

Wimmera Project

Noise and Vibration Impact Assessment

Community Information Session

24 March 2021

Noise and Vibration Impact Assessment



Noise and Vibration Assessment Objectives



Measurement of Existing Conditions



Criteria



Impact Assessment



Mitigation

Noise and Vibration – EES Draft Evaluation Objective

- *To protect the health and wellbeing of the community, and minimise effects on air quality, noise and social amenity.*
- *Assess the likely noise increases, and vibration impacts at sensitive receptors in the vicinity of the project and along the proposed transport route.*

Noise and Vibration – Key legislation and guidance

Construction

State

- *Civil construction, building and demolition guide* (EPA Vic Publication No. 1834)

Vibration (No applicable AS/NZ standards)

- BS6472-1: 2008 Guide to evaluation of human exposure to vibration in buildings.
- DIN 4150 Part 3. Structural Vibration in Buildings – Effects on Structures

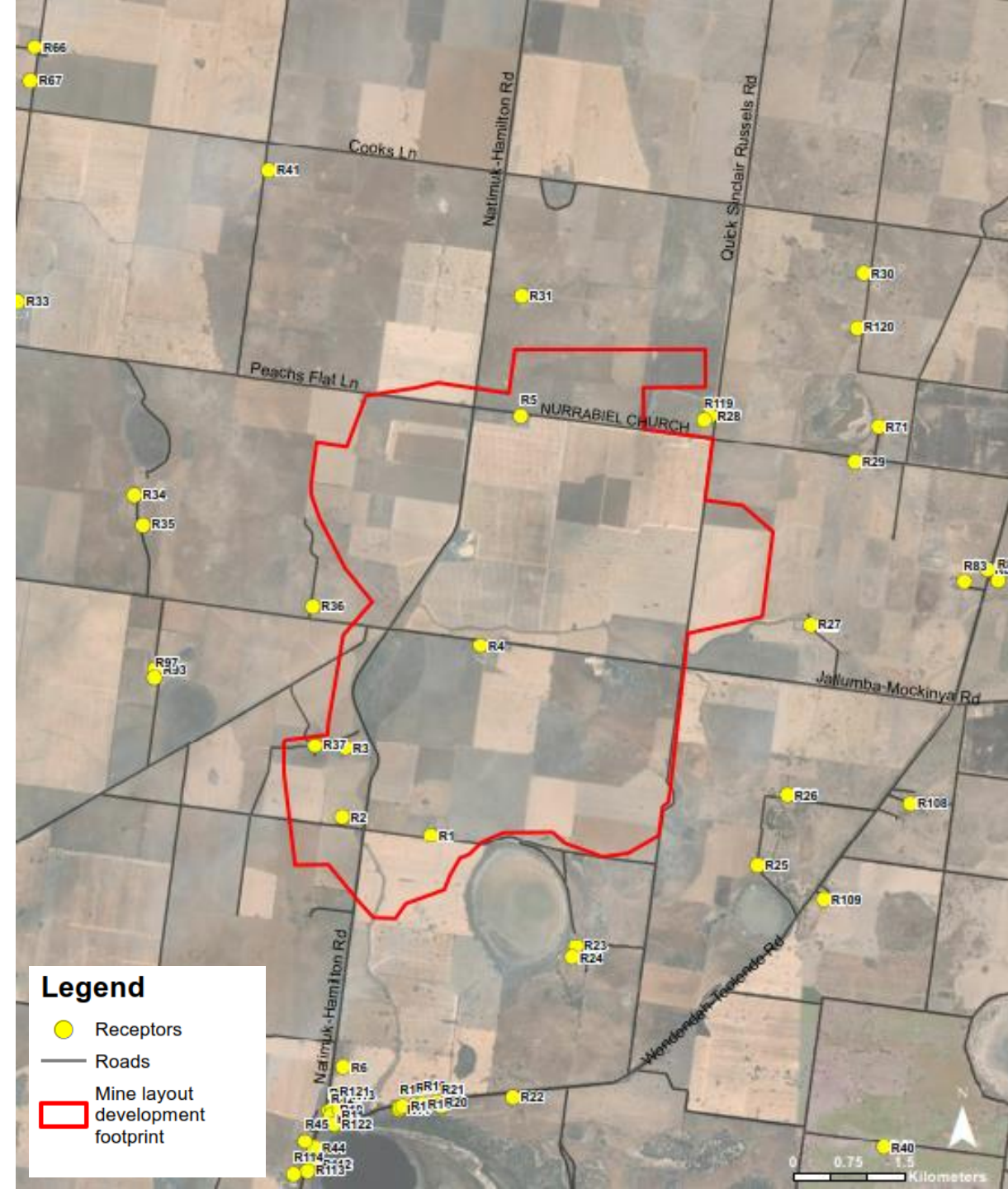
Operation

State

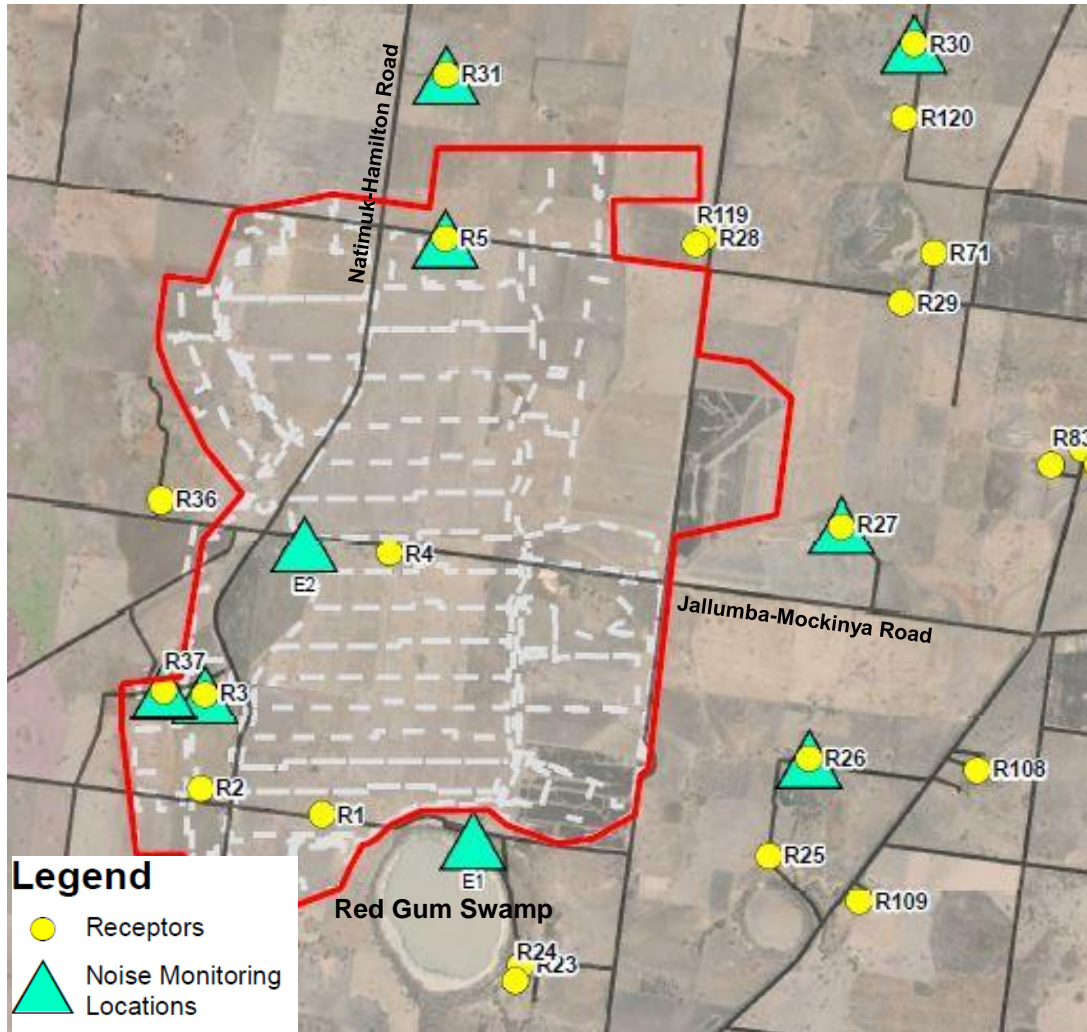
- *Environmental Protection Act 1970 (Vic)*
- *Environmental Protection Amendment Act 2017 (Vic) (from July 2021)*
- *Noise from Industry in Regional Victoria* (EPA Vic Publication No. 1411) **(NIRV)**
- *Road Noise Policy, NSW (2011)*

Mine layout and closest receptors

- Sensitive receptors in all directions surrounding the mine site.
- Noise levels modelled for all sensitive receptors within 5km of the mine site including, Noradjuha, Toolondo and Clear Lake.
- Six receptors within mine layout development envelope will require an access agreement; R1, R2, R3, R4, R5, R37.



