

ACCENTURE

**CHANDALA TRONOX FACILITY
BESS PROJECT**

**PRELIMINARY ENVIRONMENTAL NOISE IMPACT
ASSESSMENT**

JULY 2026

OUR REFERENCE: 36611-4-26180-03

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ENVIRONMENTAL NOISE IMPACT ASSESSMENT CHANDALA TRONOX FACILITY BESS PROJECT

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FOR

ACCENTURE

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EXECUTIVE SUMMARY

Herring Storer Acoustics were commissioned to carry out an acoustic study of noise emissions for the proposed BESS addition to the Tronox Chandala facility.

The proposed BESS addition includes 4 BESS modules, with each module consisting of 8 DC battery containers and 1 AC inverter skid, spread across 1 “BESS” site as shown in Appendix A.

This acoustic assessment provides a preliminary assessment of noise impacts to the surrounding area by the proposed project.

The nearest noise sensitive premises “R1” is situated approximately 1km to the north-west of the Tronox Chandala Facility.

Modelling was conducted with the noise level information provided.

For the most stringent time period (night) the Assigned Noise Level is 65 dB(A) at the nearest noise sensitive premise – due to its classification as an industrial caretaker premise. The highest predicted, assessable, noise emissions for the nearest noise sensitive premise is 37 dB(A) at “R1”. This includes all proposed plant associated with the project operating at 90% battery operation and 100% inverters. An adjustment for tonal characteristics has been included in the noise level emissions.

It is noted that the above assessment excludes noise levels from all other sources – however – it is noted that at the calculated noise level of 32 dB(A) – which excludes the adjustment for tonality - the noise emissions associated with the proposed BESS facility would not contribute to any other noise emission in the area sufficiently to significantly contribute to an increase at R1 that would elevate noise levels above the most stringent Assigned Noise Level. A similar finding is applicable to other identified noise sensitive premises at distances further from the Tronox Chandala Facility that have a lower Assigned Noise Level.

Hence, it is considered that the proposed BESS facility addition to the Tronox Facility could be undertaken with negligible risk to impacting premises in the vicinity.

An update to the noise impact assessment is expected to be required to reflect the final design prior to development application approval – and likely to be the subject of a condition of approval.

CONTENTS

1.	INTRODUCTION	1
2.	ACOUSTIC CRITERIA	2
3.	METHODOLOGY	3
4.	RESULTS	4
5.	ASSESSMENT	5

APPENDICES

A	PRELIMINARY LAYOUT PLAN
B	NOISE CONTOUR PLOT

1. INTRODUCTION

Herring Storer Acoustics were commissioned to carry out an acoustic study of noise emissions for the proposed addition of a BESS facility to the Tronox facility at Chandala.

This is a preliminary assessment to ascertain the indicative noise impact of the proposed project and determine what further work in this regard, if any, is likely to be required as the development progresses.

The locality of the project relative to the Tronox Chandala facility is shown below in Figure 1.1.

