


**TOOWOOMBA REGIONAL COUNCIL**  
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Assessment Manager

acousticworks)))

Proposed Retirement Facility  
420-462 Hermitage Road  
Cotswold Hills

**ACOUSTIC REPORT**



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Gemlife  
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Reference:  
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## 1. Introduction

This report is in response to a request by Gemlife for an updated environmental and road traffic noise assessment of a proposed retirement facility to be located at 420-462 Hermitage Road, Cotswold Hills. This report has been revised based on a new site layout. To facilitate the assessment, unattended noise monitoring was conducted to determine road traffic noise impacts and verify the acoustic model. Based on the outcomes of the assessment, recommendations for acoustic treatments are specified.

## 2. Site Description

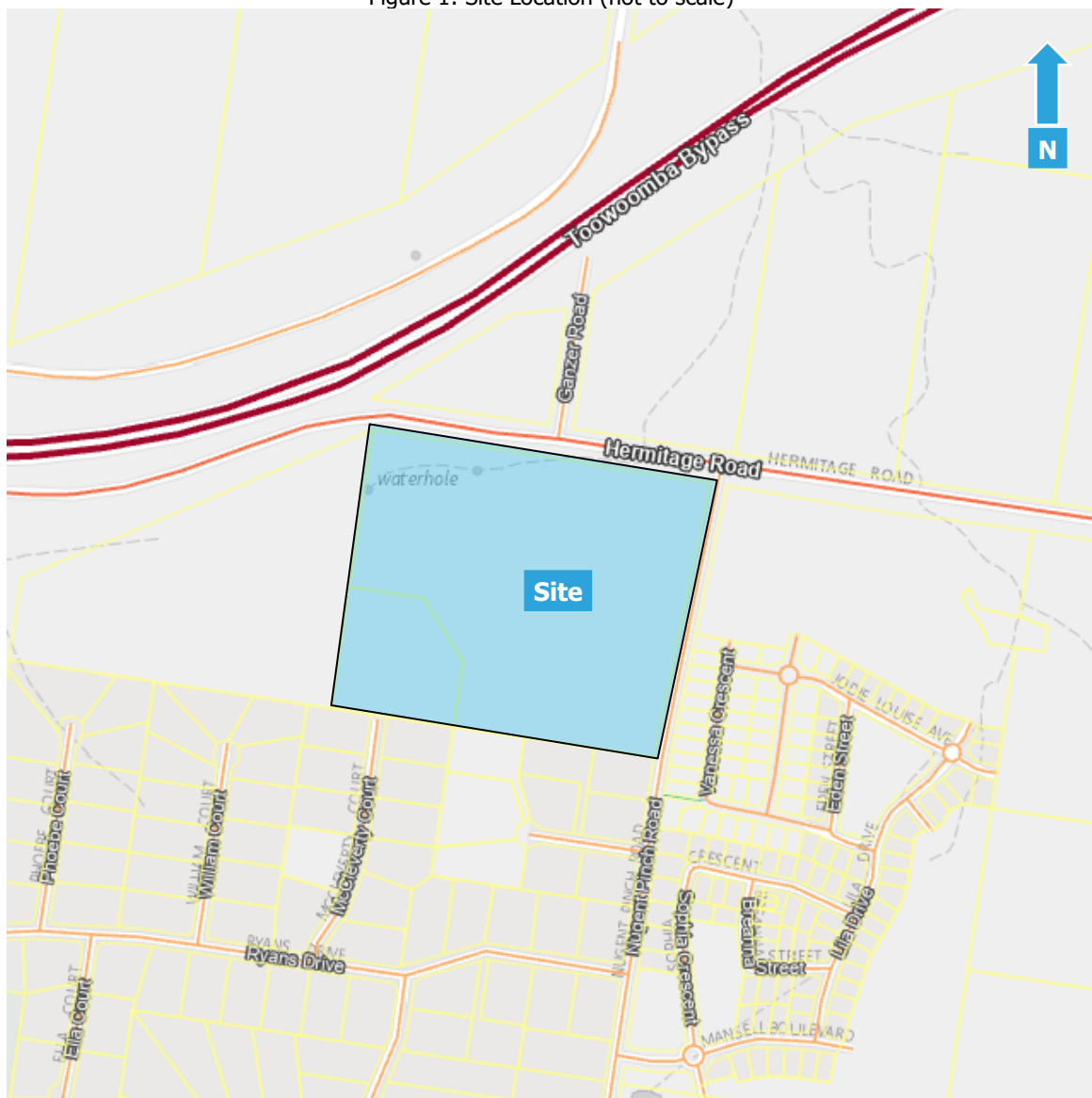
### 2.1 Site Location

The site is described by the following:

420-462 Hermitage Road, Cotswold Hills  
Lot 1 and 2 on SP339842

Refer to Figure 1 for site location.

Figure 1: Site Location (not to scale)



A comprehensive site survey was conducted on the 5<sup>th</sup> February 2024 and identified the following:

- a) The site is currently vacant.
- b) The surrounding area consists of residential land uses.
- c) Nugent-Pinch Road is located adjacent the eastern site boundary.
- d) Hermitage Road is located adjacent the northern site boundary.
- e) The Toowoomba Bypass is located approximately 70 metres north of the site.

## 2.2 Proposal

The proposal seeks to construct a retirement facility, consisting of the following:

- Total site area of 142,205 m<sup>2</sup>.
- 294 retirement units, clubhouse, 3 tennis courts, lawn bowls court, dog run area, manager's unit and outdoor recreation areas.
- 71 car parking spaces and 22 RV parking spaces with site access via Nugent-Pinch Road.

Refer to the Appendices for development plans.

## 2.3 Acoustic Environment

The surrounding area is primarily affected by traffic noise from the surrounding road network.

# 3. Equipment

The following equipment was used to record noise levels:

- 2 x Rion NL42 Environmental noise monitors.
- Pulsar Model 105 Ltd Sound Calibrator.

The noise monitors hold current NATA Laboratory Certification and were field calibrated before and after the monitoring period, with no significant drift from the reference signal recorded.

## 4. Receivers and Noise Measurements

### 4.1 Receiver locations

The nearest residential receiver locations were identified as follows;

1. A single storey residential dwelling is located to the north at 395 Hermitage Road.
2. Single storey residential dwellings are located to the south at 10-11 McCleverty Court, 3-7 Bonnaccorde Place and 62 Nugent-Pinch Road.
3. Single storey residential dwellings are located to the east along Vanessa Crescent.

Refer to Figure 2 for these locations.

Figure 2: Receivers and noise monitoring locations



## 4.2 Unattended Noise Monitoring

### 4.2.1 Noise Monitor A: Environmental Monitoring

A Rion NL42 environmental noise monitor was placed at 11 Lila Drive to measure ambient noise levels. The monitor was located in a free field position with the microphone approximately 1.4 metres above ground surface level. The noise monitor was set to record noise levels between 5<sup>th</sup> and 13<sup>th</sup> February 2024.

The environmental noise monitor was set to record noise levels in "A" Weighting, Fast response using 15-minute statistical intervals. Ambient noise monitoring was conducted generally in accordance with Australian Standard AS1055:2018 *Acoustics – Description and measurement of environmental noise*. Refer to Figure 2 for noise monitoring location.

### 4.2.2 Noise Monitor B: Road Traffic Monitoring

A Rion NL42 environmental noise monitor was placed at 16 Jodie Louise Avenue to measure road traffic noise levels. The monitor was located in a free field position with the microphone approximately 1.4 metres above ground surface level. The noise monitor was set to record noise levels between 5<sup>th</sup> and 13<sup>th</sup> February 2024.

The environmental noise monitor was set to record noise levels in "A" Weighting, Fast response using 1-hour statistical intervals. Ambient noise monitoring was conducted generally in accordance with Australian Standard AS2702:1984 *Acoustics – Methods for the measurement of road traffic noise*. Refer to Figure 2 for noise monitoring location.

## 5. Measured Noise Levels

The following tables present the measured noise levels from the unattended noise surveys and meteorological conditions. Any periods of inclement weather or extraneous noise were omitted from the measured data prior to determining the results.

### 5.1 Meteorological Conditions

Meteorological observations during the unattended noise monitoring survey were obtained from the Bureau of Meteorology website (<http://www.bom.gov.au/climate/data>), shown in Table 1 below.

Table 1: Meteorological Conditions – Bundaberg

Day	Date	Rainfall (mm)	Wind			
			9am		3pm	
			Speed (km/h)	Direction	Speed (km/h)	Direction
Monday	05/02/24	0	19	ENE	17	E
Tuesday	06/02/24	0	17	ENE	11	NNE
Wednesday	07/02/24	0	30	E	22	ESE
Thursday	08/02/24	0.6	26	E	20	E
Friday	09/02/24	4.0	24	ESE	26	E
Saturday	10/02/24	0	20	ESE	24	ENE
Sunday	11/02/24	0.6	31	ESE	26	ESE
Monday	12/02/24	0.6	33	E	33	E
Tuesday	13/02/24	0.4	30	E	26	E

### 5.2 Background noise levels

The measured background noise levels from the unattended noise survey are as follows;

Table 2: Measured ambient noise levels.

Day	Date	Noise Monitor A L90 dB(A)		
		Day	Evening	Night
Monday	05/02/24	39	36	31
Tuesday	06/02/24	36	35	33
Wednesday	07/02/24	38	36	34
Thursday	08/02/24	37	34	32
Friday	09/02/24	37	35	33
Saturday	10/02/24	36	39	31
Sunday	11/02/24	34	36	29
Monday	12/02/24	40	37	32
Tuesday	13/02/24	38	-	31
Overall value		37	36	32

\*Note high wind speeds and rainfall recorded on 8<sup>th</sup>, 9<sup>th</sup> and 11<sup>th</sup> to 13<sup>th</sup> February were not found to have affected the measured results, therefore the data was retained.

Refer to appendix for graphical presentation.

