# Corner Days & Regency Roads DPA

## Environmental Noise Assessment

A17375RP1 Revision 0

Tuesday, 20 August 2019

Resonate

**Document Information**

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| **Project** | Corner Days & Regency Roads DPA Acoustic Investigation |
| **Client** | URPS |
| **Report title** | Environmental Noise Assessment |
| **Project Number** | A17375 |

**Revision Table**

| Report revision | Date | Description | Author | Reviewer |
|---|---|---|---|---|
| 0 | 20 August 2019 | First Issue | James Tudor Tsourtos | Nick Henrys |
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# Glossary

| | |
|---|---|
| A-weighting | A spectrum adaption that is applied to measured noise levels to represent human hearing. A-weighted levels are used as human hearing does not respond equally at all frequencies. |
| Characteristic | Associated with a noise source, means a tonal, impulsive, low frequency or modulating characteristic of the noise that is determined in accordance with the Guidelines for the use of the Environment Protection (Noise) Policy (Noise EPP) to be fundamental to the nature and impact of the noise. |
| Continuous noise level | A-weighted noise level of a continuous steady sound that, for the period over which the measurement is taken using fast time weighting, has the same mean square sound pressure as the noise level which varies over time when measured in relation to a noise source and noise-affected premises in accordance with the Noise EPP |
| Day | Between 7 am and 10 pm as defined in the Noise EPP |
| dB | Decibel—a unit of measurement used to express sound level. It is based on a logarithmic scale which means a sound that is 3 dB higher has twice as much energy. We typically perceive a 10 dB increase in sound as a doubling of that sound level. |
| dB(A) | Units of the A-weighted sound level. |
| Frequency (Hz) | The number of times a vibrating object oscillates (moves back and forth) in one second. Fast movements produce high frequency sound (high pitch/tone), but slow movements mean the frequency (pitch/tone) is low. 1 Hz is equal to 1 cycle per second. |
| Indicative noise level | Indicative noise level determined under clause 5 of the Noise EPP. |
| $L_{90}$ | Noise level exceeded for 90 % of the measurement time. The $L_{90}$ level is commonly referred to as the background noise level. |
| $L_{eq}$ | Equivalent Noise Level—Energy averaged noise level over the measurement time. |
| $L_{max}$ | The maximum instantaneous noise level. |
| Night | Between 10.00 p.m. on one day and 7.00 a.m. on the following day as defined in the Noise EPP |
| Noise source | Premises or a place at which an activity is undertaken, or a machine or device is operated, resulting in the emission of noise |
| Quiet locality | A locality is a quiet locality if the Development Plan provisions that make land use rules for the locality principally promote land uses that all fall within either or both of the following land use categories: (a) Residential; (b) Rural Living; |
| 'A' Weighted | A spectrum adaption that is applied to measured noise levels to represent human hearing. A-weighted levels are used as human hearing does not respond equally at all frequencies. |
| dB | Decibel—a unit of measurement used to express sound level. It is based on a logarithmic scale which means a sound that is 3 dB higher has twice as much energy. We typically perceived a 10 dB increase in sound as a doubling of that sound level. |
| dB(A) | 'A' Weighted sound level in dB. |

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# Table of Contents

# 1 Introduction

Resonate have been engaged by URPS to complete a noise assessment for the Corner Days & Regency Roads, Croydon Park, SA. This report is intended to support a Development Plan Amendment (DPA) for the land.

The noise assessment is for the proposed change of use of the subject land to ensure compliance with the relevant requirements in light of the site's proximity to main roads and the relationship between the proposed retail activity and residential use. The land is currently zoned as Light Industry. This assessment investigates potential noise issues from the proposed change of use including:

- Noise requirements arising from the Environmental Protection (Noise) Policy and the Port Adelaide Enfield Development plan
- The control of traffic noise to proposed noise sensitive land uses in accordance with Minister's Specification SA 78B

# 2 Land Site

## 2.1 Location

Figure 1 shows the location of the land package under consideration for the DPA. The land is currently zoned as light industry.

