



**GENESIS MINERALS LIMITED**

**MOUNT MORGAN GOLD  
MINING PROJECT**

**ENVIRONMENTAL NOISE ASSESSMENT**

DECEMBER 2025

OUR REFERENCE: 35729-1-25441



DOCUMENT CONTROL PAGE

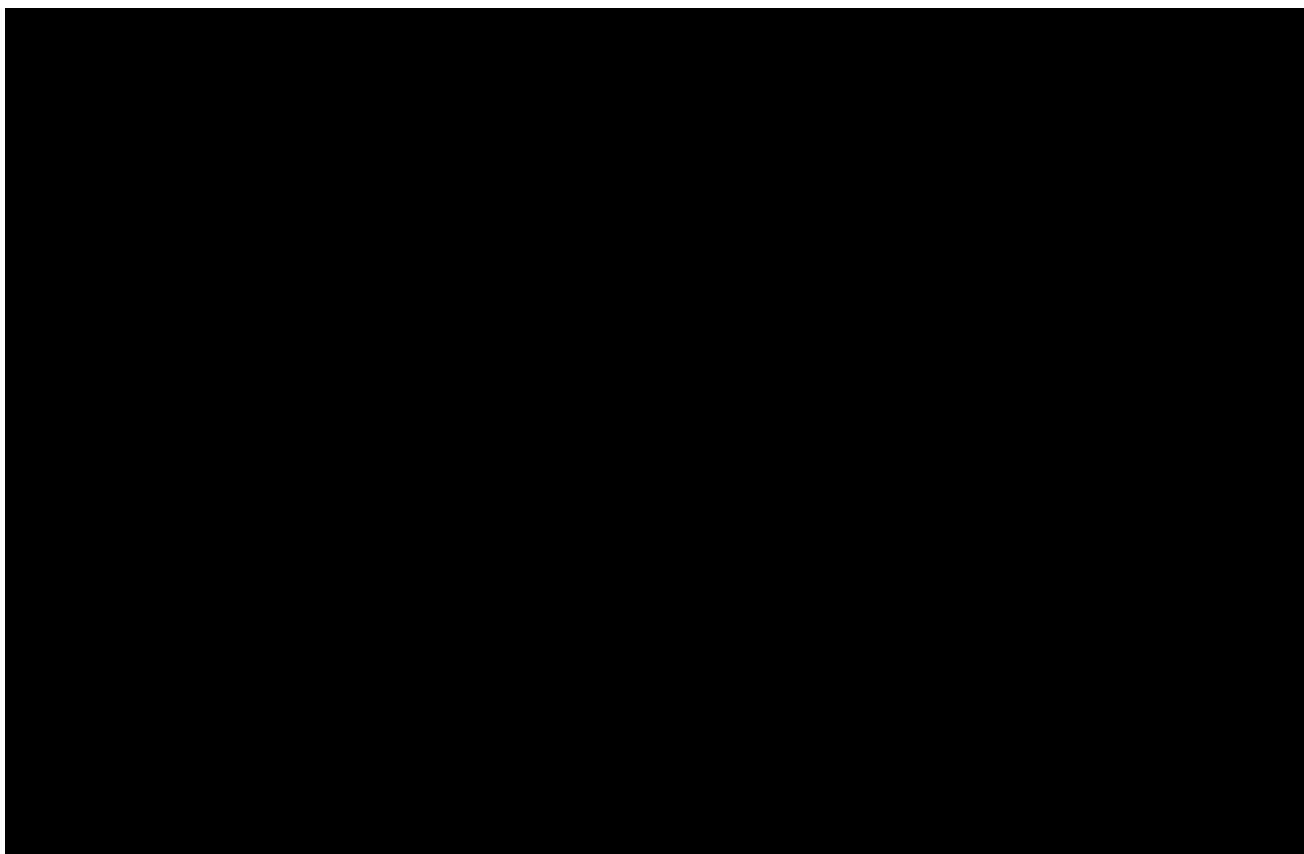
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FOR

