

Sellicks Beach Growth Area

Environmental Noise Quality Assessment

S8351C3

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sonus.

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

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Author : Adam Cook, MAAS
Reviewer : Chris Turnbull, MAAS

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GLOSSARY

A-weighting	Frequency adjustment representing the response of the human ear
Background noise level	The noise level of the environment in the absence of the noise source under consideration.
dB(A)	A-weighted noise level, measured in decibels
$L_{90,T}$	The sound pressure level that is exceeded for 90 percent of a measurement period, T. Often considered representative of the background noise level.
$L_{eq,T}$	The equivalent continuous noise level – The level of steady noise which is equivalent in energy to a time-varying noise in the environment, occurring over a measurement period, T.
Sound pressure level	The level of noise measured in the environment
Sound power level	The total acoustic energy emitted by a noise source.

EXECUTIVE SUMMARY

An assessment of environmental noise has been made for land at Sellicks Beach, known as the Sellicks Beach Growth Area (the **Affected Area**). The Affected Area has been earmarked as a future urban growth area by the Government of South Australia, with capacity for up to 1,700 new dwellings over a 134 hectare site.

Key outcomes of the assessment are provided below:

- Road traffic noise within the Affected Area will comply with relevant criteria for road traffic noise without the application of specific noise mitigation at the interface with existing roads.
 - Main South Road is classed as a Type B road, but is setback sufficiently from the Affected Area such that no receiver treatments under *Ministerial Building Standard 010* are required.
 - Traffic noise on Main South Road will be audible within the Affected Area, but compliant with outdoor noise level requirements.
 - Other roads adjacent to the Affected Area do not have the traffic flow required to produce road traffic noise at a level at which noise mitigation would be required.
- The development of new noise sensitive land uses on the Affected Area will not constrain operation of the Sellicks Hill Quarry.
 - The noise contribution from the quarry at future residential allotments in the Affected Area is predicted to be compliant with the relevant assessment criteria without provision of any noise mitigation to the Affected Area or at the Quarry.
 - The relative depth of the activity areas with the quarry pit and positioning of the significant visual amenity bunding on the western edge of the quarry block line of sight to quarry plant and reduce noise impacts from quarrying activity significantly.
 - Observations on site indicated that noise from the quarry may be occasionally audible, particularly when ambient noise levels are low and there is favourable wind conditions from source to receiver. The audible noise was similar in nature to that observed at the processing plant, a steady, relatively broadband character of sound. This noise was routinely masked by traffic on Main South Road and other ambient sounds.

- o Road trucks accessing the quarry entrance were observed to be a significant source of noise and will be audible at parts of Affected Area closest to the entrance road. This noise is assessed against the quarry noise criteria while on Quarry land, or under the road traffic noise criteria once on the public road network. The noise from these trucks was found to be compliant with both applicable criteria and quarry access will not be constrained by future receivers positioned on the Affected Area.
- The development of new noise sensitive receivers adjacent to the Berg Herring Wines winery can achieve compliance with the noise policy criteria without constraining currently approved venue operation, subject to noise mitigation.
 - o Mitigation could involve the construction of a 2.4 metre barrier at the interface between the winery and the Affected Area, or provision of a 35m spatial buffer between the winery boundary and newly constructed residences.
 - o Consideration should be made to zoning of compatible land uses at the interface of the Affected Area and the winery to minimise the risk of noise complaints and protect operation of the winery into the future.

1 INTRODUCTION

An assessment of environmental noise has been made for land at Sellicks Beach, known as the Sellicks Beach Growth Area (the **Affected Area**). The Affected Area has been earmarked for future housing development by the Government of South Australia, with capacity for up to 1,700 new dwellings over the 134 hectare site. An aerial image of the Affected Area and current zoning from the consultant brief is provided in Figure 1.

