pollution which could have an unacceptable adverse effect on health and the quality of life. Where necessary suitable mitigation measures should be incorporated to secure acceptable living conditions;

[NPPF P3 b.] Not give rise to, or contribute to, an unacceptable level of access to daylight and sunlight for neighbouring residents and occupiers, or unacceptable levels of air, noise, artificial light, water, soil or other forms of pollution on or beyond the site. Adverse impacts of this nature should be avoided where possible, or else mitigated to an acceptable degree. Where possible, opportunities should be taken to reduce pollution affecting the wider area (such as through traffic and travel management or improved external lighting);

[NPPF P3 d]. 'Mitigate and reduce to a minimum potential adverse impacts resulting from noise, not result in levels of noise exposure which would have a significant observed adverse effect, and maintain the character of tranquil areas (those areas that have remained relatively undisturbed by noise from human sources and are prized for their recreational and amenity value for this reason)';

¹ <https://www.gov.uk/government/publications/noise-policy-statement-for-england>

Planning Practice Guidance (PPG): Noise [dated 22 July 2019] provides further guidance with regard to the assessment of noise within the context of Planning Policy. The overall aim of this guidance, tying in with the principles of the NPPF and the Explanatory Note of the Noise Policy Statement for England (NPSE), is to *'identify whether the overall effect of noise exposure is, or would be, above or below the significant observed adverse effect level and the lowest observed adverse effect level for the given situation.'*

A summary of the effects of noise exposure associated with both noise generating developments and noise sensitive developments is presented within the PPG and repeated as follows:

Table 1-1 NPPG - Noise Exposure Hierarchy

Perception	Examples of Outcomes	Increasing Effect Level	Action
No Observed Effect Level			
Not present	No Effect	No Observed Effect	No Specific Measures Required
Present and not intrusive	Noise can be heard, but does not cause any change in behaviour, attitude or other physiological response. Can slightly affect the acoustic character of the area but not such that there is a change in the quality of life.	No Observed Adverse Effect	No Specific Measures Required
Lowest Observed Adverse Effect Level			
Present and intrusive	Noise can be heard and causes small changes in behaviour, attitude or other physiological response, 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 small actual or perceived change in the quality of life.	Observed Adverse Effect	Mitigate and reduce to a minimum
Significant Observed Adverse Effect Level			
Present and disruptive	The noise causes a material change in behaviour, attitude or other physiological response, 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	Avoid
Present and very disruptive	Extensive and regular changes in behaviour, attitude or other physiological response and/or an inability to mitigate effect of noise leading to psychological stress, e.g. regular sleep deprivation/awakening; loss of appetite, significant, medically definable harm, e.g. auditory and non-auditory.	Unacceptable Adverse Effect	Prevent

The NPPF, NPSE and NPPG do not, however, present absolute noise level criteria which define SOAEL, LOAEL and NOEL which is applicable to all sources of noise in all situations. Therefore, within the context of the Development, national planning policy and appropriate guidance documents including 'BS 4142: 2014 + A1:2019 'Methods for Rating and Assessing Industrial and Commercial Sound', BS8233:2013 'Guidance on sound insulation and noise reduction for buildings', BS5288:2009 'Code of practice for noise and vibration control on construction and open sites – Part 1: Noise'; IEMA 'Guidelines for Environmental Noise Impact Assessment' and DMRB LA 111 (May 2020) 'Design Manual for Roads and Bridges.' Section 2.0 presents the noise level criteria used as a basis of this assessment.

The NPPG also states that neither the NPSE nor the NPPF (which reflects the Noise Policy Statement) expects noise to be considered in isolation, separately from the economic, social and other environmental dimensions of the proposed development.

1.3 Local Policy Context

The adopted Wokingham Local Plan¹ (adopted 29 Jan 2010) has policy CP1 and Policy CC06 (updated by Appendix 1) of the Managing Development Delivery document. There is understood to be no supplementary planning guidance relating to noise, however the revised Appendix 1 of Policy CC06 provides guidance relating to noise assessments.

Policy CC06 states :

- 1. Proposals must demonstrate how they have addressed noise impacts to protect noise sensitive receptors (both existing and proposed) from noise impacts in line with Appendix 1² of the MDD.*
- 2. Noise impact of the development must be assessed. Where there is no adverse impact (No Observed Effect Level) then noise will not be a material consideration.*
- 3. Where there is an adverse effect (Lowest Observed Adverse Effect Level to Significant Observed Adverse Effect Level), then*
 - a) The development layout must be reviewed. Where this results in there no longer being an adverse impact then design and mitigation measures should be incorporated accordingly.*
 - b) Where there is still an adverse impact then internal layout must be reviewed. Where this results in there no longer being an adverse impact then design and measures should be incorporated accordingly.*

¹ <https://www.wokingham.gov.uk/planning-policy/adopted-development-plan/local-plans>

² <https://www.wokingham.gov.uk/sites/wokingham/files/2023-06/MDD%20Inspector%20report%20and%20appendix%20no%20maps%20%281%29.pdf>

c) Where there is still an adverse impact then physical mitigation measures such as barriers/mechanical ventilation must be reviewed. Where this results in there no longer being an adverse impact then design and mitigation measures should be incorporated accordingly.

d) Where there is still an adverse impact and the development falls within the significant observed adverse effect level then planning permission will normally be refused.

