

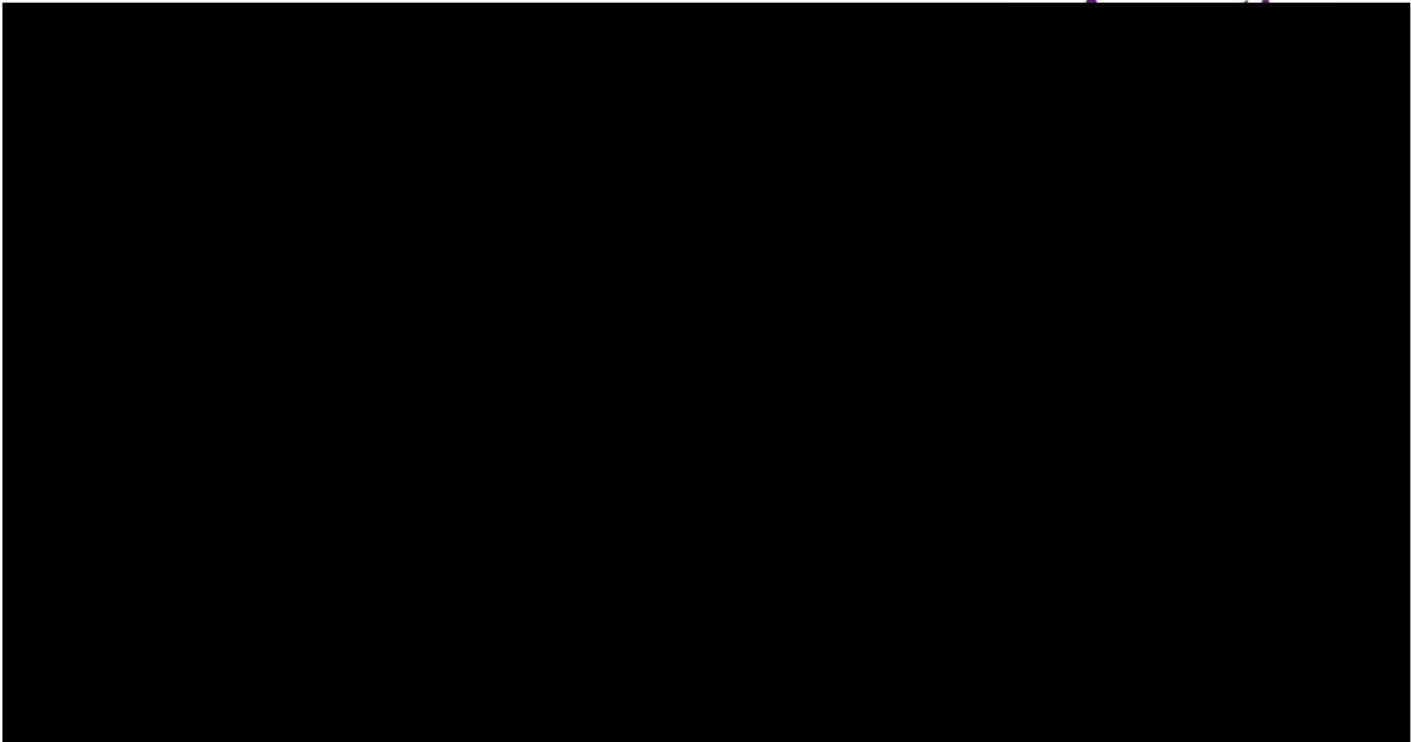


NOISE IMPACT ASSESSMENT

Clyst Hayes, Brook Lane, RH12 4SB

IDEAL CARS SUSSEX LIMITED

JULY 2026



[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

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REVISION HISTORY

Version	Comments	Changes made by	Approved by
1.0	First draft version	JN	JB

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1 INTRODUCTION

Anderson Acoustics Ltd was commissioned by Ideal Cars Sussex Limited in April 2026 to provide a noise impact assessment to support a planning application for a residential development at Clyst Hayes, Brook Lane, RH12 4SB.

This report presents the results of a baseline noise survey, an assessment of internal ambient noise levels, the suitability of open windows to provide cooling during the overheating condition and an assessment of noise levels in external amenity areas.

