



Proposed Karting Track Noise Impact Assessment

Site:

Cirencester Road

Down Ampney

Cirencester

GL7 5QF

For:

Cotswold Driving Experiences Ltd

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1 Introduction

1.1 Overview

Parker Acoustics Ltd (PAL) has been commissioned by Cotswold Driving Experiences Ltd to undertake a noise impact assessment for a proposed karting track at an existing Rally and Off-Road Driving School off Cirencester Road, Down Ampney, Cirencester, GL7 5QF (hereafter referred to as 'the site').

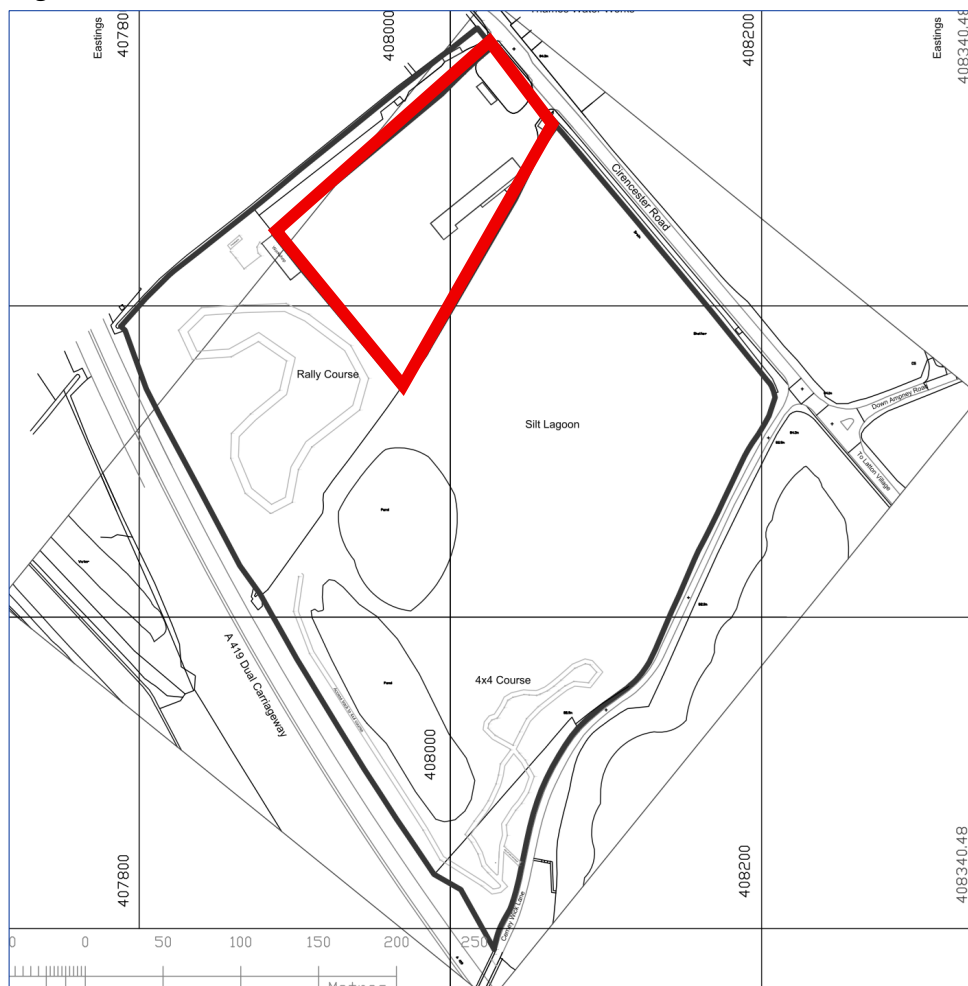
The report has been prepared for Cotswold Driving Experiences Ltd for the sole purpose described above and no extended duty of care to any third party is implied or offered. Third parties referring to the report should consult Cotswold Driving Experiences Ltd and PAL as to the extent to which the findings may be appropriate for their use.

A glossary of acoustic terms used in the main body of the text is contained in Appendix A.

1.2 Site Description

The site is located to the south-west of Cirencester Road in Down Ampney, as shown (highlighted in red) in Figure 1.1.

Figure 1.1: Site Location



The site is bound by:

- Cirencester Road to the north-east
- The GwynneSpeed / Cotswold Driving Experiences site in all other directions

The proposal is for the introduction of a Karting track (accommodating ≤ 10 no. karts per session) to the north-east of the established rally course.

The proposed hours of operation are understood to be 09:00 – 17:00 hrs seven days a week.

The nearest noise sensitive receptor (NSR) to the proposal is a dwelling (currently unoccupied) on Cirencester Road circa 53 metres to the north.

2 Noise Criteria and Assessment Guidance

2.1 Planning Policy

National Planning Policy Framework

The National Planning Policy Framework (NPPF)¹ was updated in December 2024 and sets out the Government's planning policies for England and how these are expected to be applied.