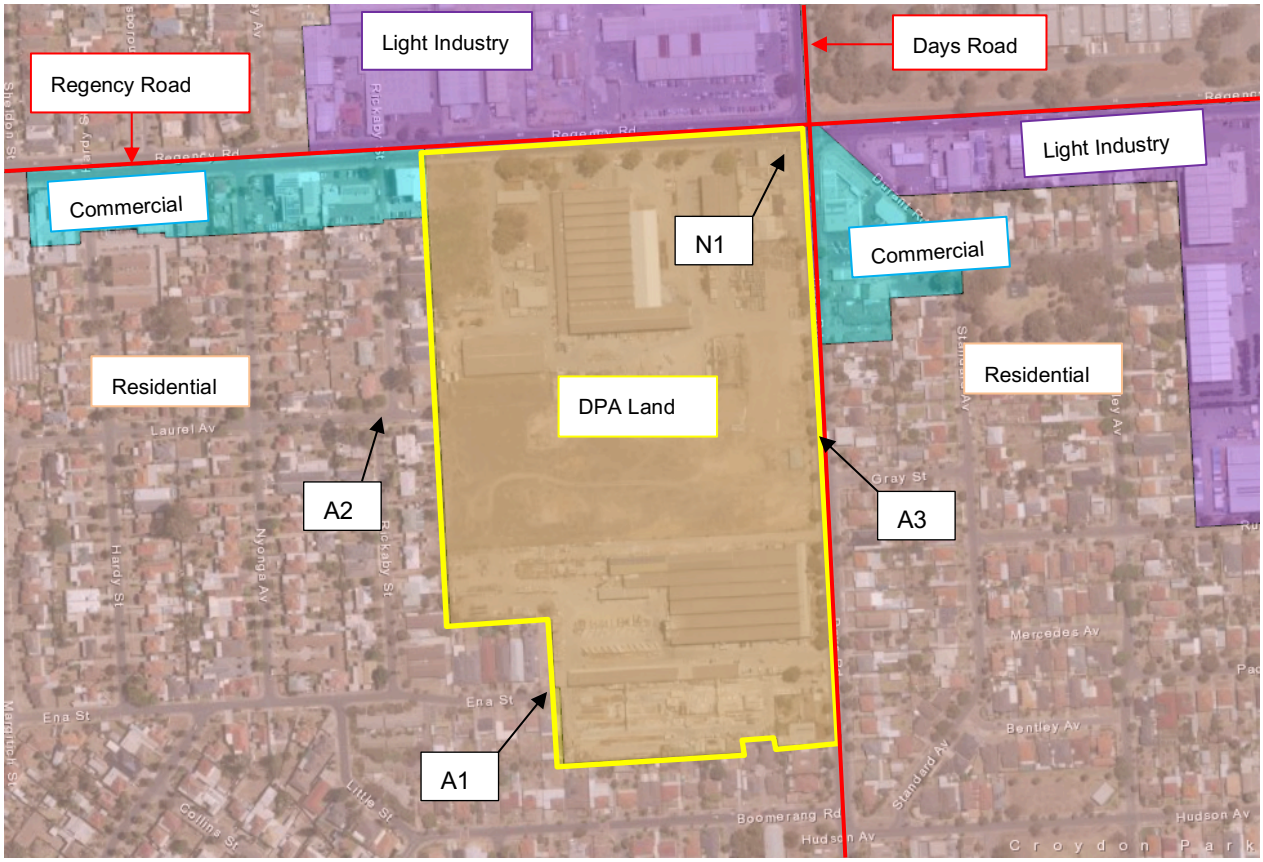


**Figure 1 Site of land for DPA and neighbouring land uses, unattended noise logging location (N1) and attended measurement locations (A1 – A3)**

## 2.2 Land designations and operations

At this stage of the assessment the land use is intended to be rezoned as a mix of residential and commercial. Resonate understand that the likely division of the land is to define the northern third (adjacent to Regency Road) as commercial and the remaining southern area as residential. The possibility of mixed-use developments, such as apartment buildings with ground floor commercial businesses fronting Regency Road, has been considered for this assessment.

# 3 Existing Environment

Noise measurements were taken at the site of the land to quantify the existing environment for the assessment of potential future noise impacts.

## 3.1 Unattended noise logging

### 3.1.1 Details

Noise logging was undertaken at the location shown in Figure 1 (NL1), between Tuesday 23 July – Monday 29 July, 2019.

### 3.1.2 Instrumentation

The noise measurements were taken with a calibrated Rion NL-42 sound level meter, which is a Type 1 instrument suitable for field and laboratory use. The sound level meter was calibrated both before and after the measurements using a Type 1 Brüel & Kjær 4231 sound level calibrator, and the calibration was found to have not drifted. Both the sound level meter and calibrator carry current calibration certificates from a NATA accredited laboratory. Copies of the calibration certificates are available on request.