**GENESIS MINERALS LTD**



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## 1. INTRODUCTION

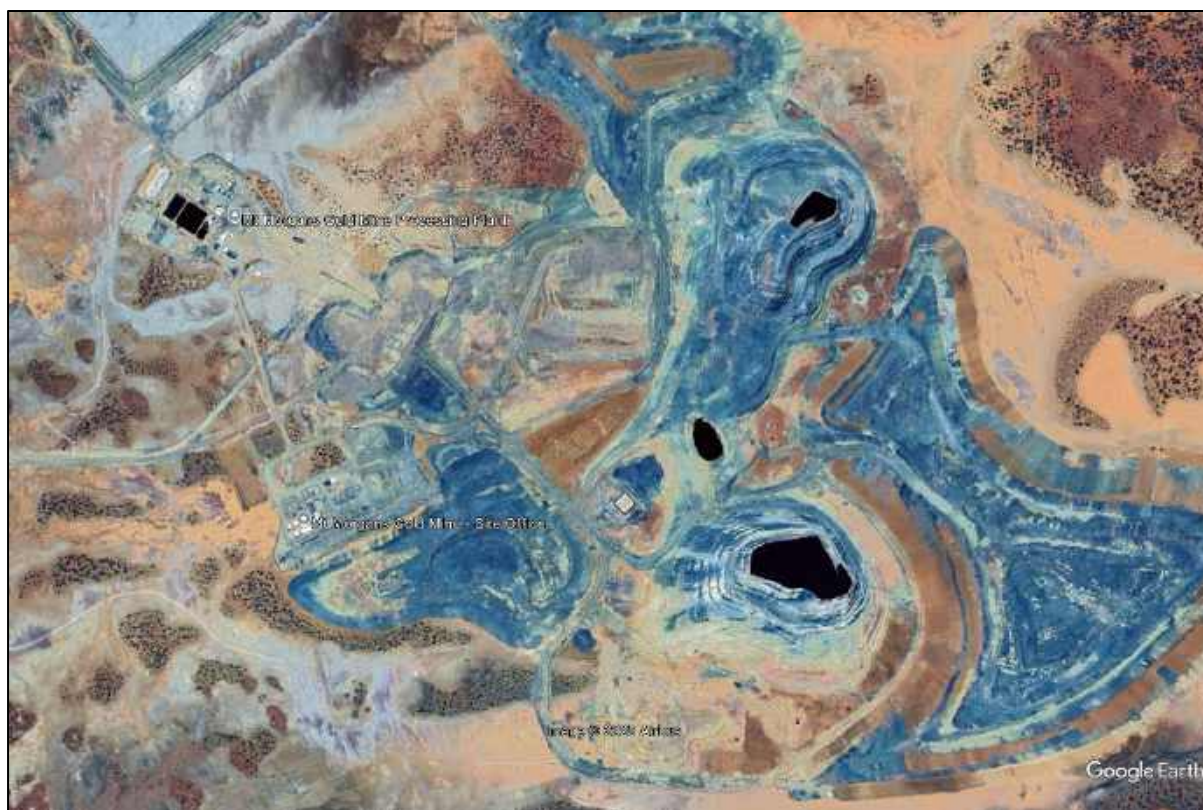
Genesis Minerals Limited commissioned Herring Storer Acoustics to carry out an acoustic study of noise emissions for mining operations at their Mt Morgans Project (the Project).

The Project is located 20km west of Laverton, being approximately 750km northeast of Perth in Western Australia. The Project area is a 520 km<sup>2</sup> contiguous tenement package comprising predominantly granted mining leases.

The current plant and mining activities have been previously modelled and assessed as a part of the approval process (Reference 20948-3-16204).

The purpose of this acoustic assessment is related to the upgrading of the processing plant for the project. The upgrade entails an additional crushing circuit, mill, power generation and supporting infrastructure.

The nearest noise sensitive premises are located at the Mt Margaret Community which is situated approximately 2.6km to the northwest of the processing plant. Figure 1.1 shows the overall location plan for the Project.



**FIGURE 1.1 – LOCATION PLAN**

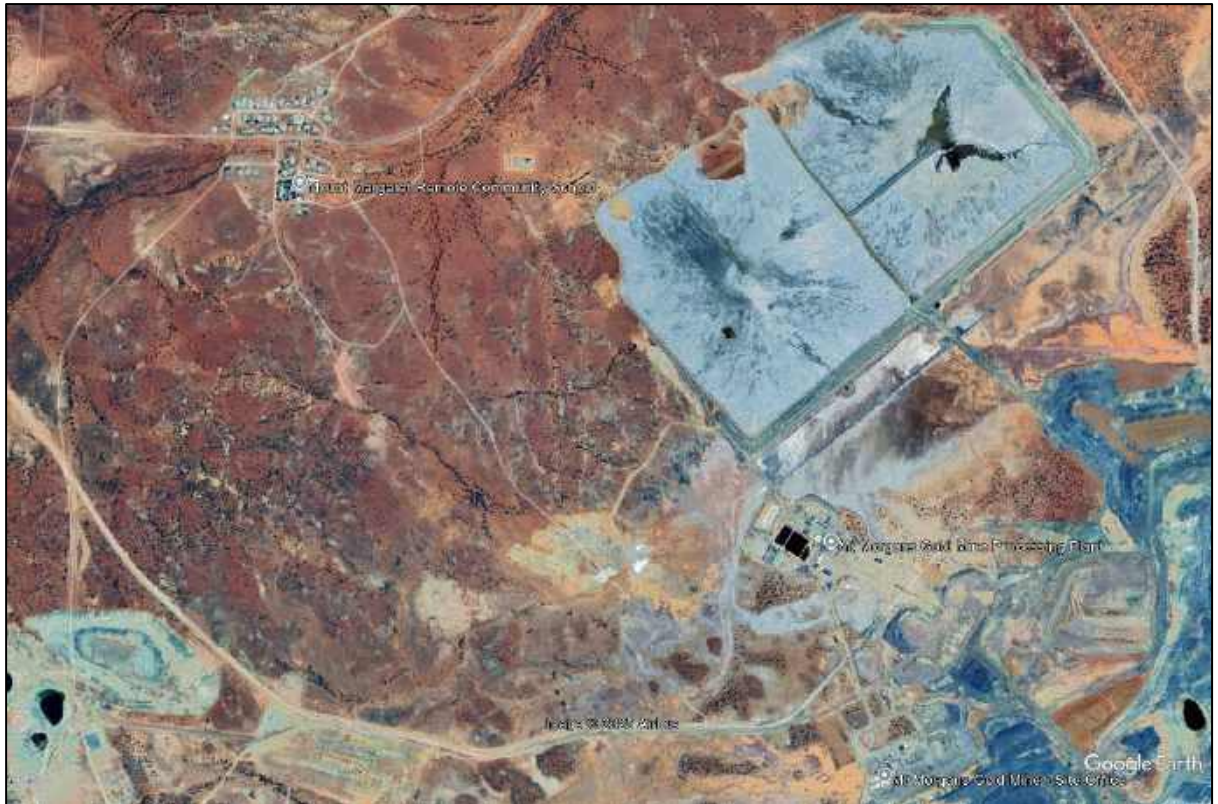
This report assesses nighttime (worst case) noise emissions under maximum noise propagation conditions for the upgraded treatment plant. Additionally, the cumulative impact of the upgraded plant, existing plant, and mining operations have been considered.