The replacement appendix 1 provides guidance for noise assessment methodology and the following for this application ie. 'New Noise Sources near Noise Sensitive Receptors

11. Where a new industrial or commercial development is proposed near a residential area, the effect of the new noise source on the surrounding area shall be assessed in accordance with currently available and appropriate standards. External noise levels at the nearest NSRs should meet the NOEL levels as set out above. Where possible, noise should be mitigated at source and through appropriate site layout.

This refers to the following table

Table 1: Impact Levels - Amenity Spaces for Dwellings LAeq,T dB

Noise Source	NOEL	LOAEL	SOAEL
Environmental noise	LAeq,T	LAeq,T	LAeq,T
07.00 - 23.00	<55	56 – 69	>70
23.00 - 07.00	<45	46 – 64	>65

Thus, the Wokingham criteria for this proposal is 55 dB LAeq (daytime) or 45 dB LAeq as external (garden) amenity levels.

2.0 ASSESSMENT CRITERIA

In order to enable the assessment of the proposed development in terms of LOAEL and SOAEL, **Table 2-1** presents equivalent noise levels and associated actions with the target noise level criteria identified. The noise level criteria detailed below for this site have been derived from the above Wokingham criteria (based on a worst-case 10 dB reduction for an open window) and the following UK standards and design guidance:

- BS 8233:2014 'Guidance on sound insulation and noise reduction for buildings – Code of practice'
- BS 4142:2014 'Method for rating industrial and commercial sound'
- World Health Organisation (1999) 'Guidelines for Community Noise'

Table 2-1: Noise Level Criteria and Actions

Noise Sources	Noise Level Criteria	Justification for Effect Level- Action Required
No Observed Adverse Effect Level (NOAEL)		
Fixed plant and equipment located externally or internally with louvered ventilation grilles and commercial/industrial noise	Difference between Rating Level ($L_{Ar,T}$) dB and existing background level $L_{A90,T}$ dB is less than or equal to -10dB	Justification for Effect Level: Below low impact threshold in BS4142:2014 Action Required: None
Absolute internal noise criteria	Noise Levels below Living Rooms and Daytime Hotel Room: 30 dBL _{Aeq,16hours} Bedrooms and Night-time Hotel Room: 25 dBL _{Aeq,16hours} $L_{AFmax,2min}$ noise levels do not exceed: 45dB L_{AFmax} based on 10 th highest $L_{AFmax,2min}$ sample) Offices: 35 dB $L_{Aeq,16hours}$	Justification for Effect Level: Less than threshold values in Table 4 in BS8233:2014 and Table 1 in World Health Organisation (1999) Guidelines on Community Noise Action Required: None
Lowest Observed Adverse Effect Level (LOAEL)		
Fixed plant and equipment located externally or internally with louvered ventilation grilles and commercial/industrial noise	Difference between Rating Level ($L_{Ar,T}$) dB and existing background sound level $L_{A90,T}$ dB is between 1-4dB.	Justification for Effect Level: Within less likely for adverse or significant adverse impact to occur low impact threshold in BS4142:2014 Action Required: Mitigate and reduce to a minimum the exceedance over 0dB above background threshold
Absolute internal noise criteria	Noise Levels below Living Rooms and Daytime Hotel Room: 35 dBL _{Aeq,16hours} Bedrooms and Night-time Hotel Room: 30 dBL _{Aeq,16hours} $L_{AFmax,2min}$ noise levels do not exceed 45dB L_{AFmax} based on 10 th highest $L_{AFmax,2min}$ sample) Offices: 40 dB $L_{Aeq,16hours}$	Justification for Effect Level: Exceed threshold guidelines in Table 4 of BS8233:2014 and World Health Organisation (1999) Guidelines on Community Noise by no greater than 5dB to achieve <u>reasonable internal conditions</u> as defined by Note 7 to Table 1 in BS8233:2014 Action Required: Mitigate and reduce to a minimum the exceedance over the threshold
Significant Observed Adverse Effect Level (SOAEL)		
Fixed plant and equipment located externally or internally with louvered ventilation grilles and commercial/industrial noise	Difference between Rating Level ($L_{Ar,T}$) dB and existing background sound level $L_{A90,T}$ dB is between 5-9dB.	Justification for Effect Level: Within adverse impact threshold in BS4142:2014. Action Required Additional mitigation required to achieve effect of LOAEL or less.
Absolute internal noise criteria	Noise Levels below Living Rooms and Daytime Hotel Rooms: 45 dBL _{Aeq,16hours} Bedrooms and Night-time Hotel Room: 35 dBL _{Aeq,16hours} 45 dB $L_{AFmax,2min}$ based on 10th highest $L_{AFmax,2min}$ sample) Offices: 45 dB $L_{Aeq,16hours}$	Justification for Effect Level: Exceeds BS8233:2014 $L_{Aeq,T}$ reasonable criteria by 5dB or exceeds $L_{AFmax,2min}$ (10th highest sample) Action Required: Additional mitigation required to achieve effect of LOAEL or less.
Unacceptable Observed Adverse Effect Level (UOAEL)		
Fixed plant and equipment located externally or internally with louvered ventilation grilles and commercial/industrial noise	Difference between Rating Level ($L_{Ar,T}$) dB and existing background sound level $L_{A90,T}$ dB is equal to or greater than 10dB	Justification for Effect Level: Within significant adverse impact threshold in BS4142:2014 Action Required: Additional mitigation required to achieve effect of LOAEL or less.
Absolute internal noise criteria	Noise levels exceed: Living Rooms and Daytime Hotel Room: 45 dB $L_{Aeq,16hours}$ Bedrooms and Night-time Hotel Room: 45 dB $L_{Aeq,16hours}$ $L_{AFmax,2min}$ noise levels exceeds 55dB L_{AFmax} based on 10 th highest $L_{AFmax,2min}$ sample) Offices: 45 dB $L_{Aeq,16hours}$	Justification for Effect Level: Exceeds BS8233:2014 $L_{Aeq,T}$ reasonable criteria by 10dB or exceeds $L_{AFmax,2min}$ (10th highest sample) by 10dB or more. Action Required: Additional mitigation required to achieve effect of LOAEL or less.