Where issues of noise impact are concerned the NPPF provides brief guidance in paragraph 187 where it states that planning policies and decisions should contribute to and enhance the natural and local environment by:

'preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of.....noise pollution'.

Paragraph 198 advises that:

'Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development. In doing so they should.....mitigate and reduce to a minimum potential adverse impacts resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life'.

The NPPF also refers to the 2010 DEFRA publication, the Noise Policy Statement for England (NPSE) which reinforces and supplements the NPPF.

Noise Policy Statement for England

The Noise Policy Statement for England² (NPSE) sets out the long-term vision of promoting good health and a good quality of life through the effective management of noise within the context of Government policy on sustainable development. This long-term vision is supported by the following aims:

- Avoid significant adverse impacts on health and quality of life
- Mitigate and minimise adverse impacts on health and quality of life
- Where possible, contribute to the improvement of health and quality of life

The NPSE describes the following levels at which noise impacts may be identified:

- NOEL – No Observed Effect Level. This is the level below which no effect can be detected. In simple terms, below this level, there is no detectable effect on health and quality of life due to the noise
- LOAEL – Lowest Observed Adverse Effect Level. This is the level above which adverse effects on health and quality of life can be detected
- SOAEL – Significant Observed Adverse Effect Level. This is the level above which significant adverse effects on health and quality of life occur

According to the explanatory notes in the statement, where a noise level falls between the lowest observable adverse effect level (LOAEL) and a level which represents a significant observable adverse effect level (SOAEL):

¹ National Planning Policy Framework. Ministry of Housing, Communities and Local Government (2024)

² Noise Policy Statement for England. Government Department for Environment, Food and Rural Affairs (2010)

'...all reasonable steps should be taken to mitigate and minimise adverse effects on health and quality of life whilst also taking into consideration the guiding principles of sustainable development. This does not mean that such effects cannot occur.'

Planning Practice Guidance on Noise

Planning Practice Guidance³ (PPG) is an online resource providing additional guidance and elaboration on the NPPF. It advises that:

'Plan making and decision making need to take into account the acoustic environment and in doing so consider:

- whether or not a significant adverse effect is occurring or likely to occur;*
- whether or not an adverse effect is occurring or likely to occur; and*
- whether or not a good standard of amenity can be achieved.'*

In line with the Explanatory Note of the NPSE, the PPG references the LOAEL and SOAEL in relation to noise impact. It also provides examples of outcomes that could be expected for a given perception level of noise, plus actions that may be required to bring about a desired outcome. However, in line with the NPSE, no objective noise levels are provided for LOAEL or SOAEL although the PPG acknowledges that:

'...the subjective nature of noise means that there is not a simple relationship between noise levels and the impact on those affected. This will depend on how various factors combine in any particular situation'.

Table 2.1 summarises the PPG noise exposure hierarchy.

Table 2.1: PPG Noise Exposure Hierarchy

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

³ Planning Practice Guidance on Noise (<https://www.gov.uk/government/collections/planning-practice-guidance>). Ministry of Housing, Communities and Local Government (updated 2019)

With regard to planning policies and noise standards, the PPG advises that:

'Plans may include specific standards to apply to various forms of proposed development and locations in their area. Care should be taken, however, to avoid these being applied as rigid thresholds, as specific circumstances may justify some variation being allowed.'

2.2 Assessment Guidance

IEMA Guidelines for Environmental Noise Impact Assessment

The Guidelines for Environmental Noise Impact Assessment⁴ provide recommendations for approaches to noise impact assessment in the context of the Environmental Impact Assessment (EIA) process. However, the principles in the guidelines are relevant to all types of project where noise effects are likely to occur, regardless of size including small developments which are not screened as EIA development.

The guidelines provide a number of examples regarding approach to impact assessment. Table 2.2 replicates an example of noise impact magnitude descriptors used to assess increases in ambient noise levels due to increased local vehicle noise. This has been adopted in this instance as a means of assessing potential changes in ambient noise level due to the additional contributions associated with vehicles using the karting track.

Table 2.2: Example Noise Impact Magnitude Descriptors

Relative Change in Ambient Level (dB L _{Aeq,T})	Scale of Change	Impact Magnitude
≤ 2.9	Negligible	Negligible
3 – 4.9	Small	Low
5 – 9.9	Medium	Moderate
≥ 10	Large	High

⁴ Guidelines for Environmental Noise Impact Assessment, Institute of Environmental Management and Assessment (2014)

3 Baseline Noise Survey

3.1 Methodology

Baseline noise monitoring was carried out between Thursday 28th May and Monday 1st June 2026 to determine prevailing ambient noise levels at a position representative of the nearest noise sensitive receptor (NSR) to the site.

The adopted noise monitoring positions (shown as 'X' in Appendix B) was at the boundary of the nearest NSR to the north of the site.