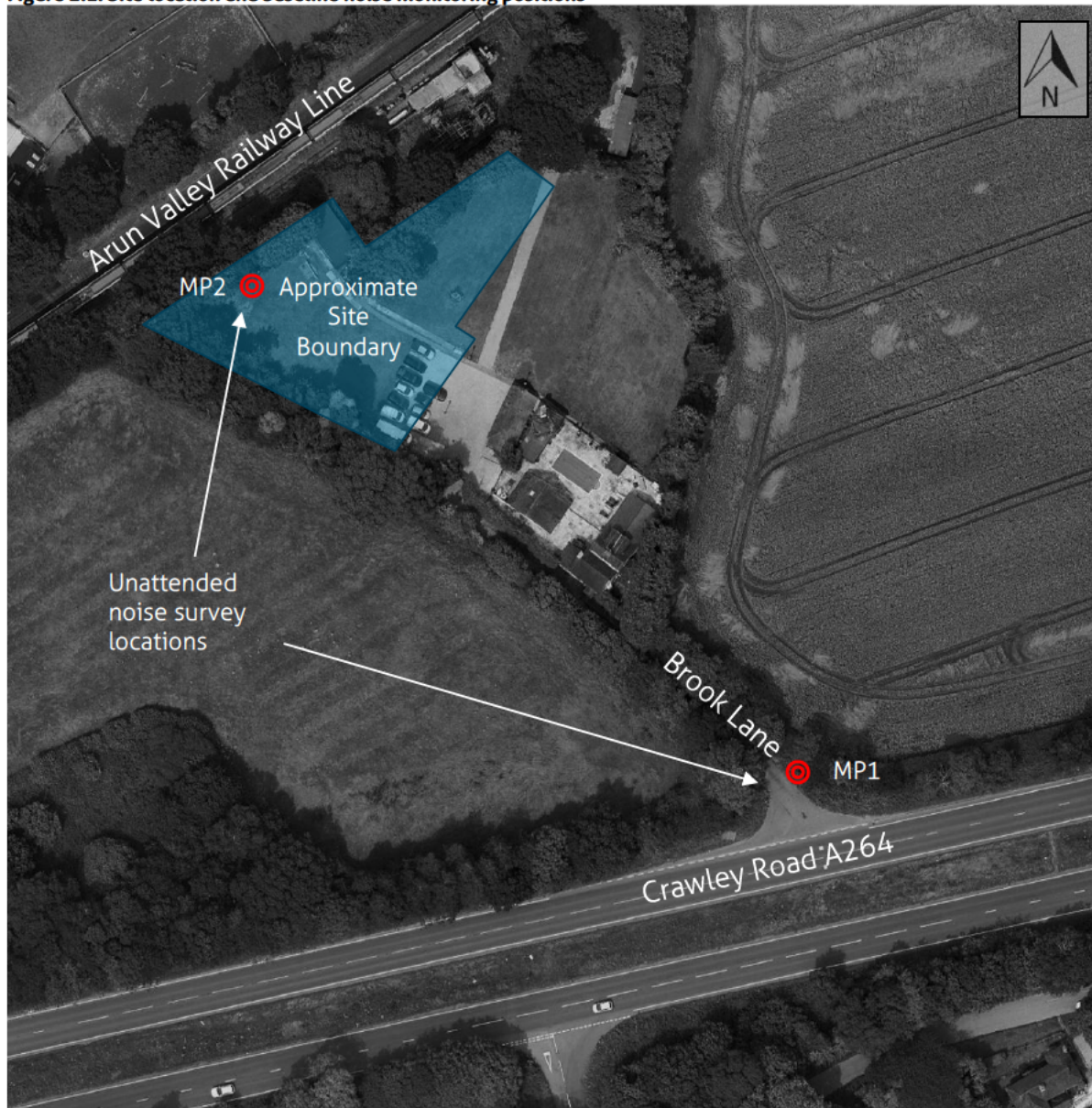
This report is technical in nature and, as such, a summary of noise units and acoustic terminology can be found [here](#) for reference.

2 SITE DESCRIPTION

The site, shown in Figure 2.1, is a parcel of land situated on Brook Lane approximately 3km to the north west of Horsham. The site lies between the Arun Valley Railway Line approximately 20m to the north of the site boundary, and Crawley Road (A264) approximately 100m to the south. Other than these transport networks, the site is in a predominantly agricultural area.

According to data on the website www.realtimetrains.co.uk, the first train of the day is at around 5:30am with eight trains an hour typically using the railway line in daytime hours up to midnight. The last train typically passes at 1:15am.

Figure 2.1: Site location and baseline noise monitoring positions



The proposed site layout is shown in Figure 2.2.

Figure 2.2: Proposed Site Plan



3 RELEVANT GUIDANCE AND CRITERIA

3.1 British Standard 8233

British Standard BS 8233:2014 provides guideline values for internal noise levels within a number of building types including residential dwellings. In general, for steady external noise sources, it is desirable that the internal ambient noise level does not exceed the guideline values in Table 3.1.

Table 3.1: British Standard 8233 Indoor Noise Levels

Activity	Location	Daytime	Night-time
Resting	Living room	35 dB $L_{Aeq, 16\text{hour}}$	-
Dining	Dining room/area	40 dB $L_{Aeq, 16\text{hour}}$	-
Sleeping (daytime resting)	Bedroom	35 dB $L_{Aeq, 16\text{hour}}$	30 dB $L_{Aeq, 8\text{hour}}$

Notes: Daytime assessment period – 07:00 to 23:00 hrs
Night-time assessment period – 23:00 to 07:00 hrs

Furthermore, the Standard notes that, “Regular individual noise events (for example, scheduled aircraft or passing trains) can cause sleep disturbance. A guideline value may be set in terms of SEL or $L_{Amax,F}$, depending on the character and number of events per night. Sporadic noise events could require separate values.” No thresholds/criteria are provided within the standard, however.

The previous, 1999 version of the Standard included the note that, “For a reasonable standard in bedrooms at night, individual noise events (measured with F time-weighting) should not normally exceed 45 dB $L_{Amax,F}$ ”.