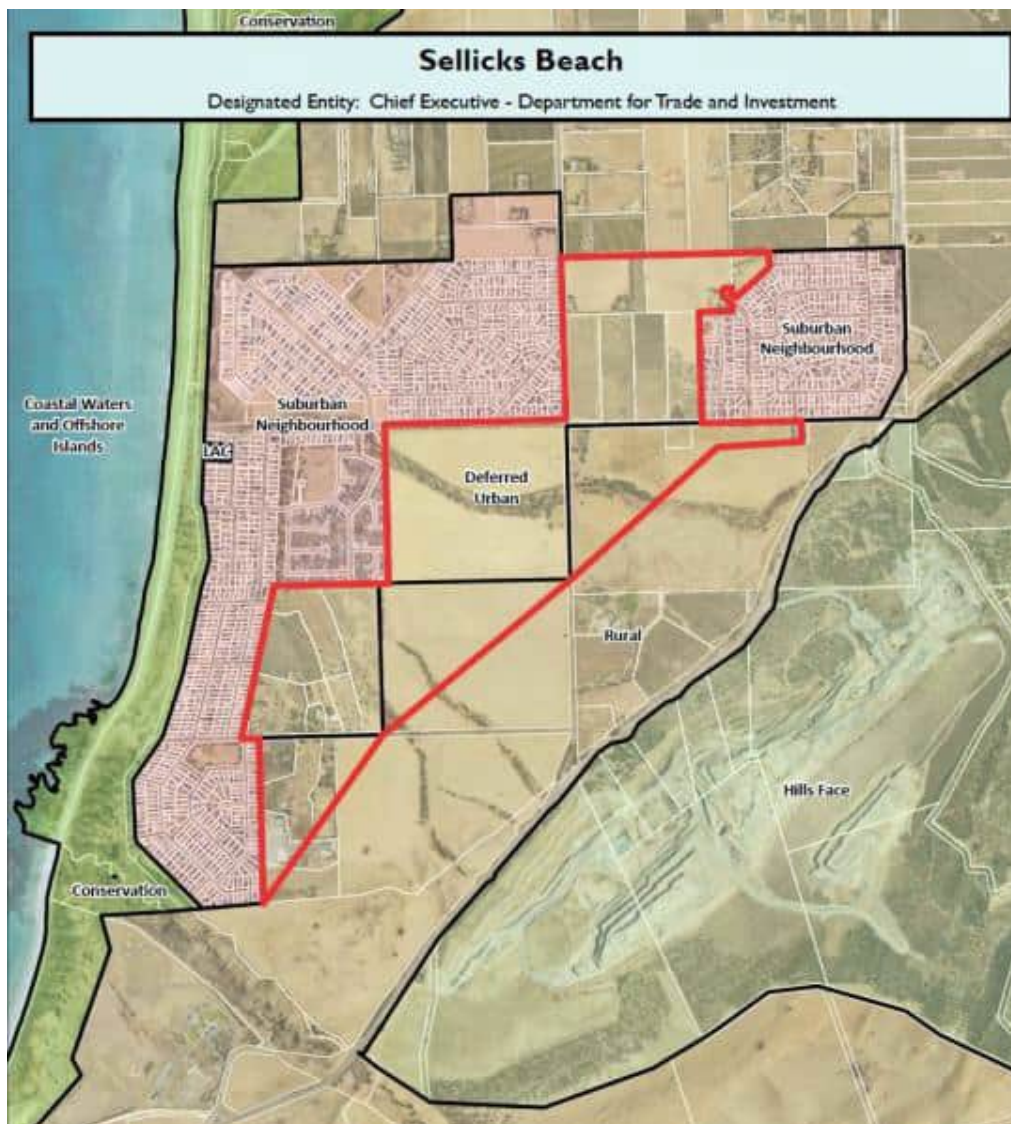


Figure 1: Subject site and current zoning from Consultant Brief

In order to facilitate future residential use on the Affected Area, a Code Amendment will be required. To inform the Code Amendment, the Department for Housing and Urban Development (**DHUD**) has commissioned studies of current environmental conditions, including noise. An Environmental Noise Quality Audit (**ENQA**) has been conducted to:

- Determine the existing acoustic environment, including identification of existing sources in the vicinity and measurement of the noise received at the Affected Area.
- Predict future noise emissions from sources currently in the vicinity of the site.
- Determine what noise control measures can be incorporated into the development of the Affected Area, so that the presence of new sensitive receivers (dwellings) on the Affected Area in future does not constrain the operation of existing lawfully approved activities in the vicinity.
- Determine the need for any planning constraints and/or mitigation measures, should the Code Amendment proceed, to achieve adequate levels of residential amenity

The assessment is based upon the following:

- Consultant Brief by Department for Housing and Urban Development, dated 22 August 2024.
- Site visit and noise measurements taken at Sellicks Hill Quarry on 22 November 2024.
- Sellicks Hill Quarry *Annual Compliance Report 31/08/2022-30/08/2023*, downloaded from Department for Energy and Mining website on 20 November 2024.
- The assumption that existing agricultural uses within the Affected Area will be vacated.

Note that this report is intended for public consultation and as such commercially sensitive information has been omitted. There is no change to reported results or recommendations.

2 PLANNING AND DESIGN CODE

The Affected Area is currently within the *Deferred Urban Zone* and the *Rural Zone* of the Planning and Design Code (the **Code**) but is not within the *Noise and Air Emissions* overlay. The Affected Area is currently surrounded by the *Rural Zone* and the *Suburban Neighbourhood Zone*, and the nearby Sellicks Hill Quarry is located within the *Hills Face Zone*.

The desired outcome for the *Deferred Urban Zone* is “*To safeguard land for future urban growth*”. The desired outcomes for the *Rural Zone* are “*A zone supporting the economic prosperity of South Australia primarily through the production, processing, storage and distribution of primary produce, forestry and the generation of energy from renewable sources.*” and “*A zone supporting diversification of existing businesses that promote value-adding such as industry, storage and warehousing activities, the sale and consumption of primary produce, tourist development and accommodation.*”.

It is likely that a Code Amendment for the Affected Area will seek to change the zoning to a zone or zones which accommodate residential uses, and other zones for supplementary land uses such as suburban activity centres and open space.

The Interface between Affected Area Uses module of the Code provides the following Desired Outcome for locations where there is an interface between Zones: “*Development is located and designed to mitigate adverse effects on or from neighbouring and proximate land uses.*”

To provide an objective assessment of this Desired Outcome, reference is made to:

- Ministerial Building Standard MBS 010 (**MBS 010**) to assess road traffic noise
- The *Environment Protection (Commercial and Industrial) Noise Policy 2023* (the **Policy**) to assess noise from existing business and rural activity in the area.

3 EXISTING CONDITIONS

Measurements of the current acoustic environment at the Affected Area were taken between 6 February and 15 February 2025 at two locations shown in Figure 1. Noise monitoring data were at times adversely affected by weather, including periods of high wind speeds which occurred over several days. These data have been excluded from subsequent analysis but are shown on the graphs in Appendix A.

The timing of the monitoring was chosen to coincide with a lull in construction works along Sellicks Beach Road, associated with the Main South Road duplication project. As noise from this construction activity is temporary and transient in nature, where evident in the monitoring data, it has also been excluded from the analysis.

