

Greater Seaton Project Area

Environmental Noise Assessment

S8133C1

September 2024

sonus.

Sonus Pty Ltd
17 Ruthven Ave
Adelaide SA 5000
Phone: +61 (8) 8231 2100
Email: info@sonus.com.au
www.sonus.com.au

Document Title : Greater Seaton Project Area
Environmental Noise Assessment
Client : Renewal SA
Document Reference : S8133C1
Date : September 2024
Author : Simon Moore, MAAS

© Sonus Pty Ltd. All rights reserved.

This report may not be reproduced other than in its entirety. The report is for the sole use of the client for the particular circumstances described in the report. Sonus accepts no responsibility to any other party who may rely upon or use this report without prior written consent.

1 INTRODUCTION

An environmental noise assessment has been conducted for the proposed redevelopment of the Greater Seaton Project Area (the **Project**).

The purpose of the assessment was to determine the existing acoustic environment and subsequent construction requirements for dwellings within the proposed Project area (the **Project Area**). Specifically, the following noise sources have been considered:

- For dwellings on the eastern boundary of the Project Area, traffic noise from Tapleys Hill Road as well as noise from commercial activity associated with the nearby *United Petroleum Seaton* service station.
- For dwellings on the western boundary of the Project Area, noise from commercial activity associated with the nearby *AM/PM West Lakes* service station.

The nearby noise sources are shown in relation to the Project Area in Figure 1.

To address traffic noise from Tapleys Hill Road, reference has been made to Ministerial Building Standard *MBS 010 "Construction requirements for the control of external sound"* (**MBS 010**) to determine suitable acoustic treatment that may be applied to dwellings associated with the Project. Furthermore, noise from the nearby service stations has been assessed with reference to the *Environment Protection (Commercial and Industrial Noise) Policy 2023* (the **Policy**) to determine goal noise levels at dwellings that would indicate a suitable level of residential amenity.



Figure 1: Project Area and Nearby Noise Sources

The assessment has been based on:

- Project information provided in Renewal SA *Request for Services* document for “Greater Seaton Project Area – Noise Assessment” (classified *OFFICIAL: Sensitive*) dated 6 March 2024.
- Unattended noise monitoring conducted by Sonus from 30 July 2024 to 7 August 2024 at three locations within the Project Area.
- The South Australian *Planning and Design Code* (the **Code**).

2 ROAD TRAFFIC NOISE

2.1 Criteria

MBS 010 provides construction requirements for the building facade to adequately reduce road traffic noise levels from road corridors in the vicinity. It is noted that the Project Area does not encompass a *noise attenuation area* as provided by the Code and therefore the requirements of MBS 010 are not mandatory (that is, there are no specific requirements for acoustic treatment to the dwellings for road traffic noise). However, MBS 010 provides a contemporary method for determining suitable acoustic treatment for residences due to road traffic noise.

The *Deemed-to-Satisfy* approach of MBS 010 specifies acoustic treatment to each building component of a dwelling based on the *Sound Exposure Category (SEC)* for that part of the building envelope. The SECs range from 1 to 5, with SEC 1 requiring a basic level of acoustic treatment and SEC 5 requiring extensive acoustic treatment.

Typically for noise from a road corridor, the SEC is determined based on the designated road type and speed limit of the road, as well as the separation distance between the edge of the transport corridor and the facade of the building. However, noise monitoring in the vicinity of Tapleys Hill Road has shown that the measured night time average noise levels ($L_{eq,9hr}$ from 10:00pm to 7:00am) are substantially less than those assumed by MBS 010.

As such, reference has been made to *Table A1.1* of MBS 010 to determine appropriate SECs based on the measured sound exposure levels and corresponding predicted noise levels at varying setback distances from Tapleys Hill Road. The table is reproduced in Table 1 below.

Table 1: MBS 010 Sound exposure levels for Road and Rail

DTS Sound exposure categories	Road and Rail Sound exposure level at the facade [dB(A)]
1	59 < 63
2	63 < 67
3	67 < 71
4	71 < 75
5	75 or greater

2.2 Assessment

Based on the night time average noise levels ($L_{eq,9hr}$ from 10:00pm to 7:00am) measured at Measurement Location 1 (see Figure 1), predictions have been made of the sound exposure levels (and corresponding SEC) at varying setback distances from Tapleys Hill Road. The setback distances for each SEC are shown in Figure 2, where a maximum of SEC 2 would apply within the Project Area.