This is the same threshold (i.e. 45 dB) given in the World Health Organization (WHO) Guidelines for Community Noise, and it is, therefore, considered to remain relevant and is described in the following sub-section.

In respect of external noise levels, the guidance in BS 8233:2014 suggests that “it is desirable that the external noise level does not exceed 50 dB $L_{Aeq,T}$, with an upper guideline value of 55dB $L_{Aeq,T}$ which would be acceptable in noisier environments”. BS 8233:2014 however acknowledges that “these guideline values are not achievable in all circumstances where development might be desirable”, and that “...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”.

BS 8233:2014 suggests that proposed development within noisy environments should be designed to ensure that the recommended internal design standards are achieved, and that noise levels in external amenity areas are designed to effectively control and reduce noise levels; although it acknowledges that in certain circumstances meeting the external design recommendations may not be feasible, or necessary, especially where the provision of such spaces is desirable for other technical, planning or policy reasons.

3.2 Building Regulations Approved Document O

In June 2022, the Building Regulations Approved Document O: *Overheating* came into force, setting standards to control overheating in new residential buildings. The document also includes specific criteria with regard to noise levels in bedrooms during the overheating condition, as defined in the regulations.

Section 3 of ADO includes a sub-section on Noise, which 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. 40 dB $L_{Aeq,T}$, averaged over 8 hours (between 11pm and 7am).*
- b. 55 dB L_{AFmax} , more than 10 times a night (between 11pm and 7am).*

NOTE: Guidance on reducing the passage of external noise into buildings can be found in the National Model Design Code: Part 2 – Guidance Notes (MHCLG, 2021) and the Association of Noise Consultants' Acoustics, Ventilation and Overheating: Residential Design Guide (2020).

The above statements do not specifically mention living rooms or any other habitable room (only bedrooms) and for the night-time period. The above criteria are likely to have been derived from BS8233 internal noise guidance levels + a 10 dB allowance during the overheating condition.

4 BASELINE NOISE CONDITIONS

4.1 General

The prevailing noise conditions at the site were determined by an unattended environmental noise survey undertaken at the location shown in Figure 2.1. Continuous noise measurements were obtained under free-field conditions at a height of 2m above ground between 14:00 hours on 20th September and 13:00 hours on 28th October 2026.

4.2 Equipment details

Table 4.1: Inventory of Measurement Equipment

Item	Make and Model	Serial Number	Calibration	
			Certificate number	Expiry Date
Sound Level Meter	Rion NL-52	00610202	TCRT26/2131	25/02/2028
Sound Level Meter	Rion NL-53	00730385	TCRT26/2034	26/01/2028
Calibrator	Rion NC-74	34935219	TCRT26/2116	19/02/2028

4.3 Weather Conditions

At the time of setting up the noise monitor, weather conditions were clear, dry with a low breeze.

Weather conditions during the survey period were obtained from www.wunderground.com (weather station at Gatwick Airport) which indicated dry conditions with low to moderate breezes occasionally exceeding 5 m/s during the survey period.

The weather conditions are not expected to have impacted on the measured noise levels.

4.4 Unattended Survey Results

A summary of the daily daytime and night-time ambient and background noise levels in addition to typical night-time maximum levels (not exceeded more than 10 times) are presented in Table 4.2 below.

Average daytime and night-time noise levels with octave band levels are presented in Table 4.3 below. A time history plot is provided in Appendix A.

Table 4.2: Unattended noise survey results MP1, road (free-field)

Date	Day (07:00-23:00)		Night (23:00-07:00)		
	L _{Aeq,T}	L _{A90,T}	L _{Aeq,T}	L _{A90,T}	L _{Amax,F}
Tues 21/04/2026 ¹	61	60	56	39	74
Weds 22/04/2026	62	57	59	31	73
Thurs 23/04/2026	61	56	59	39	74
Fri 24/04/2026	63	54	53	49	71
Sat 25/04/2026	60	53	-	-	-
Overall	61	57	57	39	73

¹ Not a full 16-hour measurement. Start time 16:00 h

Table 4.3: Octave band levels of unattended noise survey MP1, road (free-field)

Monitoring Period	Octave Band Centre Frequency, Hz						dB(A)
	125	250	500	1k	2k	4k	
Daytime L _{eq,16h} (0700-2300 hours)	54	52	53	58	52	52	61
Night-time L _{eq,8h} (2300-0700 hours)	48	46	48	53	48	51	57
Night-time L _{Amax} (2300-0700 hours)	58	58	55	56	57	72	73

Table 4.4: Unattended noise survey results MP2, rail (free-field)

Date	Day (07:00-23:00)		Night (23:00-07:00)		
	L _{Aeq,T}	L _{A90,T}	L _{Aeq,T}	L _{A90,T}	L _{Amax,F}
Tues 21/04/2026 ¹	68	67	64	42	78
Weds 22/04/2026	69	64	64	33	78
Thurs 23/04/2026	71	67	-	-	-
Overall	69	67	64	33	78

¹ Not a full 16-hour measurement. Start time 14:00 h

² Not a full 16-hour measurement. End time 13:00 h

5 INTERNAL NOISE LEVEL GUIDELINES

In order to achieve the internal noise guidelines set out in BS 8233, it is necessary to estimate internal noise levels with windows closed using standard glazing and ventilation products.