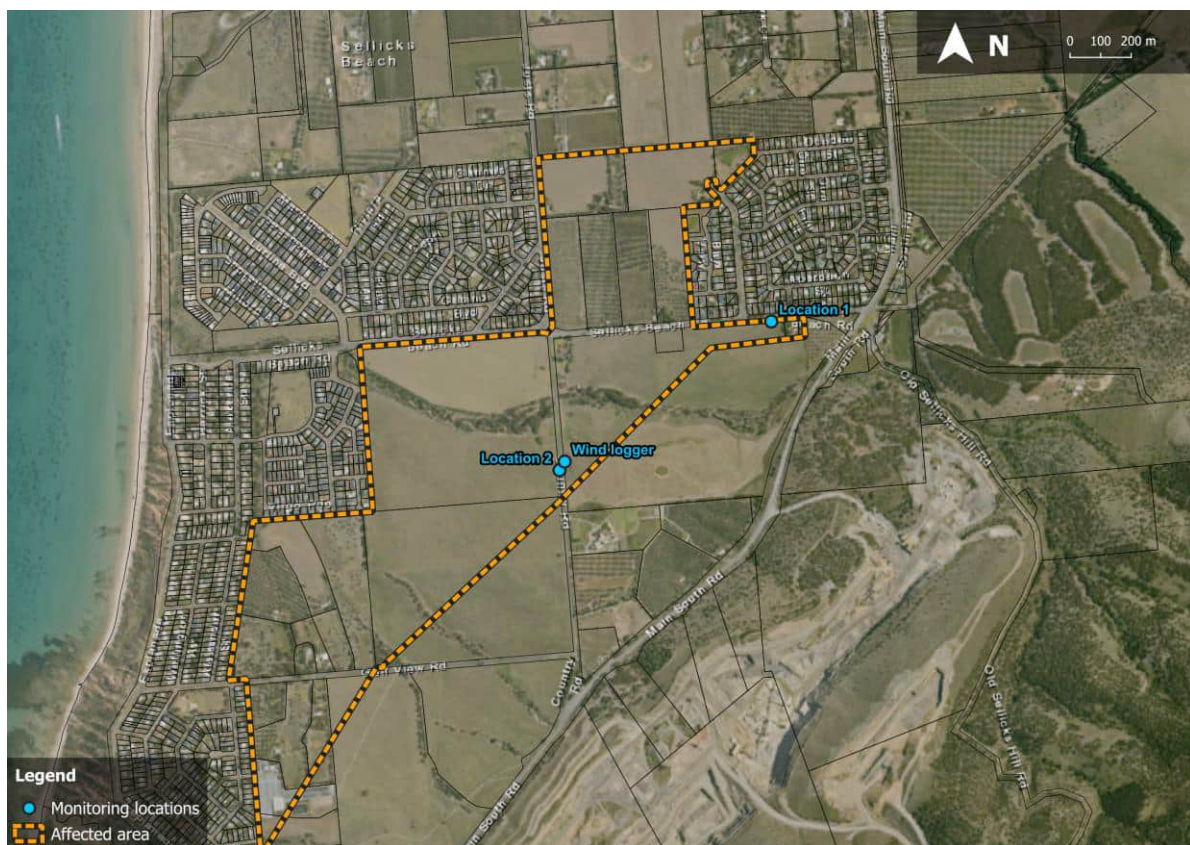


Figure 2: Noise monitoring locations

Location 1 was chosen as representative of ambient noise at the closest part of the Affected Area to Main South Road and the existing winery / function venue on Sellicks Beach Road. Sources of noise observed in sound recordings taken at this location were identified as the passing of vehicles travelling on Sellicks Beach Road, steady traffic noise from South Road during peak times and livestock grazing in the adjacent paddocks of the Affected Area. A summary of relevant noise descriptors recorded at Location 1 over the monitoring period is provided in Table A6 in Appendix A.

Location 2 was chosen as representative of ambient noise at allotments within the central and southern parts of the Affected Area. Sources of noise observed in sound recordings taken at this location were predominantly vehicles passing on Country Road, wind in foliage and tidal noise, and livestock in the paddocks of the adjacent parts of the Affected Area. Higher L_{eq} noise levels measured at Location 2 are attributed to the exposed position of the measurement equipment at Location 2 which was more susceptible to noise from local traffic, wind in foliage and tidal noise. A summary of relevant noise descriptors recorded at Location 2 over the monitoring period is provided in Table A7 in Appendix A.

Meteorological data during the noise monitoring period was recorded on site nearby monitoring Location 2, and sourced from the Bureau of Meteorology automatic weather station at Sellicks Hill. Wind speed data is shown overlaid on the graphs in Appendix A.

4 ASSESSMENT

4.1 Road traffic noise

The primary source of Road Traffic Noise at the Affected Area is Main South Road which is designated as a Type B road in the Code. Current posted speed limits on Main South Road are shown in Figure 3.



Figure 3: Main South Road posted speed limits

4.1.1 Criteria

Assessment against MBS 010 is mandatory at Building Rules Consent stage where land is within the Noise and Air Emissions overlay of the Code. As this is not the case for the proposed Affected Area, the general principles of MBS 010 have been used to objectively assess road traffic noise.

The *Deemed-to-Satisfy* approach of MBS 010 specifies acoustic treatment to each component of a building 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. If there is

no SEC applicable, it is deemed that no specific acoustic treatment is required for road noise. For a Type B road, MBS 010 provides the Sound Exposure Categories shown in Table 1:

Table 1: MBS 010 Sound Exposure Category vs receiver setback distance to designated road sources

Sound exposure category	Posted speed limit and separation distance	
	70-90 km/h	100-110 km/h
SEC 1	55 < 95 metres	75 < 130 metres
SEC 2	30 < 55 metres	35 < 75 metres
SEC 3	15 < 30 metres	20 < 35 metres
SEC 4	Less than 15 metres	10 < 20 metres
SEC 5	N/A	Less than 10m

Table 2 (taken directly from MBS 010) provides the expected road traffic noise level ($L_{Aeq,9hr}$) for each SEC.

Table 2: MBS 010 Sound Exposure Categories for road traffic noise at night

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

4.1.2 Road traffic noise exposure

Over the duration of the monitoring, the highest recorded $L_{Aeq,9hr}$ noise level was 57 dB(A), at Location 2. Noise levels at Location 1 (closer to Main South Road) were lower, with a highest measured $L_{Aeq,9hr}$ of 50 dB(A). The higher noise levels at Location 2 are attributed to noise from foliage at this location which is more exposed to wind than at Location 1, rather than higher levels of traffic noise. Regardless, measured noise levels at both locations were below the MBS 010 noise level ranges where a road traffic noise Sound Exposure Category would apply and acoustic treatment to building facades would be required.

This conclusion from the measurement data is supported by the spatial footprint of the highest setback distance for SEC 1 when applied to Main South Road, as shown in Figure 4.