3.0 ASSESSMENT METHODOLOGY

3.1 NOISE MODELLING METHODOLOGY

Three-dimensional noise modelling has been undertaken based on the monitoring data to predict noise levels at a number of locations both horizontally and vertically. CADNA noise modelling software has been used. This model is based on ISO 9613-2 noise propagation methodology and allows for detailed prediction of noise levels to be undertaken for large numbers of receptor points and different noise emission scenarios both horizontally and vertically. The modelling software calculates noise levels based on the emission parameters and spatial settings that are entered. Input data and model settings as given in **Table 3-1** below have been used.

Table 3-1: Modelling Parameters Sources and Input Data

Parameter	Source	Details
Horizontal distances – around site	Ordnance Survey	Ordnance Survey
Ground levels – around site	DEFRA	LIDAR 1m DTM
Building heights – around site	NALO Group Observations	4.0m height for one-storey properties 8.0 m height for two storey properties 3.0m per additional storey
Existing Building heights – on site	NALO Group Observations	6m height
Receptor positions*	NALO GROUP	• 1.5 m for ground floor properties • 4.0m height for first-floor properties • 2.5m per additional storey
Modelling Parameters	NALO GROUP	• Ground Absorption: 0.5 • Order of Reflections: 2 • Noise Contour Plot Grid • Receiver Spacing: 10

*All receptors modelled 1.0m from building façade unless otherwise stated.

It is acknowledged that a number of the values of parameters chosen will affect the overall noise levels presented in this report. However, it should be noted that the values used, as identified above, are worst-case.

3.2 NOISE MODEL INPUT DATA

3.2.2 Operational Noise from Customers, Staff & Parking

Information regarding noise emissions from operational noise sources associated with the proposed store are based on the following source noise measurements at similar stores shown in **Table 3-4** below. It should be noted that the noise levels below are considered to be very much worst-case during maximum operation of the car park. Whilst the application is for 24hr use, it is considered very unlikely that there would be full capacity use of the car park by either potential customers or staff throughout the night.

Table 3-4: Operational Noise Input Data (Sound Pressure Levels)

Noise Source	Type	Octave Band Sound Power Level (dB(A))									Sound Pressure Level (dB(A)) at 1m	Distance (m)
		31.5 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz		
Footfall, Loading and Car Park Area	Average	64	54	55	47	42	37	37	34	31	65	1
Car Door/Boot Slam Maximum Noise Event	Maximum	82	72	73	65	60	55	55	52	49	89	1

3.3 SENSITIVE RECEPTORS

Table **3-6** below summarises receptor locations that have been selected to represent worst case sensitive receptors with respect to direct noise from the site. Façades of the nearest noise sensitive properties to the development site have been represented. The locations of the receptors are presented within **Figure 3-2** below.

Table 3.6: Sensitive Receptor Locations

Ref.	Description	Type of Use / Noise Sources	Height (m)
R1	R1 179 Butts Hill Road 1F	Residential / Site Noise	4.0
R2	R2 171 Butts Hill Road 1F	Residential / Site Noise	4.0
R3	R3 163 Butts Hill Road 1F	Residential / Site Noise	4.0