Calculations have been undertaken in accordance with BS EN 12354-3:2017. The area of glazing and method of ventilation in any particular room, along with the room size and room acoustic conditions, affect the degree of reduction in noise transmission from outside to inside.

5.1 External Noise Levels

A 3D noise model was built in CadnaA to estimate noise levels from incident on the facades of the proposed dwellings, calibrated to the measured noise levels. An acoustic fence is proposed along the boundary with the railway. Figures 5.1 and 5.2 show the highest average daytime levels at each façade where the height of acoustic fence is 2 and 3 metres respectively. The results are tabulated in Table 5.1.

Figure 5.1: Example 3D view of noise model showing average daytime noise levels with 2m acoustic fence, dBA (free-field)



Figure 5.2: Example 3D view of noise model showing average daytime noise levels with 3m acoustic fence, dBA (free-field)

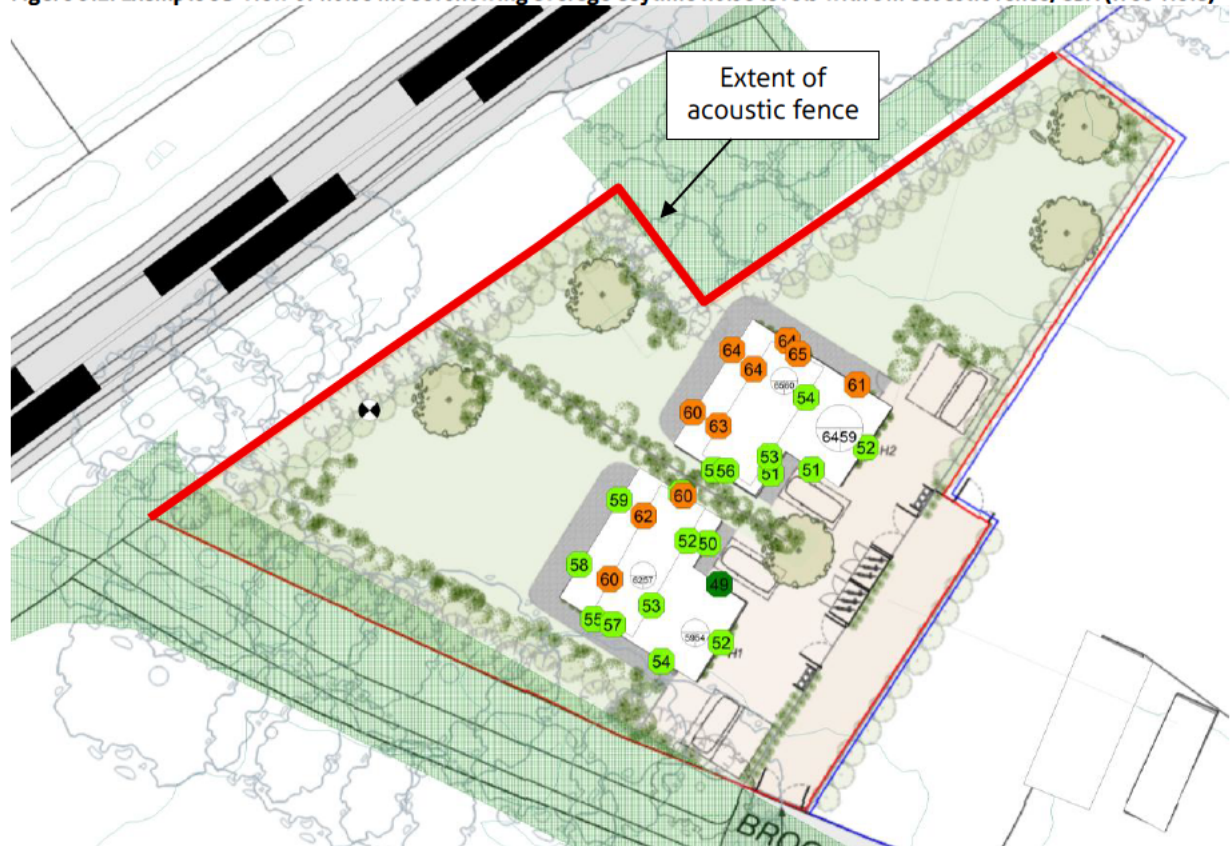


Table 5.1: Estimated noise levels incident on each facade, dBA (free-field noise levels)

House	Room	2m acoustic fence			3m acoustic fence		
		Day ($L_{Aeq,16hrs}$)	Night ($L_{Aeq,8hrs}$)	Night (L_{Amax})	Day ($L_{Aeq,16hrs}$)	Night ($L_{Aeq,8hrs}$)	Night (L_{Amax})
1	Living Room	55	-	-	53	-	-
	Snug	56	-	-	53	-	-
	Bedroom 1	52	49	54	52	49	54
	Bedroom 2	62	57	71	59	54	67
	Bedroom 3	61	56	70	58	53	66
	Bedroom 4	62	57	71	60	55	68
2	Living Room	59	-	-	54	-	-
	Snug	52	-	-	51	-	-
	Bedroom 1	52	48	58	52	48	58
	Bedroom 2	63	58	72	60	55	69
	Bedroom 3	65	60	72	64	59	70
	Bedroom 4	64	60	71	64	59	71

5.2 Internal Noise Levels - Windows Closed (whole dwelling ventilation condition)

The following sections will outline the mitigation required in order to meet BS 8233 and WHO internal and external noise guidelines with windows closed.