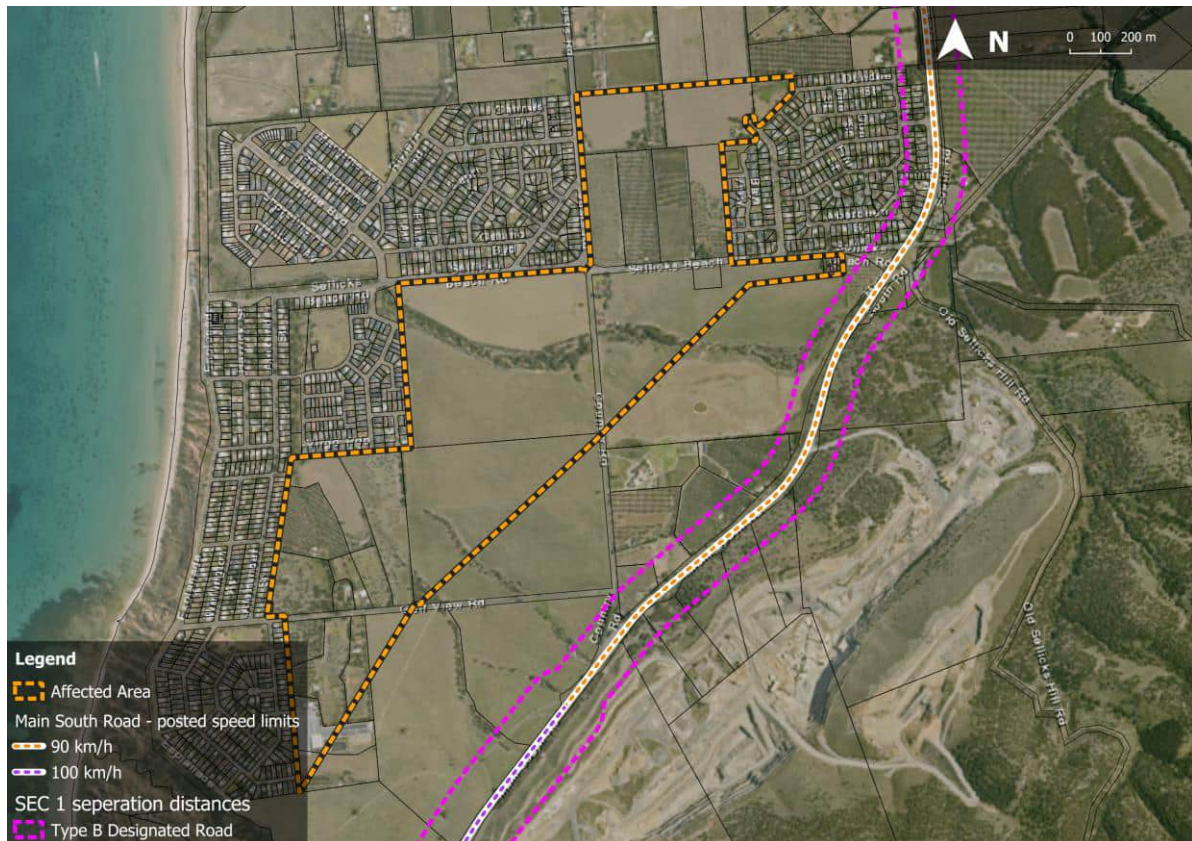


Figure 4: SEC 1 separation distances to Main South Road (Designated Type B road)

From the MBS 010 analysis, the road traffic noise contribution at the closest parts of the Affected Area to Main South Road will be less than 59 dB(A) $L_{eq,9hr}$, and no specific acoustic treatment for road traffic noise would be triggered under MBS 010 should the Affected Area be within a Noise Designated Area under the Noise and Air Emissions overlay of the Code.

4.2 Quarry

The Sellicks Hill Quarry (the **Quarry**) is located in Sellicks Hill, approximately 3km southeast of Aldinga Beach covering an area of approximately 261 hectares. The Quarry produces limestone, shale, marble and dolomite for construction materials. The Quarry has been identified as a strategically important mineral resource area for South Australia.

In accordance with the Code, development on the Affected Area will need to mitigate against adverse effects caused by this existing noise source, preventing constraint on the operation of the quarry due to the addition of new noise sensitive receivers in close proximity. The Policy provides a method for assessing the environmental noise emissions from an existing premises to future sensitive receivers.

4.2.1 Criteria

Clause 11 of the Policy establishes a hierarchy of measurement locations to be used when measuring noise for compliance determination. Where no acoustic treatment is incorporated to the facade of dwellings, the relevant assessment location is outdoors. Based upon the intervening Rural Zone and the Affected Area having future zoning promoting residential land use, the relevant assessment criteria for noise from the Quarry are:

- 52 dB(A) for the day period (7:00am to 10:00pm)
- 45 dB(A) for the night period (10:00pm to 7:00am).

When measuring or predicting noise levels for comparison with the Policy, adjustments may be made to the noise levels for each “annoying” characteristic of tonality, impulsiveness, intermittency, low frequency, or modulation of the noise source. The characteristic must be dominant in the acoustic environment and therefore the application of penalties can vary depending on the assessment location, time of day, the noise source being assessed, and the predicted noise level.

4.2.2 Noise modelling

To quantify noise emission from the Quarry, a noise model has been developed using SoundPLAN environmental noise prediction software.

The model calculates noise levels based on worst-case propagation conditions to all receivers, and the following inputs:

- Noise measurement data from a site survey of the Quarry, taken on 22 November 2024.
- Terrain elevation data from the South Australian Government 2022 Digital Elevation Model 50cm Grid.

- CONCAWE propagation algorithm using weather category 6 for propagation to all receivers.
- Acoustically-reflective ground for the quarry pit and hardstand areas, soft ground for undeveloped land between the quarry and the Affected Area.
- Shielding from existing buildings and structures on the quarry site.
- Advice from Adbri Quarries regarding existing and planned future operation of the site, and a list of noise generating items operating at the site.