Baseline noise monitoring



Period	Average L_{A90} dB
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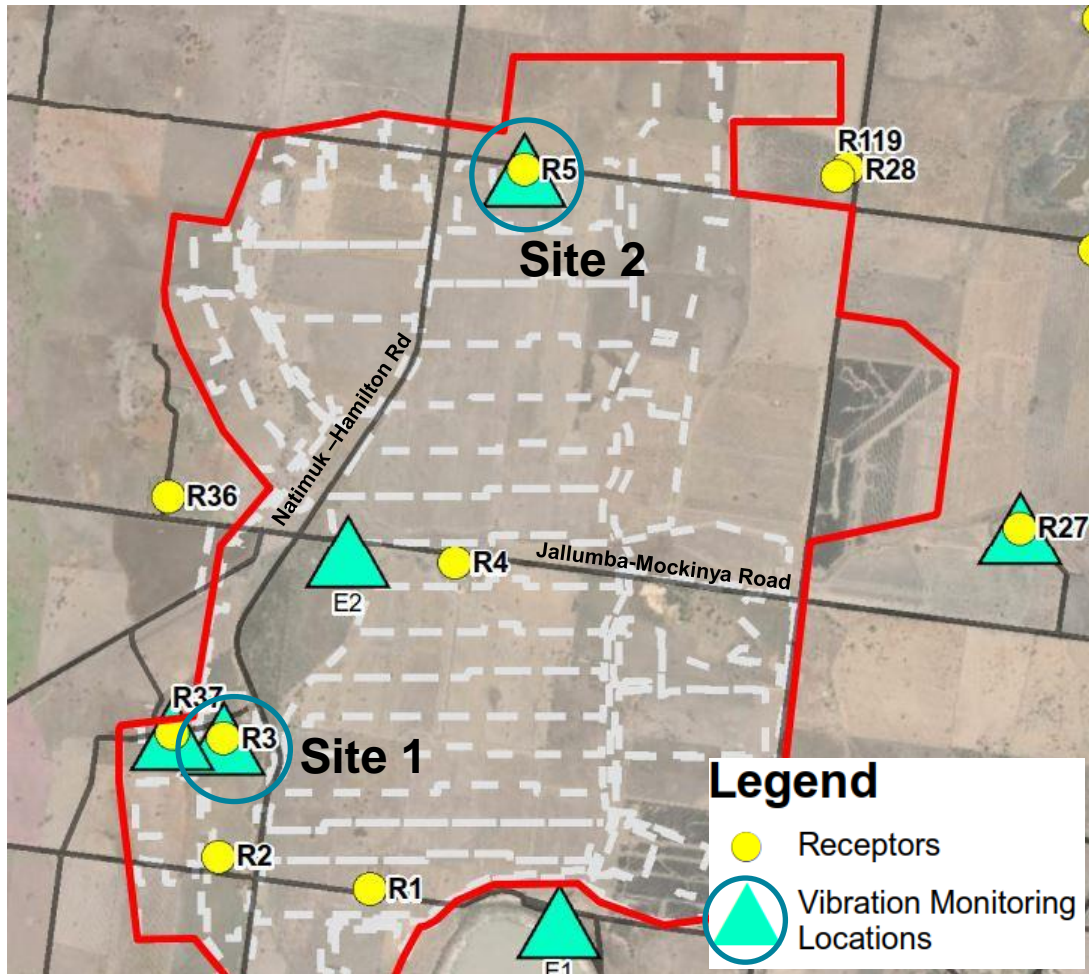
Day	27 to 34
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Evening	26 to 32
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Night	21 to 25
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- Noise monitoring in February 2019 for one month at six locations.
- Further monitoring in March 2020 at three locations.
- Typical noise levels for rural environment.