Reverberation

A reverberation time in furnished bedrooms and living rooms of 0.5 seconds across the frequency spectrum between 125 Hz and 4kHz has been assumed.

External Wall Construction

We have assumed the proposed external walls in the development will consist of a brick-block cavity wall. We would expect such a construction to achieve the following minimum sound reduction performance, based on experience of similar wall constructions:

Table 5.2: Estimated sound reduction index (dB) of the assumed external wall construction

125	250	500	1k	2k	4k	$R_w / R_w + C_{tr}$
41	45	45	54	58	58	52 / 48

It should be noted that even if the external wall configurations differ from the above, this will not impact on the predicted internal ambient noise levels within the apartments and houses; as the major noise break-in contribution into ambient noise levels are the glazing and ventilation elements of the façade.

Ventilation

The Design and Access Statement for the scheme indicates that Mechanical Ventilation with Heat Recovery will be installed throughout.

For the purposes of this assessment, noise break-in through the ventilation system is assumed negligible.

It should be noted that the design of the MVHR systems should aim at achieving at least the internal noise criteria set out in Section 3.1, such the cumulative internal noise level due to external noise intrusion and mechanical services noise comply with the criteria in BS 8233.

Glazing

Calculations based on the proposed external wall construction and ventilation systems demonstrate that standard double glazing capable of achieving the minimum sound reduction performance shown in Table 5.3 should ensure appropriate internal noise levels are met across the development. Example calculations showing the worst affected rooms (Bedroom 3 and Living Room of House 2) are shown in Appendix B.

Table 5.3: Minimum sound reduction performance (dB) for the glazed elements of habitable rooms in the development

Glazing example	125	250	500	1k	2k	4k	$R_w / R_w + C_{tr}$
4/12/6mm	23	22	27	38	40	41	35/29

The sound insulation requirements of the glazing are applicable to the window system as a whole, including frames, mullions and panels. They are based on BS EN ISO 10140: 2021 "Acoustics – Laboratory measurement of sound insulation of building elements" and rated in accordance with BS EN ISO 717-1:2020 "Acoustics – Rating of sound insulation in buildings and of building elements Part 1. Airborne sound insulation".

The proposed external wall, glazing and ventilation façade elements should ensure that appropriate BS 8233 internal noise levels are achieved.

6 OVERHEATING AND VENTILATION

A qualitative assessment has been undertaken in this section to determine whether openable windows can be used to provide thermal comfort to the proposed dwellings.

Predicted noise levels incident on the façade of the development have been compared to the Approved Document O criteria given in Section 3.2, taking into account the assumed sound reduction in internal noise levels of 13 dB provided by a partially open window.

Table 6.1: Predicted internal night-time noise levels (free-field), dB

House	Room	2m acoustic fence			3m acoustic fence		
		Night ($L_{Aeq,8hrs}$)	Night (L_{Amax})	Meets target ADO Level	Night ($L_{Aeq,8hrs}$)	Night (L_{Amax})	Meets target ADO Level
1	Bedroom 1	36	41	Y	36	41	Y
	Bedroom 2	44	58	N	41	54	N
	Bedroom 3	43	57	N	40	53	Y
	Bedroom 4	44	58	N	42	55	N
2	Bedroom 1	35	45	Y	35	45	Y
	Bedroom 2	45	59	N	42	56	N
	Bedroom 3	47	59	N	46	57	N
	Bedroom 4	47	58	N	46	58	N

The table above shows that for both scenarios, Bedroom 1 in both houses can rely on open windows to control overheating according to Approved Document O requirements. However, Bedrooms 2, 3 and 4 in both houses will require an alternative form of cooling (such as cooling modules integrated into the MVHR systems or ceiling fans).

7 EXTERNAL AMENITY AREA NOISE ASSESSMENT

BS 8233 states that “it is desirable that the external noise level does not exceed 50dB $L_{Aeq,T}$, with an upper guideline value of 55dB $L_{Aeq,T}$ which would be acceptable in noisier environments”.

The proposed site plan shows that both properties will contain private gardens, which are considered amenity areas. Given that the proposed development is neighboured by transport infrastructure, BS8233’s upper external noise limit of 55 dB $L_{Aeq,T}$ has been considered appropriate for our assessment.

Figure 7.1 shows the noise contour across the site with a 2m acoustic fence calculated at a height of 1.5 m. It can be seen that most of the garden area, with the exception of small areas directly to the sides of the houses, will experience external noise levels above the upper guideline limit of 55 dB $L_{Aeq,16hr}$ recommended in BS 8233.

Figure 7.1: External amenity area noise contour (predicted $L_{Aeq,16hr}$ at 1.5 metres above ground level) – 2m acoustic fence



BS8233:2014 also states that “These guideline values may not be achievable in all circumstances where development might be desirable. In such a situation, development should be designed to achieve the lowest practicable noise levels in these external amenity spaces but should not be prohibited.”

