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MAC201090-05RP1V1

Downer EDI Works Limited  
C/- Neville Hattingh  
Element Environment  
PO Box 1563  
Warriewood NSW 2102

Dear Neville,

## Noise Monitoring Assessment

**Downer EDI Works Pty Ltd - Sustainable Road Resource Centre,  
Central Sydney Industrial Estate, Rosehill, NSW.**

### 1 Introduction

Muller Acoustic Consulting Pty Ltd (MAC) has been requested by Element Environment on behalf of Downer EDI Works Pty Ltd (Downer) to complete a Noise Monitoring Assessment (NMA) of potential noise impacts associated with the demolition and construction of a reclaimed asphalt pavement (RAP) facility (the 'project'). The facility is located on Lot 6 of the proposed subdivision of the Western Area of the former Clyde Refinery within the Central Sydney Industrial Estate (CSIE), Rosehill, NSW.

Attended noise monitoring was undertaken during the day period (7am-6pm) on Wednesday 14 April 2021 to address conditions outlined in the Development Consent and the Rosehill Sustainable Road Resource Centre Construction Noise Management Plan (CNMP). Inspection confirmed that bulk earthworks and demolition activities were occurring onsite, which involved the operation of four (4) excavators and a 90-tonne excavator utilising a rock breaker attachment.

The NMA has quantified potential demolition and construction noise emissions from the project and has been conducted in accordance with the following documents:

- NSW Environment Protection Authority (EPA), Noise Policy for Industry (NPI), 2017;
- Rosehill Sustainable Road Resource Centre Development Consent, 2021 (SSD\_10459);
- Sustainable Road Resource Centre Construction Noise Management Plan (CNMP ref PR122\_Stage1 Version 1 dated 01.02.2021), 2021; and
- Australian Standard AS 1055:2018 - Acoustics - Description and measurement of environmental noise.

A glossary of terms, definitions and abbreviations used in this report is provided in **Appendix A**.

## 2 Noise Criteria

The Rosehill Sustainable Road Resource Centre CNMP outlines the applicable noise criteria for representative residential receiver catchments to the north, south and west of the site and are presented in **Table 1**.

Table 1 Noise Criteria <sup>1</sup>			
Receiver	Standard Hours NML	Out of Hours NML	
	dB LAeq(15min)	dB LAeq(15min)	
	Day	Period 1	Period 2
R1 (Rydalmere)	54	46	42
R2 (Silverwater)	52	46	43
R3 (Rosehill)	61	56	45

Note 1: Noise criteria adopted from the CNMP.

Note 2: Day - the period from 7am to 6pm Monday to Saturday or 8am to 6pm on Sundays and public holidays; Evening - the period from 6pm to 10pm; Night - the remaining periods.

Note 3: Periods and parameters as expressed in the CNMP.

### 3 Methodology

The attended noise measurements were conducted in general accordance with the procedures described in Australian Standard AS 1055:2018, "Acoustics - Description and Measurement of Environmental Noise". Measurements were conducted using a Svantek Type 1, 971 noise analyser. The acoustic instrumentation used carries current NATA calibration and complies with AS IEC 61672.1-2019- Electroacoustics - Sound level meters - Specifications. Calibration of all instrumentation was checked prior to and following measurements. Drift in calibration did not exceed  $\pm 0.5$  dBA.

Noise measurements were of 15-minutes in duration and where possible, throughout each survey the operator quantified the contribution of each significant noise source. Measurements were conducted at three residential receiver catchments (R1, R2 and R3) on Wednesday 14 April 2021, during the daytime, to satisfy the requirements of the CNMP.

Extraneous noise sources were excluded from the analysis to determine the  $L_{Aeq}(15min)$  site noise contribution for comparison against the relevant criteria. In the event of project attributed noise being above criteria, site was to be informed of the exceedance. Where the site is inaudible, the contribution is estimated to be at least 10dBA below the ambient noise level.

Additional plant noise testing was conducted to determine the sound power level of earthworks and demolition. **Figure 1** presents the identified receiver locations and representative measurement locations.



**FIGURE 1**  
**LOCALITY PLAN**  
 REF: MAC201090



**KEY**

-  ATTENDED MONITORING LOCATION
-  SITE LOCATION



\*Imagery Source: nearmap

## 4 Noise Monitoring Results and Discussion

The results of attended monitoring at the receiver catchments surrounding the Rosehill Sustainable Road Resource Centre (RSRRC) during standard hours earthworks and demolition with rock breaker operating are presented in **Table 2** to **Table 4**.