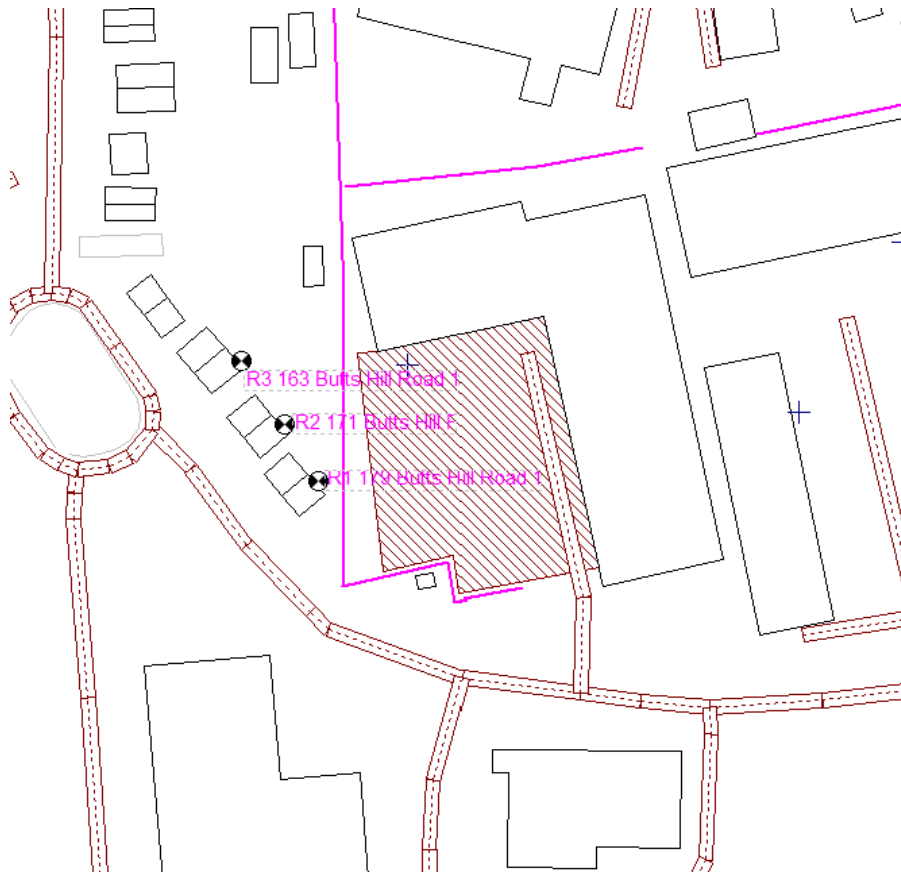


Figure 3-2: Sensitive Receptor Locations

4.0 BASELINE NOISE SURVEY

4.1 BASELINE NOISE SURVEY DESCRIPTION

A monitoring survey was undertaken to characterise the baseline background and ambient noise levels currently experienced on site. Equipment used during the survey included:

RION NL-53 Serial number 00163000

RION NL-5 Serial number 00420772

The measurement equipment was checked against the appropriate calibrator at the beginning and end of the measurements, in accordance with recommended practice, 0.0dB drift was observed at ST1. The accuracy of the calibrators can be traced to National Physical Laboratory Standards, calibration certificates for which are available on request.

A baseline monitoring survey was undertaken at 4 locations (as specified in **Table 4-1** below and shown in Figure 4.1 below). At LT1 measurements were undertaken from Friday 7th August 2026 to Wednesday 12th August 2026. Additional short-term attended measurements were undertaken during daytime, evening and night-time periods on Thursday 6th August 2026. The raw data collected from the long-term monitoring is available upon request.

Measurements were taken in general accordance with BS 7445-1:2003 The Description and Measurement of Environmental Noise: Guide to quantities and procedures. Weather conditions during the survey set up and collection were observed as being dry with wind speeds less than 5 ms⁻¹.

Table 4-1: Noise Monitoring Locations

Ref	Location
LT1	Northeast corner of Base 239, Headley Park Road
LT2	Southwest Corner of Headley Park 9, Car Park (road side of wall)
ST1	Garages at rear of 163 Butts Hill Road
ST2	In front of 155B Butts Hill Road
ST3	Stafford Close

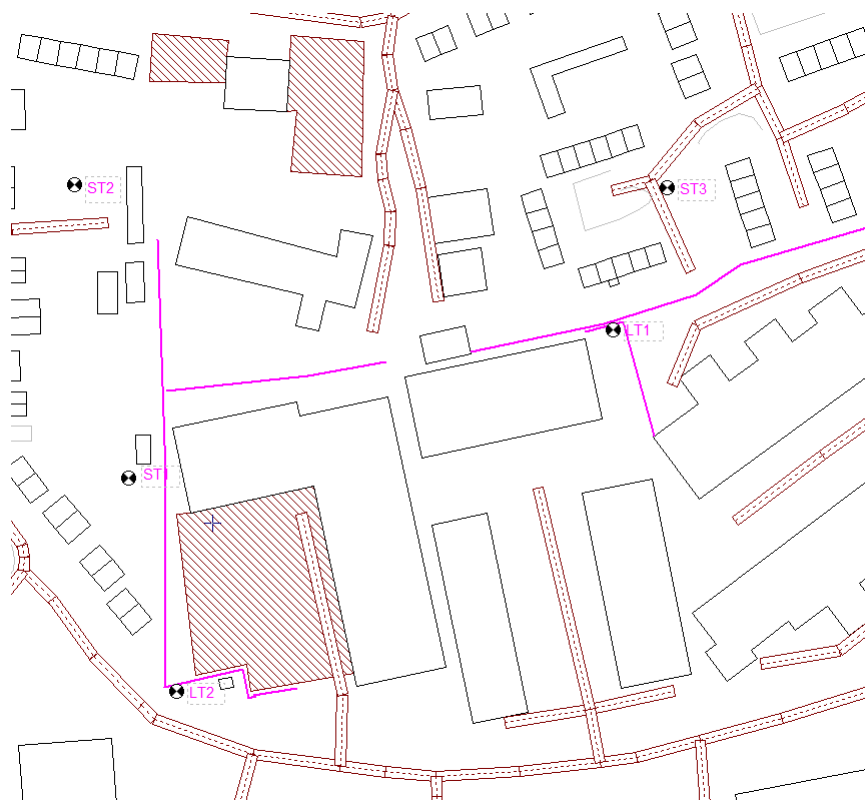


Figure 4-1 Noise Monitoring Locations

Table 4-2: Meteorological Conditions and Observations During the Attended Survey

Measurement Location	Date & Time	Temperature (°C)	Wind Speed (m/s)	Wind Direction	Cloud Cover (Oktas)	Dominant Noise Source
ST1	06/08/2026 12:38	20	0-1	west	0	Road traffic noise
ST2	06/08/2026 16:05	25	0-1	west	0	Road traffic noise
ST3	06/08/2026 16:30	27	0-1	west	0	Road traffic noise
ST1	06/08/2026 16:54	27	0-1	west	0	Road traffic noise
ST2	06/08/2026 21:41	20	0-1	west	0	Road traffic noise
ST3	06/08/2026 22:11	17	0-1	west	0	Road traffic noise
ST1	06/08/2026 23:02	16	0-1	west	0	Road traffic noise
ST2	06/08/2026 23:25	16	0-1	west	0	Road traffic noise
ST3	06/08/2026 23:47	16	0-1	west	0	Road traffic noise

4.2 NOISE SURVEY RESULTS

The dominant noise sources observed in the area included road traffic noise from the surrounding road network.