This report assesses the noise emissions for the proposed mining operation and assesses compliance with the requirements of the *Western Australian Environmental Protection (Noise) Regulations 1997 (WA) (the Noise Regulations)*.

## 2. ASSESSMENT CRITERIA

The nearest noise sensitive premise to the project is the Mt Margaret Community. The community comprises residential housing and supporting infrastructure.

Based on the layout of the plant, the community is 2.6kms from the ROM / Primary Crusher, and 3 to 4kms from the operating pits at Jupiter. The proposed site layouts at Jupiter are shown in Figure 2.2.



**FIGURE 2.2 – JUPITER LAYOUT AND MT MARGARET COMMUNITY**

### 2.1 ENVIRONMENTAL PROTECTION (NOISE) REGULATIONS 1997 (WA)

These regulations stipulate maximum allowable external noise levels 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.

**TABLE 1 – ASSIGNED OUTDOOR NOISE LEVELS**

Type of premises receiving noise	Time of day	Assigned level (dB)		
		L <sub>A10</sub>	L <sub>A1</sub>	L <sub>Amax</sub>
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
Noise sensitive premises: any area other than highly sensitive area	All hours	60	75	80
Commercial premises	All hours	60	75	80
Industrial and utility premises	All hours	65	80	90

Note: The L<sub>A10</sub> noise level is the noise that is exceeded for 10% of the time.  
 The L<sub>A1</sub> noise level is the noise that is exceeded for 1% of the time.  
 The L<sub>Amax</sub> noise level is the maximum noise level recorded.  
 IF = Influencing Factor

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 – 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

Note: Where annoying characteristics are present, the adjustment is +10 dB, and is +15dB if impulsiveness is present. The adjustments are cumulative to a maximum of 15 dB.

It is assumed that mining operational noise will not have a 'tonality' characteristic applicable, due to the distance and the mining noise approaching the existing background noise level, hence noise characteristics would be increasingly weak. At noise emission levels at around 35 dB(A) it would generally be the case that the noise emission level would be low enough that the influence of background noise will result in the noise emission not being 'technically tonal', although that does not mean that some characteristics would not be audible.

### 3. METHODOLOGY

#### 3.1 NOISE EMISSIONS

Noise levels were predicted with the acoustic software SoundPlan, using the Concawe algorithm for nominated direction wind conditions in accordance with the Western Australian Environmental Protection Authority EAG 13, and the meteorological factors for modelling outlined in section 6.4.2 of the "Draft Guidelines on Environmental Noise for Prescribed Premises (May 2016)". The sound power levels used in the acoustic modelling are tabulated in the Appendix A.

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 effective sound propagation receiver locations. The night scenarios (including all mining scenarios but not blasting) were modelled with temperature inversion conditions.

This is understood to be representative of the maximum noise levels associated with the proposed operations.

The following input data was used in the calculations:

- a) Provided plans.
- b) Sound Power Levels listed in Appendix A.
- c) Ground contours and receiver point provided by client.
- d) Ground Absorption of 0.6.

Weather conditions for modelling were as stipulated in the Environmental Protection Authority's "Draft Guidance for Assessment of Environmental Factors No. 8 - Environmental Noise" and for the day period are as listed in Table 3.

**TABLE 3 – WEATHER CONDITIONS**

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

\* From sources, towards receivers.

#### 4. NOISE EMISSIONS

Noise immissions<sup>1</sup> at the nearest neighbouring residential premises (Mt Margaret Community), due to noise associated with both the proposed upgrades, and the current operations, were modelled with the computer programme SoundPlan. Sound power levels used for the calculations are based on measured sound pressure levels of similar equipment proposed for use on site.

The modelling of noise levels has been based on noise sources and sound power levels shown in Table 4.