### 5.3 Road Traffic Noise Levels

The measured road traffic noise levels at the monitoring location are as follows;

Table 3: Measured Road Traffic Noise Levels

Day	Date	L10(18h)	Leq(1h) Day	Leq(1h) Night	L90(8h)	L90(18h)
Monday	05/02/24	-	58	49	-	-
Tuesday	06/02/24	47	53	47	43	41
Wednesday	07/02/24	51	61	52	42	42
Thursday	08/02/24	47	48	60	38	41
Friday	09/02/24	47	51	48	38	41
Saturday	10/02/24	47	51	47	36	39
Sunday	11/02/24	47	53	47	36	39
Monday	12/02/24	48	48	46	37	43
Tuesday	13/02/24	-	53	46	-	-
Overall value		47.9	53.2	49.5	39.7	41.5

\*Note high wind speeds and rainfall recorded on 8<sup>th</sup>, 9<sup>th</sup> and 11<sup>th</sup> to 13<sup>th</sup> February were not found to have affected the measured results, therefore the data was retained.

Weekends were omitted as these are not considered relevant to the assessment.

Refer to the appendix for graphical representation.

## 6. Noise Criteria

### 6.1 Road Traffic Noise Criteria

As the development is located within a transport noise corridor, as detailed in the Toowoomba Regional Council Planning Scheme, the following criteria applies:

#### 6.1.1 Queensland Design Code MP4.4

To determine the minimum design requirements for any new residential buildings located in a transport noise corridor, the Queensland Development Code Part 4.4 may be applied if no alternative solutions are provided. In accordance with MP4.4, the noise categories are stated in Table 4.

Table 4: Queensland Development Code Noise Categories

Category	Noise level L10 (18hr) dBA (including façade correction)
Category 4	≥ 73
Category 3	68-72
Category 2	63-67
Category 1	58-62
Category 0	≤ 57

The building treatment for any future development onsite shall be determined at Building Approval stage, in general accordance with the Queensland Development Code. Alternative solution may be provided on request.

## 6.2 Environmental Noise Criteria

In accordance with Toowoomba Regional Council Planning Scheme Version 28, the following criteria shall be applied:

### 6.2.1 Environmental Standards Code

Table 2 below presents the applicable criteria at noise sensitive receptors as detailed in the Environmental Standards Code

Table 5: Environmental Standards code - Noise

Performance Outcome	Acceptable Outcome
<p>PO<sub>8</sub> The generation of noise from the premises does not cause Environmental Harm or Nuisance to adjoining properties or other noise sensitive land uses.</p> <p>a) Development:            i) is located in an appropriate zone;            ii) proposes best practice design and construction materials (in relation to noise attenuation); and            iii) proposes operational practices that will minimise noise nuisance for adjoining sensitive land uses.</p>	<p>AO<sub>8.1</sub> The development will achieve the following noise levels (when measured at the nearest sensitive receiver)</p> <p>a) Background (L<sub>90</sub>) + 5dB(A) for variable noise between the hours of 7:00am to 10:00pm (measured at the façade of the sensitive land use);            b) Background (L<sub>90</sub>) + 3dB(A) between the hours of 10:00pm and 7:00am (measured within bedrooms assuming open windows);            c) Background (L<sub>90</sub>) for continuous noise sources (measured at the façade of the sensitive land use between 7:00am and 10:00pm and within bedrooms assuming open windows from 10:00pm to 7:00am); and            d) maximum limit L<sub>Amax</sub> 45dB(A) inside dwellings; and</p> <p>The development will achieve the Acoustic Quality Objectives listed within the <i>Environmental Protection (Noise) Policy 2008</i></p> <p>HOWEVER</p> <p>AO<sub>8.2</sub> Where a development is unable to meet noise levels specified in AO<sub>8.1</sub> an acoustic assessment has been undertaken by a suitably qualified and skilled person which demonstrates that the development will not result in environmental nuisance at any existing or likely future residential premises (within a 10 year planning horizon).</p>

Further reference is made to the *Environmental Protection (Noise) Policy 2008*.

### 6.2.2 Environmental Protection (Noise) Policy 2008

#### 6.2.2.1 Acoustic Quality Objectives

Table 6 below presents the acoustic quality objectives at noise sensitive receptors as detailed in Schedule 1 of the Environmental Protection (Noise) Policy 2008.

Table 6: Acoustic Quality Objectives at Noise Sensitive Properties

Sensitive Receptor	Time of Day	Acoustic Quality Objectives, dB(A)		
		L <sub>Aeq,adj,1hr</sub>	L <sub>A10,adj,1hr</sub>	L <sub>A1,adj,1hr</sub>
Dwelling (outdoors)	Day and Evening (7am – 10pm)	50	55	65
Dwelling (Indoors)	Day and Evening (7am – 10pm)	35	40	45
	Night (10pm - 7am)	30	35	40

### 6.2.2.2 Background Creep

The Background Creep criteria are as follows;

Time-varying noise:

$$L_{Aeq,adj,T} \leq L_{A90,T \text{ Ambient}} + 5dB(A)$$

Steady-state noise:

$$L_{Aeq,adj,T} \leq L_{A90,T \text{ Ambient}}$$

The time period (T) is a time interval of at least 15 minutes, or if the noise continues for less than 15 minutes, the duration of the noise source.

Based on the results of ambient noise monitoring, the project specific background creep noise limits are shown in Table 7.

Table 7: Background Creep Noise Limits

Time Period	Noise Level Limits SPL dB(A)		Sleep Disturbance Internal $L_{Amax}$ criteria
	$L_{A90,T}$	$L_{Aeq,T}$	
Day 7am – 6pm	37	42	-
Evening 6pm – 10pm	36	41	-
Night 10pm – 7am	32	37	45



### 7.1.2 Background Creep

The noise source levels and predicted impacts at the receiver locations are shown as follows;

Table 9: Background Creep noise levels, 15 mins

Receiver	Receivers 1. 395 Hermitage Road (N) 2. 10-11 McCleverty Court, 3-7 Bonnaccorde Place & 62 Nugent-Pinch Road (S) 3. Vanessa Crescent (E)	Source Leq@1m dB(A)	Correction dB(A)*	Corrected Leq@1m dB(A)	No. of events per 15min Day	No. of events per 15min Eve	No. of events per 15min Night	Duration per event	Distance (m)	Inc	Barrier (height (m))	Barrier screening dB	Building TL or shield dB	Building screening dB	Dist atten. @-6dB/dd	LAeqadj,T ext. dB(A) Day	LAeqadj,T ext. dB(A) Eve	LAeqadj,T ext. dB(A) Night	L <sub>Aeq</sub> 15 min Compliance			
																			Day	Eve	Night	
																			Criteria			
																				42	41	37
	Criteria																			42	41	37
	Car start	74	2	76	20	15	10	2	111							-41	21	20	18	Yes	Yes	Yes
	Car door closure	75	2	77	20	15	10	2	111							-41	23	21	20	Yes	Yes	Yes
1	Car passby	69		69	20	15	10	15	111							-41	23	22	20	Yes	Yes	Yes
	Internal Clubhouse Activities	80		80	1	1	1	900	286				-10			-50	20	20	20	Yes	Yes	Yes
	Deliveries	78		78	1	1	1	60	296							-50	16	16		Yes	Yes	n/a
	Voice conversation - Dog run area	70		70	1	1	1	900	293							-50	20	20		Yes	Yes	n/a
	Voice conversation - Lawn bowls area	70		70	1	1	1	900	240							-48	22	22		Yes	Yes	n/a
	Voice conversation - Tennis court area	70		70	1	1	1	900	245							-48	22	22		Yes	Yes	n/a
	Dog run area - dogs barking	79	2	81	1	1	1	200	293							-50	24	24		Yes	Yes	n/a
	Lawn bowls activities	73		73	1	1	1	900	293							-50	23	23		Yes	Yes	n/a
	Tennis court activities	73	2	75	1	1	1	900	240							-48	27	27		Yes	Yes	n/a
	<b>Total</b>															33	33	25		Yes	Yes	Yes
	Criteria																			42	41	37
	Car start	74	2	76	20	15	10	2	40							-33	29	28	26	Yes	Yes	Yes
	Car door closure	75	2	77	20	15	10	2	40							-32	31	30	28	Yes	Yes	Yes
2	Car passby	69		69	20	15	10	15	30							-30	35	33	32	Yes	Yes	Yes
	Internal Clubhouse Activities	80		80	1	1	1	900	176				-10			-45	25	25	25	Yes	Yes	Yes
	Deliveries	78		78	1	1	1	60	215							-47	20	20		Yes	Yes	n/a
	Voice conversation - Dog run area	70		70	1	1	1	900	95							-40	30	30		Yes	Yes	n/a
	Voice conversation - Lawn bowls area	70		70	1	1	1	900	234							-47	23	23		Yes	Yes	n/a
	Voice conversation - Tennis court area	70		70	1	1	1	900	90							-39	31	31		Yes	Yes	n/a
	Dog run area - dogs barking	79	2	81	1	1	1	200	95							-40	35	35		Yes	Yes	n/a
	Lawn bowls activities	73		73	1	1	1	900	234							-47	26	26		Yes	Yes	n/a
	Tennis court activities	73	2	75	1	1	1	900	90							-39	36	36		Yes	Yes	n/a
	<b>Total</b>															42	41	34		Yes	Yes	Yes
	Criteria																			42	41	37
	Car start	74	2	76	20	15	10	2	50							-34	28	27	25	Yes	Yes	Yes
	Car door closure	75	2	77	20	15	10	2	50							-34	29	28	26	Yes	Yes	Yes
3	Car passby	69		69	20	15	10	15	50							-34	30	29	27	Yes	Yes	Yes
	Internal Clubhouse Activities	80		80	1	1	1	900	50				-10			-34	36	36	36	Yes	Yes	Yes
	Deliveries	78		78	1	1	1	60	97							-40	27	27		Yes	Yes	n/a
	Voice conversation - Dog run area	70		70	1	1	1	900	320							-50	20	20		Yes	Yes	n/a
	Voice conversation - Lawn bowls area	70		70	1	1	1	900	150							-44	26	26		Yes	Yes	n/a
	Voice conversation - Tennis court area	70		70	1	1	1	900	102							-40	30	30		Yes	Yes	n/a
	Dog run area - dogs barking	79	2	81	1	1	1	200	320							-50	24	24		Yes	Yes	n/a
	Lawn bowls activities	73		73	1	1	1	900	150							-44	29	29		Yes	Yes	n/a
	Tennis court activities	73	2	75	1	1	1	900	102							-40	35	35		Yes	Yes	n/a
	<b>Total</b>															41	41	37		Yes	Yes	Yes

\*Correction due to tonality and impulsiveness as per AS1055:2018.