Baseline vibration monitoring



- Site 1 - Natimuk-Hamilton Road
- Site 2 - Nurrabel Church Road

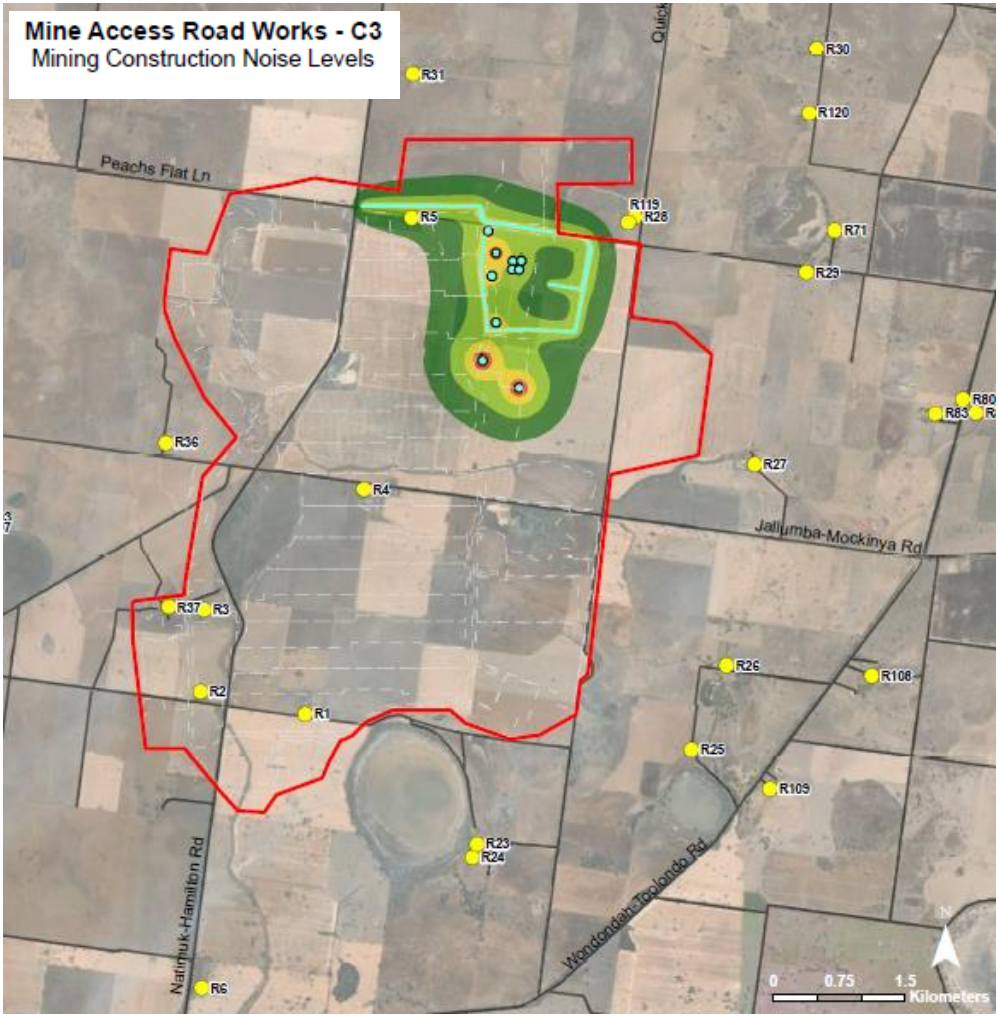
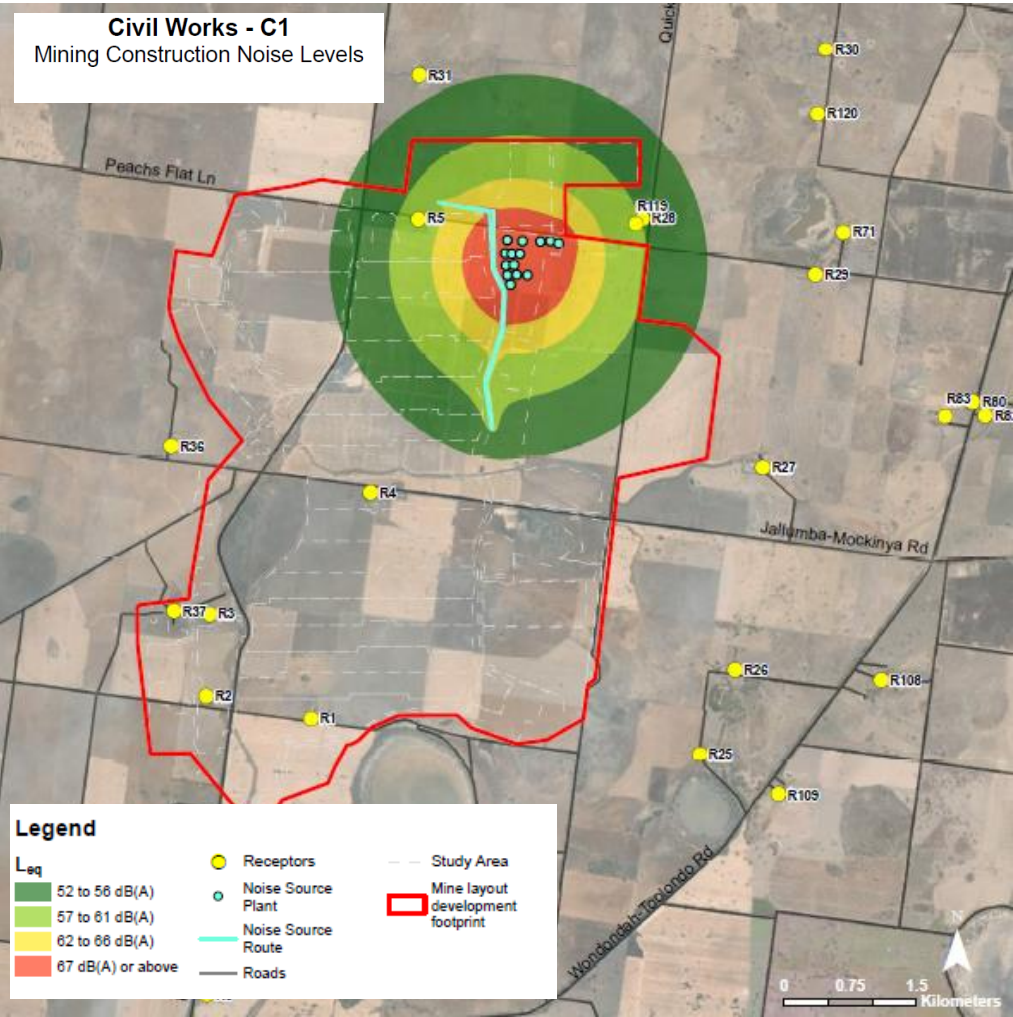
Measured existing vibration levels are low, and below human comfort vibration criteria for a residential building.