4.2.3 Quarry operations

The Sellicks Hill Quarry operates extraction across three pits, with the distribution of operation across the pits dependent on demand for the various materials produced. Noise modelling of quarry operations was based upon the operational details provided by Adbri Quarries with allowance for potential future growth.

During stakeholder interviews, Adbri Quarries cited specific concerns that future residents in the Affected Area may raise complaints regarding the noise from trucks accessing the quarry from Main South Road (a public road). Noise from quarry trucks within the Quarry Site Boundary has been included in the predicted noise levels. Additional analysis has been conducted to determine the noise contribution from quarry trucks to traffic noise from Main South Road.

4.2.4 Results

The highest predicted noise level from the Quarry within the Affected Area are presented in Table 3, and shown graphically in Figure 5.

Table 3: Predicted noise from quarry within Affected Area

Location	Leq,15min [dB(A)]	
	Day [7:00 am to 10:00 pm]	Night [10:00 pm to 07:00 am]
Highest level within Affected Area	36	37

Noise levels for both the day and night period are predicted to be compliant with the relevant noise criteria, without the provision of any specific noise mitigation.

An assessment of the noise from quarry trucks on Main South Road adjacent the Quarry has been made by considering a scenario where the advised daily number of quarry trucks accessing the site are added to the current traffic flow (conservatively assuming the number of quarry trucks in the reported existing traffic flow is negligible). This analysis is summarised in Table 4.

Table 4: Analysis of noise from quarry trucks

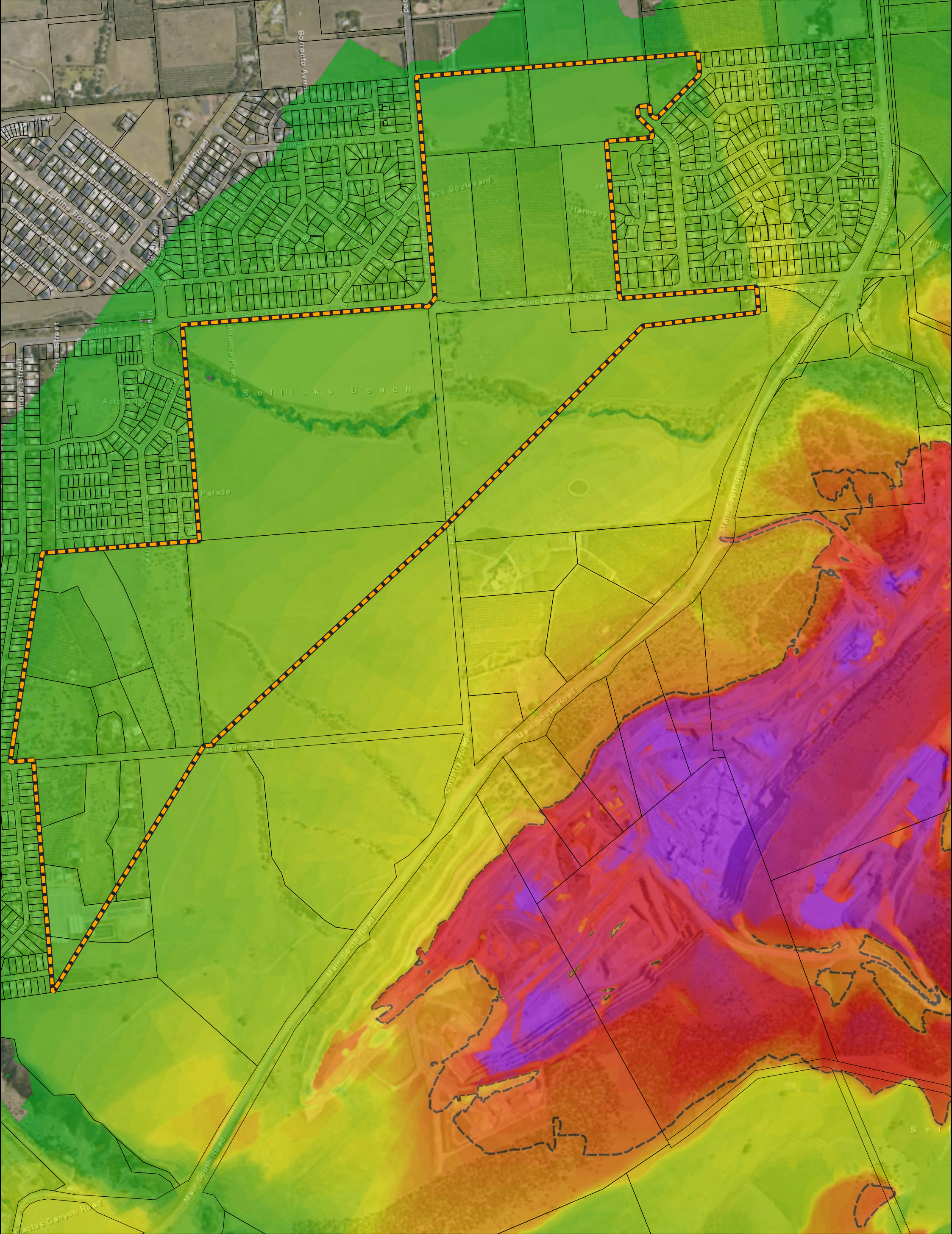
Metric	Noise from current traffic flow with addition of quarry trucks	
	Day	Night
Predicted noise level at Affected Area closest to quarry entrance	42	38
Predicted noise level at closest part of affected area to Main South Road	49	44