Compliance is predicted for the proposed operation of the site on the condition that the recommendations in Section 9 are implemented.

### 7.1.3 Sleep Disturbance

The night-time maximum noise source levels and predicted levels at the receiver locations are shown in Table 15.

Table 10: Sleep Disturbance L<sub>Amax</sub> levels

Receiver	Receivers												
	Description	Source @ 1m dB(A)	Correction dB(A)*	Corrected dB(A)	Distance (m)	Barrier (height (m)) Yes	Barrier screening dB	Building TL or shield dB	Building screening	Dist atten. @-6dB/dd	LA max adj,T ext.. dB(A)	LA max adj,T int.. dB(A)	Complies Lmax (internal) dB(A)
1													45
	Car start	80	2	82	111					-49	23	18	Yes
	Car door closure	81	2	83	111					-49	24	19	Yes
	Car passby	74		74	111					-49	17	12	Yes
	Internal Clubhouse Activities	84		84	286			-10		-57	9	4	Yes
2													45
	Car start	80	2	82	40					-32	40	35	Yes
	Car door closure	81	2	83	40					-32	41	36	Yes
	Car passby	74		74	30					-30	36	31	Yes
	Internal Clubhouse Activities	84		84	176			-10		-45	21	16	Yes
3													45
	Car start	80	2	82	50					-34	38	33	Yes
	Car door closure	81	2	83	50					-34	39	34	Yes
	Car passby	74		74	50					-34	32	27	Yes
	Internal Clubhouse Activities	84		84	50			-10		-34	32	27	Yes

\*Correction due to tonality and impulsiveness as per AS1055:2018.

Compliance is predicted for onsite activities on the condition the recommendations in Section 8 are implemented.

### 7.1.4 Waste Collection

Noise associated with waste collection was assessed using existing measurements of similar activities. The predicted noise impacts at the receiver locations are shown as follows;

Table 11: Waste Collection - Predicted Noise Impacts

Receiver	Receivers													L <sub>Aeq</sub> 15 min Compliance								
	Description	Source Leq@1m dB(A)	Correction dB(A)*	Corrected Leq@1m dB(A)	No. of events per 15 min Day	No. of events per 15 min Eve	No. of events per 15 min Night	Duration per event	Distance (m)	Inc Barrier (height (m))	Barrier screening dB	Building TL or shield dB	Building screening dB	Dist atten. @-6dB/dd	L <sub>Aeq</sub> adj, T ext. dB(A) Day	L <sub>Aeq</sub> adj, T ext. dB(A) Eve	L <sub>Aeq</sub> adj, T ext. dB(A) Night	Day	Eve	Night		
																		Day	Eve	Night		
	1. 395 Hermitage Road (N) 2. 10-11 McCleverty Court, 3-7 Bonnaccorde Place & 62 Nugent-Pinch Road (S) 3. Vanessa Crescent (E)																					
Criteria																		42	41	37		
Waste collection		94	2	96	1	1	1	240	300						-50	40	40	40	Yes	Yes	No	
Total																	40	40	40	Yes	Yes	No
Criteria																		42	41	37		
Waste collection		94	2	96	1	1	1	240	211						-47	43	43	43	No	No	No	
Total																	43	43	43	No	No	No
Criteria																		42	41	37		
Waste collection		94	2	96	1	1	1	240	104						-14	-41	35	35	35	Yes	Yes	Yes
Total																	35	35	35	Yes	Yes	Yes

\*Correction due to tonality and impulsiveness as per AS1055:2018.

Compliance is predicted for waste collection on the condition the recommendations in Section 9.3 are implemented.

## 8. Road Traffic Assessment

Road traffic noise associated with Toowoomba Bypass for the ten year planning horizon was assessed at the development.

### 8.1 Traffic Volumes

Traffic data for the Toowoomba Bypass was predicted based on correspondence with the traffic engineer for the development. Refer to Table 12 for the predicted traffic volumes for the ten year planning horizon.

Table 12: Traffic Volumes

Location	2024 Predicted AADT	2035 Predicted AADT	Percentage of Heavy Vehicles	Estimated Growth Rate
Toowoomba Bypass	16,000	22,147	13%	3%

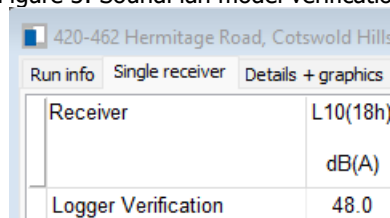
### 8.2 Road Traffic Noise Verification

To ensure the CoRTN noise model is accurate, a verification model of the predicted  $L_{A10(18hr)}$  was created and compared to the measured noise level. The CoRTN method allows a 2dB(A) variation from the predicted and measured level, if the variation exceeds 2dB(A) a correction to the predicted level is required.

Table 13: Comparison of Measured and Predicted Noise Levels

Location	Measured $L_{A10(18hr)}$ dB(A)	Predicted $L_{A10(18hr)}$ dB(A)	Correction
Toowoomba Bypass	47.9	48.0	0

Figure 3: SoundPlan model verification



420-462 Hermitage Road, Cotswold Hills		
Run info	Single receiver	Details + graphics
Receiver	L10(18h)	
	dB(A)	
Logger Verification	48.0	

### 8.3 Predicted Road Traffic Noise Levels - 2035

Road traffic noise modelling for the proposed development was based on the following information:

- Site layout and floor plans provided by Jared Poole Design, drawing BP1415/03.01, Revision H, dated 08/09/25.
- Toowoomba Bypass Speed Limit of 100km/h.
- Receiver heights were set to 1.5m above finished floor level.
- 2.5dB façade correction.
- -0.7dB(A) (Free field) and -1.7dB(A) (Façade) corrections for Queensland Conditions.
- Base terrain data obtained from the Queensland Spatial Catalogue – Q Spatial.

Predicted road traffic noise impacts for the development are presented in Table 14.

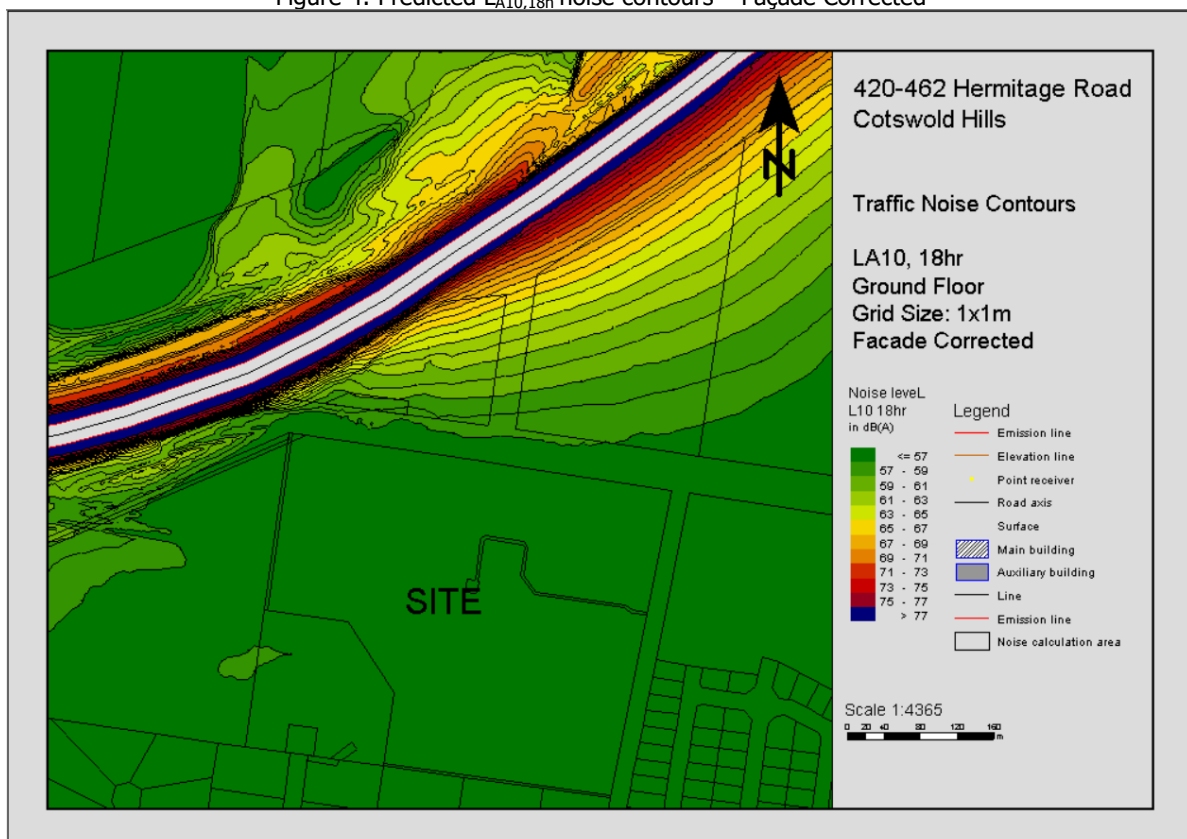
Table 14: Predicted Road Traffic Noise Impacts

Location	Predicted Road Traffic Noise Impacts 2033	
	L <sub>A10 18hr</sub> dB(A)	QDC Noise Category
Lot 1 – Lot 266	≤57	0
Clubhouse	≤57	0
Summer House	≤57	0
Manager’s Unit	≤57	0

Based on the predicted noise impacts, compliance is predicted with QDC requirements on the condition the construction recommendations in Section 9 are implemented.