**TABLE 4 – SOUND POWER LEVEL - NOISE SOURCES dB(A)**

Noise Source	Noise Level	Level Reference
Primary Crusher	116	Lw/unit
Pebble Crusher	106	Lw/unit
Mill (Ball)	109	Lw/unit
Mill (SAG)	110	Lw/unit
Primary Crusher Discharge Drive Motor	94	Lw/unit
Transfer Drive (Load Hopper) After Reclaimer	94	Lw/unit
Thickener Pump	94	Lw/unit
Absorption Pump	94	Lw/unit
Pump (General)	94	Lw/unit
Power Station Generator	95	Lw/unit
Power Station Exhaust	99	Lw/unit
Loader (General)	113	Lw/unit
Haul Truck	115	Lw/unit
Haul truck tipping on ROM	115	Lw/unit
Digger	118	Lw/unit
FEL On ROM	117	Lw/unit
Generator (General)	99	Lw/unit
Fan 1	113	Lw/unit
Noise Source	Noise Level	Level Reference
Fan 2	113	Lw/unit
Fan 3	113	Lw/unit
Primary Crusher Conveyor	79	Lw/m, m <sup>2</sup>
Reclaimer Feed Conveyor	79	Lw/m, m <sup>2</sup>
Pebble Crusher Feed Conveyor	79	Lw/m, m <sup>2</sup>
Mill Feed Conveyor	79	Lw/m, m <sup>2</sup>
Second feed conveyor	79	Lw/m, m <sup>2</sup>
Haul Road (truck) noise source	98	Lw/m, m <sup>2</sup>
Construction Noise Source (Haul Road Construction)	114	Lw/m, m <sup>2</sup>
Power Station	103	Lw/unit

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 effective sound propagation towards receiver locations.

<sup>1</sup> Immissions – noise received at a source

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

Based on the layout of the operations the noise sources are separated into different areas being:

- Jupiter Comprising: Open Pits (Heffernans, Doublejay and Ganymede)  
Processing Facility

Based on noise emissions<sup>2</sup> from the above equipment, the following operating scenarios were developed:

### **S1 Entire Operations**

This scenario is the cumulative noise levels for all operations at Jupiter. Noise sources used are as follows:

Jupiter Processing Facility – Primary Crusher (x2)  
Secondary Crusher (Pebble Crusher x2)  
Conveyor Systems (approx. 1000m)  
Mill (SAG and Ball x2 each)  
Transfers (x4)  
Primary Crusher Discharge Drive (x2)  
Pumps (x12)  
Power Station (x2)

Jupiter Mining – Diggers (x3)  
Haul Trucks (x9)  
Front End Loader (x2)  
Dozer (x2)  
Drill Rig (x2)

### **S2 Processing Operations Only**

This scenario is the cumulative noise levels for the current and proposed processing operations at Jupiter. Noise sources used are as follows:

Jupiter Processing Facility – Primary Crusher (x2)  
Secondary Crusher (Pebble Crusher x2)  
Conveyor Systems (approx. 1000m)  
Mill (SAG and Ball x2 each)  
Transfers (x4)  
Primary Crusher Discharge Drive (x2)  
Pumps (x12)  
Power Station (x2)

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## 5. RESULTS

A summary of the calculated noise levels for mining operations are shown in Table 5.

TABLE 5 – CALCULATED NOISE LEVELS FOR VARIOUS OPERATING SCENARIOS,  $L_{A10}$  dB(A)

Operating Scenario Description	Mt Margaret Community
S1 – All Operations	35
S2 – Jupiter Processing Only	34

Comparison of the mining scenarios for 'worst case' daytime and night-time conditions shows that the predicted noise emissions are slightly higher for night conditions. This is expected as night conditions reflect a night-time temperature inversion which is commonly the best conditions for far-field sound propagation.

## 6. ASSESSMENT

The highest predicted noise emissions for the Mt Margaret Community is 35 dB(A) from a combination of all noise sources including the processing facility, mining / mobile equipment operations at Jupiter.

For the most stringent time period (night) the assigned noise level at the community is 35 dB(A).

As discussed previously, the S1 operating scenario considers all noise sources from the proposed operations. The calculated noise level of an  $L_{A10}$  35 dB(A) is assessed under the highest night time propagation weather conditions. Given all this, the noise modelling would be considered as conservative, as it is unlikely that all noise sources are operating at the same time under the worst case propagation conditions.

It is assumed that mining operational noise will not have a 'tonality' characteristic applicable, due to the distance and the mining noise approaching the existing background noise level, hence noise characteristics will be increasingly weak and would not be applicable. At noise emission levels around 35 dB(A) it will generally be the case that the noise emission level would be low enough that the influence of background noise will result in the noise emission not being 'technically tonal', although that does not mean that some characteristics would not be audible.

## 7. CONCLUSION

It is concluded that the project will comply with the requirements of the Western Australian *Environmental Protection (Noise) Regulations 1997* at all times.

The identified receptor locations situated at the Mt Margaret Community are the nearest noise sensitive premises. Assessable noise levels at these receptors are below the most stringent assigned noise level of 35 dB(A). This is for the worst case operating conditions for all noise sources operating at the same time, which is unlikely.