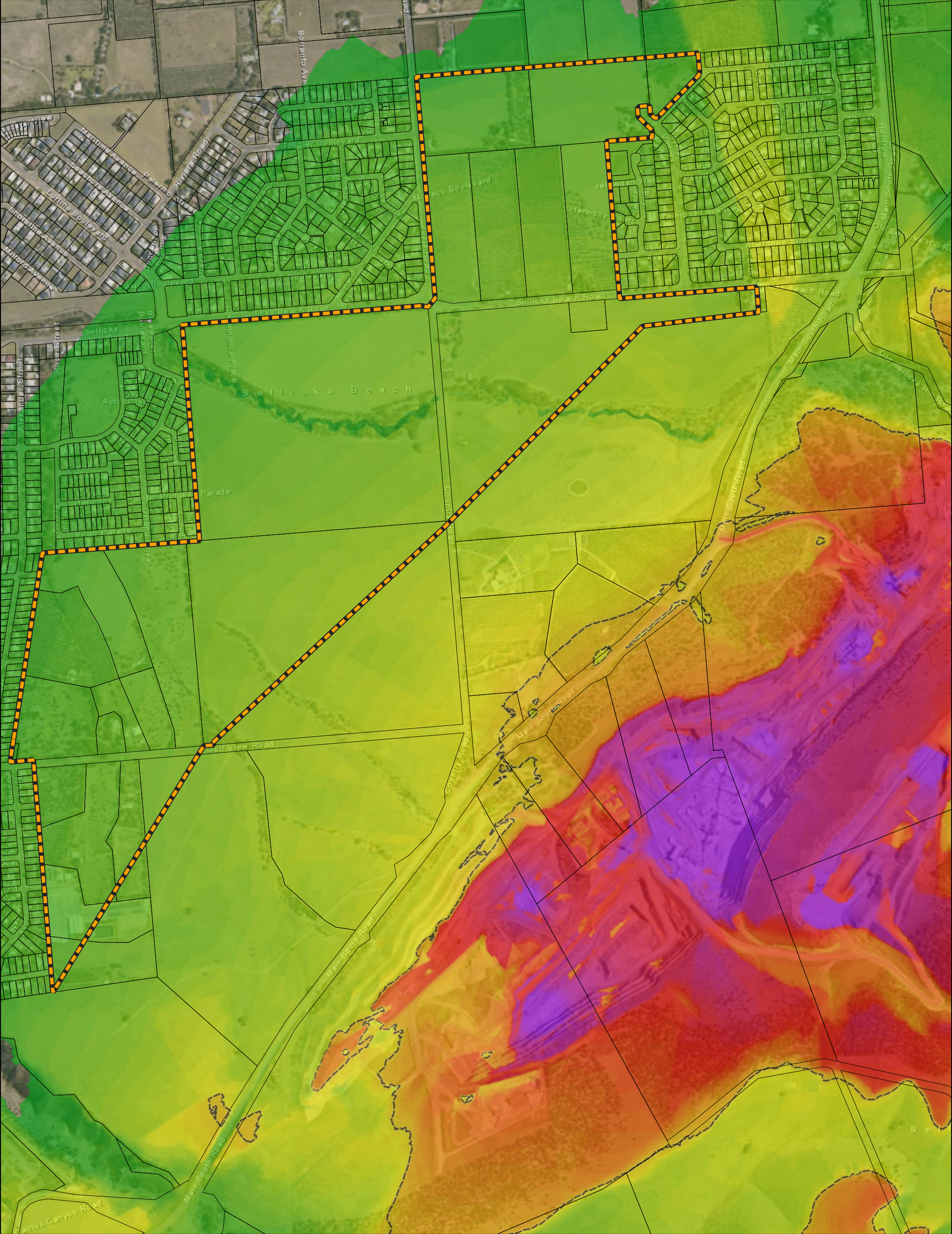
Notes:

- (1) Assumes the day/night proportion of traffic flow is 90% day, 10% night, with day as 7:00 am to 10:00 pm, night as 10:00 pm to 7:00 am.

Predicted noise levels at the closest location of the Affected Area to the quarry entrance road during the night period remain lower than the facade noise level criteria for MBS 010 Sound Exposure Category 1, and as such would not require property treatment. For the closest part of the Affected Area to Main South Road, predicted road traffic noise levels are similarly lower than the MBS 010 facade noise criteria at which acoustic treatment requirements are triggered.

The increase in night road traffic noise levels when the quarry is operating is likely to be noticeable by residents at allotments in the Affected Area which are adjacent to Main South Road, however specific noise mitigation for noise from quarry road trucks is not required to satisfy the MBS 010 facade noise levels for road traffic noise.





4.3 Winery

Berg Herring Wines operates a cellar door (**Winery**) at Lot 21 Sellicks Beach Road, within the northern boundaries of the Affected Area. City of Onkaparinga has advised that the Winery operates under a DA approval (DA number 21023636), which stipulates that the playback of music is limited to acoustic (i.e. unamplified) music only. As such, the assessment considers noise from non-music sources only.

The Winery holds a Liquor Production & Sales Licence (License number 57618105) which states a premises capacity of 100 patrons and authorised hours for the sale of liquor between 10:00am to 9:00pm each day of the week.

4.3.1 Criteria

Criteria for the Winery are determined from the Policy. Similarly to the criteria applied for noise from the Quarry, the applicable assessment location and noise criteria are dependent on if acoustic treatment is incorporated into the building facade, which would be required for future receivers within a 'Mixed Use Area'.

Where no acoustic treatment is incorporated to the facade of dwellings, the relevant assessment location is outdoors. Based upon the location of both the Winery and receivers being within the Affected Area, and future zoning promoting residential land use, the relevant assessment criterion for noise from the Winery is 52 dB(A) for the day period (7:00am to 10:00pm).

4.3.2 Winery operations

Noise levels from operation of the winery were predicted using a SoundPLAN noise model. The model calculates noise levels based on worst-case propagation conditions to all receivers and noise sources including:

- Patrons in the outdoor areas of the winery
- Carparking for patrons and staff
- Typical building services plant.

4.3.3 Results

The highest predicted noise level from the Winery within the Affected Area is presented in Table 3.