Ambient and background noise levels are usually described using the L_{Aeq} index (a form of energy average) and the L_{A90} index (i.e. the level exceeded for 90% of the measurement period) respectively. Road traffic noise is generally described using the L_{A10} index (i.e. the level exceeded for 10% of the measurement period).

The presented measured data for the unattended long-term measurements consists of the energetic 1-hour samples, for daytime, and 15-minute samples, for the evening and daytime, over the stated measurement period. The L_{Aeq} levels presented in the tables below are the logarithmic average of each measurement period. The L_{A10} and L_{A90} are the arithmetic average for each measurement period. All values are sound pressure levels in dB (re: 2×10^{-5} Pa).

4-3: Results of Long-Term Baseline Noise Monitoring Survey (Average Levels)

Location	Period (T)	$L_{Aeq,T}$	$L_{Amax,T}$	$L_{Amin,T}$	$L_{A10,T}$	$L_{A90,T}$
LT1	Weekday Daytime 07:00 – 19:00	47.8	62.6	36.6	51.0	39.6
LT1	Weekday Evening 19:00 – 23:00	42.2	56.0	33.4	45.0	35.9
LT1	Weekday Night 23:00 – 07:00	37.9	48.4	32.0	40.1	34.0
LT1	Weekend Daytime 07:00 – 19:00	45.7	60.4	34.4	48.8	37.4
LT1	Weekend Evening 19:00 – 23:00	41.2	54.0	33.5	43.5	36.0
LT1	Weekend Night 23:00 – 07:00	35.6	48.2	28.3	37.6	30.4
LT2	Weekday Daytime 07:00 – 19:00	61.5	72.2	45.7	64.5	52.1
LT2	Weekday Evening 19:00 – 23:00	58.9	69.8	40.7	63.2	44.7
LT2	Weekday Night 23:00 – 07:00	51.0	66.3	35.0	52.4	37.6
LT2	Weekend Daytime 07:00 – 19:00	59.3	70.5	43.6	63.5	47.5

The presented measured data for the attended short-term measurements consists of 1-second samples, for daytime, evening and night-time, over the stated measurement periods. The L_{Aeq} levels presented in the tables below are the logarithmic average of each measurement period. The L_{A10} and L_{A90} are the arithmetic average for each measurement period. All values are sound pressure levels in dB (re: 2×10^{-5} Pa).

Table 4-4: Results of Short-Term (Attended) Baseline Noise Monitoring Survey (Average Levels)

Location	Period	Duration	Monitoring Date and Times	L _{Aeq,T}	L _{Amax,T}	L _{Amin,T}	L _{A10,T}	L _{A90,T}
		(T)		(dB)	(dB)	(dB)	(dB)	(dB)
ST1	Daytime 07:00 – 19:00	15 minutes	06/08/2026 12:38	48.0	61.7	60.7	24.2	53.0
	Evening 19:00 – 23:00	15 minutes	06/08/2026 16:05	52.6	77.4	77.6	39.0	55.9
	Night-time 23:00 – 07:00	15 minutes	06/08/2026 16:30	40.0	64.8	62.7	31.6	42.0
ST2	Daytime 07:00 – 19:00	15 minutes	06/08/2026 16:54	48.1	72.9	64.6	43.3	49.5
	Evening 19:00 – 23:00	15 minutes	06/08/2026 21:41	46.4	71.1	60.8	34.8	49.0
	Night-time 23:00 – 07:00	15 minutes	06/08/2026 22:11	40.4	65.2	60.8	29.8	43.7
ST3	Daytime 07:00 – 19:00	15 minutes	06/08/2026 23:02	48.0	72.7	68.7	34.8	51.5
	Evening 19:00 – 23:00	15 minutes	06/08/2026 23:25	42.2	67.0	62.8	34.2	44.4
	Night-time 23:00 – 07:00	15 minutes	06/08/2026 23:47	37.1	61.9	55.2	30.8	39.4

4.3 REPRESENTATIVE BACKGROUND NOISE LEVELS

Using the data collected during the baseline survey, representative background noise levels have been derived for all receptor locations presented in **Figure 3-2**. **Table 4-5** presents the representative background noise levels considered appropriate for the existing sensitive receptors within the area (the lower of the respective daytime and evening measurements have been used to represent daytime noise levels, where appropriate). The representative noise levels considered to be most representative of rear facades of the properties are considered to be from the attended location ST1. Whilst this may not necessarily represent the lowest noise levels in the middle of a weekend night, it is considered to represent typical L90 background noise levels during sensitive hours for sleep.

Table 4-5: Representative Background Noise Levels (All Receptors)

Receptors	Monitoring Location	Time Period	Representative Background Noise Level (L _{A90,T} dB)
R1, R2, R3	ST1	Daytime 07:00 - 19:00	53.0
		Evening 19:00 - 23:00	55.9
		Night-time 23:00 - 07:00	42.0

5.0 ASSESSMENT OF EFFECTS

5.1 BACKGROUND COMPARISON NOISE ASSESSMENT

It is considered that the BS4142 methodology does not sensibly apply to this sort of noise source (variable, moving vehicles in a car park), especially where the predicted noise level already included a worst-case element. It should also be noted that the requirements of EN17 do not apply to this noise, as it relates to noise from the use of the car parking area only i.e. no plant or equipment noise. However, for comparison this background comparison assessment is presented in **Table 5-1** and shown graphically in **Figure 5-1**.