Refer to Figure 4 for a graphical representation of the predicted noise levels.

Figure 4: Predicted L<sub>A10,18h</sub> noise contours – Façade Corrected



## 9. Recommendations

### 9.1 Road Traffic Noise

All building treatments for residential units shall be determined at the Building Approval stage in accordance with the assessment requirements of the Queensland Building Code Mandatory Part 4.4. For reference, noise categories are nominated in Table 15.

#### 9.1.1 Glazing & Noise Category

The minimum glazing treatments presented in Table 15 are required to comply with the following:

- The minimum glass thickness specified shall not be reduced regardless of the  $R_w$  performance of the glass unless the glazier can provide a specific (non-generic) NATA Test report proving the proposed glazing system complies (the test report must be based on the same configuration proposed for the development). Note an estimation or calculated performance will not be accepted.
- If compliance cannot be achieved with the minimum  $R_w$  ratings for the glass thickness nominated, then glazing system shall be upgraded until compliance is achieved.
- Glazing specified with acoustic seals requires a seal that has been tested with a glazing system or door to achieve an  $R_w$  in accordance with AS/NZS ISO 717.1, mohair seals are not acceptable.
- The glazier shall provide NATA test reports on request to verify compliance with the minimum  $R_w$  ratings. Generic reports are not acceptable.

Table 15: QDC Noise Category & Glazing Treatments

Location	QDC Category	QDC $R_w$ Ratings				QDC Glazing	
		Wall	Roof	Windows	Entry Doors	Windows	Acoustic seals
Lot 1 – Lot 294	0	-	-	-	-	standard	no
Clubhouse	0	-	-	-	-	standard	no
Manager's Unit	0	-	-	-	-	standard	no

Any locations not identified in Table 15 would require 4mm float for windows (minimum  $R_w$  22) and 4mm toughened for sliding doors (minimum  $R_w$  22).

#### 9.1.2 Alternative Ventilation

To achieve the required internal noise levels for the development, all locations nominated in Table 15 with noise category 1 will require the provision for an alternative ventilation system similar to air-conditioning or mechanical ventilation.

### 9.1.3 Wall Construction

The wall construction recommendations from QDC MP4.4 are included in the table below. Note that these are not the only allowable methods of construction for the development, and alternative constructions to achieve the required  $R_w$  ratings may also be provided.

Table 16: Minimum Wall Treatments

QDC Noise Category	Wall $R_w$	QDC Acceptable forms of construction
0	N/A	Standard Construction

### 9.1.4 Roof Construction

The roof/ceiling construction recommendations from QDC MP4.4 are included in the table below. Note that these are not the only allowable methods of construction for the development, and alternative constructions to achieve the required  $R_w$  ratings may also be provided.

Table 17: Minimum Roof Treatments

QDC Noise Category	Roof $R_w$	QDC Acceptable forms of construction
0	N/A	Standard Construction

### 9.1.5 Entry Door Construction

The QDC entry door construction requirements are detailed in Table 18 below with the QDC Noise Categories nominated in Table 15:

Table 18: Typical entry door treatments

QDC Noise Category	Entry Door $R_w$	Minimum Door Treatment
0	N/A	Standard Construction

The constructions shown in the table above are not the only materials that may be used for the entry door. Any materials may be used provided that the construction satisfies the minimum acoustic  $R_w$  rating listed in the table.

## 9.2 Onsite Activities

Compliance is predicted with Toowoomba Regional Council assessment criteria at the nearest sensitive receivers on the condition the following recommendations are implemented:

- Deliveries to the site shall be limited to the day and evening time periods (7am to 10pm).
- Use of the Dog Run, tennis courts and lawn bowls areas shall be limited to the day and evening time periods (7am to 10pm).

## 9.3 Waste Collection

We recommend that waste collection be conducted in accordance with the surrounding residential properties with recommended hours of 7am to 6pm weekdays and 8am to 6pm Saturdays to minimise noise impacts at the sensitive receivers.

## 9.4 Onsite Mechanical Plant

No information regarding mechanical services was available at the time of the assessment. We recommend that any new mechanical plant is designed to comply with the criteria stated in Section 6 with an assessment undertaken by qualified acoustic consultant to be conducted prior to installation.

# 10. Conclusion

An environmental and road traffic noise assessment was conducted for the proposed retirement facility to be located at 420-462 Hermitage Road, Cotswold Hills. On the condition the recommendations detailed in Section 9 are implemented, compliance is predicted with the assessment criteria.

If you should have any queries, please do not hesitate to contact us.

Report prepared by,



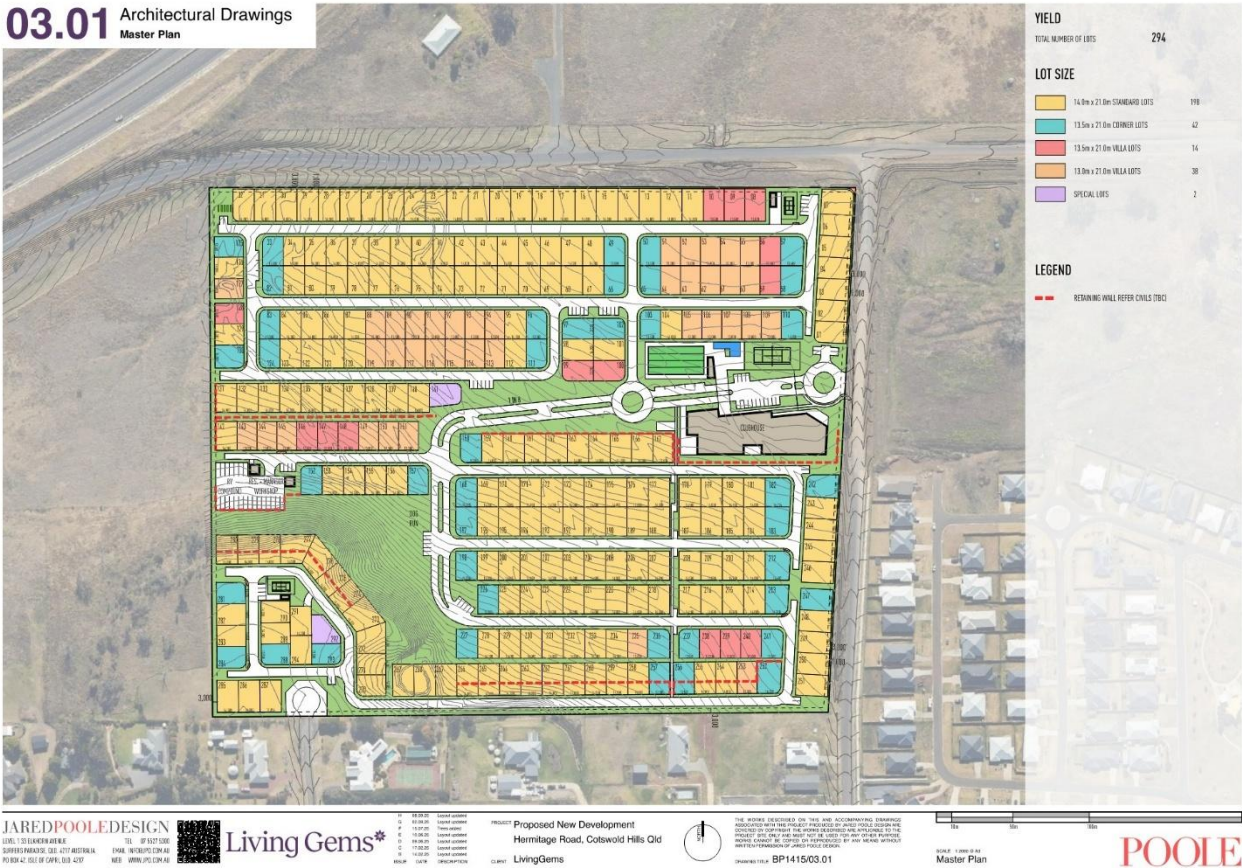
Marco Scoca  
Acoustic Consultant  
BEng (Civil Eng. Hons)  
GradDipEngSc (Mechanical Eng.)  
acousticworks)))