Measurements were undertaken using a Norsonic Nor 118 Class 1 integrating sound level meter⁵ connected to a windshield covered microphone positioned in 'free field' conditions (i.e. > 3.5 metres from a vertical reflective surface).

The measurement system calibration was verified immediately before and after the survey using a Norsonic Nor 1255 portable calibrator⁶. No drift in calibration level was noted.

Measurements consisted of A-weighted broadband parameters including L_{Aeq} .

3.2 Weather Conditions

An onsite portable weather station⁷ was installed circa 16 metres to the north-west of the noise monitoring position.

Appendix C presents charts to show windspeed and rainfall at the site during the baseline noise survey.

It can be seen that no periods of adverse weather occurred (e.g. rainfall or wind speeds > 5 m/s); therefore, weather conditions were appropriate for noise monitoring throughout the entire survey.

3.3 Summary of Measured Baseline Noise Data

Figure 3.1 presents the noise data time history measured at the baseline noise survey position.

⁵ Serial number 31839; UKAS calibration certificate number U52828 valid until 3rd December 2027

⁶ Serial number 125525543; UKAS calibration certificate number U52830 valid until 3rd December 2026

⁷ Davis Vantage Vue 6250UK Portable Weather Station

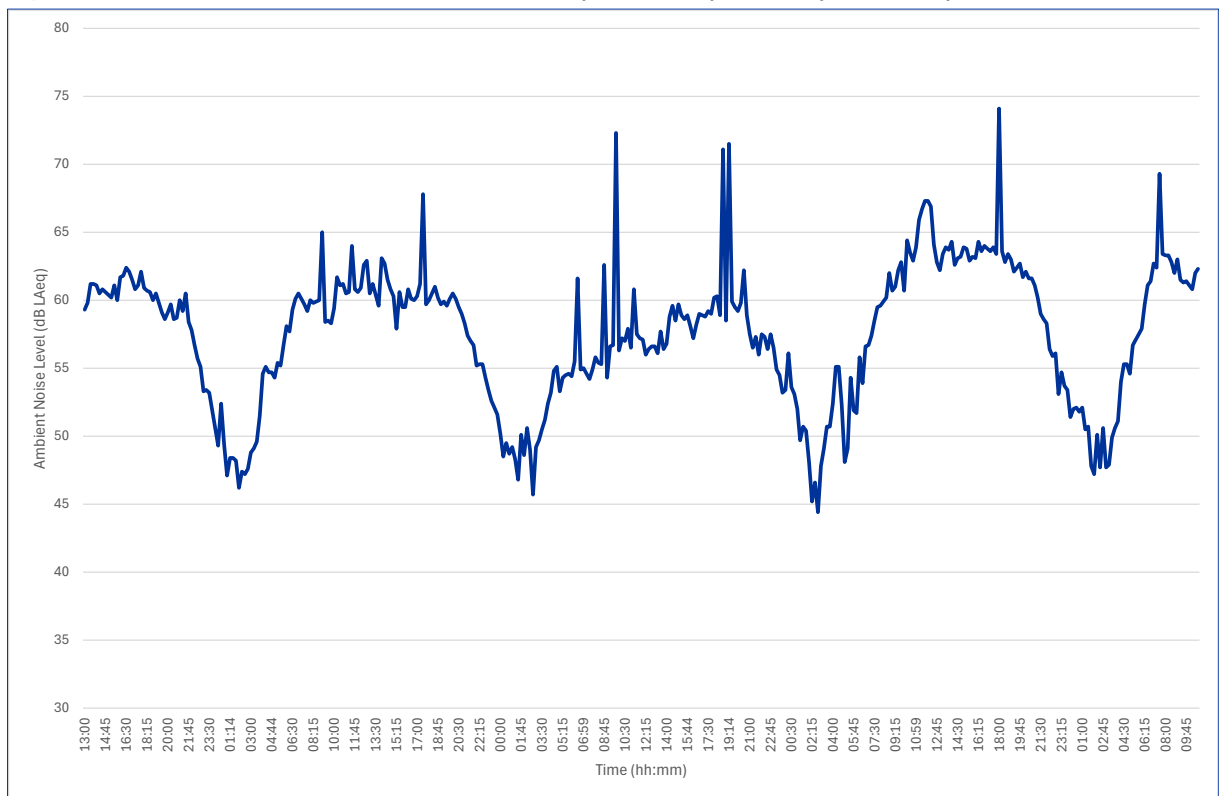
Figure 3.1: Measured Baseline Noise Time History, Thursday 28th May – Monday 1st June 2026


Table 3.1 presents a summary of the baseline noise data, for each day / night period, rounded to the nearest decibel.