### 3.1.3 Procedure

Noise measurements were undertaken in accordance with the following:

- The microphone of the sound level meter was at a height of approximately 1.2 metres above the ground and at least 3.5 metres away from any wall or facade.
- A wind shield was used during all measurements.
- Care was taken to avoid any effect on the measurement of extraneous noise.
- Noise measurements were undertaken for a period of 15 minutes.

### 3.1.4 Results

The results of the continuous noise logging are plotted in Figure 2 with the night time periods highlighted in grey.

Table 1 and Table 2 show the average measured noise levels for daytime and night-time respectively. Table 5 shows the range of measured noise levels for both daytime and night-time periods. Noise levels follow a typical diurnal pattern which link with traffic levels on Regency Road.

**Table 1 Daytime average noise levels**

| Date | Leq, dB(A) | Lmax, dB(A) | L90, dB(A) |
|---|---|---|---|
| 23/7/19 | 71 | 87 | 64 |
| 24/7/19 | 71 | 88 | 63 |
| 25/7/19 | 71 | 88 | 64 |
| 26/7/19 | 71 | 88 | 63 |
| 27/7/19 | 70 | 86 | 62 |
| 28/7/19 | 69 | 84 | 61 |
| 29/7/19 | 72 | 88 | 64 |

Table 2 Night-time average noise level

| Date | Leq, dB(A) | Lmax, dB(A) | L90, dB(A) |
|---|---|---|---|
| 23/7/19 | 63 | 81 | 51 |
| 24/7/19 | 63 | 81 | 52 |
| 25/7/19 | 63 | 81 | 53 |
| 26/7/19 | 63 | 81 | 51 |
| 27/7/19 | 62 | 78 | 51 |
| 28/7/19 | 64 | 81 | 50 |

Table 3 Ranges of measured noise levels

| Date | Leq, dB(A) | Lmax, dB(A) | L90, dB(A) |
|---|---|---|---|
| Daytime | 64 – 78 | 77 – 105 | 56 – 68 |
| Night-time | 55 – 74 | 72 – 100 | 39 – 66 |