# 11. Appendices

## 11.1 Development Plans

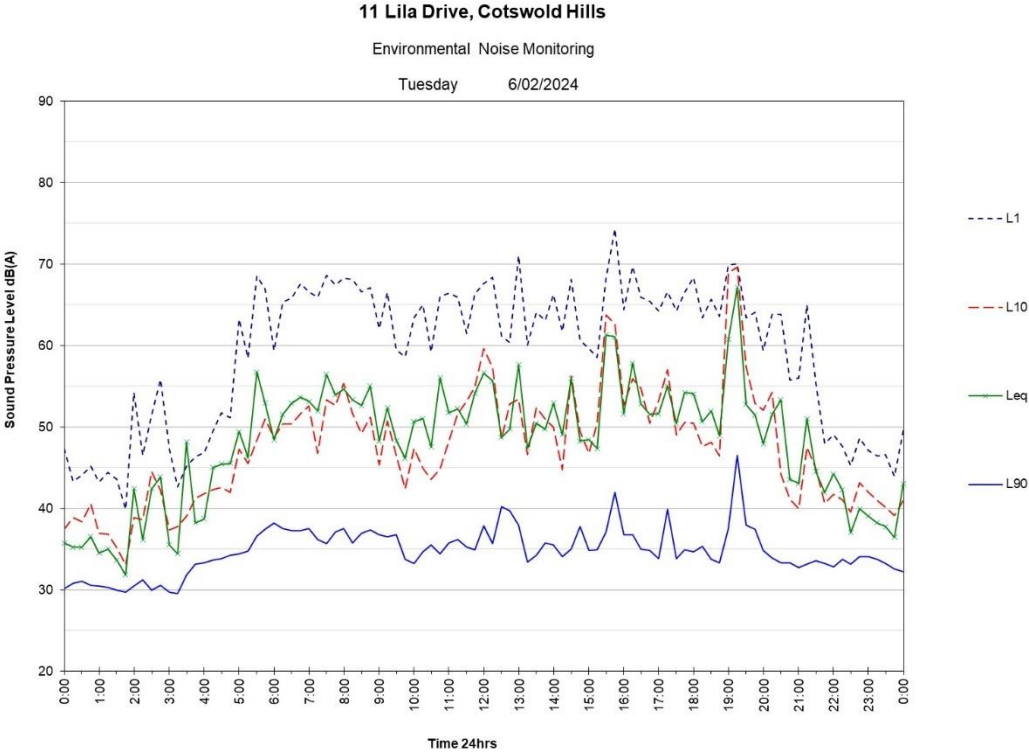
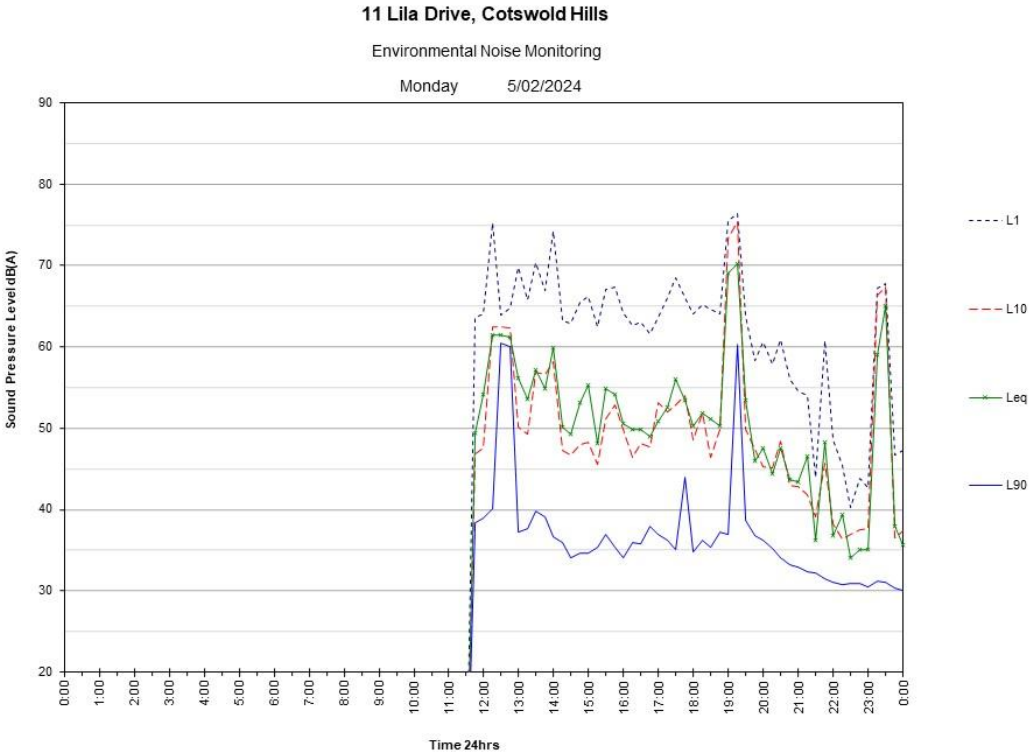
### 03.01 Architectural Drawings

Master Plan



### 11.2 Noise Monitoring Charts

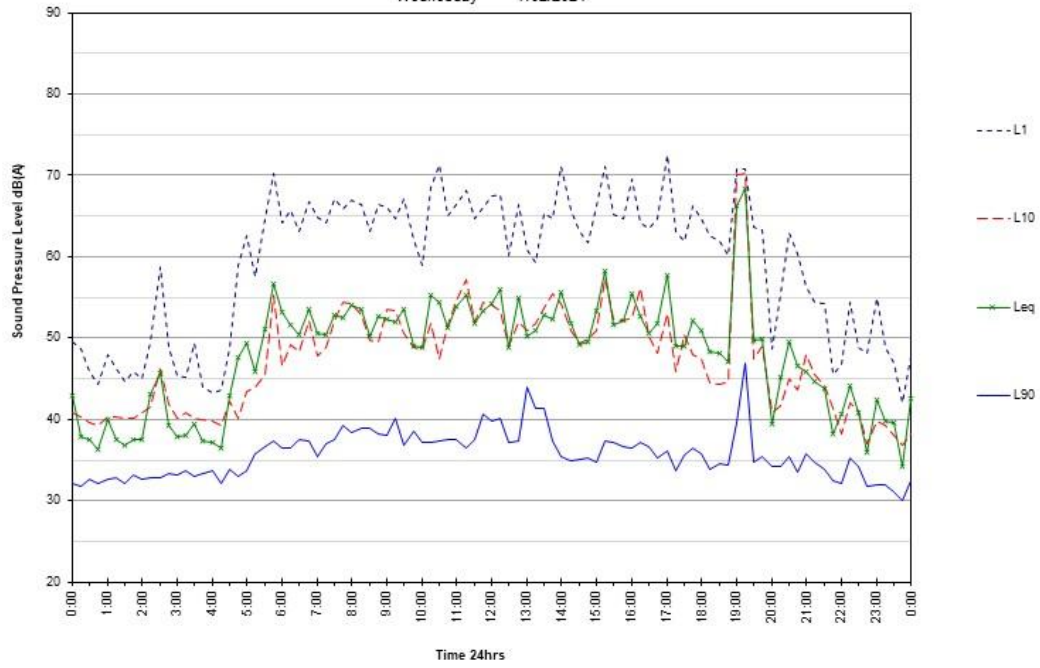
#### 11.2.1 Ambient Noise Monitoring – Monitor A



11 Lila Drive, Cotswold Hills

Environmental Noise Monitoring

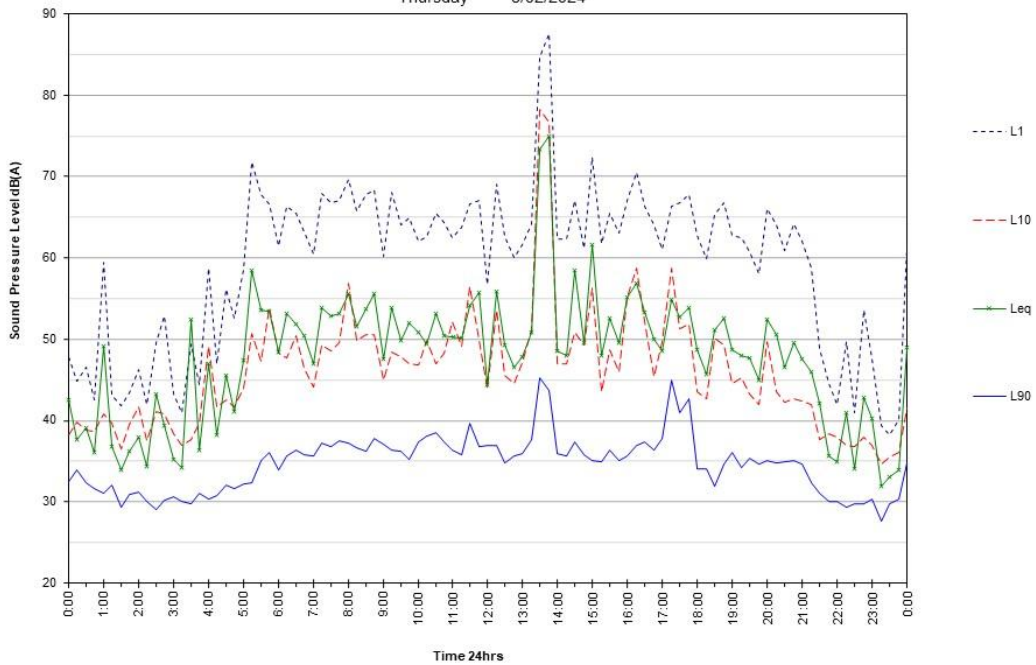
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11 Lila Drive, Cotswold Hills