Table 3.1: Summary of Measured Baseline Noise Data

Date (Period)	Time (hh:mm)	Ambient Noise Level (dB LAeq, 15min)		Weather Conditions
		Range	Average*	
28/05/2026 (Day)	13:00 – 23:00	55 – 62	60	Dry; windspeed 0 – 2 m/s
28/05/2026 – 29/05/2026 (Night)	23:00 – 07:00	46 – 60	54	Dry; windspeed 0 – 1 m/s
29/05/2026 (Day)	07:00 – 23:00	54 – 68	61	Dry; windspeed 0 – 1 m/s
29/05/2026 – 30/05/2026 (Night)	23:00 – 07:00	46 – 62	53	Dry; windspeed 0 m/s
30/05/2026 (Day)	07:00 – 23:00	54 – 72	61	Dry; windspeed 0 – 1 m/s
30/05/2026 – 31/05/2026 (Night)	23:00 – 07:00	44 – 57	53	Dry; windspeed 0 – 1 m/s
31/05/2026 (Day)	07:00 – 23:00	56 – 74	64	Dry; windspeed 0 – 2 m/s
31/05/2026 – 01/06/2026 (Night)	23:00 – 07:00	47 – 61	55	Dry; windspeed 0 – 1 m/s
01/06/2026 (Day)	07:00 – 11:00	61 – 69	63	Dry; windspeed 0 – 1 m/s

* Derived via logarithmic average of the data set

3.4 Analysis

During survey commissioning and decommissioning, it was noted that baseline noise levels were predominantly due to heavy road traffic on the A419 dual carriageway to the south-west of the site.

Other noise sources included road traffic on Cirencester road to the north-east of the site, occasional vehicle movements to and from the site (i.e. customers arriving to and leaving from the Rally and Off-Road Driving School) and birdsong.

The proposed hours of operation are understood to be 09:00 – 17:00 hrs seven days a week; therefore, all data measured outside of these periods have been excluded from the analysis set out below:

- Ambient noise levels were between 54 – 72 dB $L_{Aeq (15min)}$
- Average⁸ ambient noise levels were 62 dB $L_{Aeq (15min)}$

⁸ Determined by logarithmic average of the data

4 Source Noise Levels

4.1 Karting Noise Survey

Sample noise measurements of karting activity were acquired on Thursday 28th May 2026 prior to the commissioning of the baseline noise survey.

Measurements were undertaken using a Norsonic Nor 140 Class 1 integrating sound level meter⁹ connected to windshield covered microphone positioned in 'free field' conditions (i.e. > 3.5 metres from a vertical reflective surface).

The measurement system calibration was verified immediately before and after the measurements using a Norsonic Nor 1255 portable calibrator¹⁰. No drift in calibration level was noted.

Measurements consisted of A-weighted broadband parameters including L_{Aeq} at various distances from the proposed track, as shown in Figure 4.1.

Figure 4.1: Measurement of Karting Noise



Table 4.1 presents a summary of the measured noise data.

⁹ Serial number 1404079; UKAS calibration certificate number U51064 valid until 21st May 2027

¹⁰ Serial number 125525543; UKAS calibration certificate number U52830 valid until 3rd December 2026

Table 4.1: Summary of Karting Noise Measurements – 28/05/2026

Time, T (hh:mm)	Measurement Distance (m)	Noise Level (dB $L_{Aeq,T}$)	Notes / Observations
12:47 – 12:48	7	67.7	Single kart using track, several laps
12:49 – 12:50	4	70.7	Single kart using track, several laps
12:51 – 12:52	5	71.3	Single kart using track, several laps
12:53 – 12:54	3	70.0	Single kart using track, several laps

4.2 Analysis

During the karting noise measurements, it was noted that the prevailing external residual noise climate (primarily due to road traffic noise from the A419 dual carriageway to the south-west) was affecting the measured noise data. With this in mind, an ambient noise measurement was also acquired once carting activity had ceased to determine a residual noise level of 59 dB $L_{Aeq,T}$.

The cumulative ambient noise levels summarised in Table 4.1 have been corrected (via logarithmic subtraction) for the influence of the residual noise levels in order to determine the specific karting noise levels. The corrected karting noise levels are presented in Table 4.2.

Table 4.2: Summary of Karting Noise Levels (Corrected for Residual Contribution)

Time, T (hh:mm)	Measurement Distance (m)	Noise Level (dB $L_{Aeq,T}$)	Notes / Observations
12:47 – 12:48	7	67.1	Single kart using track, several laps
12:49 – 12:50	4	70.4	Single kart using track, several laps
12:51 – 12:52	5	71.0	Single kart using track, several laps
12:53 – 12:54	3	69.6	Single kart using track, several laps

Table 4.3 presents the octave band ambient noise spectrum of karting noise, acquired at 7 metres distance from the karting track, after corrections have been applied for the influence of residual noise present at the time of the measurement.