**Table 2 Noise Survey Results – R1, James Ruse Drive, Rydalmere**

Date	Time (hrs)	Descriptor (dBA re 20 µPa)			Criteria	Meteorology	Comments
		L <sub>Amax</sub>	L <sub>Aeq</sub>	L <sub>A90</sub>			
14/04/2021	13:03	78	61	51	54	WS: 2.0m/s WD: NW Rain: Nil	Traffic dominant RSRRC Inaudible

Traffic from Grand Avenue and James Ruse Drive dominated the L<sub>Aeq</sub>(15min) level of 61dB at this monitoring location. During breaks in traffic, RSRRC construction activities were inaudible.

**Table 3 Noise Survey Results – R2, 86 Carnarvon Street, Silverwater**

Date	Time (hrs)	Descriptor (dBA re 20 µPa)			Criteria	Meteorology	Comments
		L <sub>Amax</sub>	L <sub>Aeq</sub>	L <sub>A90</sub>			
14/04/2021	11:50	75	57	52	52	WS: 2.0m/s WD: NW Rain: Nil	Traffic dominant RSRRC Inaudible

Traffic from Carnarvon Street dominated the L<sub>Aeq</sub>(15min) level of 57dB at this receiver. During breaks in traffic, RSRRC construction activities were inaudible.

**Table 4 Noise Survey Results – R3, 71 Penelope Lucas Lane, Rosehill**

Date	Time (hrs)	Descriptor (dBA re 20 µPa)			Criteria	Meteorology	Comments
		L <sub>Amax</sub>	L <sub>Aeq</sub>	L <sub>A90</sub>			
14/04/2021	12:21	84	68	56	61	WS: 2.0m/s WD: NW Rain: Nil	Traffic dominant RSRRC Inaudible

Traffic from James Ruse Drive dominated the L<sub>Aeq</sub>(15min) level of 68dB at this monitoring location. During breaks in traffic, RSRRC construction activities were inaudible.

On Wednesday 14 April 2021 plant noise testing was completed to determine the sound power level of the demolition and earthworks taking place onsite. Measurements were taken at 20m and 55m from the work area. The result and calculated sound power level of demolition and construction activities is presented in **Table 5**. The equipment operating included a 90t excavator with a rock breaker attachment, two (2) 30t excavators, a 50t excavator and a 40t excavator.

**Table 5 Plant Noise Testing**

Plant Item	Calculated Sound Power Level dB
90t Excavator with rock breaker	111/ (121) <sup>1</sup>
4 x excavators (30-50t)	109

Note 1: The hammer attachment was breaking rock approximately 1m below ground surface hence was slightly shielded to the noise monitor. Removing direct line of site would attenuate approximately 8-10dB, hence the bracketed value shows anticipated sound power level if breaking rock at surface.

Results of the monitoring presented in **Table 2** to **Table 5** demonstrate that external noise levels from the project would satisfy relevant external construction noise criteria at assessed receivers.

We trust the above information is satisfactory and if you require anything further, please contact the undersigned.

Yours sincerely



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# Appendix A – Glossary of Terms