Construction noise and vibration assessment

- Construction works will occur predominantly during normal (daytime) working hours, for a period of up to two years.
- Construction activities located primarily at northern end of the mine site.
- There are no noise criteria for construction works during normal working hours.
- Some stages will occur concurrently.
- Vibration will not be an issue at receptors more than 200 metres away.

Stage	Activity	Duration	Description
C1	Bulk/earthworks/civils	2 months	Clearing and preparing site, excavations
C2	Concrete works	4 months	Establishing concrete platforms for the proposed infrastructure.
C3	Mine access road	2 months	Preparation, surfacing works, excavation and road profilers.
C4	Plant construction	12 months	Installation of processing plant and associated large infrastructure
C5	Floc Plant/SMP install	12 months	Installation of the flocculent plant, structural, mechanical and piping within the processing plant area
C6	Evaporation pond and tailings storage facility	3 to 4 months	Ground preparation, excavation, construction of the evaporation ponds, tailings storage facilities.

Construction noise assessment



Operational noise assessment

Noise from Industry in Regional Victoria (NIRV) Publication 1411 Recommended Maximum Noise Levels (RMNLs)

Day

46 dB(A)

Evening

41 dB(A)

Night

36 dB(A)

Operational noise modelling

- Noise model includes mining fleet, processing plant, and other ancillary equipment including truck movements
- Fixed location of mineral unit plant (MUP)
- Noise levels modelled by Years 1, 7, 13, 16, 17 and 19
- Noise modelling is an iterative process to assess mitigation options
- Modelled levels are compared the NIRV Recommended Maximum Noise Levels

Operation - Initial mitigation measures

- Dredge mining method
- Fixed location of mineral unit plant (MUP)
- Stockpiles
- AMC cell activity day period only
- Reduced night time ancillary and mining activities