Table 5-1: Background Noise vs Operational Noise - Comparison Assessment

Location	Existing Measured Background dB L_{A90}			Worst-case Noise Level from Parking & Operations L_{Aeq} dB			Excess over Background		
	Daytime	Evening	Night-time	Daytime	Evening	Night-time	Daytime	Evening	Night-time
R1 179 Butts Hill Road 1F	53	55.9	42.0	35.8	35.8	35.8	-17.2	-20.1	-6.2
R2 171 Butts Hill Road 1F	53	55.9	42.0	35.8	35.8	35.8	-17.2	-20.1	-6.2
R3 163 Butts Hill Road 1F	53	55.9	42.0	34.2	34.2	34.2	-18.8	-21.7	-7.8

All values are sound pressure levels in dBA re: 2×10^{-5} Pa. All calculations used to derive the above table (including averaging of background noise levels and predicted source noise levels) have been undertaken to 1 decimal place to avoid perpetuation of rounding errors.

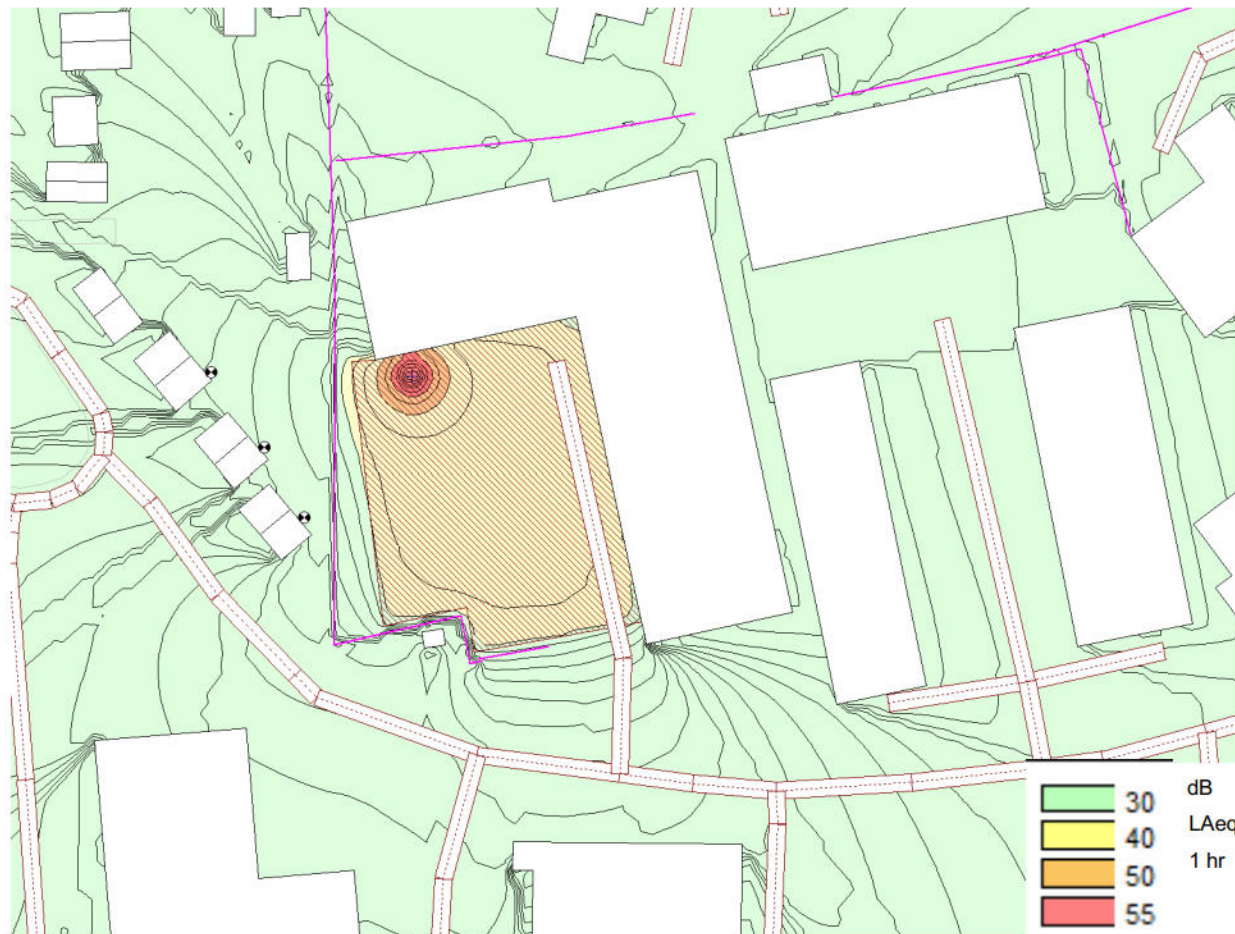


Figure 5-1 Noise Contour Plot – Average Noise from Operations - Height 1.5m. dB $L_{Aeq(1hr)}$

As demonstrated within **Table 5-1** and **Figure 5-1**, the results of the operational noise assessment indicate that during the daytime and night-time periods, operational noise levels at sensitive façades of the existing noise sensitive properties are below measured background sound levels, are all well below background levels at all times and as such are below the planning test of Significant Observed Adverse Effect levels (SOAEL) criteria as stated in **Table 2-1**.