Environmental Noise Monitoring

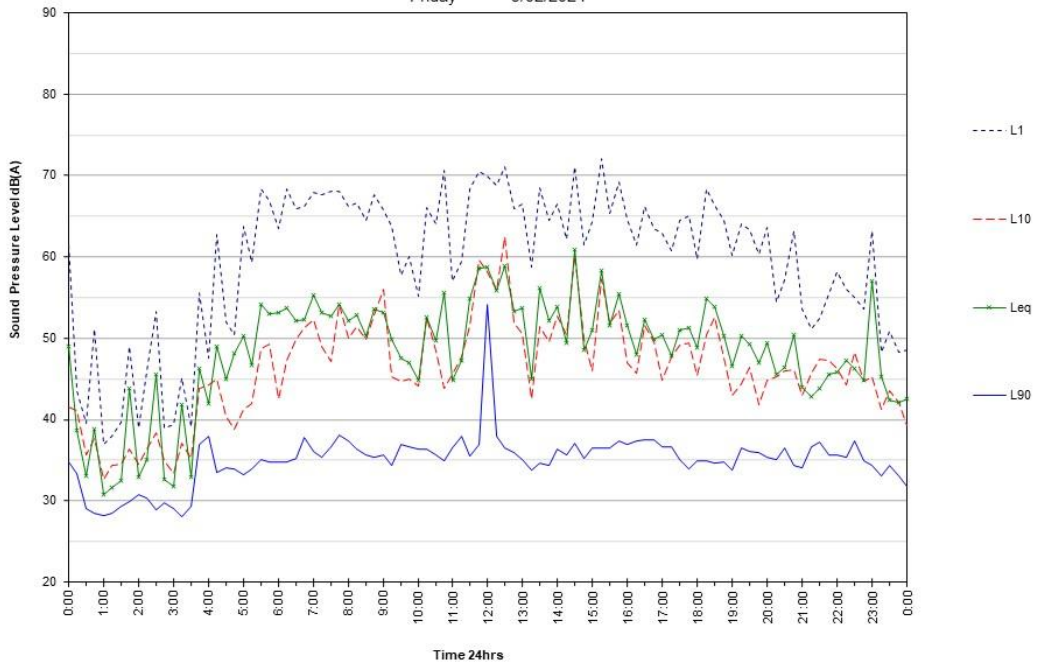
Thursday 8/02/2024



11 Lila Drive, Cotswold Hills

Environmental Noise Monitoring

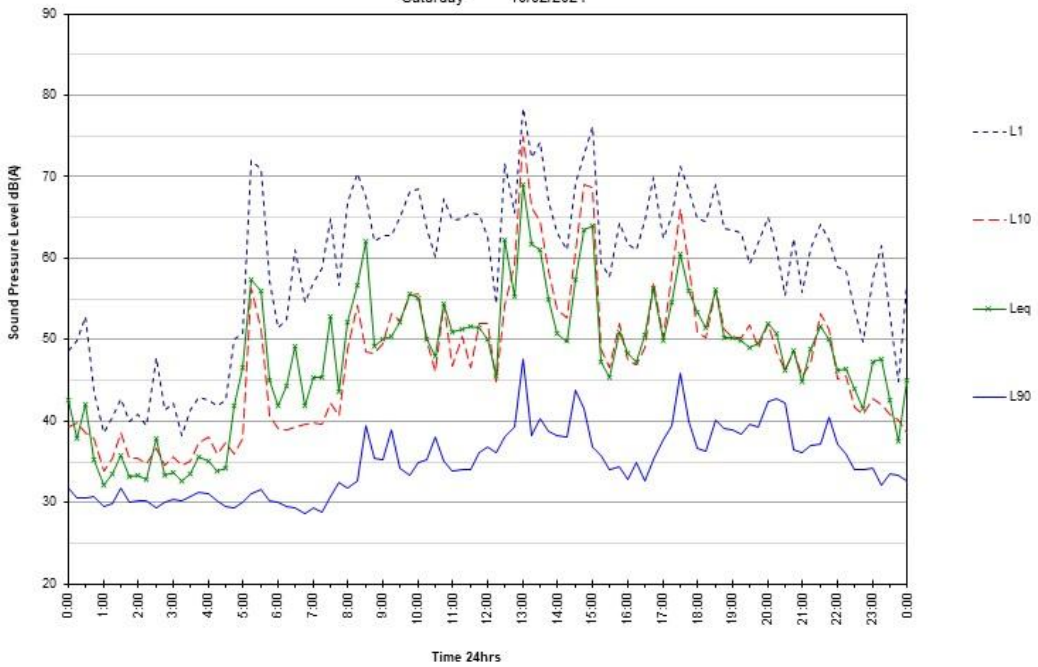
Friday 9/02/2024



11 Lila Drive, Cotswold Hills

Environmental Noise Monitoring

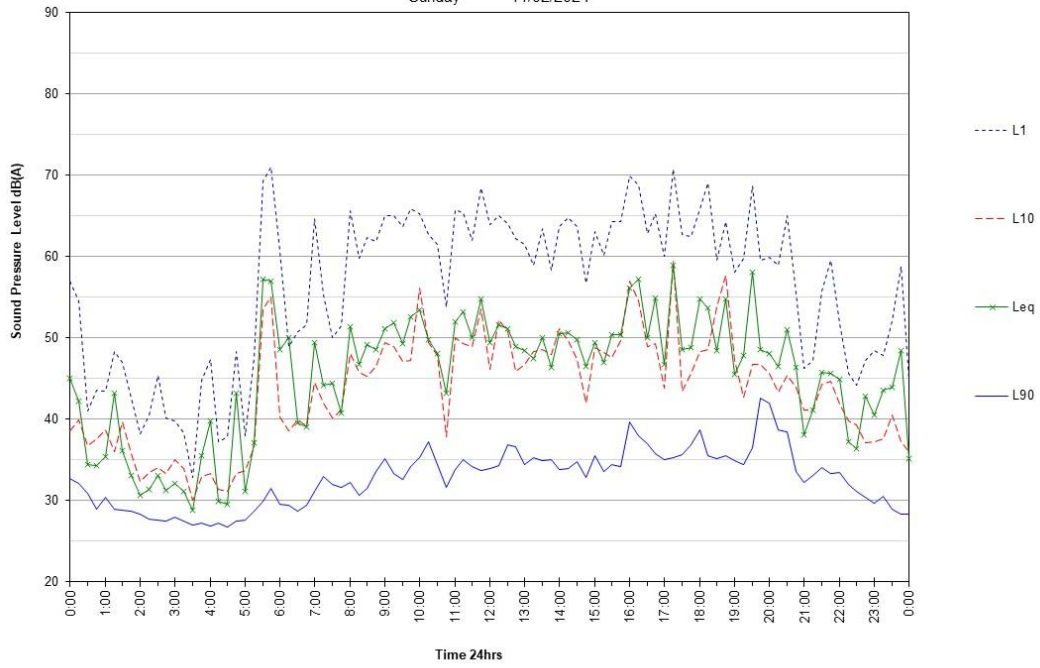
Saturday 10/02/2024



**11 Lila Drive, Cotswold Hills**

Environmental Noise Monitoring