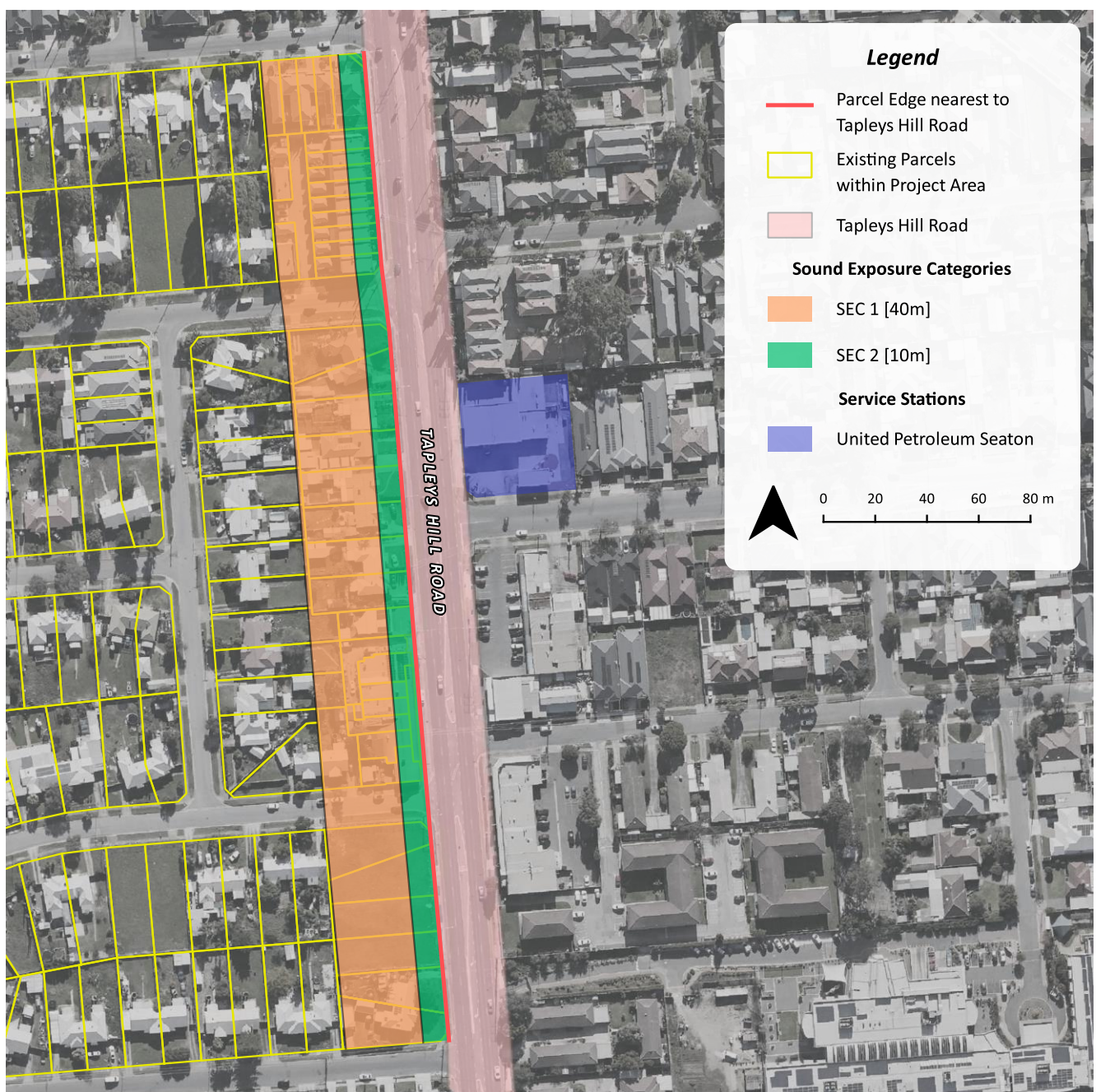


Figure 2: SEC Setback Distances from Tapleys Hill Road

The SECs and setback distances that could be applied to the Greater Seaton Project Area are summarised with reference to the nearest parcel boundary to Tapleys Hill Road as shown in Table 2. MBS 010 could then be applied with reference to these specific setback distances.

Table 2: Sound Exposure Category based on Setback Distance

Setback distance from parcel boundary (nearest to Tapleys Hill Road, refer to Figure 2)	Sound Exposure Category
Between 10m and 40m	1
Less than 10m	2

Once the SEC for each part of the building envelope has been determined, Table 3 shows the corresponding acoustic rating for each building component as provided by MBS 010. Deemed-to-Satisfy constructions that can achieve the acoustic ratings are provided in Section 5 of MBS 010.