Figures 7.2 and 7.3 demonstrate that, with the inclusion of a 3m solid acoustic fence, the noise levels are reduced such that a much greater proportion of the rear gardens meet the upper guideline limit of 55 dB $L_{Aeq,16hr}$. The fencing should have no gaps and have a minimum surface mass of 10 kg/m². The model does not take into account any additional screening by individual garden fences, or screening provided by fences to nearby premises which would only serve to further reduce noise levels in the gardens.

With such mitigation measures, it may be considered that the lowest practicable noise levels are achieved across the site.

Figure 7.2: External amenity area noise contour (predicted $L_{Aeq,16hr}$ at 1.5 metres above ground level) – 3m acoustic fence



Figure 7.3: External amenity area noise contour (predicted $L_{Aeq,16hr}$ at 1.5 metres above ground level) – extended 3m acoustic fence



8 CONCLUSIONS

Anderson Acoustics Ltd was commissioned by Ideal Cars Sussex Limited in April 2026 to provide acoustic consultancy services to provide a noise impact assessment to support a planning application for a residential development on the land at Clyst Hayes, Brook Lane, RH12 4SB.

The outcome of our noise assessment is summarised below.

- An on-site survey was carried out to understand ambient noise levels. The noise environment was dominated by constant noise from the nearby A-road however higher average and maximum noise levels were measured due to individual train pass-bys on the railway to the north.
- Mechanical ventilation with heat recovery is proposed throughout the development. Therefore, noise ingress through the ventilation system is considered negligible.
- In order to meet the internal ambient noise levels in habitable rooms recommended by BS 8233, double glazing with a minimum sound reduction performance of 29 dB $R_w + C_{tr}$ should be installed throughout.
- Open windows may not be relied on to control overheating in all bedrooms with windows on the west façade (Bedrooms 2, 3 and 4 in both houses). Alternative means of overheating control will need to be used, keeping windows closed due to external noise levels.
- Predicted noise levels across the majority of the external amenity areas will meet the desirable guideline level in BS 8233 of 55 dB $L_{Aeq,T}$ with the use of 3m solid fence along the western boundary of the property.

The outcome of our assessment demonstrates that planning permission should not be refused on noise grounds subject to the recommendations made in this report.

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APPENDIX A

ENVIRONMENTAL NOISE SURVEY DETAILS

Figure A.1: Unattended Survey Results (Road – MP1)