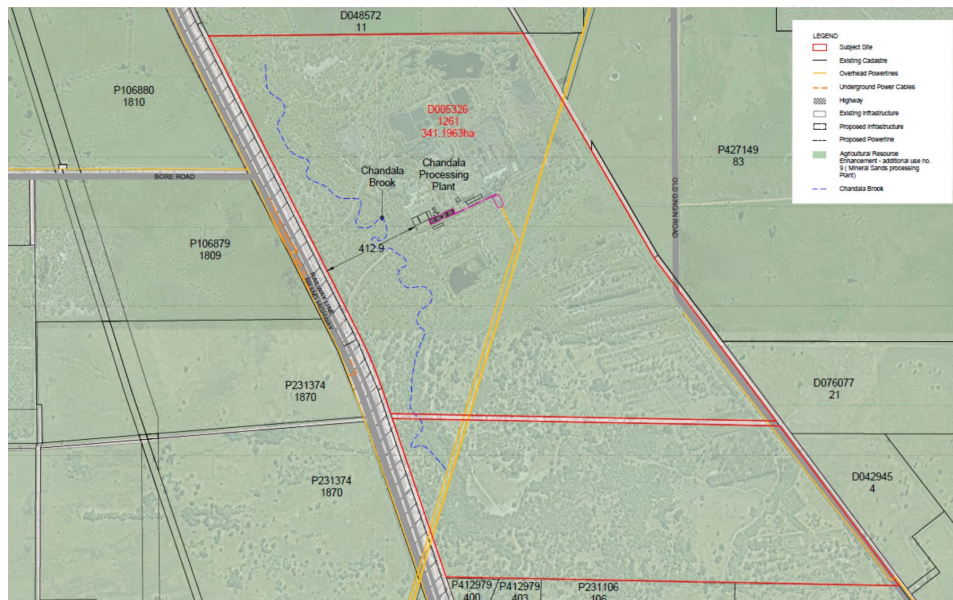


FIGURE 1.1 – PROPOSED BESS PROJECT LOCATIONS

The project consists of a BESS facility. The noise sources considered in our preliminary assessment consist of 4 modules with a total of

- 32 DC battery containers.
- 4 AC inverter skids.

The surroundings to the Tronox facility and the identified noise sensitive premises considered in this assessment, are shown below in Figure 1.2

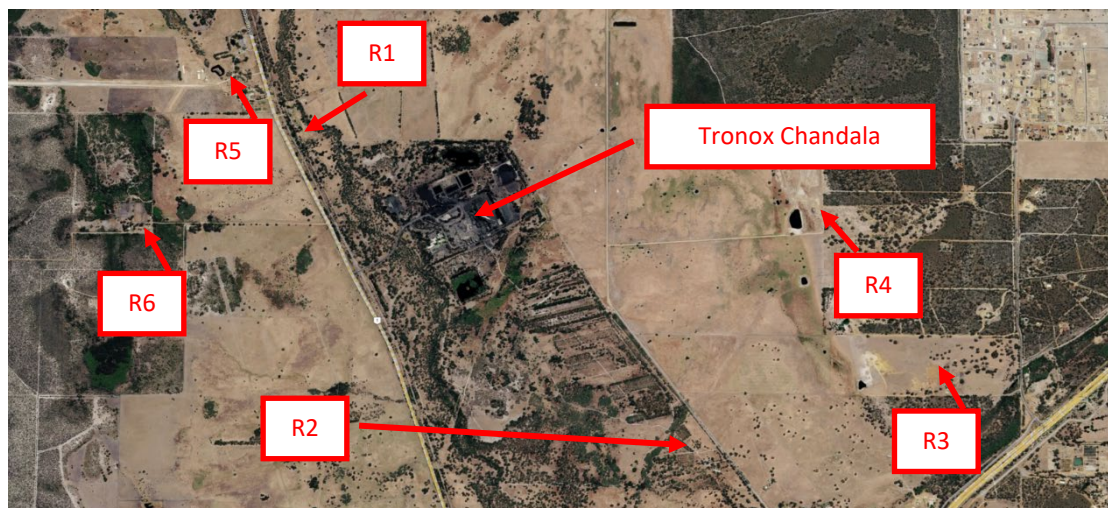


FIGURE 1.2 – SITE SURROUNDS

The nearest noise sensitive premises have been identified as shown above in Figure 1.2, with the nearest noise sensitive premises being approximately 1 km to the north-west of the Tronox Facility.

This report assesses night-time (worst case) noise emissions under maximum propagation conditions for the proposed development, based upon assumed noise levels for compliance with the requirements of the Western Australian *Environmental Protection (Noise) Regulations 1997* (WA) (*the Noise Regulations*).

This work has been undertaken to accompany the development application for the project to ascertain if the project can comply with the Regulations. It is considered likely that a detailed assessment will need to be undertaken during the design development phase of the project in response to expected development approval conditions – at which time, equipment selections and the like would have been undertaken with finalised noise data able to be included in the modelled levels.

2. ACOUSTIC CRITERIA

The criteria used is in accordance with the *Environmental Protection (Noise) Regulations 1997*. These regulations stipulate maximum allowable external noise levels that can be received at one premises from another premises. For the highly sensitive area of a noise sensitive premises the allowable noise levels are determined by the calculation of an influencing factor. The influencing factor is calculated for the usage of land within the two circles, having radii of 100m and 450m from the premises of concern. For other premises (i.e. commercial and industrial premises), including other areas of a noise sensitive premises, the allowable noise levels are fixed. Table 2.1 lists the baseline Assigned Noise Levels for highly sensitive areas of a noise sensitive premises and the allowable noise levels for other premises.

