

**ACCENTURE
COOLJARLOO ENERGY HUB
BESS**

**PRELIMINARY ENVIRONMENTAL NOISE IMPACT
ASSESSMENT**

JULY 2026

OUR REFERENCE: 36886-1-25429

DOCUMENT CONTROL PAGE

ENVIRONMENTAL NOISE IMPACT ASSESSMENT
COOLJARLOO ENERGY HUB
BESS PROJECT

Job No: 25429

Document Reference: 36886-1-25429

FOR

ACCENTURE

DOCUMENT INFORMATION				
Author:	George Watts	Checked By:	Tim Reynolds	
Date of Issue:	27 July 2026			
REVISION HISTORY				
Revision	Description	Date	Author	Checked
DOCUMENT DISTRIBUTION				
Version No.	Destination			
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EXECUTIVE SUMMARY

Herring Storer Acoustics were commissioned to carry out an acoustic study of noise emissions for the BESS system proposed as a part of the Cooljarloo Energy Hub.

The proposed BESS includes 16 BESS modules, with each module consisting of 128 DC battery containers and 16 AC inverter skids, spread across 1 “BESS” site as shown in Appendix B.

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

The nearest noise sensitive premises identified is the “Billinue Community”, situated approximately 3.1km to the south-east of the proposed BESS location.

Modelling was conducted with the noise level information provided.

For the most stringent time period (night) the Assigned Noise Level is 35 dB(A) at the nearest noise sensitive premise. The highest predicted, assessable, noise emissions for the nearest noise sensitive premise would be 21 dB(A) at the “Billinue Community”. 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 16 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 that would elevate noise levels above the most stringent Assigned Noise Level.

Hence, it is considered that the proposed BESS 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	5
5.	ASSESSMENT	5

APPENDICES

A	RESIDENTIAL LOCATIONS
B	PRELIMINARY LAYOUT PLAN
C	NOISE CONTOUR PLOT

1. INTRODUCTION

Herring Storer Acoustics were commissioned to carry out an acoustic study of noise emissions for the proposed BESS facility to the Tronox mine site at Cooljarloo.

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 Cooljarloo minesite is shown below in Figure 1.1 and 1.2.