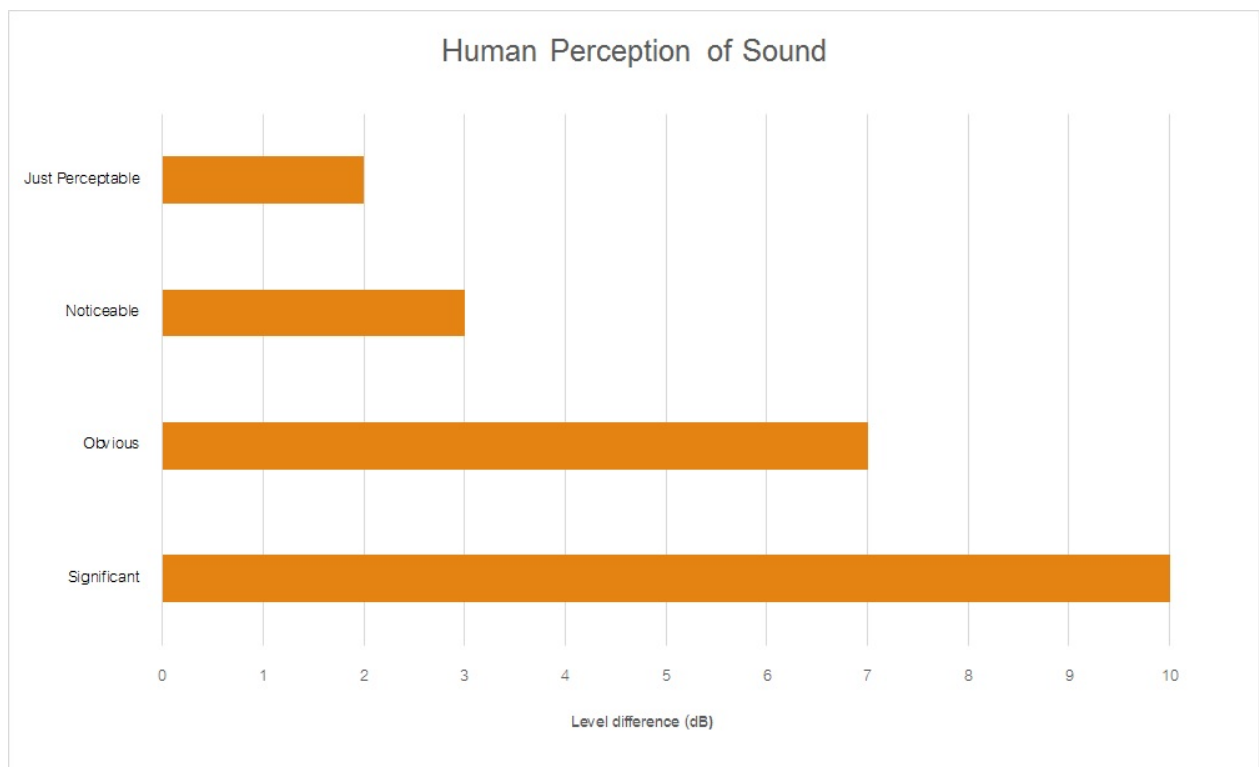
Table A1 provides a number of technical terms have been used in this report.

Table A1 Glossary of Terms	
Term	Description
1/3 Octave	Single octave bands divided into three parts
Octave	A division of the frequency range into bands, the upper frequency limit of each band being twice the lower frequency limit.
ABL	Assessment Background Level (ABL) is defined in the NPI as a single figure background level for each assessment period (day, evening and night). It is the tenth percentile of the measured LA90 statistical noise levels.
Adverse Weather	Weather effects that enhance noise (that is, wind and temperature inversions) that occur at a site for a significant period of time (that is, wind occurring more than 30% of the time in any assessment period in any season and/or temperature inversions occurring more than 30% of the nights in winter).
Ambient Noise	The noise associated with a given environment. Typically a composite of sounds from many sources located both near and far where no particular sound is dominant.
A Weighting	A standard weighting of the audible frequencies designed to reflect the response of the human ear to noise.
dBA	Noise is measured in units called decibels (dB). There are several scales for describing noise, the most common being the 'A-weighted' scale. This attempts to closely approximate the frequency response of the human ear.
dB(Z), dB(L)	Decibels Linear or decibels Z-weighted.
Hertz (Hz)	The measure of frequency of sound wave oscillations per second - 1 oscillation per second equals 1 hertz.
LA10	A noise level which is exceeded 10 % of the time. It is approximately equivalent to the average of maximum noise levels.
LA90	Commonly referred to as the background noise, this is the level exceeded 90 % of the time.
LAeq	The summation of noise over a selected period of time. It is the energy average noise from a source, and is the equivalent continuous sound pressure level over a given period.
LAm <sub>ax</sub>	The maximum root mean squared (rms) sound pressure level received at the microphone during a measuring interval.
RBL	The Rating Background Level (RBL) is an overall single figure background level representing each assessment period over the whole monitoring period. The RBL is used to determine the intrusiveness criteria for noise assessment purposes and is the median of the ABL's.
Sound power level (LW)	This is a measure of the total power radiated by a source. The sound power of a source is a fundamental location of the source and is independent of the surrounding environment. Or a measure of the energy emitted from a source as sound and is given by: $= 10 \cdot \log_{10} (W/W_0)$ Where: W is the sound power in watts and W <sub>0</sub> is the sound reference power at 10-12 watts.

Table A2 provides a list of common noise sources and their typical sound level.

Table A2 Common Noise Sources and Their Typical Sound Pressure Levels (SPL), dBA	
Source	Typical Sound Level
Threshold of pain	140
Jet engine	130
Hydraulic hammer	120
Chainsaw	110
Industrial workshop	100
Lawn-mower (operator position)	90
Heavy traffic (footpath)	80
Elevated speech	70
Typical conversation	60
Ambient suburban environment	40
Ambient rural environment	30
Bedroom (night with windows closed)	20
Threshold of hearing	0

Figure A1 – Human Perception of Sound



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