TABLE 2.1 – ASSIGNED OUTDOOR NOISE LEVELS

Type of premises receiving noise	Time of day	Assigned level (dB)		
		L _{A10}	L _{A1}	L _{Amax}
Noise sensitive premises: highly sensitive area (i.e. within 15m of a dwelling)	0700 to 1900 hours Monday to Saturday	45 + IF	55 + IF	65 + IF
	0900 to 1900 hours Sunday and public holidays	40 + IF	50 + IF	65 + IF
	1900 to 2200 hours all days	40 + IF	50 + IF	55 + IF
	2200 hours on any day to 0700 hours Monday to Saturday and 0900 hours Sunday and public holidays	35 + IF	45 + IF	55 + IF
Industrial Premises	All hours	65	80	90

Note: The L_{A10} noise level is the noise that is exceeded for 10% of the time.
The L_{A1} noise level is the noise that is exceeded for 1% of the time.
The L_{Amax} noise level is the maximum noise level recorded.
IF = Influencing Factor

It is a requirement that noise from the site be free of annoying characteristics (tonality, modulation and impulsiveness) at other premises, defined below as per Regulation 9.

Where the above characteristics are present and cannot be practicably removed, the following adjustments are made to the measured or predicted level at other premises.

TABLE 2.2 – ADJUSTMENTS FOR ANNOYING CHARACTERISTICS WHEN MUSIC IS NOT PRESENT

Where tonality is present	Where modulation is present	Where impulsiveness is present
+ 5 dB	+ 5 dB	+ 10 dB

The key receptors have been identified, as shown in Figure 2.2 above.

The Assigned Noise Levels for each noise sensitive premise identified is listed below in Table 2.3. It is understood that “R1” is classified as an industrial caretaker premises, as defined in Schedule 1 of the Environmental Protection (Noise) Regulations 1997 ‘Part A – Industrial and utility premises’ which references “Caretakes and like residences attached to or forming part of premises referred to in this Part”, hence, the Assigned Noise Level reflects this classification in the table below.

TABLE 2.3 – ASSIGNED NOISE LEVELS FOR SENSITIVE PREMISES

Type of premises receiving noise	Time of day	Assigned level (dB)		
		L _A 10	L _A 1	L _A max
R1	All Hours	65	80	90
R2 – R6	0700 to 1900 hours Monday to Saturday	45	55	65
	0900 to 1900 hours Sunday and public holidays	40	50	65
	1900 to 2200 hours all days	40	50	55
	2200 hours on any day to 0700 hours Monday to Saturday and 0900 hours Sunday and public holidays	35	45	55

This provides the closest in terms of distance to the project, with compliance at these locations indicative of compliance at all others.

3. METHODOLOGY

Noise immissions¹ at the nearest neighbouring residential premises, due to noise associated with the proposed operations, were modelled using the computer programme SoundPlan. Sound power levels used for the noise modelling were based on noise level data provided by Accenture.

This acoustic assessment is required for the approval process and is being undertaken prior to the final design of the project being known. In the event that equipment selections change, this modelling exercise may need to be repeated with updated selections.

The design configuration for the proposed project is contained in Appendix A.

The overall sound power levels for individual equipment as shown in Table 3.1.

TABLE 3.1 – SOUND POWER LEVEL - NOISE SOURCES dB(A)

Noise Sources	Sound Power Level dB(A)
Batteries (32 off)	96.7
Inverters (4 off)	86.2

The one-third octave band data listed below in Table 3.2 has been utilised in our assessment, with the batteries being the “90% working mode” data and the inverter being the overall sound power level provided for 100% operation in the noise simulation report.

The noise report(s) have not been included in this preliminary report as the information has been provided on a “commercial in confidence” basis.

¹ Immissions – noise received at a source

² Emissions – noise emanating from a source and / or location

TABLE 3.2 – BATTERY SWL, dB

Source	One-Third Octave Band Centre Frequency, Hz							
	100	200	400	800	1600	3150	6300	dB(A)
	125	250	500	1000	2000	4000	8000	
	160	315	630	1250	2500	5000	10,000	
Battery – “90% working mode”	89	90	88.4	86.5	81.1	74.4	56	96.7
	87.8	95.7	89.7	85.3	78.6	71.2	51.1	
	87.5	97.6	90.5	83.5	76.8	67.4	46.8	
	89	90	88.4	86.5	81.1	74.4	56	

It is noted that all equipment has been assumed to be operating at the same time, at maximum noise level conditions. It is understood that the noise emissions associated with batteries typically vary with temperature, hence, for the most stringent time period defined by the Regulations, this is likely to be conservative.