**APPENDIX A**  
LOCATION PLANS

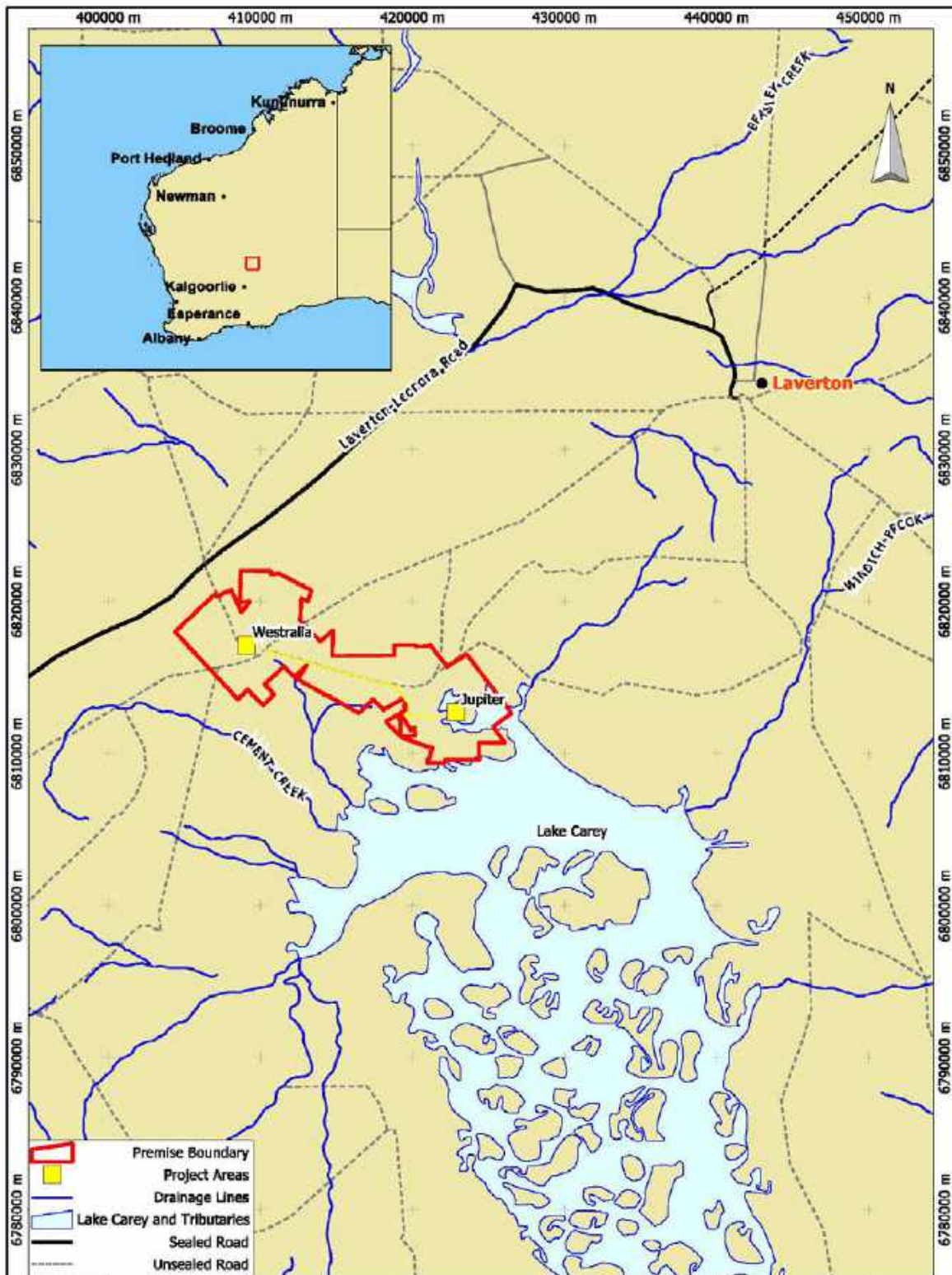