5.2 Worst-Case Operational Noise Intrusion

This assessment has been undertaken in order to establish the noise impacts from all the operational noise sources associated with the proposals at the closest existing residential receptors.

Worst-case noise intrusion assessments at nearby sensitive receptors from all noise sources associated with operational store have been undertaken. The predicted noise levels have been assessed with windows open where a reduction from a partially open window of 12.5 dB has been used. Results of the noise intrusion assessment for daytime and night-time (average L_{Aeq} and noise levels are presented within **Table 5-2**.

Table 5-2: Worst-case Operational Noise - Average Noise Intrusion Levels $L_{Aeq,1hour}$

Receptor Location	Operational External L_{Aeq} dB	Indicative Internal L_{Aeq} dB with windows open	SOAEL Criteria L_{Aeq} (Night-time internal levels)
R1 179 Butts Hill Road 1F	35.1	22.6	35
R2 171 Butts Hill Road 1F	34.2	21.7	35
R3 163 Butts Hill Road 1F	31.3	18.8	35

Table 5-3: Worst-case Operational Noise - Maximum (Door-slam) Noise Intrusion Levels $L_{Amax,1hour}$

Receptor Location	Operational External L_{Amax} dB	Indicative Internal L_{Amax} dB with windows open	SOAEL Criteria L_{Amax} (Night-time internal levels)
R1 179 Butts Hill Road 1F	55.6	43.1	45
R2 171 Butts Hill Road 1F	56.1	43.6	45
R3 163 Butts Hill Road 1F	53.7	41.2	45

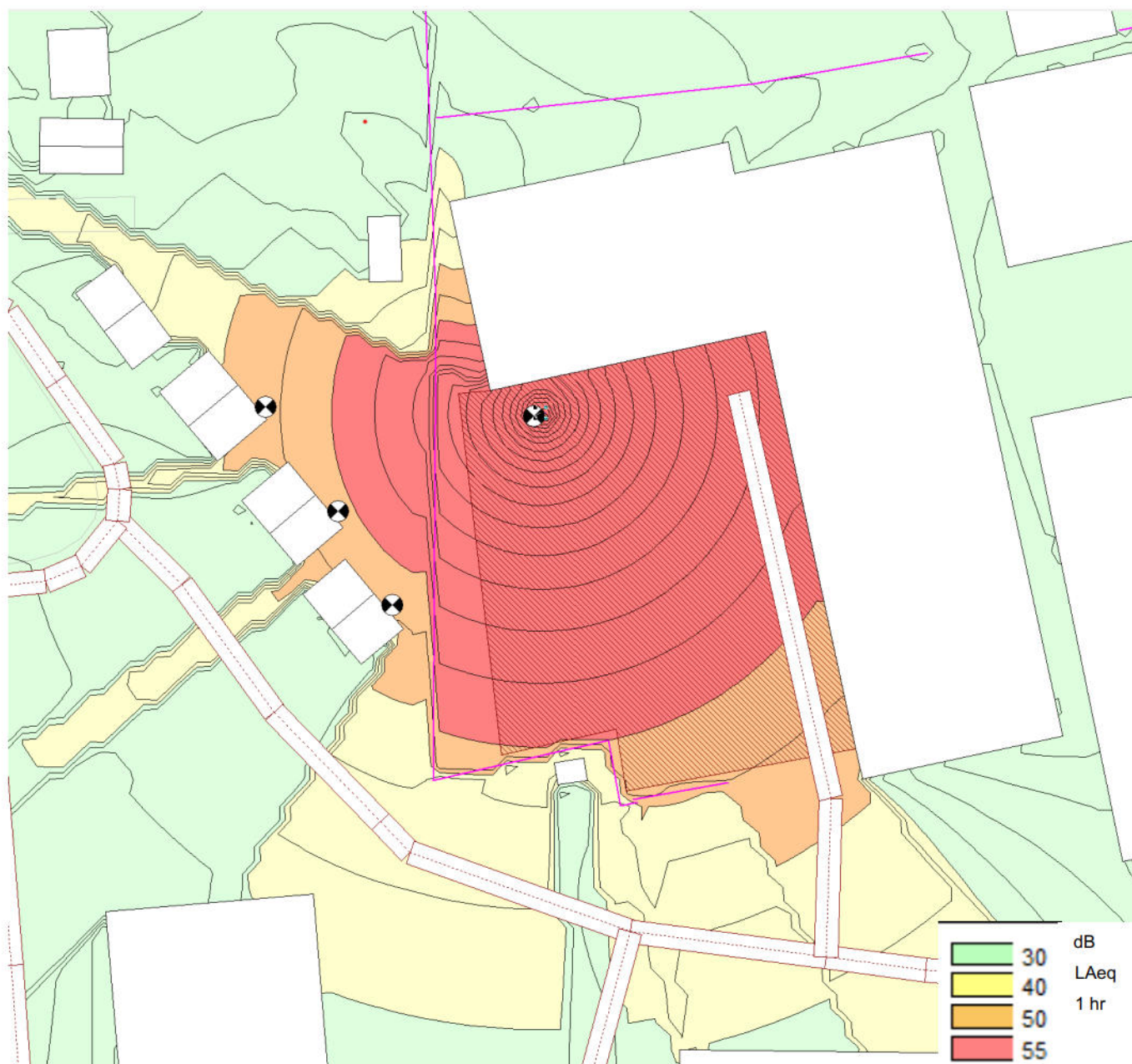


Figure 5-2 Noise Contour Plot – Worst-case L_{Amax} (Door-slam) Noise levels Height 1.5m. dB $L_{Aeq}(1hr)$

As demonstrated within **Table 5-2**, **Table 5-3** and **Figures 5-1** and **5-2**, the results of the assessment of the worst-case operational noise show that the operational noise in internal locations at nearby receptors (even with windows open) will be a maximum of 22.6 dB L_{Aeq} or 43.6 L_{Amax} , which is below planning tests of 35 dB L_{Aeq} or 45 dB L_{Amax} , for the Significant Observed Adverse Effect levels (SOAEL) criteria as stated in table 2-1 for the prevention and also below the Wokingham 45 dB night-time NOEL criteria.