Table 4.3: Source Noise Level Spectrum at 7 metres

Source	dB Level ($L_{eq,T}$) at Octave Band Centre Frequency (Hz)									dB Weighted Level ($L_{Aeq,T}$)
	31.5	63	125	250	500	1k	2k	4k	8k	
Single kart using track, several laps	64	68	69	66	64	64	58	50	45	67.1

4.3 Correction for Number of Karts

Tables 4.2 and 4.3 show that karting noise levels were circa 67 dB $L_{Aeq,T}$ at a distance of 7 metres from the track; however, only one kart was utilised during this measurement exercise.

The proposal is such that up to 10 no. karts would be using the track at any one time.

Based on the above, a correction of + 10 dB should be applied to the noise levels presented in Table 4.3 to account for this resulting in a karting noise level of 77 dB $L_{Aeq,T}$ at a distance of 7 metres from track¹¹.

¹¹ + 10 dB = 10 log (n); where n = 10 units

5 Karting Noise Assessment

5.1 Propagation

Noise propagation, from the proposed karting area, has been calculated using the dBMap¹² noise modelling software.

A line source was entered into the location of the circuit to form a 'figure of eight' shape in an area roughly central to the proposed area shown in Figure 1.2. The sound power level of the line source was adjusted such that calculated karting noise levels equalled 77 dB $L_{Aeq,T}$ at a distance of 7 metres from track as shown in Figure 5.1.

Figure 5.1: Noise Map Showing Immediate Propagation from Track

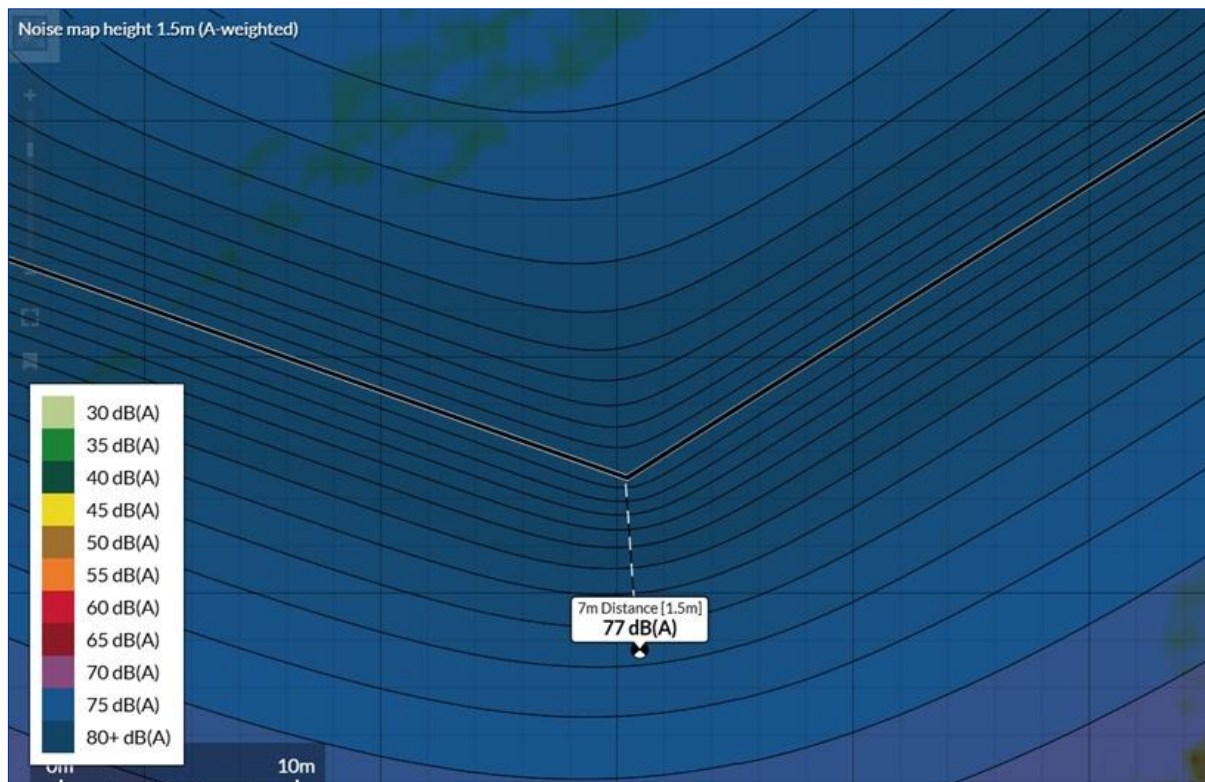


Figure 5.2 shows noise propagation from the karting track at the nearest NSR.

For a robust assessment, preliminary calculations do not include barrier attenuation.