Weather conditions for modelling were as stipulated in the Environmental Protection Authority’s “*Draft Guidance for Assessment of Environmental Factors No. 8 - Environmental Noise*” as listed in Table 3.3. The CONCAWE algorithm has been utilised for this assessment, with the weather conditions as listed below.

A ground factor of 0.6 has been in the modelling.

TABLE 3.3 – WEATHER CONDITIONS

Condition	Night	Day
Temperature	15°C	20°C
Relative humidity	50%	50%
Pasquill Stability Class	F	E
Wind speed	3 m/s*	4 m/s*

* From sources, towards receivers.

It is noted that ‘worst case’ wind conditions refer to conditions where there is a temperature inversion in conjunction with light winds in the direction from noise source to receiver, resulting in the highest sound propagation towards receiver locations.

4. RESULTS

A summary of the calculated noise levels for scenarios are shown in Table 4.1.

TABLE 4.1 – CALCULATED NOISE LEVELS, L_{A10} dB(A)

Receiver Name	Calculated Noise Level
R1	32
R2	26
R3	20
R4	23
R5	28
R6	28

A Noise contour plot for the above scenario is included in Appendix B.

5. ASSESSMENT

On the basis of the calculated noise levels, noise levels at the nearest noise sensitive premises have been calculated at up to 32 dB(A) – associated with only the proposed BESS facility addition.

Given the noise sources associated with the proposed development, noise level emissions may contain tonal characteristics – however – it is noted that this is considered a conservative assumption, as at the noise levels predicted, any tonal characteristics that may be present could be masked by background noise levels.

Hence, a + 5 dB adjustment to the calculated noise levels has been applied to the calculated noise levels in accordance with the Regulations.

Based on this, Table 5.1 contain the applicable adjustments, and assessable noise levels at each of the identified noise sensitive premises.

TABLE 5.1 – APPLICABLE ADJUSTMENTS AND ASSESSABLE LEVEL OF NOISE EMISSIONS, L_{A10} dB(A)

Noise Measurement Location	Calculated Noise Level L _{A10}	Applicable Adjustments to Measured Noise Levels, Characteristics			Assessable Noise Level
		Where Noise Emission is NOT music			
		Tonality	Modulation	Impulsiveness	
R1	32	+5	-	-	37
R2	26	+5	-	-	31
R3	20	+5	-	-	25
R4	23	+5	-	-	28
R5	28	+5	-	-	33
R6	28	+5	-	-	33

Hence, based on the most stringent time period – namely the night period - Table 5.2 assesses the noise impact of the proposed development.

TABLE 5.2 – ASSESSMENT OF NOISE LEVELS

Receiver	Assessable Noise Level, dB(A)	Applicable Times of Day	Applicable L_{A10} Assigned Noise Level (dB)	Exceedance to Assigned Noise Level L_{A10} (dB)
R1	37	All Hours	65	Complies
R2	31	Night (22:00 to 07:00)	35	Complies
R3	25		35	Complies
R4	28		35	Complies
R5	33		35	Complies
R3	33		35	Complies

For the most stringent time period (night) the Assigned Noise Level is 65 dB(A) at R1 and 35 dB(A) at the balance of the locations identified. The highest predicted, assessable, noise emissions for the nearest noise sensitive premise is 37 dB(A) at "R1". This includes all proposed plant associated with the project operating at 100%, and the adjustment for tonal characteristics included in the noise level emissions.