6.0 MITIGATION

To ensure that there is minimal (not discernible at nearby sensitive receptors) break-out of noise from internal operations, all doors, shutters and windows will be kept closed during the night-time (23:00 – 07:00).

Although there is not expected to be significant external use of the car parking area by customers and staff during the night-time, good practice measures, including regular walk around observations noting any observable noise (including around the nearby residential areas) and regular liaison with nearby property owners will be undertaken.

7.0 CONCLUSIONS

The conclusions of the noise assessment to support an application to remove conditions allowing for potential 24 hr operational use of the commercial units, Units 1 – 7 Headley Park 9, Headley Road, Reading, RG5 4SQ. A description of the existing noise environment on and around the site is provided, together with an assessment of the effects of potential 24-hour operations, (including internal operations and customer and staff use of the car parking area).

Noise sources associated with the proposals are limited to external customer parking and loading together with staff parking noise. On that basis of keeping doors, shutters and windows closed during the night-time (23:00 to 07:00) there will be no discernible noise break out from internal operations. A background noise comparison has been undertaken which shows that worst-case average noise levels are predicted to be all below background sound levels at all identified noise sensitive receptors during daytime and night-time periods.

Noise sources associated with the proposals are limited to customer parking and loading together with staff parking noise. A background noise comparison has been undertaken which shows that worst-case average noise levels are predicted to be all below background sound levels at all identified noise sensitive receptors during daytime and night-time periods.

Noise intrusion assessments at nearby sensitive receptors from operational noise sources have been undertaken. The assessment shows that noise in internal locations (including worst-case door slam noise) at nearby receptors (even with windows open) will be within the planning tests of Significant Observed Adverse Effect levels (SOAEL).

In relation to NPPF policy test in P3, no '*significant adverse effects*' are predicted to occur and thus has been met. Similarly, the Wokingham CC06 45 dB night-time external NOEL criteria has also been comfortably met.

Appendix A – Acoustic Terminology

dB	Sound levels from any source can be measured in frequency bands in order to provide detailed information about the spectral content of the noise, i.e. whether it is highpitched, low-pitched, or with no distinct tonal character. These measurements are usually undertaken in octave or third octave frequency bands. If these values are summed logarithmically, a single dB figure is obtained. This is usually not very helpful as it simply describes the total amount of acoustic energy measured and does not take any account of the ear's ability to hear certain frequencies more readily than others.
dB(A)	Instead, the dBA figure is used, as this is found to relate better to the loudness of the sound heard. The dBA figure is obtained by subtracting an appropriate correction, which represents the variation in the ear's ability to hear different frequencies, from the individual octave or third octave band values, before summing them logarithmically. As a result the single dBA value provides a good representation of how loud a sound is.
L _{Aeq}	Since almost all sounds vary or fluctuate with time it is helpful, instead of having an instantaneous value to describe the noise event, to have an average of the total acoustic energy experienced over its duration. The L _{Aeq, 07:00 – 23:00} for example, describes the equivalent continuous noise level over the 16-hour period between 7 am and 11 pm. During this time period the L _{pA} at any particular time is likely to have been either greater or lower than the L _{Aeq, 07:00 – 23:00} .
L _{Amin}	The L _{Amin} is the quietest instantaneous noise level. This is usually the quietest 125 milliseconds measured during any given period of time.
L _{Amax}	The L _{Amax} is the loudest instantaneous noise level. This is usually the loudest 125 milliseconds measured during any given period of time.
L _n	Another method of describing, with a single value, a noise level which varies over a given time period is, instead of considering the average amount of acoustic energy, to consider the length of time for which a particular noise level is exceeded. If a level of x dBA is exceeded for say. 6 minutes within one hour, then that level can be described as being exceeded for 10% of the total measurement period. This is denoted as the L_{A10, 1 hr} = x dB. The L_{A10} index is often used in the description of road traffic noise, whilst the L_{A90}, the noise level exceeded for 90% of the measurement period, is the usual descriptor for underlying background noise. L_{A1} and L_{Amax} are common descriptors of construction noise.
R _w	The <i>weighted sound reduction index</i> determined using the above <i>measurement</i> procedure, but weighted in accordance with the procedures set down in BS EN ISO 717- 1. Partitioning and building board manufacturers commonly use this index to describe the inherent sound insulation performance of their products.

Appendix B – References

- British Standards Institute (BSI). (2003). BS 7445-1:2003. *Description and Measurement of Environmental Noise - Part 1: Guide to Quantities and Procedures*. United Kingdom.
- British Standards Institute (BSI). (2014). BS 4142:2014+A1:2019. *Method for Rating Industrial and Commercial Sound*. United Kingdom.
- British Standards Institute (BSI). (2014). BS 8233:2014. *Guidance on Sound Insulation and Noise Reduction for Buildings*. United Kingdom.
- World Health Organization. (1999). *Guidelines for Community Noise*.