FIGURE 1.1 – PROPOSED BESS PROJECT LOCATION

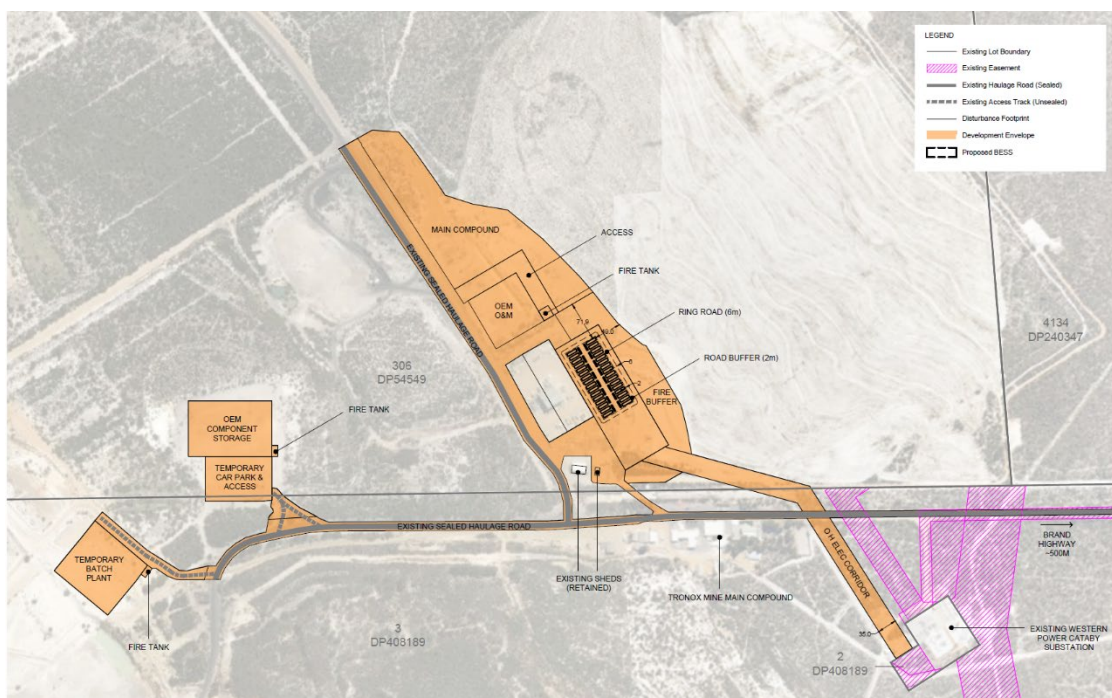


FIGURE 1.2 –BESS PROJECT DETAILS

The project consists of a BESS facility. The noise sources considered in our preliminary assessment consist of 16 modules with a total of,

- 128 DC battery containers.
- 16 AC inverter skids.

The surroundings to the proposed Cooljarloo Energy Hub and the identified noise sensitive premises considered in this assessment, are shown in Appendix A.

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

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 Assigned Noise Levels for each noise sensitive premise identified is listed below in Table 2.3.

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}
Highly Noise Sensitive Premises	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

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 B.

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 (128 off)	78.7
Inverters (16 off)	86.2
Transformer	98

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 for 5MWh DC batteries, calibrated to the provided overall noise level for 10MWh 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”	71.0	72.0	70.4	68.5	63.1	56.4	38.0	78.7
	69.8	77.7	71.7	67.3	60.6	53.2	33.1	
	69.5	79.6	72.5	65.5	58.8	49.4	28.8	

The following is noted in regards to the development of the model:

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 ID#	Predicted Noise Level, L_{Aeq} [dB(A)]
Site #1	4
Site #2	-
Site #3	-
Site #4	-
Site #5	-
Site #6	-
Site #7	10
Site #8	11
Site #9	-
Site #11	-
Site #12	-
Site #13	-
Site #15	-
Billinue Community (Dwelling 1 – 8)	16

A noise contour plot for the above scenario is included in Appendix C.

5. ASSESSMENT

On the basis of the calculated noise levels, noise levels at the nearest noise sensitive premises have been calculated at up to 16 dB(A).

Given the noise levels calculated associated with the proposed development, emissions are unlikely to contain tonal characteristics – however – to be conservative, tonal characteristics have been assumed to be present within the calculated noise emissions.

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	
Site #1	4	+5	-	-	9
Site #2	-	-	-	-	-
Site #3	-	-	-	-	-
Site #4	-	-	-	-	-
Site #5	-	-	-	-	-
Site #6	-	-	-	-	-
Site #7	10	+5	-	-	15
Site #8	11	+5	-	-	16
Site #9	-	-	-	-	-
Site #11	-	-	-	-	-
Site #12	-	-	-	-	-
Site #13	-	-	-	-	-
Site #15	-	-	-	-	-
Billinue Community (Dwelling 1 – 8)	16	+5	-	-	21

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)
Site #1	9	Night (22:00 to 07:00)	35	Complies
Site #2	-			Complies
Site #3	-			Complies
Site #4	-			Complies
Site #5	-			Complies
Site #6	-			Complies
Site #7	15			Complies
Site #8	16			Complies
Site #9	-			Complies
Site #11	-			Complies
Site #12	-			Complies
Site #13	-			Complies
Site #15	-			Complies
Billinue Community (Dwelling 1 – 8)	21			Complies

For the most stringent time period (night) the Assigned Noise Level is 35 dB(A) at the locations identified. The highest predicted, assessable, noise emissions for the nearest noise sensitive premise would be 21 dB(A) at the Billinue Community. This includes all proposed plant associated with the project operating at 100%, and with an 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 21 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 any identified noise sensitive premises that would elevate noise levels above the most stringent Assigned Noise Level.

Hence, it is considered that the BESS facility proposed as a part of the Cooljarloo Energy Hub can progress with negligible risk to noise impact upon premises in the vicinity.