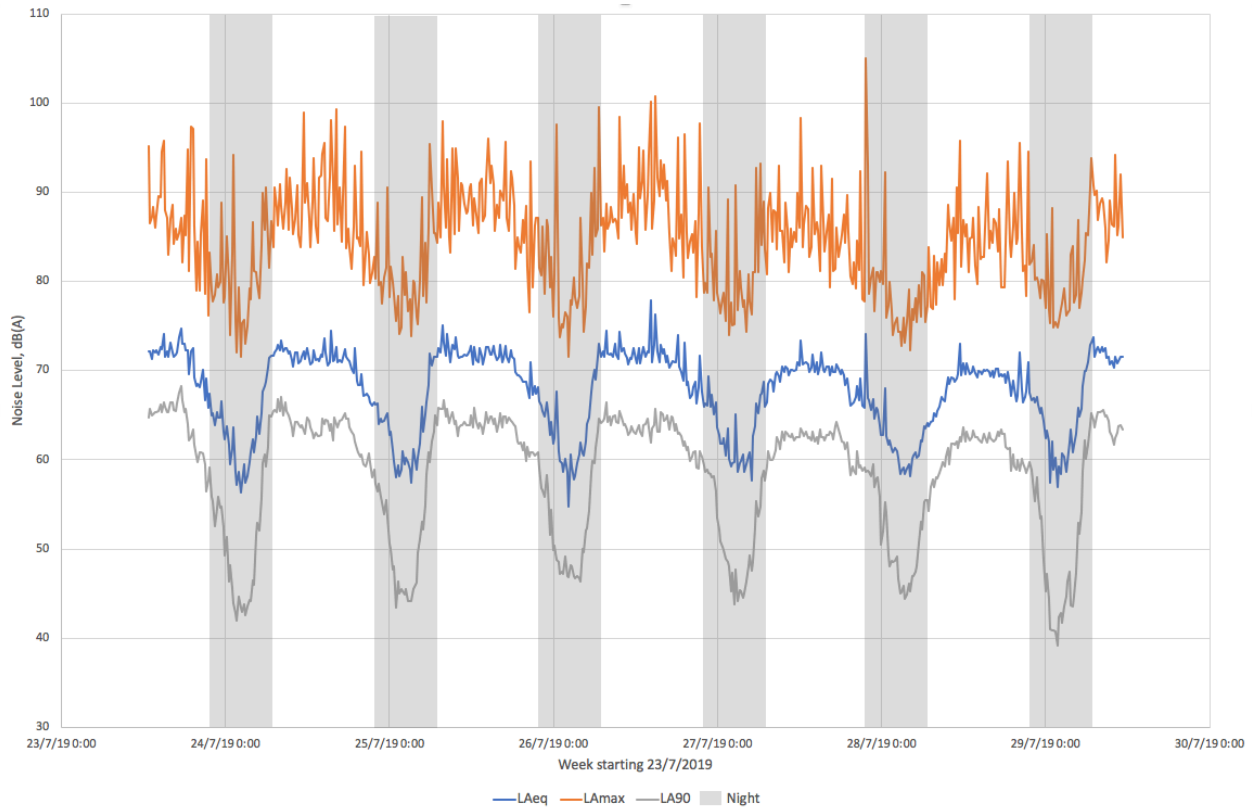


Figure 2 Unattended logging results – southwest corner of Regency Road and Days Road

## 3.2 Attended noise measurements

### 3.2.1 Details

Attended measurements were taken at three locations surrounding the site, shown in Figure 1 (A1 – A3). Measurements were taken on Monday 29 July 2019.

### 3.2.2 Instrumentation

The noise measurements were taken with a calibrated Brüel & Kjær 2250 sound level meter, which is a Type 1 instrument suitable for field and laboratory use. The sound level meter was calibrated both before and after the measurements using a Type 1 Brüel & Kjær 4231 sound level calibrator, and the calibration was found to have not drifted. Both the sound level meter and calibrator carry current calibration certificates from a NATA accredited laboratory. Copies of the calibration certificates are available on request.

### 3.2.3 Procedure

Noise measurements were undertaken in accordance with the following:

- The microphone of the sound level meter was at a height of approximately 1.2 metres above the ground and at least 3.5 metres away from any wall or facade.
- A wind shield was used during all measurements.
- Care was taken to avoid any effect on the measurement of extraneous noise.
- Noise measurements were undertaken for a period of approximately 5 minutes, which was determined as sufficient to qualify existing noise sources.

### 3.2.4 Results

**Table 4 Attended measurement results 29 July 2019**

| Measurement location & Address | Time | Measured noise level, dB(A) | | Observations |
|---|---|---|---|---|
| | | $L_{eq}$ | $L_{90}$ | |
| A1 Ena Street | 10:54 | 56 | 50 | • Dominant noise source was industrial activities within proposed DPA land<br>– Truck movements and idling.<br>– Forklift movements including reversing beeper.<br>– Hand tools (drilling/grinding etc).<br>• Birds and mechanical plant (residential) also audible. |
| A2 Laural Ave (East End) | 11:05 | 48 | 42 | Same industrial noise sources present as above but more distant. Birds and airplane flyover. Regency Rd traffic faintly audible. |
| A3 Days Rd (Opposite Curry Lover) | 11:18 | 68 | 52 | On footpath approximately 3m from traffic lane. Traffic noise dominant, some trucks and buses. |

# 4 Noise criteria

## 4.1 Development Plan

The land is located within the Port Adelaide Enfield council area and future development needs to have regard to the Port Adelaide Enfield Development Plan. The principles of development control relevant to acoustics for Commercial, Residential and Mixed Use zones are outlined below.

### 4.1.1 Commercial Zone

*10 Development adjacent to, or immediately opposite a residential zone should not detract from the amenity of residents living in the Residential Zone and should:*

*(a) be designed and located to minimise the impacts of bulky, unattractive or noise generating elements of the development upon the Residential Zone.*

*(c) provide acoustic treatment between any excessive noise generating part of the development and the adjoining residential areas.*

### 4.1.2 Residential Zone

*4 Non-residential development such as shops, schools and consulting rooms should be of a nature and scale that:*

*(c) does not detrimentally impact on the amenity of nearby residents.*

### 4.1.3 Mixed Use Zone

*5 Residential development of dwellings should incorporate the installation of acoustic measures to provide an appropriate level of internal amenity.*

Note that the PDC above is defined for the Mixed Use (Islington) Zone in the development plan.