Table 5: Predicted noise from quarry within Affected Area

Location	Leq,15min [dB(A)]
	Day [7:00 am to 10:00 pm]
Highest level within Affected Area	63

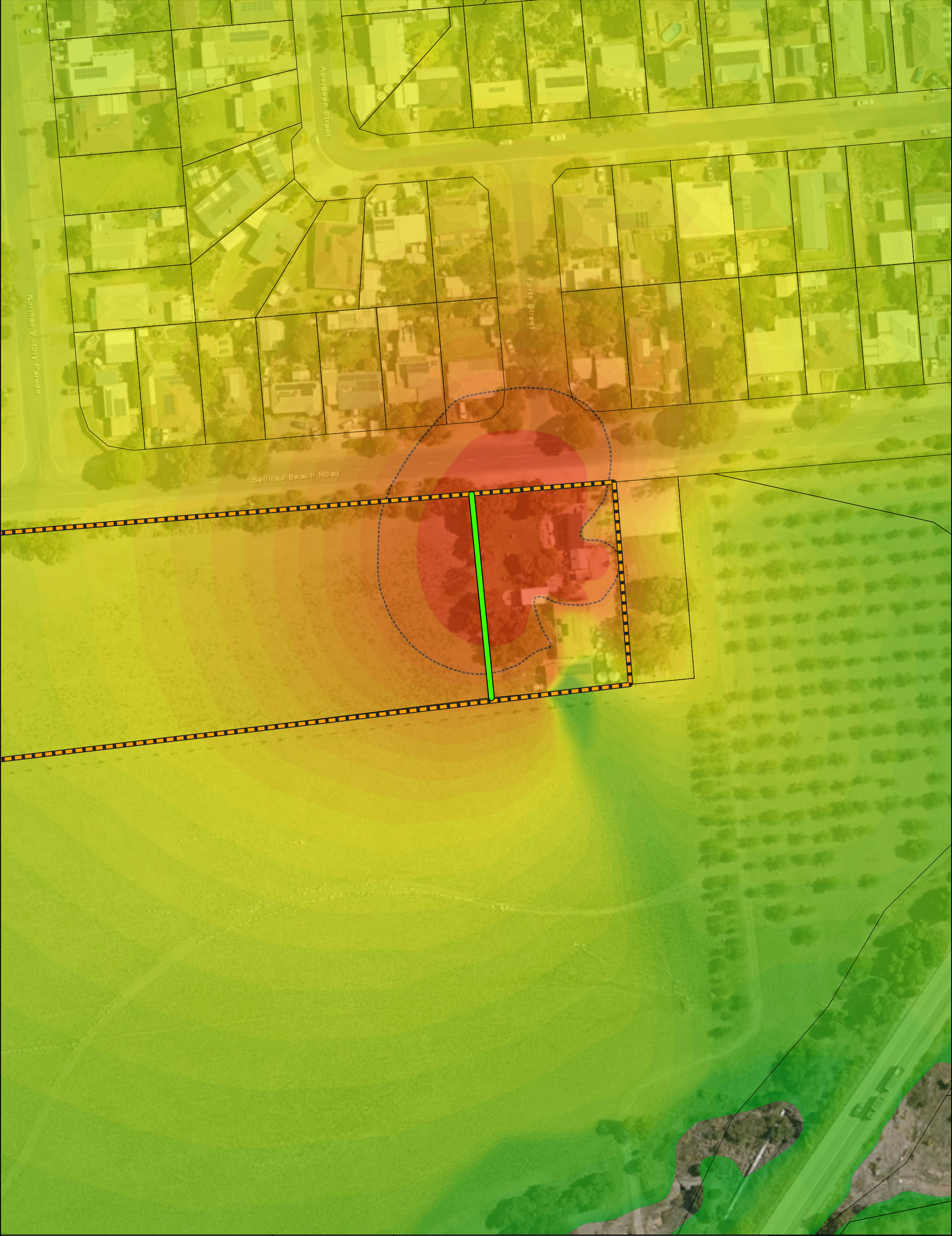
The predicted noise level from operation of the Winery at the Affected Area exceeds the applicable noise level criterion. The predicted noise level is controlled by noise from patrons in the outdoor area which is adjacent to the boundary of the Affected Area.

4.3.4 Mitigation

Noise mitigation options to protect operation of the winery against future constraint include use of acoustic shielding or incorporating a buffer area between the winery and the future location of sensitive receivers within the Affected Area.

If dwellings are to be positioned at the boundary of the Affected Area with the winery property, a 2.4 metre high noise barrier should be constructed on the boundary. The fence should be constructed from a solid material free from gaps or holes. Commonly used fencing materials which are suitable for the noise barrier include sheet metal fencing or masonry walling. Predicted noise level contours for the winery at full capacity with barrier in place are shown in Figure 6.

A buffer area could also be positioned between the winery and future residential allotments, with the land within the buffer zoned to accommodate land uses which will not accommodate sensitive receivers, such as commercial land uses or open space. If a buffer area is to be used, it should be positioned such the closest sensitive receivers are at least 35 metres from the boundary of the winery.



5 CONCLUSION

An assessment of environmental noise has been made for land at Sellicks Beach, known as the Sellicks Beach Growth Area, which has been earmarked for a future urban growth area, subject to investigations to inform the preparation of a draft Code Amendment for public consultation.

The assessment considers noise at the Affected Area from existing road traffic, nearby industry and commercial premises. Noise levels from these existing uses have been predicted at the Affected Area and compared to relevant criteria from the Planning and Design Code, including *Ministerial Building Standard 010* and *Environment Protection (Commercial and Industrial Noise) Policy 2023*.