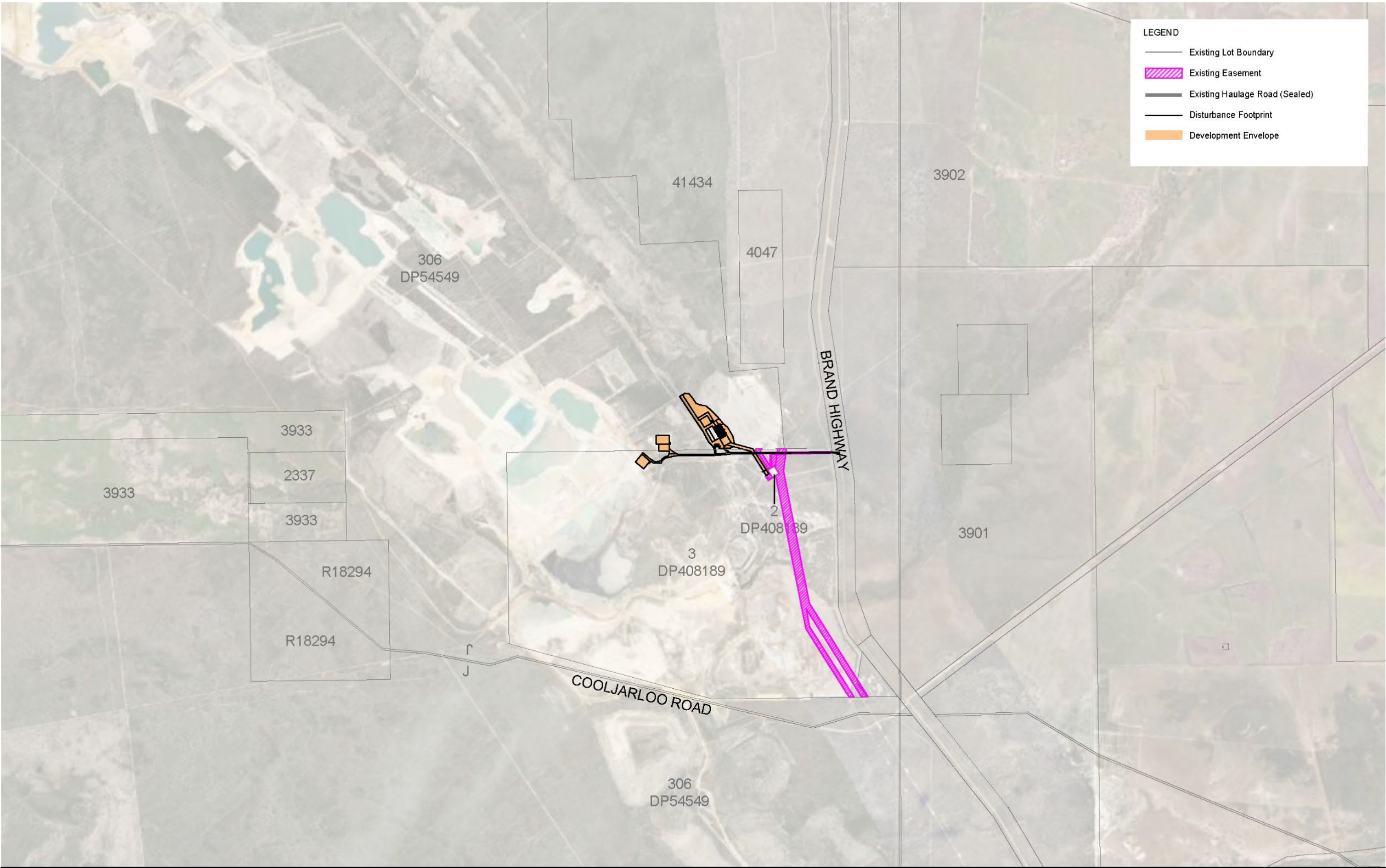
APPENDIX A

RESIDENTIAL LOCATIONS



APPENDIX B

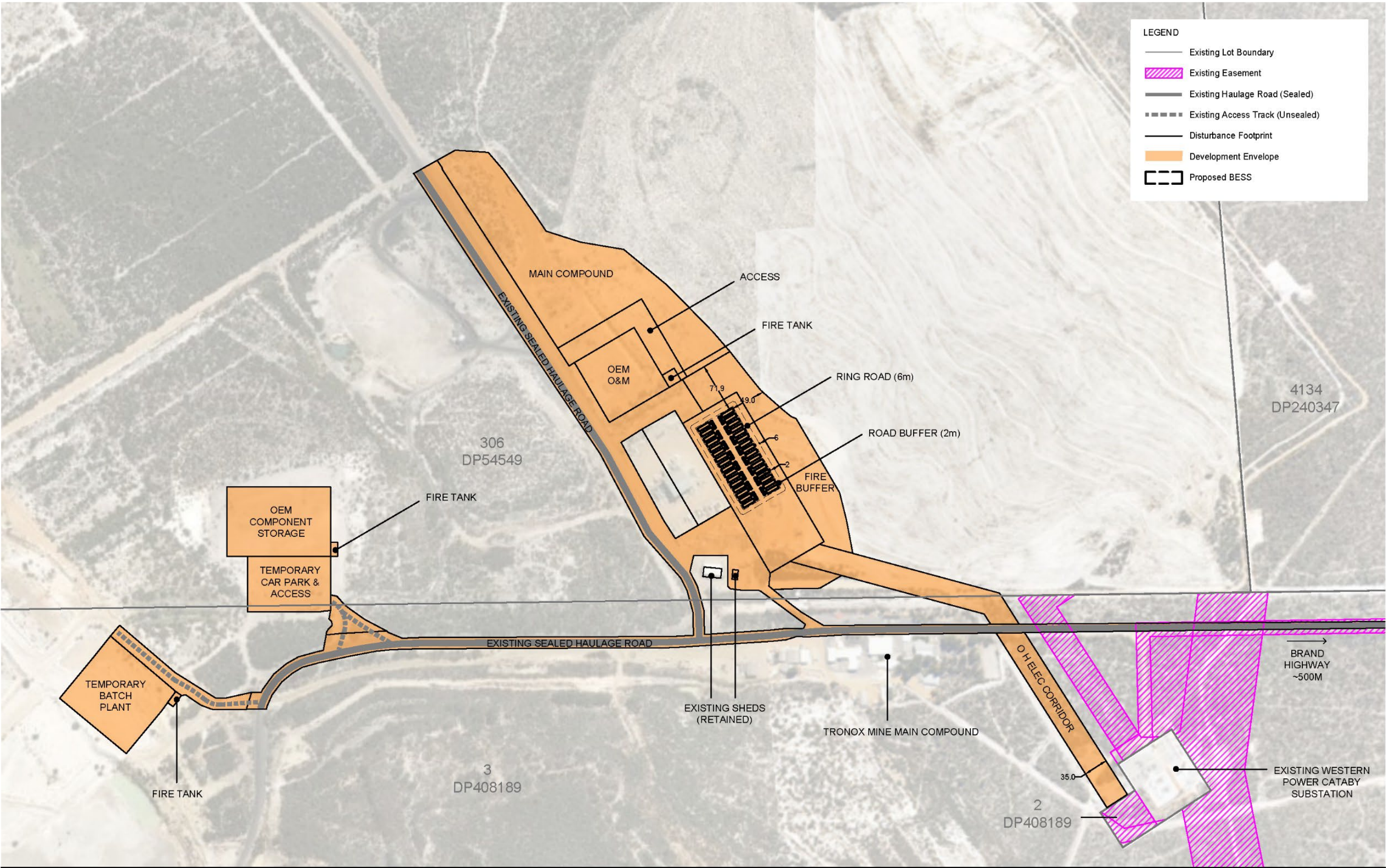
LAYOUT PLAN



Context Plan
Cooljarloo Energy Hub - BESS

Date: 08 Jul 2026 Scale: 1:40k @A3, 1:20k @A1 File: 675.25082.00EA1 CP1.dwg Staff: CP.GW.JK Check: CP





Site Plan
Cooljarloo Energy Hub - BESS

APPENDIX C

NOISE CONTOUR PLOT