### 4.1.4 Air and Noise Emissions Overlay

*1 Noise and air quality sensitive development located adjacent to high noise and/or air pollution sources should:*

*(a) shield sensitive uses and areas through one or more of the following measures:*

*(i) placing buildings containing less sensitive uses between the emission source and sensitive land uses and areas*

*(ii) within individual buildings, place rooms more sensitive to air quality and noise impacts (e.g. bedrooms) further away from the emission source*

*(iii) erecting noise attenuation barriers provided the requirements for safety, urban design and access can be met*

*(b) use building design elements such as varying building heights, widths, articulation, setbacks and shapes to increase wind turbulence and the dispersion of air pollutants provided wind impacts on pedestrian amenity are acceptable*

*(c) locate ground level private open space, communal open space and outdoor play areas within educational establishments (including childcare centres) away from the emission source.*

The existing land is not located with an air and noise emissions overlay according to the development plan. As such, assessments in accordance with Minister's specification 78B are not required for the control of road traffic noise. However, Regency Road is classified as a Type B road in the *Technical Information Sheet 08—Noise and Air Emissions Overlay 3*. Consideration for control of road traffic noise using the process defined in Minister's specification is outlined in Section 5.2.

## 4.2 Environmental Protection (Noise) Policy

Part 4, Clause 18(1) of the *Environment Protection (Noise) Policy* 2007 (Noise EPP) states that:

> The general environmental duty under section 25 of the Act is satisfied in relation to noise from a noise source, insofar as the noise affects particular noise-affected premises, if the noise complies with the noise goals.

Compliance with the Noise EPP will also ensure that PDCs for Commercial and Residential zones are met.

The noise goals in the Noise EPP are based on the zoning of the development and the closest noise affected premises in the relevant development plan. The land uses primarily promoted by the zones are used to determine the environmental noise criteria with the indicative noise factors shown in **Table 5**.

**Table 5 Excerpt from Noise EPP—Table 2(subclause(1)(b))**

| Land use category | Indicative noise factor dB(A) | |
|---|---|---|
| | Day (7 am to 10 pm) | Night (10 pm to 7 am) |
| Rural living | 47 | 40 |
| Residential | 52 | 45 |
| Rural industry | 57 | 50 |
| Light industry | 57 | 50 |
| Commercial | 62 | 55 |
| General industry | 65 | 55 |
| Special industry | 70 | 60 |

Note that a land use category of mixed use (commercial and residential) results in indicative noise factors of 57 dB(A) (day) and 50 dB(A) (night), which result from taking the averages of the indicative noise factors from each of the land use categories. The resulting indicative noise factors are identical to those of an area designated as light industry, which is the current zoning of the land.

**In accordance with Part 5 of the Noise EPP, the relevant criteria for developments on the land will be the average of relevant indicative noise factors less 5 dB(A). The application of Part 5 results in the environmental noise criteria presented Table 6,**

Table 7 and Table 8 for new developments on mixed use, commercial and residential land zones respectively.

**Table 6 Criteria for new developments located within in a mixed-use zone (commercial and residential)**

| Receiver Land Use | Criteria dB(A) | |
|---|---|---|
| | Day (7 am to 10 pm) | Night (10 pm to 7 am) |
| Mixed Use (Commercial and Residential) | 52 | 45 |
| Commercial | 55 | 48 |
| Residential | 48 | 40 |

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**Table 7 Criteria for new developments located within a commercial zone**

| Receiver Land Use | Criteria dB(A) | |
|---|---|---|
| | Day (7 am to 10 pm) | Night (10 pm to 7 am) |
| Mixed Use (Commercial and Residential) | 54 | 48 |
| Commercial | 57 | 50 |
| Residential | 52 | 45 |

**Table 8 Criteria for new developments located within a residential zone**

| Receiver Land Use | Criteria dB(A) | |
|---|---|---|
| | Day (7 am to 10 pm) | Night (10 pm to 7 am) |
| Mixed Use (Commercial and Residential) | 54 | 48 |
| Commercial | 57 | 50 |
| Residential | 47 | 40 |

Penalties can also be applied to a noise source for a variety of characteristics, such as impulsive, low frequency, modulating or tonal characters. For a characteristic penalty to be applied to a noise source is must be fundamental to the impact of the noise and dominate the overall noise impact. Application of the characteristic penalty is discussed in the noise emission assessment.