¹² <http://dbmap.net>

Figure 5.2: Noise Map Showing Propagation from Karting Track to NSR

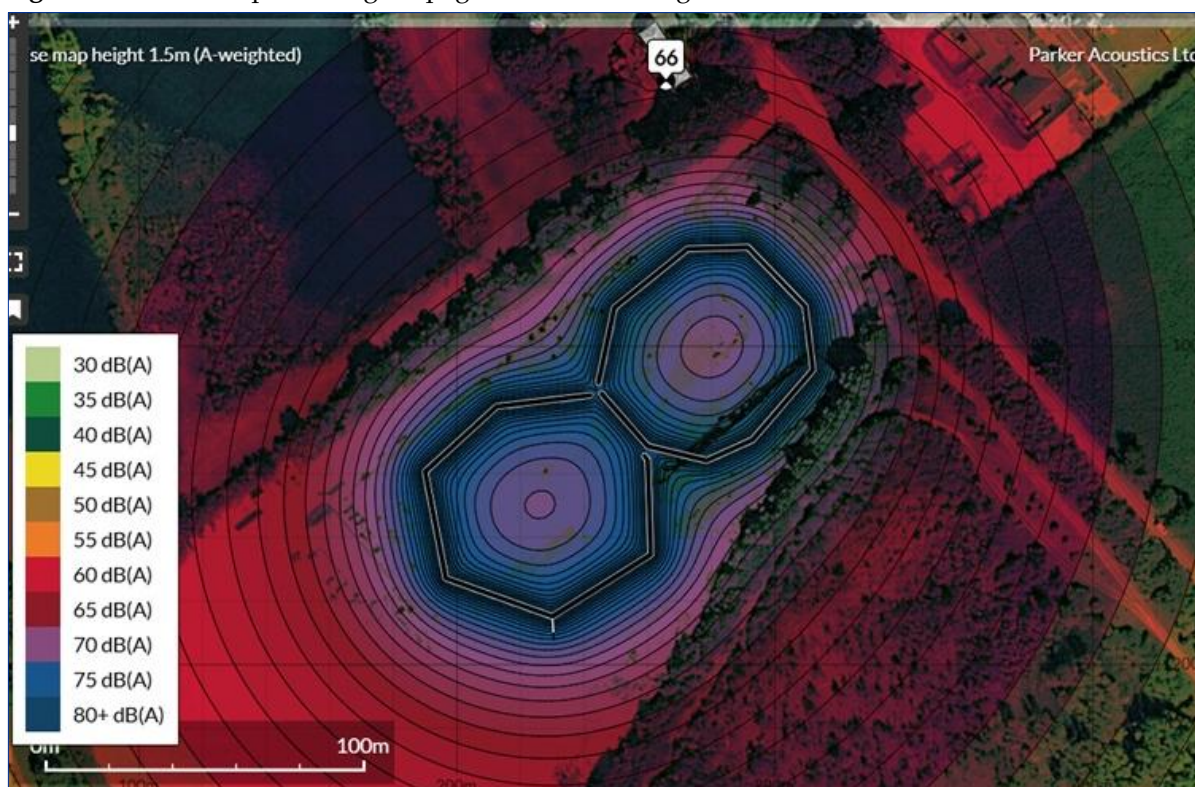


Figure 5.2 shows that the calculated karting noise levels are 66 dB $L_{Aeq,T}$ at the nearest NSR.

5.2 Assessment

Cumulative ambient noise levels have been derived via logarithmic addition of existing ambient noise levels (detailed in Section 3.4) to the additional contributions from the proposal (detailed in Section 5.1). The increase in ambient noise levels has been determined by comparing the cumulative levels (i.e. existing ambient plus proposal) against the prevailing ambient noise levels, as shown in Table 5.1.

Table 5.1: Cumulative Ambient Noise Levels

Average Ambient Noise Level (dB $L_{Aeq,T}$)	Karting Noise Level (dB $L_{Aeq,T}$)	Cumulative Noise Level (dB $L_{Aeq,T}$)	Increase in Ambient Noise Level (dB $L_{Aeq,T}$)
62	66	67	+ 5

With reference to Table 2.2 and the example noise impact magnitude descriptors, an increase of 5 dB $L_{Aeq,T}$ would be considered 'medium' resulting in a 'moderate' noise impact.

With reference to the PPG Noise Exposure Hierarchy presented in Table 2.1, the above may be noticeable and intrusive resulting in an 'Observed Adverse Effect' for which the recommended action is to 'mitigate and reduce to a minimum'.

5.3 Mitigation

In order to minimise noise propagation to the nearest NSR, it is recommended that a 2.6 metre high acoustic barrier is erected at the north-western boundary of the proposed karting area, as shown (in red) in Figure 5.3.

Figure 5.3: Location of Recommended Barrier



The barrier should be constructed of solid, impermeable material with a minimum mass per unit area of 10 kg/m^2 (e.g. masonry or close boarded timber fencing) and be well-sealed to the ground via the use of gravel boards. Alternatively, an earth bund can be used.