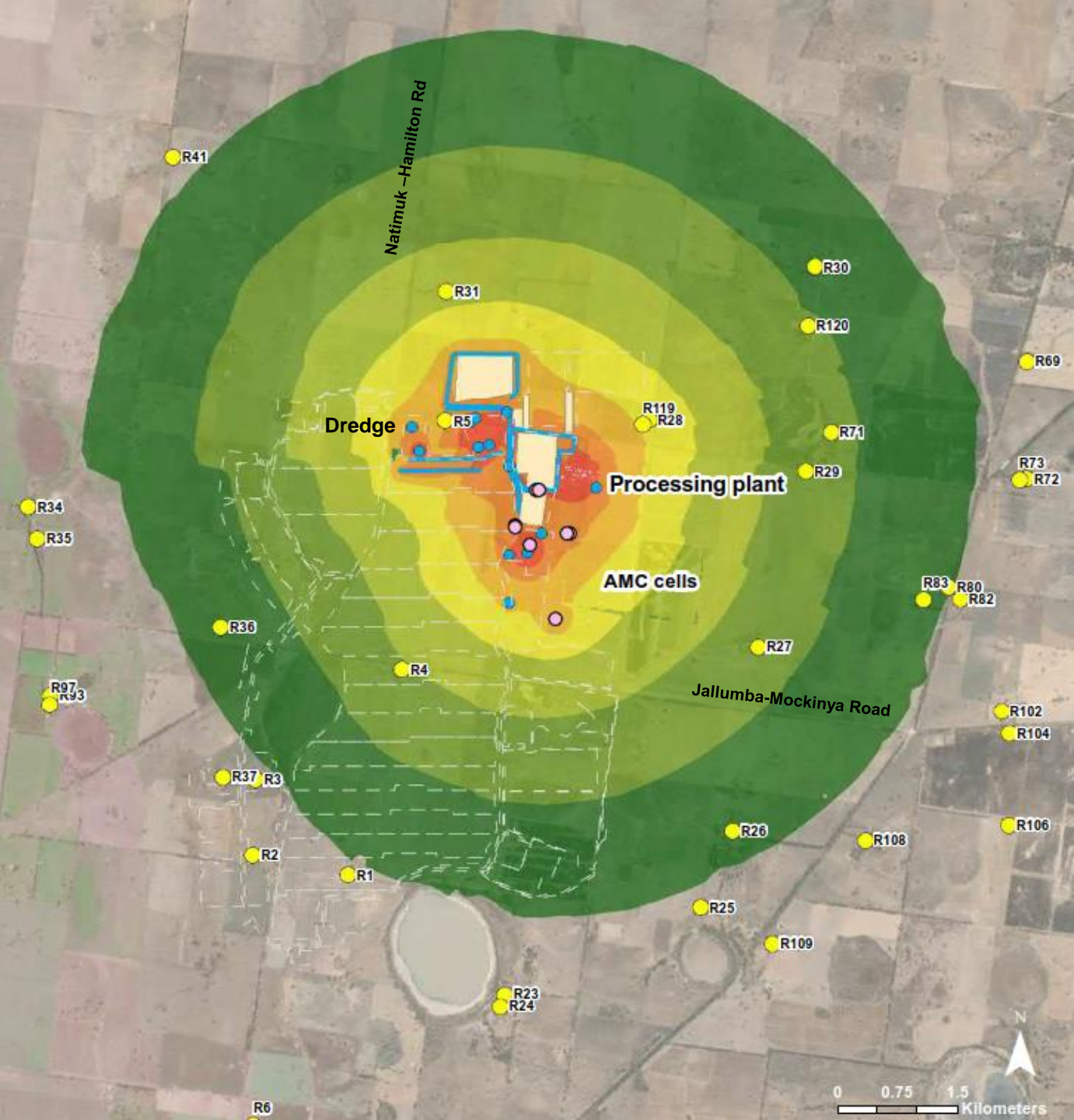
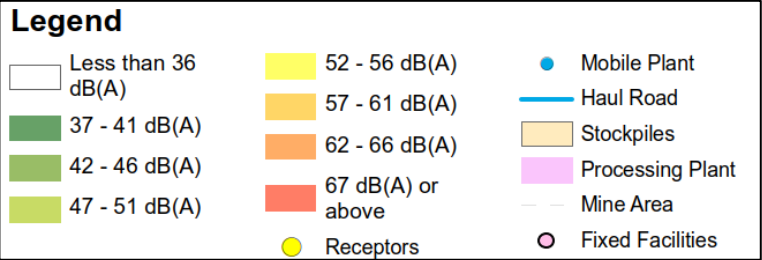
Dredge