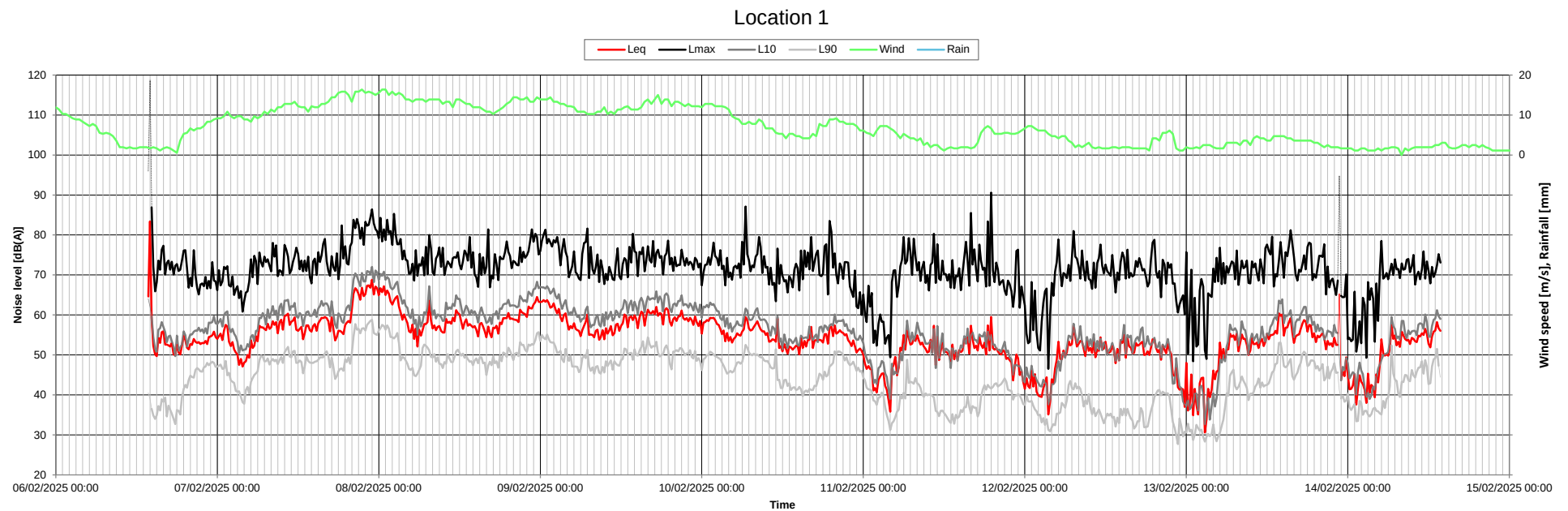
Noise from road traffic and noise from the Sellicks Hill Quarry were found to satisfy the noise criteria without specific acoustic treatment.

Noise from activity at Berg Herring Wines can achieve the criteria subject to the construction of a noise barrier or designation of a buffer space between dwellings and the boundary of the winery.

Subject to these controls, the development of new dwellings within the Affected Area will not constrain operation of existing approved land uses in the vicinity.

Based on the above, it is considered that the existing provisions of the Planning and Design Code will result in future developments within the Affected Area being compatible with existing land uses.

APPENDIX A: NOISE MONITORING DATA



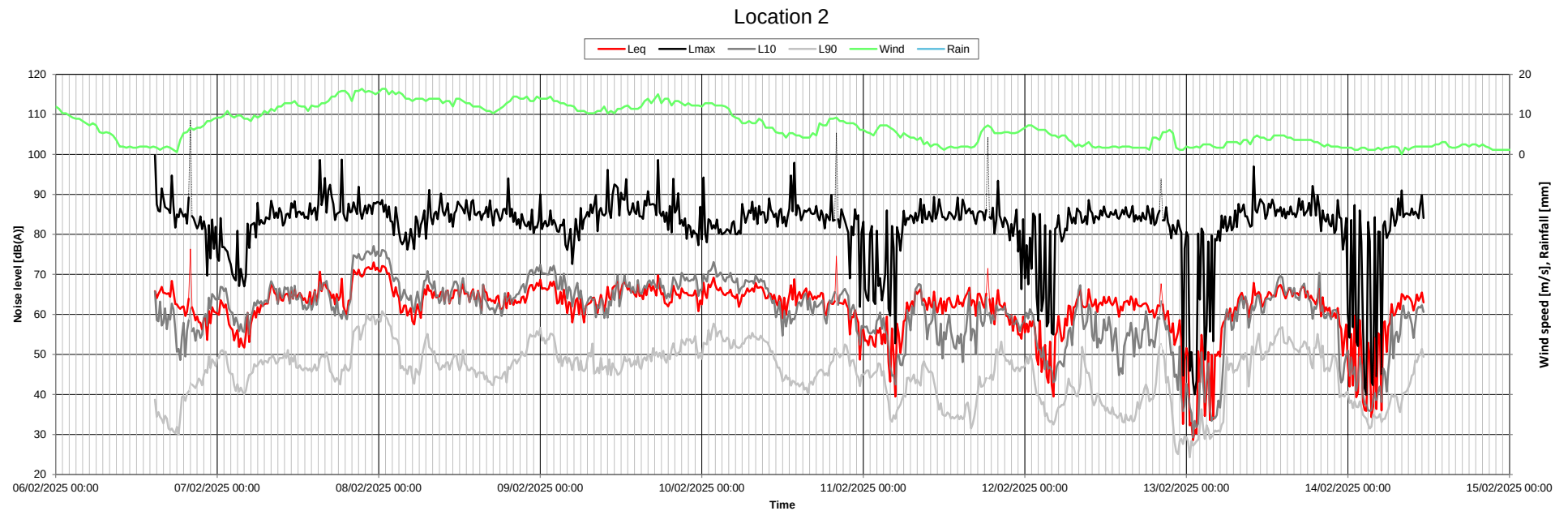


Table A6: Location 1 monitoring results summary

Noise descriptor	L ₉₀ ,15min	L _{eq} ,15min	L _{Aeq} ,15hr	L _{Aeq} ,9hr
Day				
Highest	53	60	55	N/A
Median	45	54	55	N/A
Lowest	32	47	52	N/A
Night				
Highest	52	58	N/A	50
Median	37	45	N/A	48
Lowest	28	31	N/A	47

Table A7: Location 2 monitoring results summary

Noise descriptor	L ₉₀ ,15min	L _{eq} ,15min	L _{Aeq} ,15hr	L _{Aeq} ,9hr
Day				
Highest	57	69	65	N/A
Median	43	64	64	N/A
Lowest	32	56	63	N/A
Night				
Highest	50	63	N/A	57
Median	39	55	N/A	56
Lowest	24	29	N/A	54