FIGURE 1 – GENERAL LOCATION PLAN

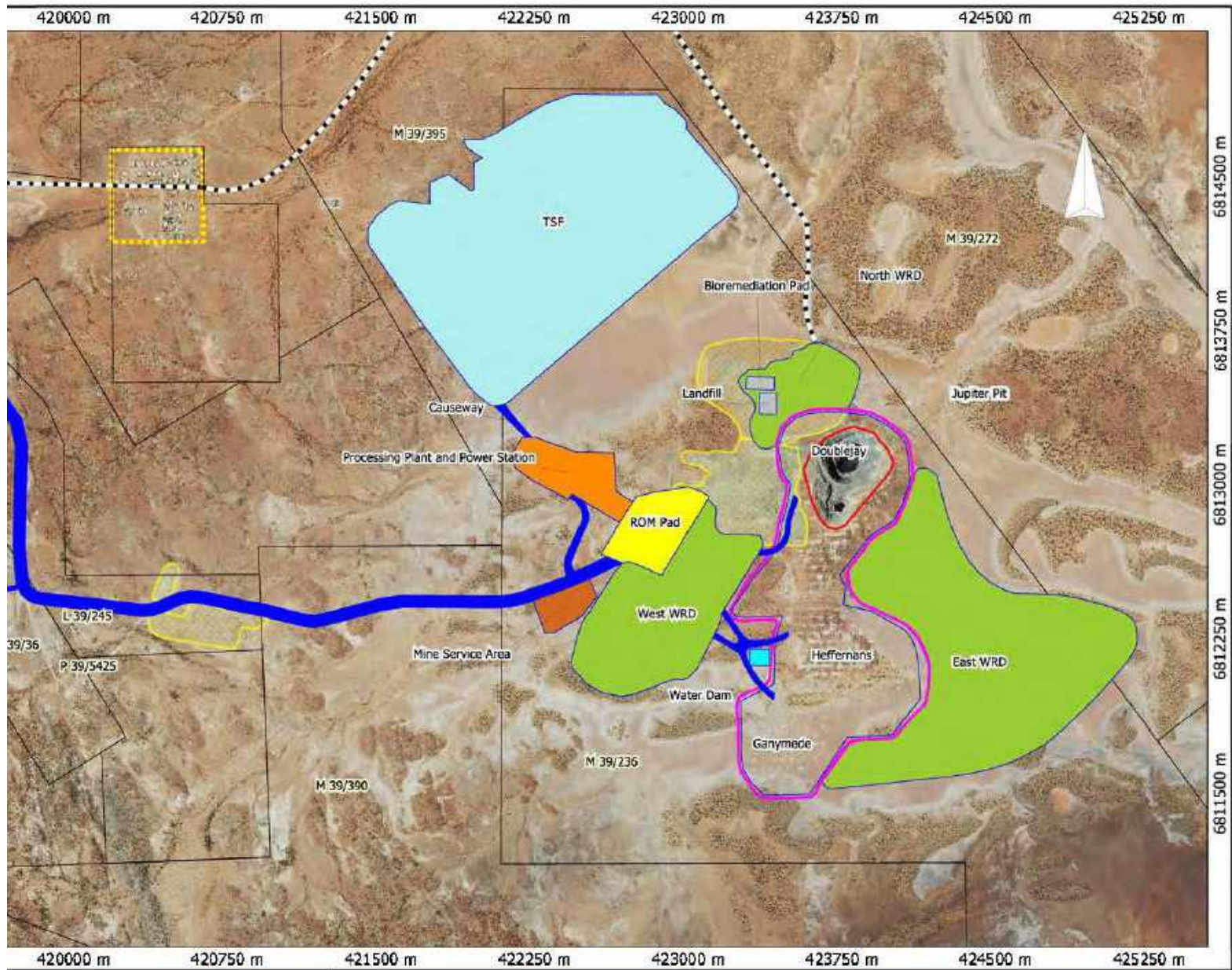


FIGURE 2 – JUPITER LAYOUT