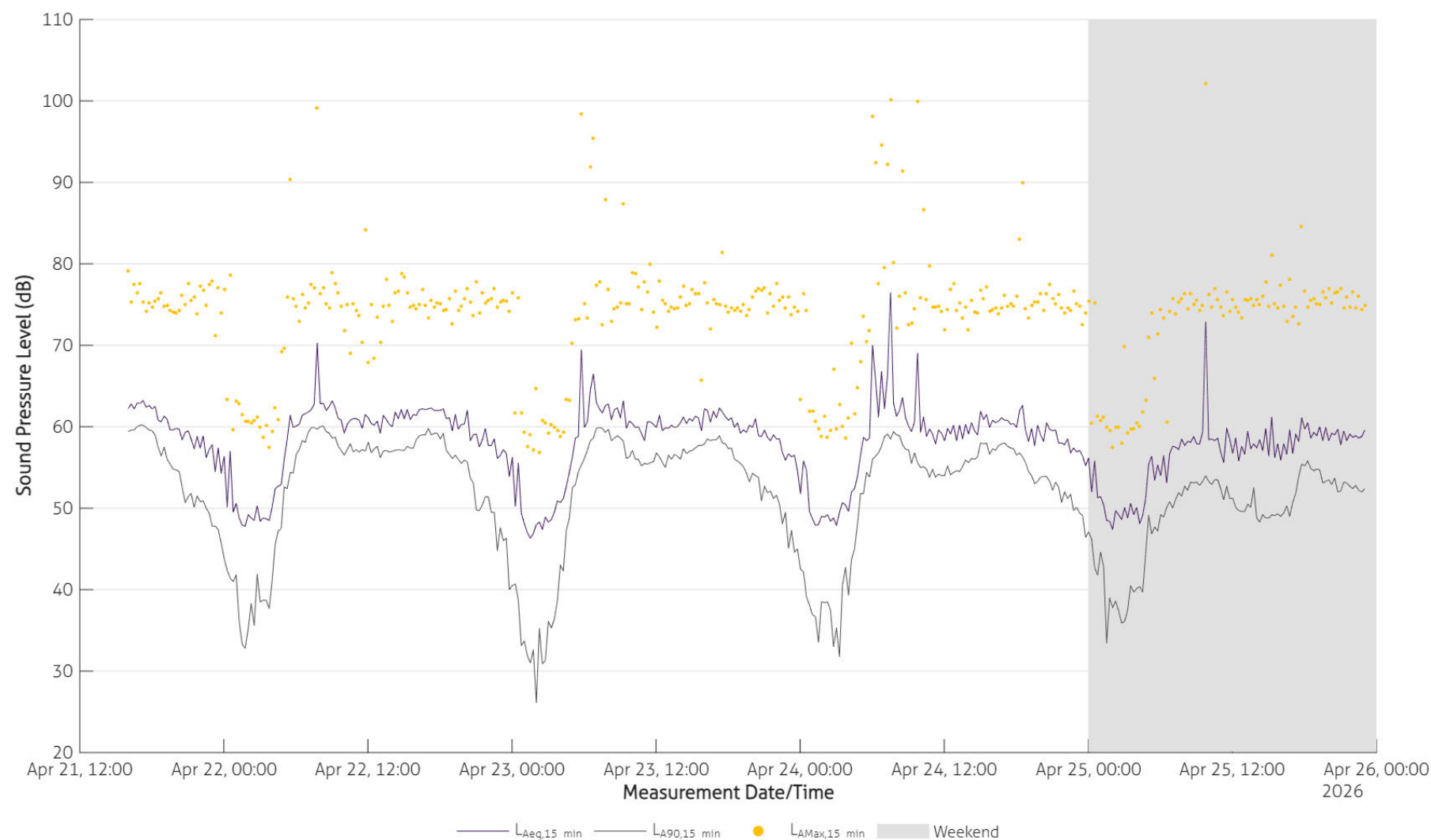
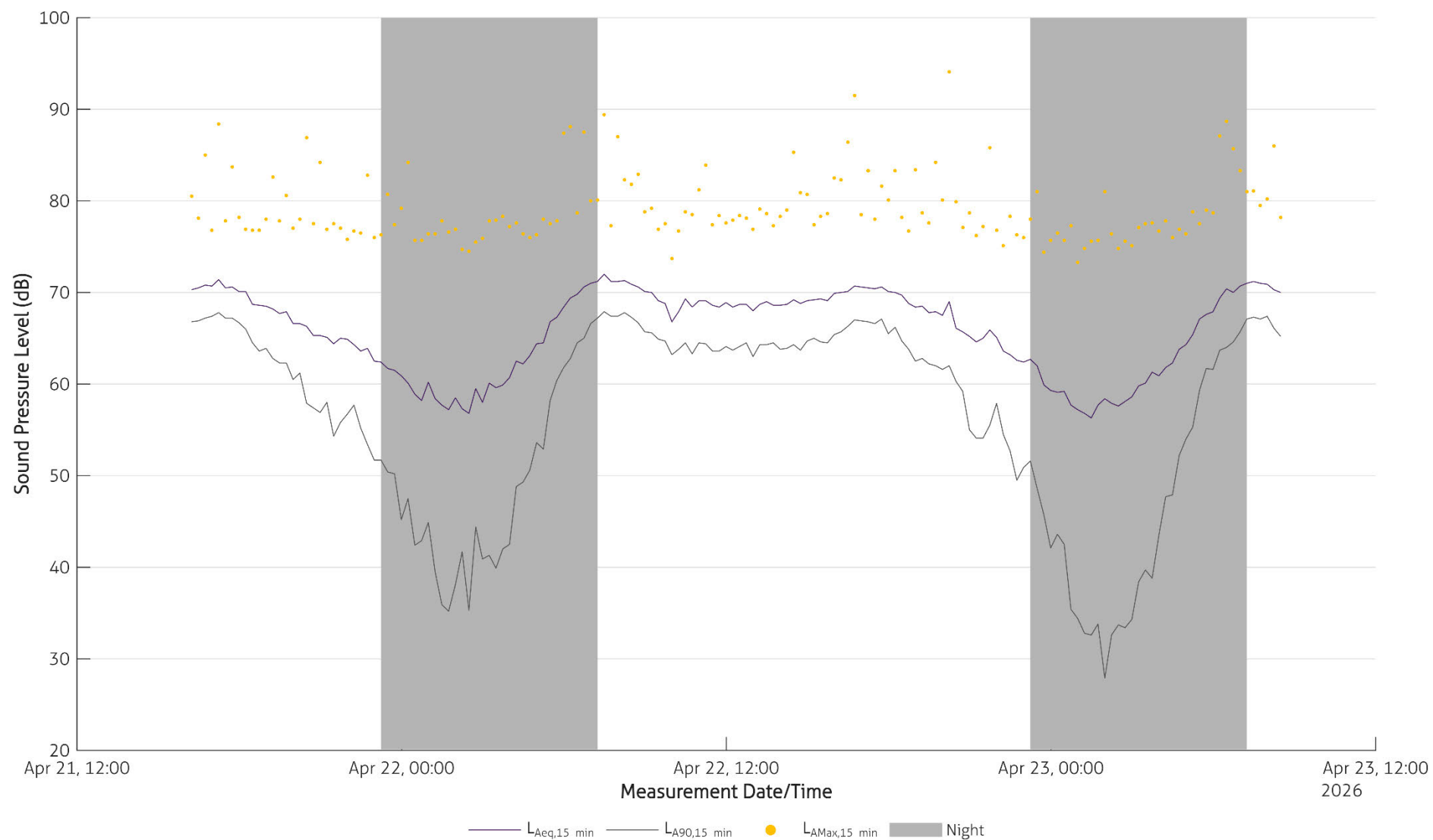