The noise propagation calculation from the proposed karting track has been revisited based on the assumption that the above recommendation can be implemented. Figure 5.4 shows the mitigated noise propagation to the nearest NSR.

Figure 5.4: Noise Map Showing Mitigated Propagation from Karting Track to NSR

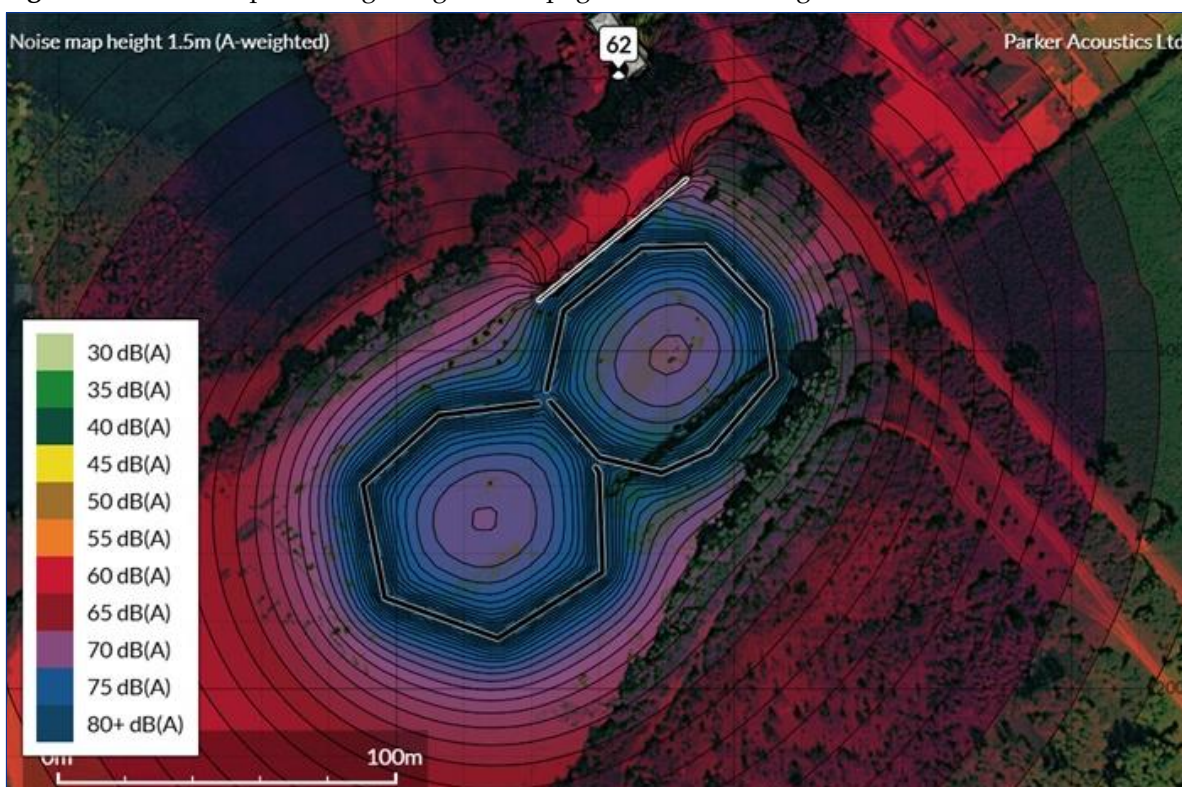


Figure 5.4 shows that the calculated mitigated karting noise levels are 62 dB $L_{Aeq,T}$ at the nearest NSR.

As before, cumulative ambient noise levels have been derived via logarithmic addition of existing ambient noise levels (detailed in Section 3.4) to the additional but mitigated contributions from the proposal (shown in Figure 5.4). The increase in ambient noise levels has been determined by comparing the cumulative levels (i.e. existing ambient plus proposal) against the prevailing ambient noise levels, as shown in Table 5.2.

Table 5.2: Cumulative Ambient Noise Levels (Mitigated)

Average Ambient Noise Level (dB $L_{Aeq,T}$)	Mitigated Karting Noise Level (dB $L_{Aeq,T}$)	Cumulative Noise Level (dB $L_{Aeq,T}$)	Increase in Ambient Noise Level (dB $L_{Aeq,T}$)
62	62	65	+ 3

With reference to Table 2.2 and the example noise impact magnitude descriptors, an increase of 3 dB $L_{Aeq,T}$ would be considered 'small' resulting in a 'low' noise impact.

With reference to the PPG Noise Exposure Hierarchy presented in Table 2.1, the above may be noticeable but not intrusive resulting in 'No Observed Adverse Effect' for which the recommended residual action is that 'no specific measures required'.

6 Summary and Conclusions

A noise impact assessment has been performed for a proposed karting track at an existing Rally and Off-Road Driving School off Cirencester Road, Down Ampney, Cirencester, GL7 5QF.