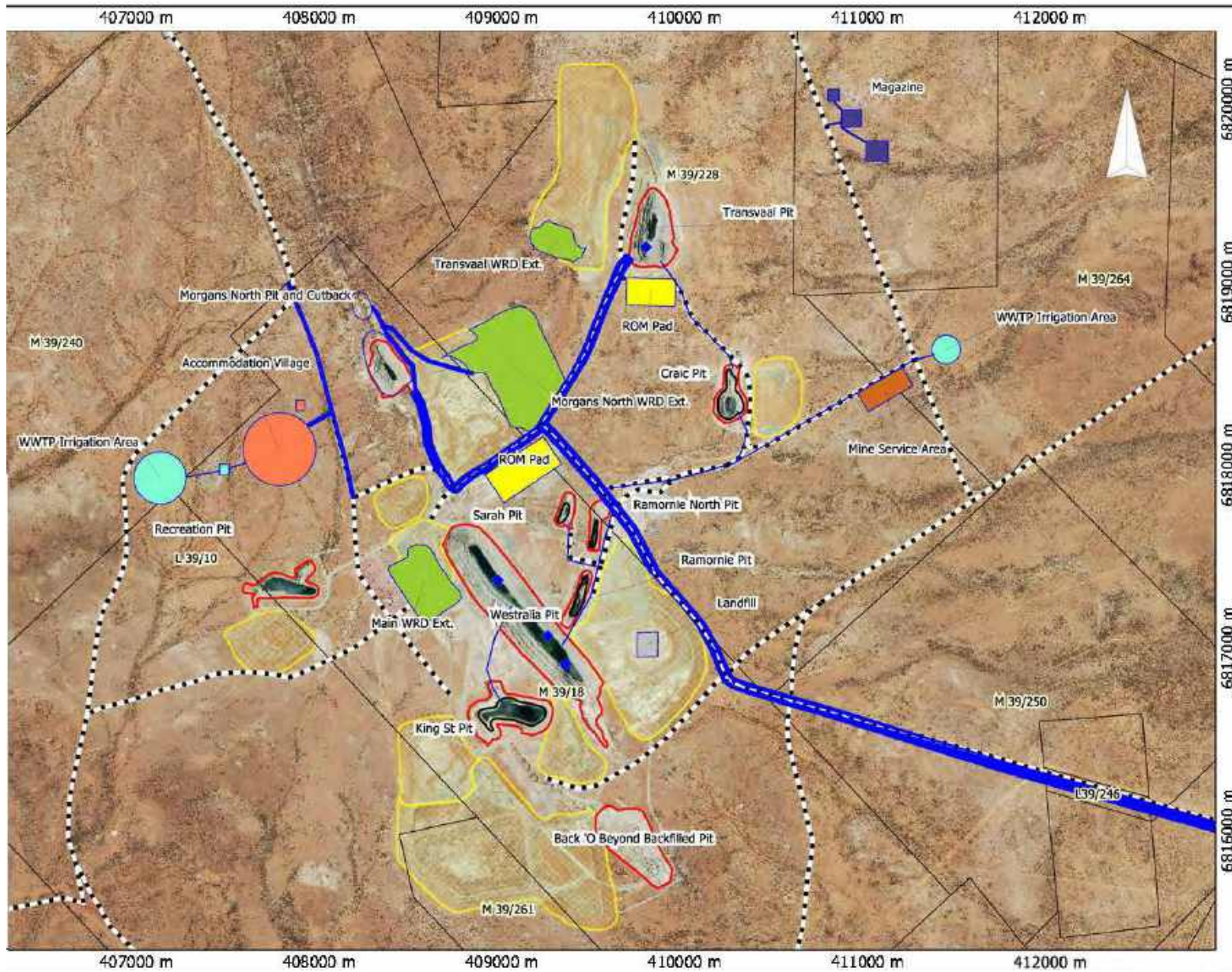
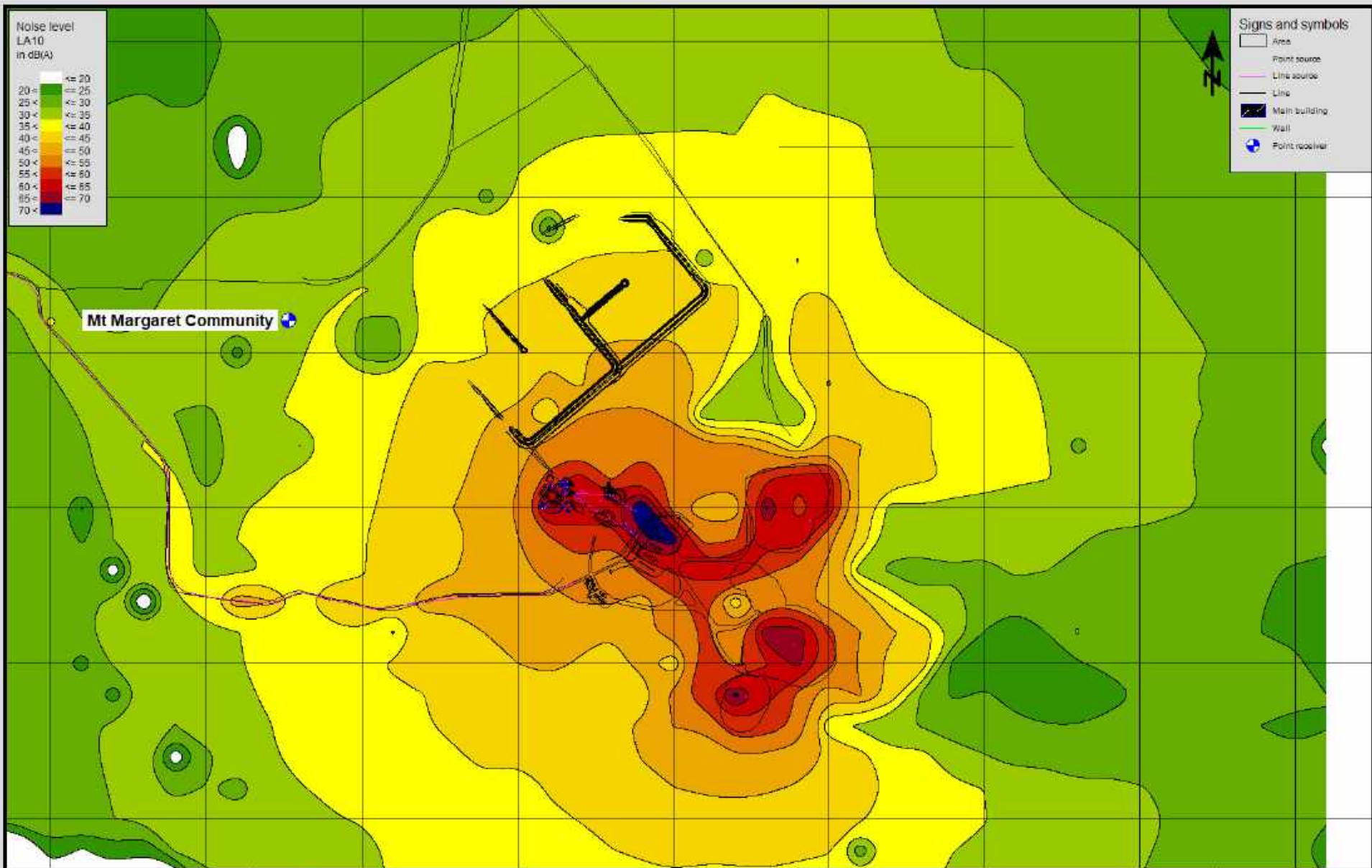