Table 3: MBS 010 acoustic requirements for building elements

SEC	Sound Insulation Requirements	
1	External walls	$R_w + C_{tr} \geq 40$ for all habitable rooms
	Windows and external glass doors	Dependant on area of window and external glass doors as a percentage of the floor area of the room*
	Mechanical ventilation systems	$R_w \geq 25$ where natural ventilation is not provided
2	Ground floor	$R_w + C_{tr} \geq 45$ for all habitable rooms
	External walls	$R_w + C_{tr} \geq 45$ for all habitable rooms
	Windows and external glass doors	Dependant on area of window and external glass doors as a percentage of the floor area of the room*
	External doors other than external glass doors	$R_w \geq 27$ for all habitable rooms
	Roof and ceilings of bedrooms	$R_w + C_{tr} \geq 35$
	Mechanical ventilation systems	$R_w \geq 25$ where natural ventilation is not provided

* Refer to Table 4.6 of MBS 010

3 NOISE FROM NEARBY SERVICE STATIONS

3.1 Criteria

The Policy is underpinned by the World Health Organisation *Guidelines for Community Noise* and therefore provides an objective measure of acceptable noise levels for residential amenity. That is, ensuring the noise from nearby commercial land uses (such as the nearby service stations) is achieving the relevant goal noise levels of the Policy at nearby noise sensitive receivers, would indicate suitable residential amenity in relation to noise.

Indicative noise levels are provided by the Policy based on the zones of the noise source (the service stations) and the noise sensitive receivers (dwellings). The zones are provided by the Code, as follows:

- The *AM/PM West Lakes* service station is located within the Urban Neighbourhood Zone.
- The *United Petroleum Seaton* service station is located within the Local Activity Centre Zone.
- Residences in the Project Area near both service stations are located within the Housing Diversity Neighbourhood Zone.

As the service stations operate at all hours of the day, the assessment has been compared against the (more onerous) night time goal noise levels provided by the Policy, as follows:

- For residences on the western boundary of the Project Area in the vicinity of the *AM/PM West Lakes* service station:
 - An average noise level ($L_{eq,15min}$) of 48 dB(A).
 - A maximum noise level (L_{max}) of 60 dB(A).
- For residences on the eastern boundary of the Project Area in the vicinity of the *United Petroleum Seaton* service station:
 - An average noise level ($L_{eq,15min}$) of 50 dB(A).
 - A maximum noise level (L_{max}) of 60 dB(A).

3.2 Assessment

Noise monitoring has been conducted over multiple weekdays and a weekend at several nearby locations (see Figure 1) to determine the noise impact from the service stations. The results of the noise monitoring are shown in Appendix A.

Average noise levels have been compared between Measurement Location 1 (near Tapleys Hill Road, away from *United Petroleum Seaton*) and Measurement Location 2 (near Tapleys Hill Road and *United Petroleum Seaton*) to determine any differences to the noise environment that may be associated with the service station. It was found that both the average and maximum noise levels did not experience any noticeable variation between the two locations, suggesting that the service station does not influence the acoustic environment (i.e. the noise from Tapleys Hill Road dominates the acoustic environment).

It is also noted that residences near the *United Petroleum Seaton* service station will experience reduced internal noise levels when treated in accordance with the recommendations provided in Section 3.

The results of the noise monitoring at Measurement Location 3 also show that the noise character near the *AM/PM West Lakes* service station, while generally lower in noise level than near Tapleys Hill Road (as expected near the less busy Frederick Road), is also consistent with that of traffic noise.

The background noise levels show that some noise at each of the service stations, likely to be associated with mechanical plant, may be audible at times when there is no traffic on nearby roads (brief periods during the night hours). The noise levels suggest that the mechanical plant at both service stations is likely achieving the relevant goal noise levels during these periods. However, it should be noted that the monitored noise levels cannot be directly compared to goal noise levels due to the maximum and average noise levels being generally controlled by traffic noise.

Based on the above, it is concluded that the acoustic environment is generally dominated by traffic noise at residences near both the service stations. As such, no specific acoustic treatment to dwellings is recommended to reduce noise levels from the nearby service stations.

4 CONCLUSION

An acoustic assessment has been made of the existing acoustic environment and subsequent construction requirements for dwellings for the proposed redevelopment of the Greater Seaton Project Area.

