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Kings Park Waste Metal Recovery, Processing and Recycling Facility - Section 96 Difference to Acoustic Impacts

1 Introduction

Renzo Tonin & Associates was engaged to review the proposed Section 96 design changes to the acoustic treatment for Kings Park Waste Metal Recovery, Processing and Recycling Facility located at 45 Tattersall Road, Kings Park. The purpose of this review is to determine the difference in the predicted noise levels in previous assessments prepared by Renzo Tonin & Associates, presented in the "EIS Supplementary Noise and Vibration Impact Assessment" (TG616-03F01 dated 3 September 2015) with subsequent changes presented in the "Kings Park Waste Metal Recovery, Processing and Recycling Facility - Section 96 Difference to Acoustic Impacts" (TG616-05F02 dated 10 August 2016) and "Kings Park Waste Metal Recovery, Processing and Recycling Facility - Fire Hydrant Water Storage Tanks and Pumps Acoustic Assessment" (TG616-05F03 dated 25 September 2017).

2 Section 96 Design Changes

The following list of Section 96 design changes will potentially affect the acoustic impacts to the identified receiver locations:

- Increase the height of the acoustic fence along the western boundary from 8m to 10m height;
- Only one weighbridge along the western boundary; and
- Adding an annex to Building C.

3 Difference to Acoustic Impacts

The Section 96 design changes listed in Section 2 were updated in the CadnaA noise model used in the previous assessment. The resultant change in acoustic impacts for the identified receiver locations are shown in the table below.

Table 3.1 – Difference to Predicted Noise Level Emission from Site Operations with Section 96 Design Changes

Receiver	Change in Acoustic Impact
R1 - Residential Premises to the east - Sunnyholt Road	No change
R2 - Residential Premises to the north - Camorta Close	No change
R3 - Residential Premises to the west - Railway Road	No change
R4 - Neighbouring Industrial Premises to the north - 38 Tattersalls Road	No change
R5 - Neighbouring Industrial Premises to the west - 57-69 Tattersalls Road	Reduction by 2dB(A)
R6 - Neighbouring Industrial Premises to the east - 21 Tattersalls Road	No change
R7 - Neighbouring Industrial Premises to the south - 38 Forge Street	No change

It can be seen from the table above that with the Section 96 design changes, the predicted noise levels to identified receivers will be the same or lower than the noise levels presented in the previous assessment. All receivers were predicted to comply with the nominated criteria in the previous assessment and therefore all receivers are predicted to comply with the Section 96 design changes.

4 Conclusion

A review of the proposed Section 96 design changes to the acoustic treatment for Kings Park Waste Metal Recovery, Processing and Recycling Facility showed that predicted noise levels at the identified receiver locations will be the same or lower than presented in the previous reports. All identified receiver locations were found to comply with the nominated noise criteria in the previous reports, and with the Section 96 design changes all identified receiver locations will comply with the nominated noise criteria.

Document control

Date	Revision history	Non-issued revision	Issued revision	Prepared	Instructed	Authorised
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19.12.2017	Revision		1	WC		WC

APPENDIX A Glossary of terminology

The following is a brief description of the technical terms used to describe noise to assist in understanding the technical issues presented.

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 all-encompassing noise associated within a given environment at a given time, usually composed of sound from all sources near and far.
Assessment period	The period in a day over which assessments are made.
Assessment point	A point at which noise measurements are taken or estimated. A point at which noise measurements are taken or estimated.
Background noise	Background noise is the term used to describe the underlying level of noise present in the ambient noise, measured in the absence of the noise under investigation, when extraneous noise is removed. It is described as the average of the minimum noise levels measured on a sound level meter and is measured statistically as the A-weighted noise level exceeded for ninety percent of a sample period. This is represented as the L90 noise level (see below).
Decibel [dB]	The units that sound is measured in. The following are examples of the decibel readings of every day sounds: 0dB The faintest sound we can hear 30dB A quiet library or in a quiet location in the country 45dB Typical office space. Ambience in the city at night 60dB CBD mall at lunch time 70dB The sound of a car passing on the street 80dB Loud music played at home 90dB The sound of a truck passing on the street 100dB The sound of a rock band 110dB Operating a chainsaw or jackhammer 120dB Deafening
dB(A)	A-weighted decibels. The A- weighting noise filter simulates the response of the human ear at relatively low levels, where the ear is not as effective in hearing low frequency sounds as it is in hearing high frequency sounds. That is, low frequency sounds of the same dB level are not heard as loud as high frequency sounds. The sound level meter replicates the human response of the ear by using an electronic filter which is called the "A" filter. A sound level measured with this filter switched on is denoted as dB(A). Practically all noise is measured using the A filter.
dB(C)	C-weighted decibels. The C-weighting noise filter simulates the response of the human ear at relatively high levels, where the human ear is nearly equally effective at hearing from mid-low frequency (63Hz) to mid-high frequency (4kHz), but is less effective outside these frequencies.
Frequency	Frequency is synonymous to pitch. Sounds have a pitch which is peculiar to the nature of the sound generator. For example, the sound of a tiny bell has a high pitch and the sound of a bass drum has a low pitch. Frequency or pitch can be measured on a scale in units of Hertz or Hz.
Impulsive noise	Having a high peak of short duration or a sequence of such peaks. A sequence of impulses in rapid succession is termed repetitive impulsive noise.
Intermittent noise	The level suddenly drops to that of the background noise several times during the period of observation. The time during which the noise remains at levels different from that of the ambient is one second or more.
L_{Max}	The maximum sound pressure level measured over a given period.
L_{Min}	The minimum sound pressure level measured over a given period.
L_1	The sound pressure level that is exceeded for 1% of the time for which the given sound is measured.
L_{10}	The sound pressure level that is exceeded for 10% of the time for which the given sound is measured.
L_{90}	The level of noise exceeded for 90% of the time. The bottom 10% of the sample is the L90 noise level expressed in units of dB(A).

L_{eq}	The "equivalent noise level" is the summation of noise events and integrated over a selected period of time.
Reflection	Sound wave changed in direction of propagation due to a solid object obscuring its path.
SEL	Sound Exposure Level (SEL) is the constant sound level which, if maintained for a period of 1 second would have the same acoustic energy as the measured noise event. SEL noise measurements are useful as they can be converted to obtain Leq sound levels over any period of time and can be used for predicting noise at various locations.
Sound	A fluctuation of air pressure which is propagated as a wave through air.
Sound absorption	The ability of a material to absorb sound energy through its conversion into thermal energy.
Sound level meter	An instrument consisting of a microphone, amplifier and indicating device, having a declared performance and designed to measure sound pressure levels.
Sound pressure level	The level of noise, usually expressed in decibels, as measured by a standard sound level meter with a microphone.
Sound power level	Ten times the logarithm to the base 10 of the ratio of the sound power of the source to the reference sound power.
Tonal noise	Containing a prominent frequency and characterised by a definite pitch.