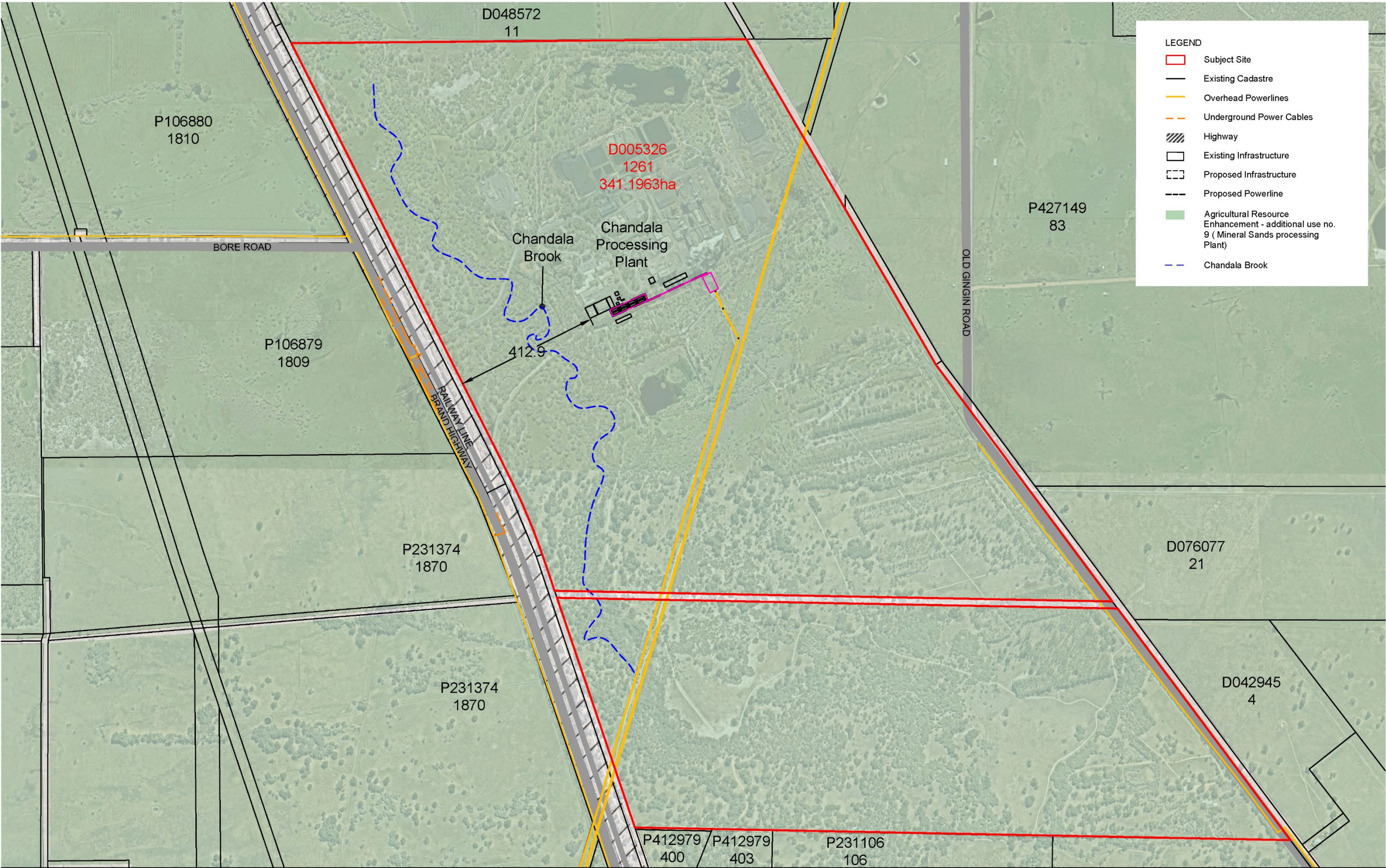
It is noted that the above assessment excludes noise levels from all other sources – however – it is noted that at the calculated noise level of 32 dB(A), the noise emissions associated with the proposed BESS facility would not contribute to any other noise emission in the area sufficiently to significantly contribute to an increase at R1 that would elevate noise levels above the most stringent Assigned Noise Level.

Similarly at the balance of the identified receivers, the margin of compliance from the proposed project only is such that the noise levels would contribute a negligible amount to current noise emissions – on the assumption that the current noise emissions may be as high as the applicable Assigned Noise Level at these locations.

Hence, it is considered that the proposed BESS facility addition to the Tronox Facility could be undertaken with negligible risk to impacting premises in the vicinity.