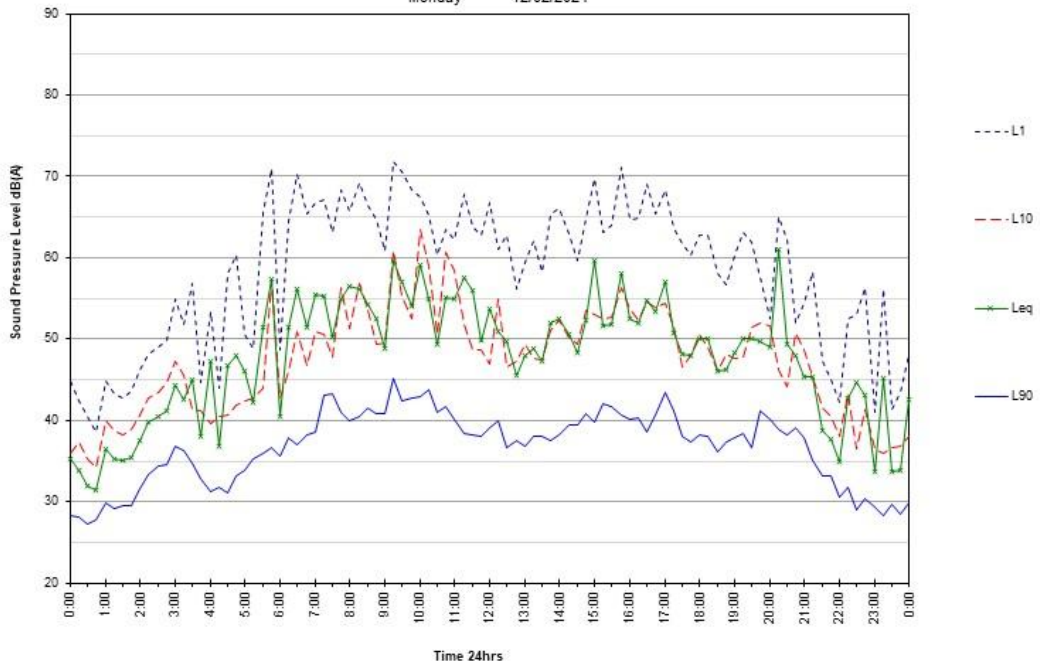
Sunday 11/02/2024



**11 Lila Drive, Cotswold Hills**

Environmental Noise Monitoring

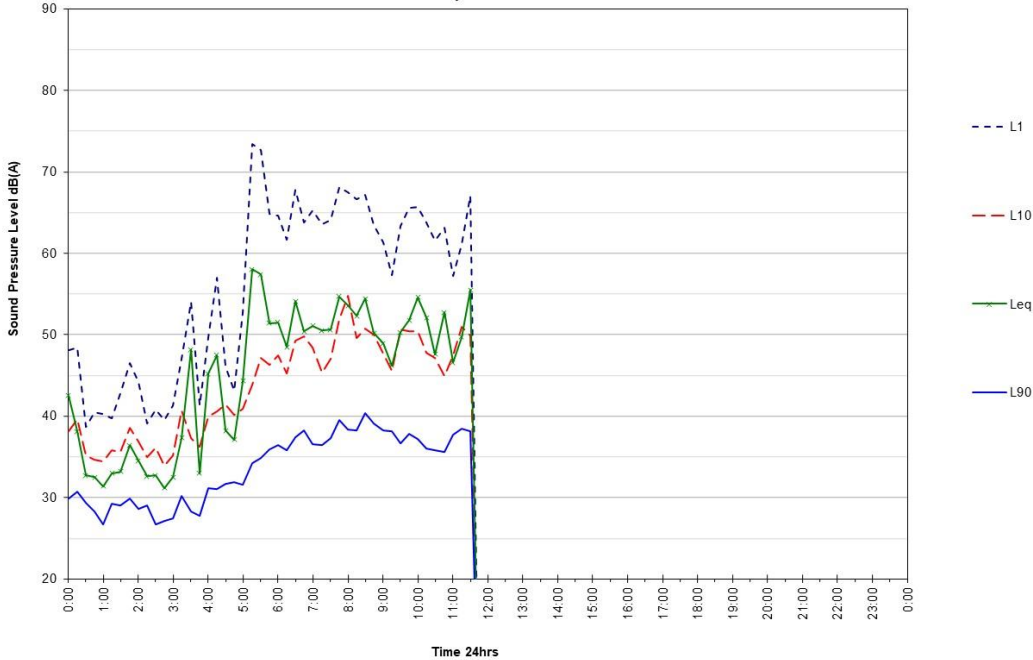
Monday 12/02/2024



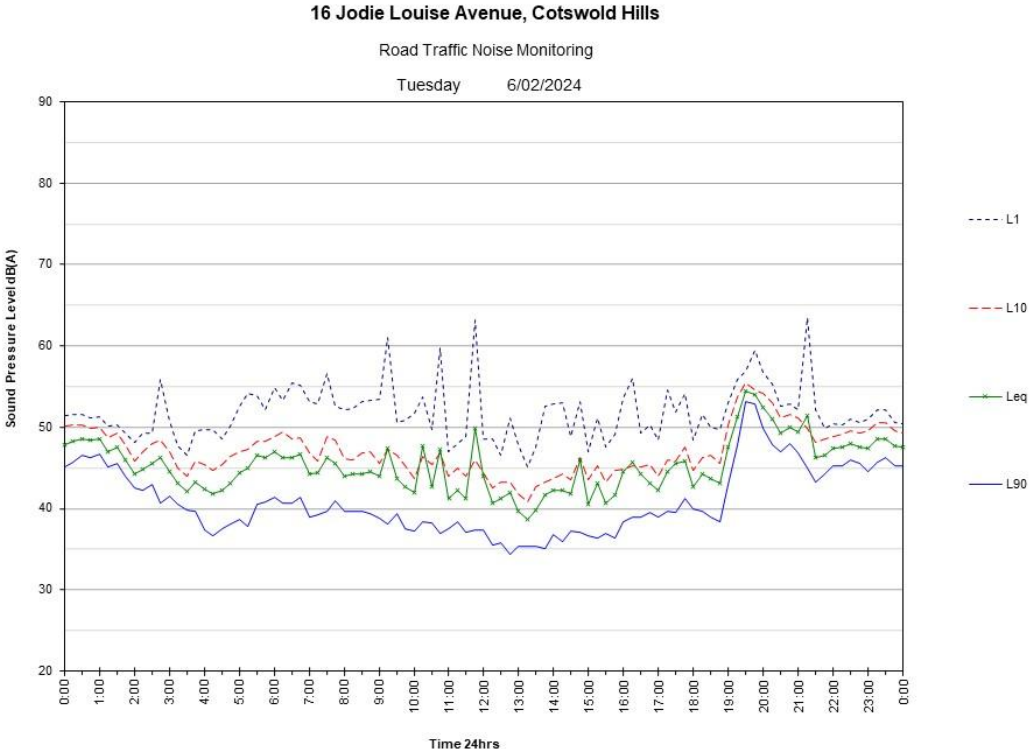
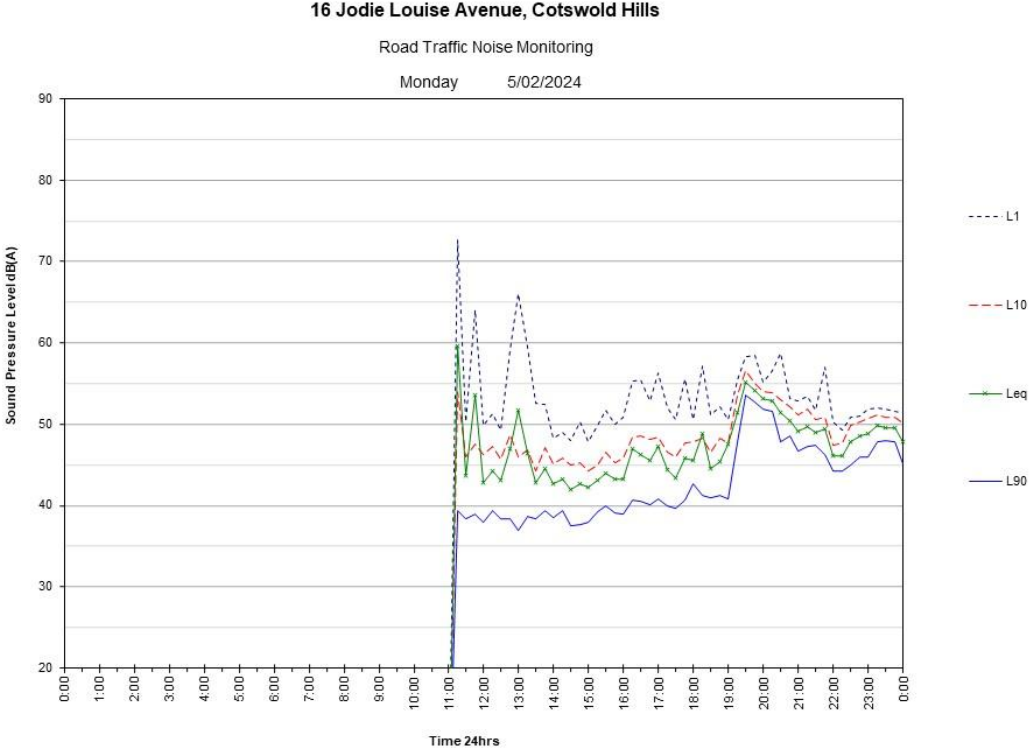
11 Lila Drive, Cotswold Hills

Environmental Noise Monitoring

Tuesday 13/02/2024



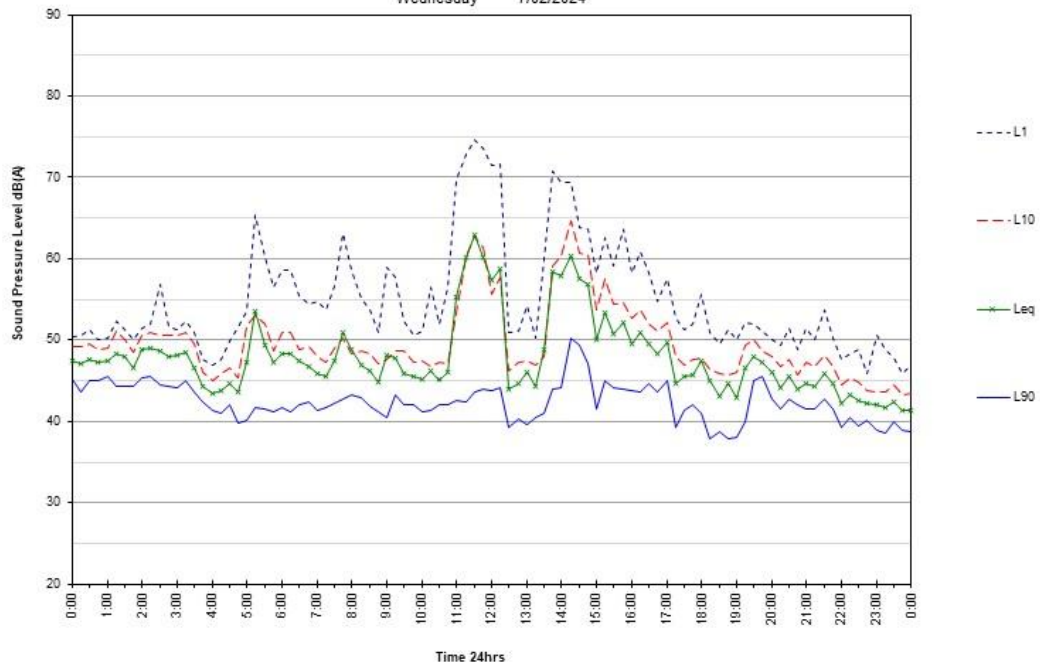
11.2.2 Road Traffic Noise Monitoring – Monitor B