Amphiroller in the Accelerated Mechanical Consolidation (AMC) cell

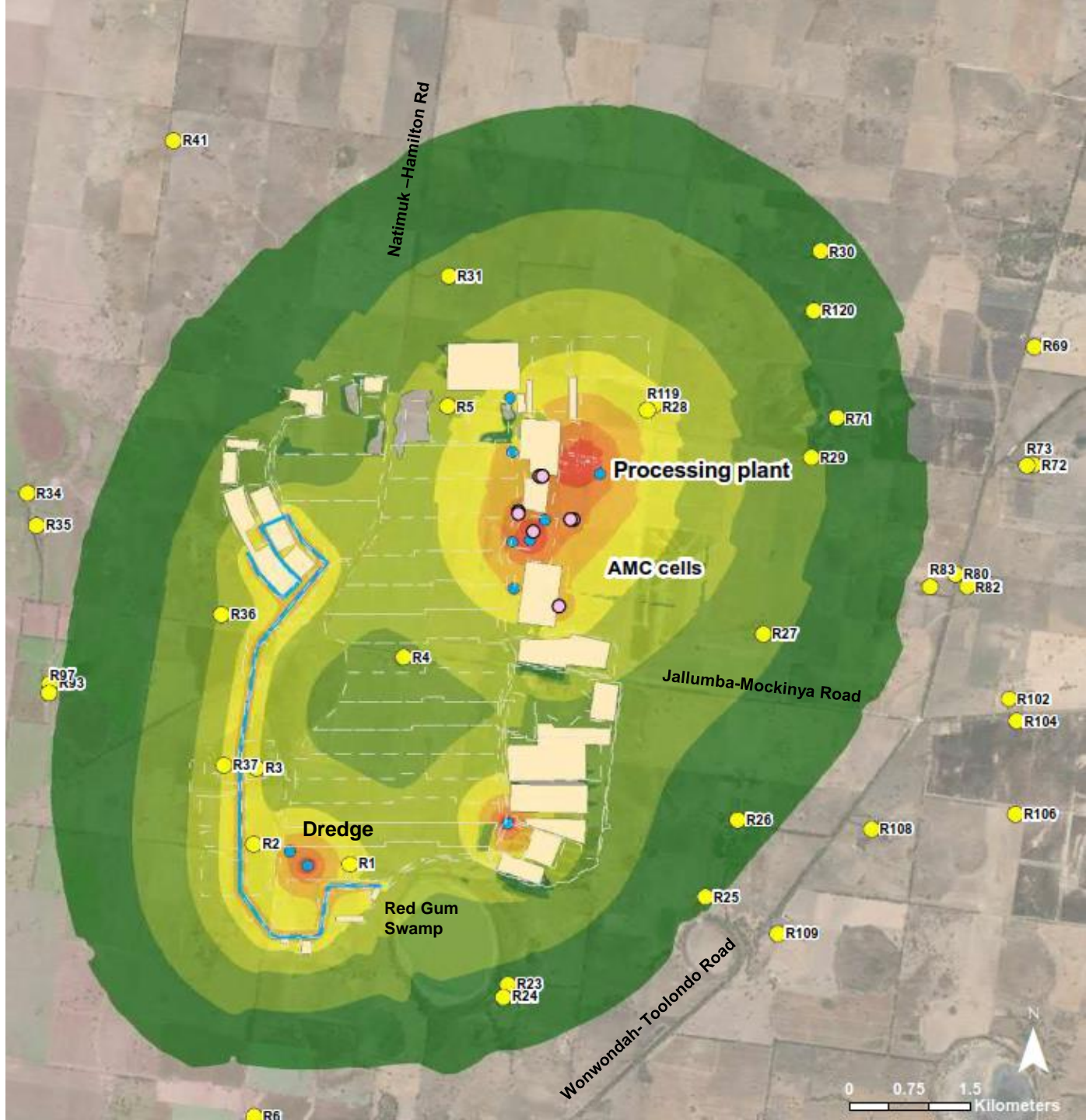
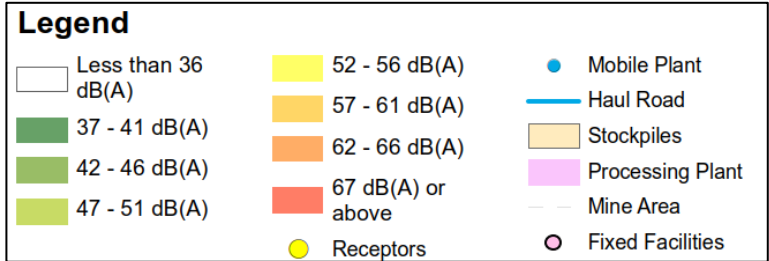
Operational noise assessment