APPENDIX A

LAYOUT PLAN



Site 4 - Local Context

Lot 1261 (No. 722) Old Gingin Road, Muchea



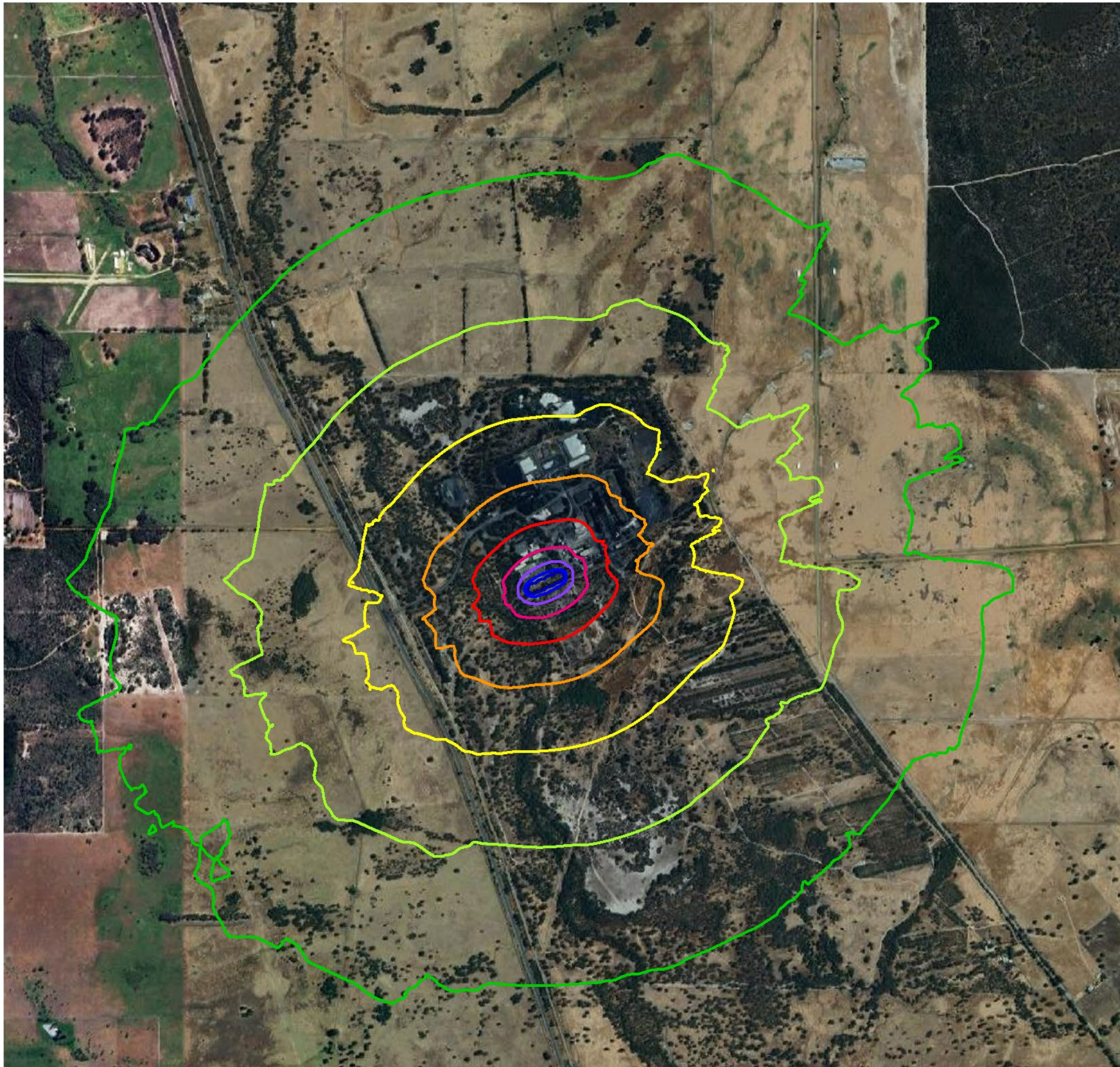


Site 4 - Site Context

Lot 1261 (No. 722) Old Gingin Road, Muchea

APPENDIX B

NOISE CONTOUR PLOT



Customer:
Tronox
Project: Tronox Chandala BESS
Project-No. 26180-033

TRONOX

Map
1

Chandala Tronox BESS Facility - GNM
Result number 3
Calculation in 1.5 m above ground

Project engineer: George Watts
Created:
Processed with SoundPLAN 9.1, Update 20/05/2026

Levels LA10
in dB(A)

- = 30
- = 35
- = 40
- = 45
- = 50
- = 55
- = 60
- = 65
- = 70



Length scale 1:15000
0 100 200 400 600 800 m