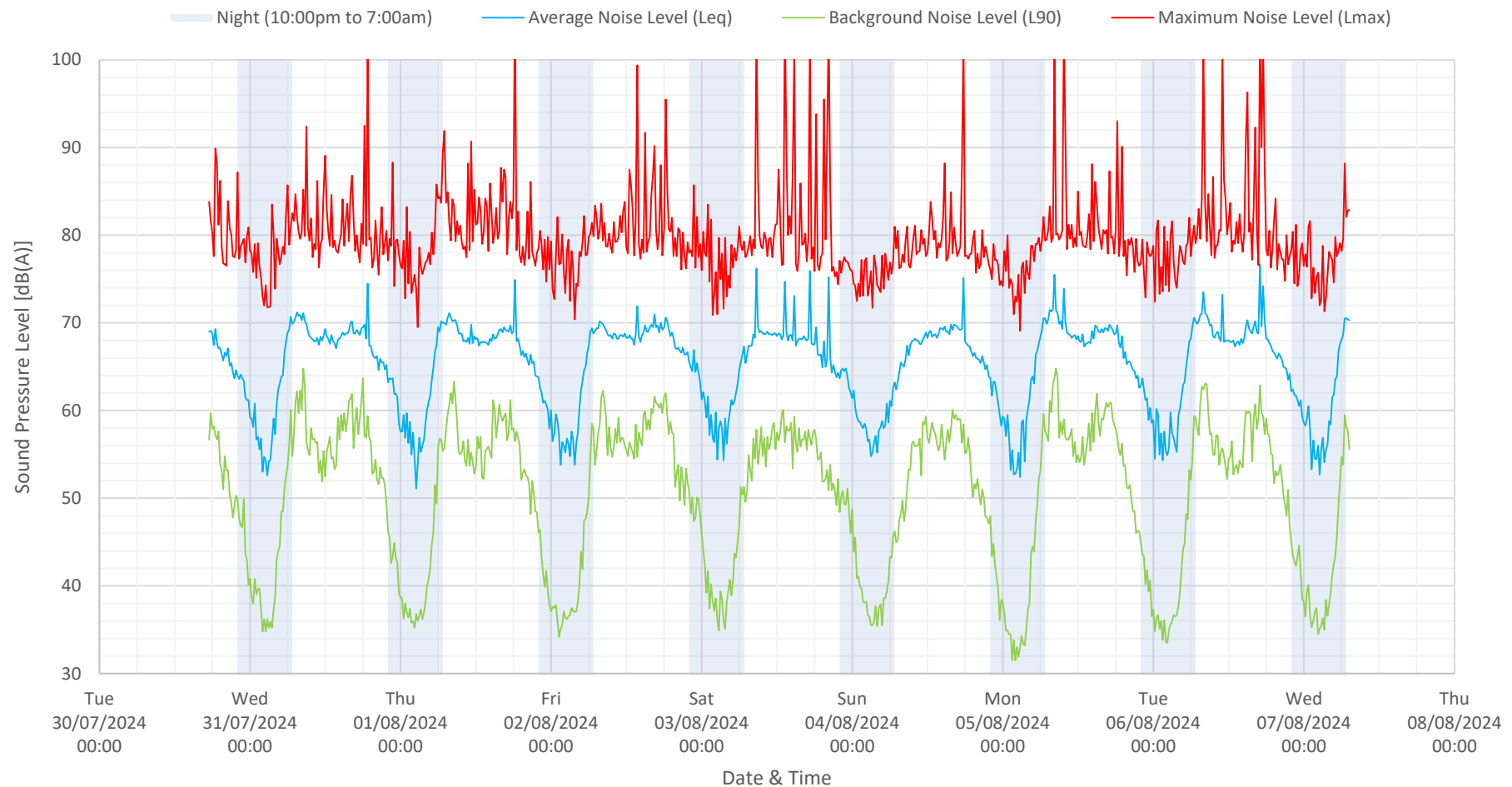
Reference has been made to Ministerial Building Standard *MBS 010 "Construction requirements for the control of external sound"* to address traffic noise from Tapleys Hill Road and determine suitable acoustic treatment that may be applied to dwellings associated with the Project. Noise from nearby service stations has been assessed with reference to the *Environment Protection (Commercial and Industrial Noise) Policy 2023* to determine goal noise levels at dwellings that would indicate a suitable level of residential amenity.

Recommendations have been made to acoustically treat dwellings for traffic noise near Tapleys Hill Road based on the project specific Sound Exposure Categories determined by the assessment. Based on the project specific SECs, minimum acoustic ratings and Deemed-to-Satisfy constructions may then be determined in accordance with MBS 010.