16 Jodie Louise Avenue, Cotswold Hills

Road Traffic Noise Monitoring

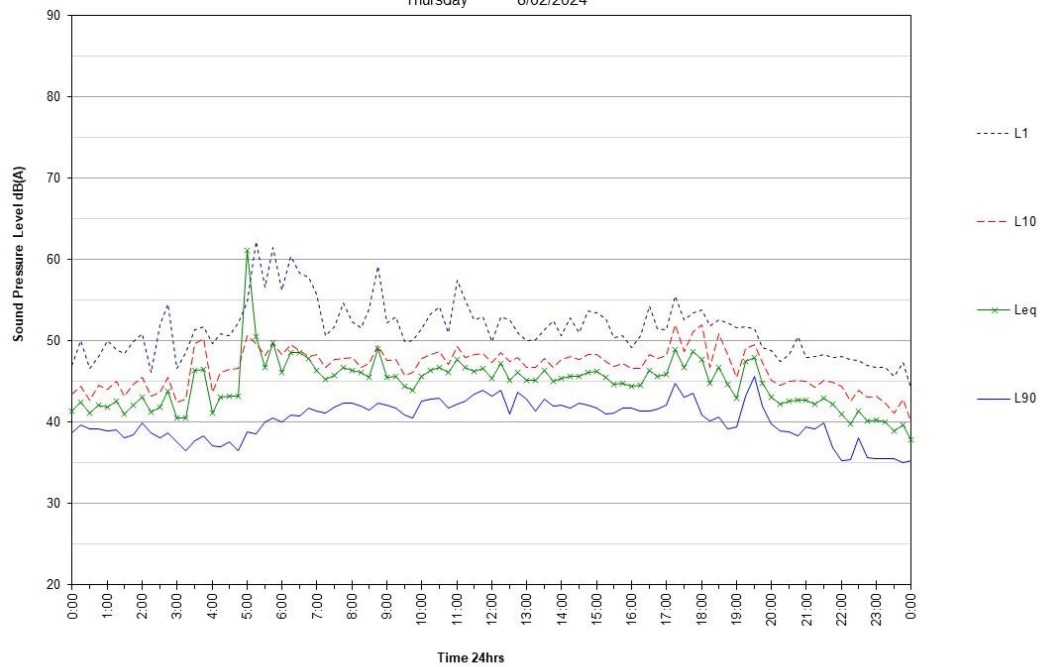
Wednesday 7/02/2024



16 Jodie Louise Avenue, Cotswold Hills

Road Traffic Noise Monitoring

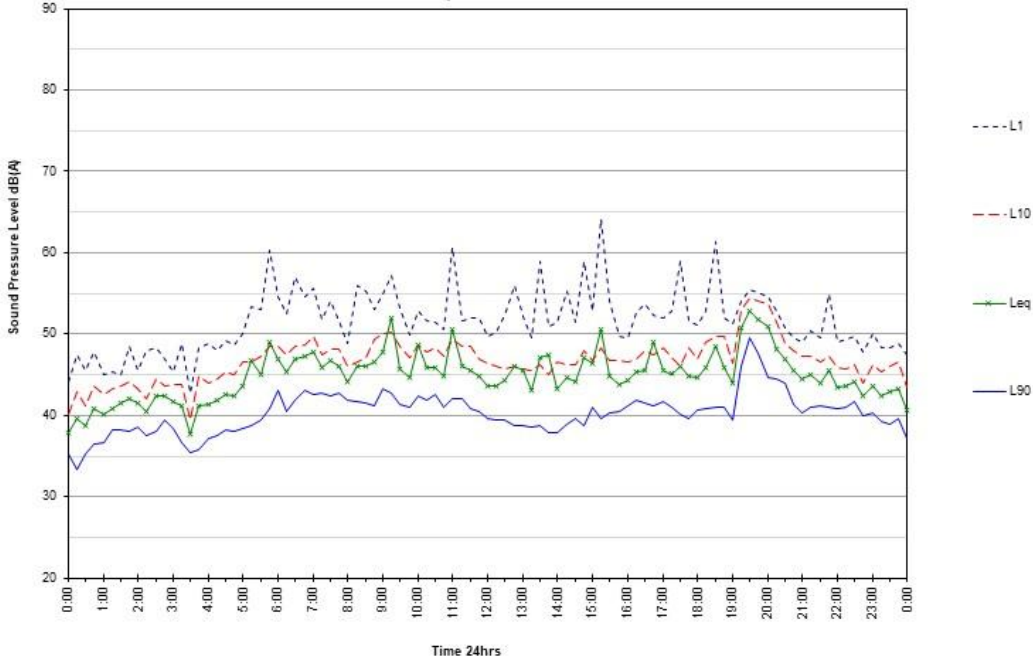
Thursday 8/02/2024



16 Jodie Louise Avenue, Cotswold Hills

Road Traffic Noise Monitoring

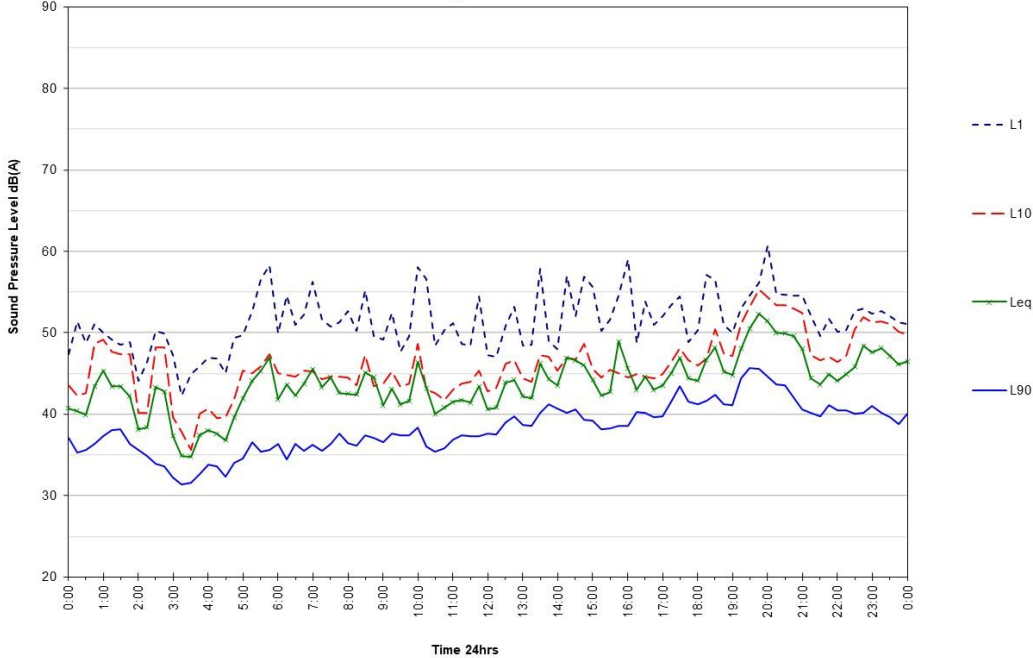
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16 Jodie Louise Avenue, Cotswold Hills

Road Traffic Noise Monitoring

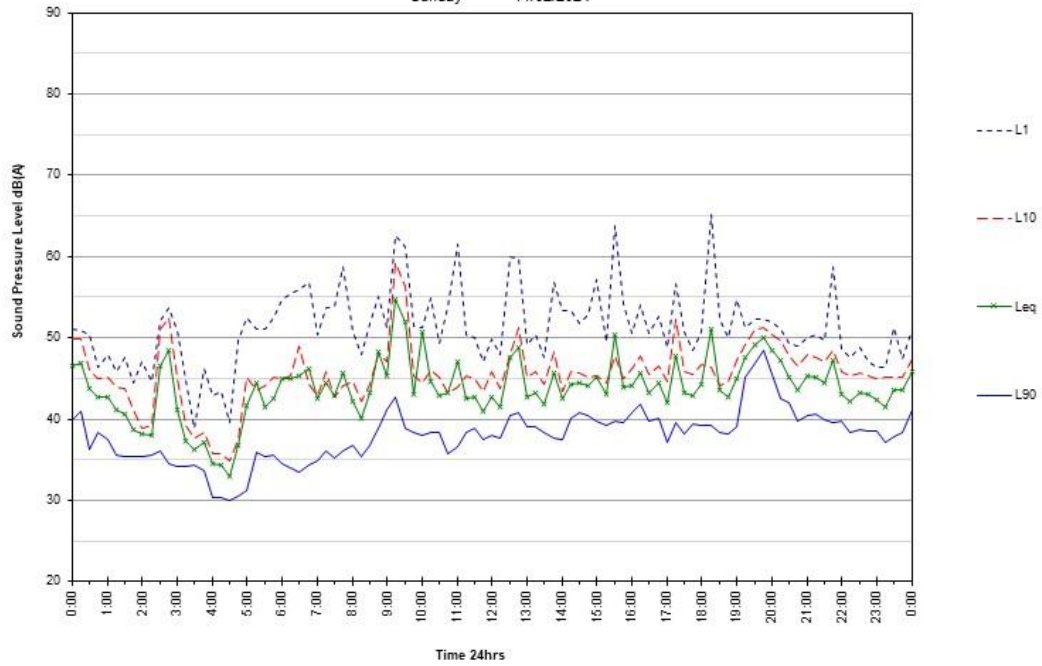
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16 Jodie Louise Avenue, Cotswold Hills

Road Traffic Noise Monitoring

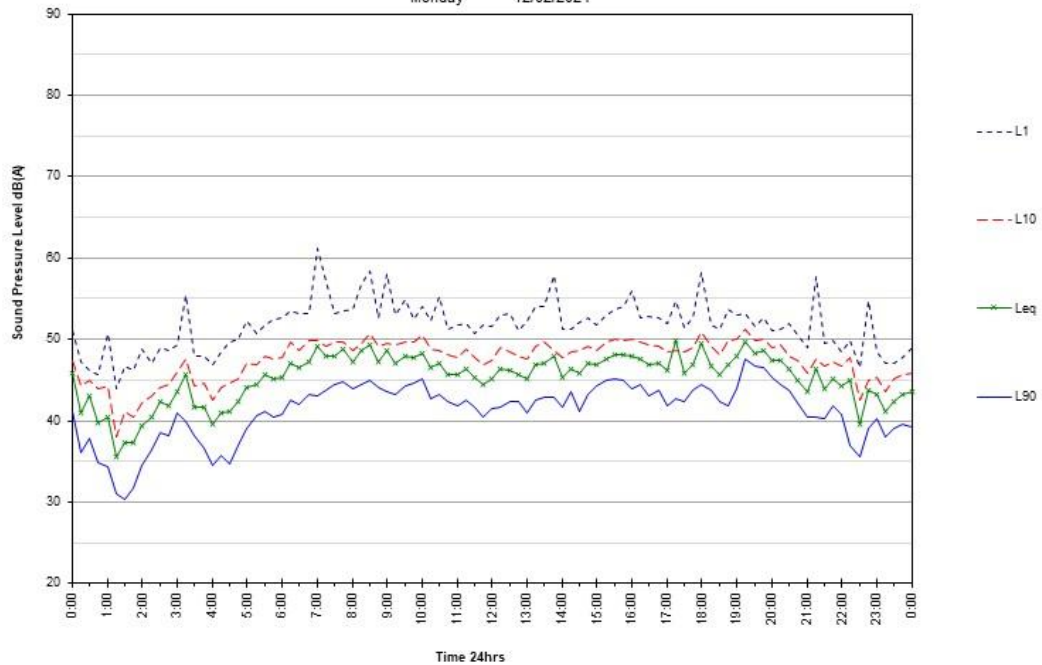
Sunday 11/02/2024



16 Jodie Louise Avenue, Cotswold Hills

Road Traffic Noise Monitoring

Monday 12/02/2024



16 Jodie Louise Avenue, Cotswold Hills

Road Traffic Noise Monitoring

Tuesday 13/02/2024