Figure A.2: Unattended Survey Results (Rail – MP2)





APPENDIX B

NOISE BREAK-IN CALCULATIONS

Figure B.1: Worst case noise break-in calculations – House 2, Bedroom 3, 2m acoustic fence

Job name:

Clyst Hayes

Job no.:

9007

Façade:

House 2 Bedroom 3 - 2m acoustic fence

RESULT SUMMARY:

L_{Aeq} Day

65

Predicted Internal Level:

28

dB L_A

Criterion:

35.0

dB L_A

Difference:

-7

dB L_A

RESULT SUMMARY:

L_{Aeq} Night

60

Predicted Internal Level:

22

dB L_A

Criterion:

30.0

dB L_A

Difference:

-8

dB L_A

RESULT SUMMARY:

L_{Amax} Nig

72

Predicted Internal Level:

31

dB L_A

Criterion:

45.0

dB L_A

Difference:

-14

dB L_A

SOUND INSULATION BY ELEMENT

Formula

Description

Data

Units

Octave band centre frequency, Hz

125

250

500

1000

2000

4000

dB(A)

Bedroom

Reverberation Time

0.5

s

0.5

0.5

0.5

0.5

0.5

0.5

Receiver Room Volume

47.8

m³

Element 1

L1

Wall

Rw + Ctr

Leq

58

56

57

62

56

56

65

-R

260kg/m² brick wall

-

36

40

41

45

52

52

+10logS

Element Area

14

14

14

14

14

14

-10logA

where A=0.16V/T

12

12

12

12

12

12

#N/A

3

3

3

3

3

3

=L2

27

21

21

22

9

9

24

L2tot

Running total

27

21

21

22

9

9

24

Element 2

L1

Glazing

Rw + Ctr

Leq

58

56

57

62

56

56

-R

SGG 4/12/6mm

29

23

22

27

38

40

41

+10logS

Element Area

3

3

3

3

3

3

-10logA

where A=0.16V/T

12

12

12

12

12

12

#N/A

3

3

3

3

3

3

=L2

30

29

25

19

11

10

26

L2tot

Running total

31

29

26

24

13

12

28

Element 1

L1

Wall

Rw + Ctr

Leq

51

49

51

56

51

54

60

-R

260kg/m² brick wall

-

36

40

41

45

52

52

+10logS

Element Area

14

14

14

14

14

14

-10logA

where A=0.16V/T

12

12

12

12

12

12

#N/A

3

3

3

3

3

3

=L2

20

14

15

16

4

7

18

L2tot

Running total

20

14

15

16

4

7

18

Element 2

L1

Glazing

Rw + Ctr

Leq

51

49

51

56

51

54

-R

SGG 4/12/6mm

29

23

22

27

38

40

41

+10logS

Element Area

3

3

3

3

3

3

-10logA

where A=0.16V/T

12

12

12

12

12

12

#N/A

3

3

3

3

3

3

=L2

23

22

19

13

6

8

20

L2tot

Running total

24

22

20

18

8

10

22

Element 1

L1

Wall

Rw + Ctr

Leq

61

61

58

59

60

70

72

-R

260kg/m² brick wall

-

36

40

41

45

52

52

+10logS

Element Area

14

14

14

14

14

14

-10logA

where A=0.16V/T

12

12

12

12

12

12

#N/A

3

3

3

3

3

3

=L2

30

26

22

19

13

23

27

L2tot

Running total

30

26

22

19

13

23

27

Element 2

L1

Glazing

Rw + Ctr

Leq

61

61

58

59

60

70

-R

SGG 4/12/6mm

29

23

22

27

38

40

41

+10logS

Element Area

3

3

3

3

3

3

-10logA

where A=0.16V/T

12

12

12

12

12

12

#N/A

3

3

3

3

3

3

=L2

33

34

26

16

15

24

30

L2tot

Running total

34

34

27

21

17

26

31

Figure B.2: Worst case noise break-in calculations – House 2, Living Room, 2m acoustic fence

Job name:

Clyst Hayes

Job no.:

9007

Façade:

House 2 Living Room - 2m acoustic fence

RESULT SUMMARY:

L_{Aeq} Day

59

Predicted Internal Level:

23

dB L_A

Criterion:

35.0

dB L_A

Difference:

-12

dB L_A

SOUND INSULATION BY ELEMENT

Formula

Description

Data

Units

Bedroom

Reverberation Time

0.5

s

Receiver Room Volume

92.8

m³

Element 1

L1

Wall

Rw + Ctr

Leq

-R

260kg/m² brick wall

-

+10logS

Element Area

29.1

m²

-10logA

where A=0.16V/T

#N/A

=L2

L2tot

Running total

Element 2

L1

Glazing

Rw + Ctr

Leq

-R

SGG 4/12/6mm

29

+10logS

Element Area

6.6

m²

-10logA

where A=0.16V/T

#N/A

=L2

L2tot

Running total

52

50

51

56

50

50

59

36

40

41

45

52

52

15

15

15

15

15

15

15

15

15

15

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15

3

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3

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14

1

1

16

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1

1

16

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50

51

56

50

50

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