Baseline noise monitoring was carried out between Thursday 28th May and Monday 1st June 2026 to determine prevailing ambient noise levels at a position representative of the nearest noise sensitive receptor (NSR) to the site.

Sample noise measurements of karting activity were acquired on Friday 28th May 2026 prior to the commissioning of the baseline noise survey. Using this data, noise propagation from the proposed karting activity, has been calculated at the nearest NSR.

The initial assessment has determined that there would a 'medium' increase in ambient noise levels resulting in a 'moderate' noise impact. With reference to the PPG Noise Exposure Hierarchy, this may be 'noticeable and intrusive' resulting in an 'Observed Adverse Effect' for which the recommended action is to 'mitigate and reduce to a minimum'.

Based on the above, an acoustic barrier has been recommended at the north-western boundary of the proposed karting track to minimise noise propagation the nearest NSR.

The revised assessment has determined that, where the recommended mitigation measures are implemented, there would a 'small' increase in ambient noise levels resulting in a 'low' noise impact. With reference to the PPG Noise Exposure Hierarchy, this may be noticeable but 'would not be intrusive' resulting in 'No Observed Adverse Effect' for which the recommended residual action is that 'no specific measures required'.

Appendix A – Abbreviations and Definitions

Sound Pressure Level (L_p)

The basic unit of sound measurement is the sound pressure level. As the pressures to which the human ear responds can range from 20 μPa to 200 Pa, a linear measurement of sound levels would involve many orders of magnitude. Consequently, the pressures are converted to a logarithmic scale and expressed in decibels (dB) as follows:

$$L_p = 20 \log_{10}(p/p_0)$$

Where L_p = sound pressure level in dB; p = rms sound pressure in Pa; and p_0 = reference sound pressure (20 μPa).

A-weighting

A frequency filtering system in a sound level meter, which approximates under defined conditions the frequency response of the human ear. The A-weighted sound pressure level, expressed in dB(A), has been shown to correlate well with subjective response to noise.

Human Perception of Sound

Audibility of sound covers a range of approximately 0 to 140 dB. The human ear system does not respond uniformly to sound across the detectable frequency range and consequently instrumentation used to measure noise is weighted to represent the performance of the ear, using the 'A weighting' [dB (A)]. Table A1 lists the sound pressure level in dB (A) for common situations:

Table A.1: Noise levels for Common Situations

Typical Noise Level dB(A)	Example
0	Threshold of hearing
30	Rural area at night, still air
40	Public library, refrigerator humming at 2m
50	Quiet office, no machinery Boiling kettle at 0.5m
60	Normal conversation
70	Telephone ringing at 2m Vacuum cleaner at 3m
80	General factory noise level Heavy goods vehicle from pavement
90	Powered lawn motor at operator's ear
100	Pneumatic drill at 5m
120	Discotheque – 1m in front of loudspeaker
140	Threshold of pain

Human Perception of Loudness

Because of the logarithmic nature of the decibel scale, it should be borne in mind that noise levels in dB(A) do not have a simple linear relationship. For example, 100dB(A) is not twice as loud as 50 dB(A) sound level. It has been found experimentally that changes in the average level of fluctuating sound, such as traffic noise, need to be of the order of 3 dB(A) before becoming definitely perceptible to the human ear. Data from other experiments have indicated that a change in sound level of 10 dB(A) is perceived by the average listener as a doubling or halving of loudness.

Equivalent Continuous A-weighted Sound Pressure Level ($L_{Aeq, T}$)

The value of the A-weighted sound pressure level in decibels of continuous steady sound that within a specified time interval, T , has the same mean-square sound pressure as a sound that varies with time. $L_{Aeq, 16h}$ (07:00 to 23:00 hours) and $L_{Aeq, 8h}$ (23:00 to 07:00 hours) are used to qualify daytime and night time noise levels.

$L_{A10, T}$

The A-weighted sound pressure level in decibels exceeded for 10% of the measurement period, T. $L_{A10, 18h}$ is the arithmetic mean of the 18 hourly values from 06:00 to 24:00 hours.

 $L_{A90, T}$

The A-weighted sound pressure level of the residual noise in decibels exceeded 90% of a given time interval, T. L_{A90} is typically taken as representative of background noise.

 $L_{AF \max}$

The maximum A-weighted noise level recorded during the measurement period. The subscript 'F' denotes fast time weighting, slow time weighting 'S' is also used.

Single Event Level / Sound Exposure Level (SEL or L_{AE})

The energy produced by a discrete noise event averaged over one second, regardless of event duration. This allows for comparison between different noise events which occur over different lengths of time.

Weighted Sound Reduction Index (R_w)

Single number quantity which characterises the airborne sound insulation properties of a material or building element over a defined range of frequencies (R_w is used to characterise the insulation of a material or product that has been measured in a laboratory).

Appendix B – Baseline Noise Monitoring Position