We note that under Part 5, Clause 20(6) of the Noise EPP, exceedance of the recommended criterion does not necessarily mean action is required under the Noise EPP. Some of the following matters should be considered when considering action:

- the amount by which the criterion is exceeded (in dB(A))
- the frequency and duration for which the criterion is exceeded
- the ambient noise that has a noise level similar to the predicted noise level
- the times of occurrence of the noise source
- the number of persons likely to be adversely affected by the noise source and whether there is any special need for quiet.

Residential zones are also considered to be quiet localities in accordance with the Noise EPP. Developments with noise sources impacting on receivers within quiet localities must have a predicted noise level (maximum) that does not exceed 60 dB(A) between 10 pm to 7am.

# 5 Noise Assessment

## 5.1 Noise emissions from proposed development

Based on Resonate's experience of environmental noise assessments for developments, typical noise sources associated with commercial and residential development typically include (but are not limited to):

- Mechanical plant, such as airconditioning
- Noise associated with vehicle movements, such as carparking areas

Noise sources such as those defined above can be expected to comply with environmental noise criteria at both existing and future noise sensitive development, using standard noise mitigation measures including:

- Location of noise sources away from the nearest receivers where practicable
- Noise barriers
- Selection of low noise mechanical plant and other equipment
- Use of attenuators where required.

In areas further south from Regency Road, existing receivers in the vicinity of the site are likely to benefit from the rezoning of the land, as the future developments are likely to generate lower noise levels when compared to the existing light industrial activities observed during the attended measurements.

## 5.2 Noise and Air Emissions Overlay

The *Noise and Air Emissions Overlay* (the Overlay) contains planning policies to protect new noise and air quality sensitive development from noise and air emissions generated from major transport corridors (road and rail) and mixed land use.

Regency Road is classified as a Type B road, as defined in *Technical Information Sheet 08—Noise and Air Emissions Overlay 3*, and therefore application of the Noise and Air Emissions Overlay is recommended in order to ensure new noise sensitive developments are constructed to appropriately mitigate road traffic noise. The range of noise levels measured at Regency Road (refer to Table 3) are also consistent with road traffic noise levels expected from a Type B road.

Days Road does not have a relevant classification, and has lower traffic noise levels than Regency Road, based on noise measurements. Application of the Overlay to land in the vicinity of Days Road (other than the area near Regency Road) is therefore not warranted. Application of the overlay is recommended for mixed use zones, in order to address potential issues associated with noise sensitive land uses located in close proximity to commercial or entertainment noise sources. The recommended extent of the Noise and Air Emissions Overlay 'designated area' is 60m from the cadastral boundary of Regency Road, in addition to the full extent of any area of the site zoned for mixed use.

Application of the Noise and Air Emissions Overlay will trigger Minister's Specification SA 78B *Construction Requirements for the Control of External Sound*. Construction requirements depend on the distance from the noise source, and consider 'shielding' i.e. where the facade does not have direct line of sight to the source.

The most stringent requirements would apply to noise sensitive development directly adjacent to Regency Road. Whilst these requirements are able to be met with appropriate facade construction, it is recommended that less sensitive commercial land uses are located along the Regency Road frontage where practicable.

## 5.3 Other existing noise sources

Noise from industrial activities on the northern side of Regency Road were not audible at the attended measurement positions. Rather, road traffic noise was the dominant noise source. Design for control of road traffic noise from Regency Road or Mixed Use noise sources in accordance with SA 78B is expected to protect future development from other noise sources in the area associated with existing businesses.

# 6 Conclusion

Resonate have completed a noise assessment for the proposed DPA land.

Existing noise levels were measured, and are dominated by road traffic from Regency Road, and existing light industrial activities within the DPA site. With the proposed future use of the land as a mixture of commercial and residential, noise requirements arising from the Environmental Protection (Noise) Policy and the Port Adelaide Enfield Development plan are expected to be appropriate for the control of noise emissions from new noise sources, to both existing and new noise sensitive receivers. The requirements can be expected to be achieved with standard noise mitigation measures.

We note that based on attended measurements, noise from existing industrial activities on the site in the surrounding existing residential area is relatively high in some locations. Reduced noise emissions from most areas of the site can be expected following rezoning to commercial, residential and mixed uses.

Noise from road traffic and mixed land use is recommended to be controlled through application of the Noise and Air Emissions Overlay, which requires that new noise sensitive development is constructed in accordance Minister's Specification SA 78B. This is also expected to ensure that noise from other existing sources in the surrounding area is adequately controlled.