FIGURE 3 – WESTRALIA LAYOUT PLAN

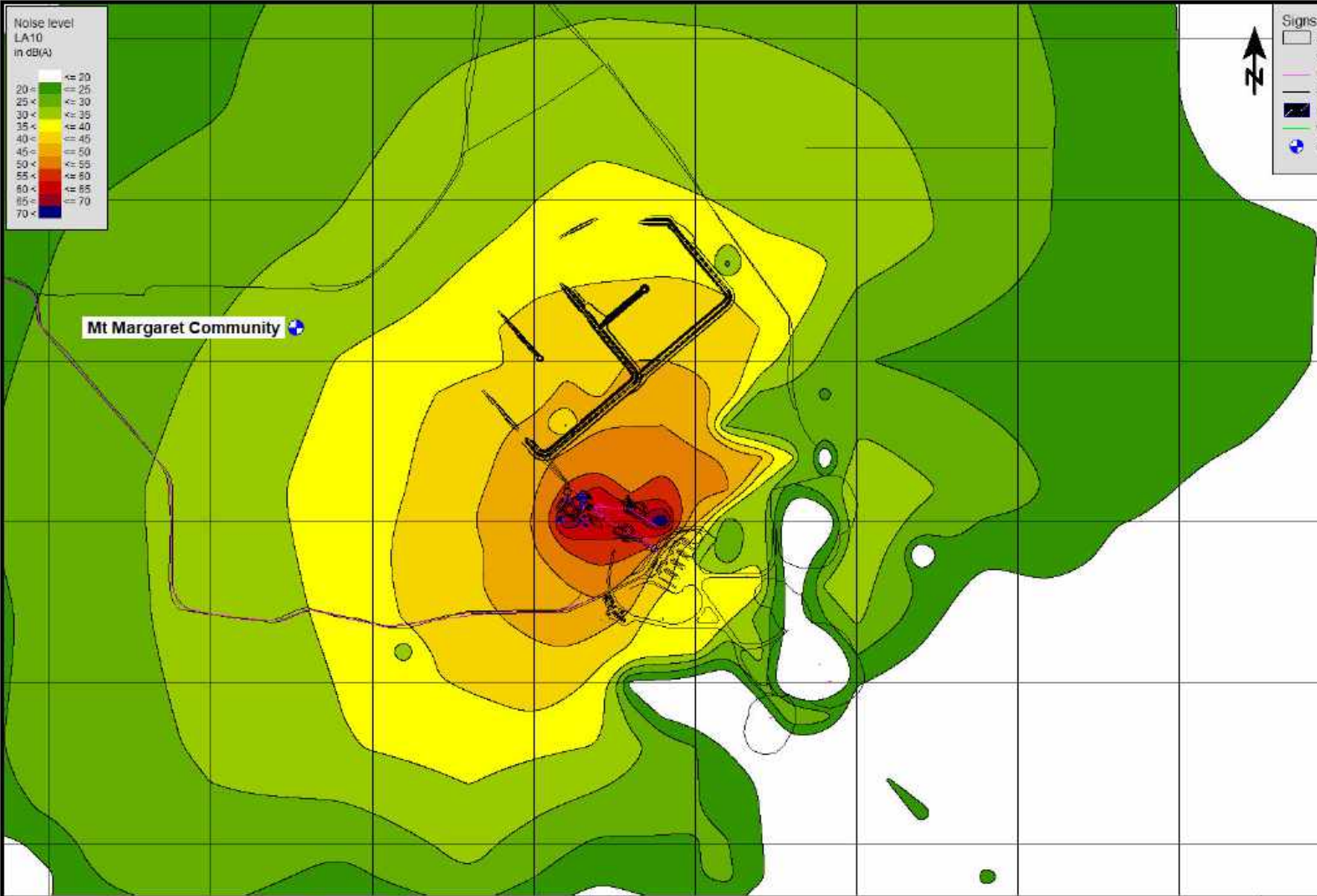
# **APPENDIX B**

## MINING NOISE CONTOUR PLOTS





Mt Margaret Community



# **APPENDIX C**

## REFERENCES

## References

1. Western Australian Environmental Protection Authority: *Environmental Protection (Noise) Regulations 1997*.
2. Australian/New Zealand Standard 2107:2016: *Acoustics – Recommended design sound levels and reverberation times for building interiors*.
3. Western Australian Environmental Protection Authority EAG13: *Environmental Assessment Guideline for Consideration of environmental impacts from noise (September 2014)*.
4. Western Australian Environmental Protection Authority: *Draft Guidelines on Environmental Noise for Prescribed Premises (May 2016)*.