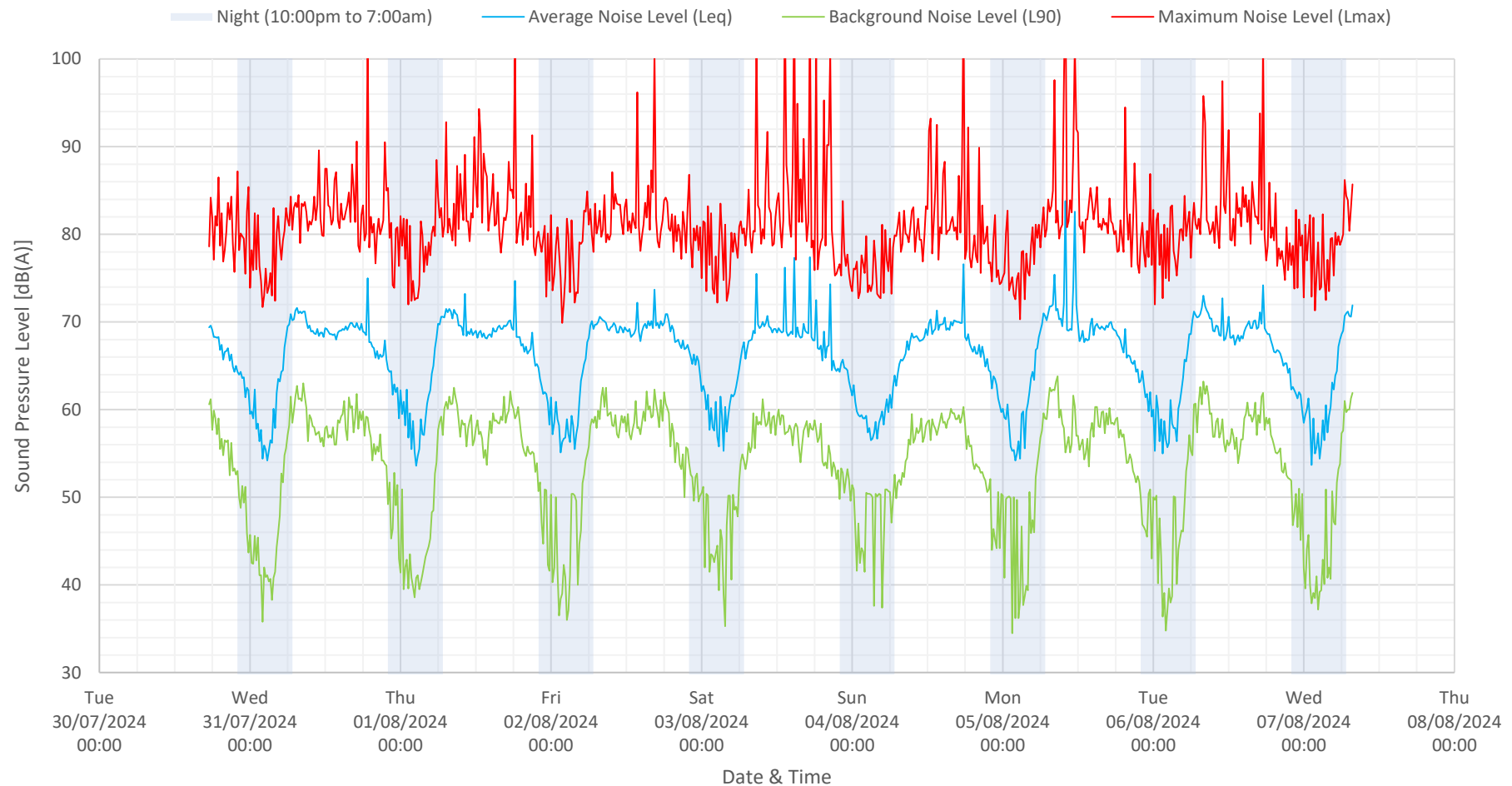
It was found that the noise environment at residences in the Project Area from nearby service stations (including *United Petroleum Seaton* and *AM/PM West Lakes*) is controlled by nearby traffic noise and is likely in compliance with the Policy. As such, no specific acoustic treatment to dwellings has been recommended to reduce noise from the service stations.

APPENDIX A: NOISE MONITORING RESULTS

Appendix A.1: Measurement Location 1 – Tapleys Hill Road (Vacant Lot)



Appendix A.2: Measurement Location 2 – Tapleys Hill Road (Opposite *United Petroleum Seaton*)



Appendix A.3: Measurement Location 3 – Frederick Road (Opposite AM/PM West Lakes)