Year 1



Operational noise assessment

Year 16



Key findings - Operation

Night-time mining

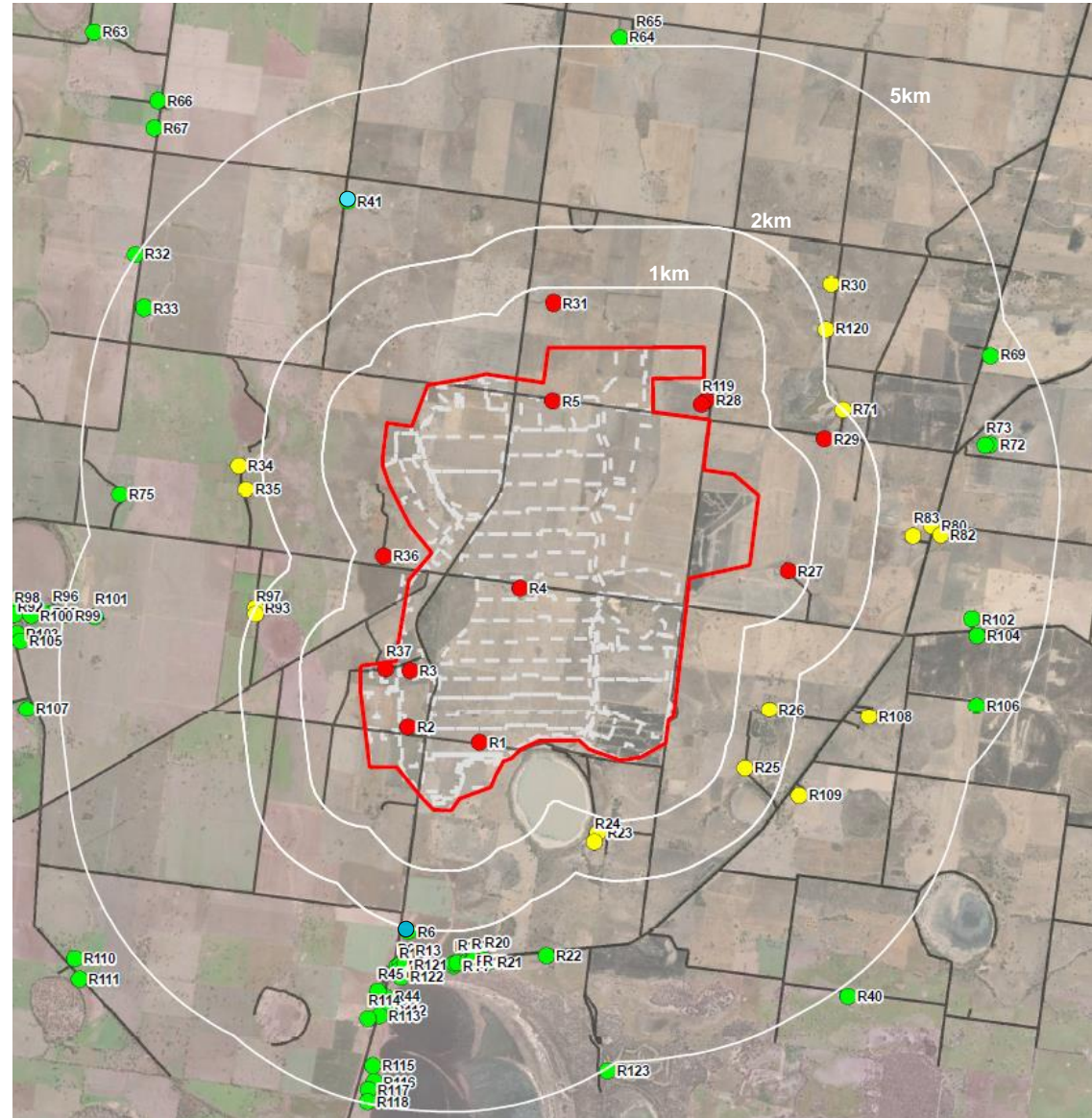
Operational noise is predicted to exceed the NIRV Recommended Maximum Noise Level (36 dB(A))

- Red – exceedance > 7 dB
- Yellow – exceedance < 7 dB
- Blue – exceedance < 2 dB

Exceedances in the north primarily due to the processing plant, elsewhere primarily due to the mining fleet.

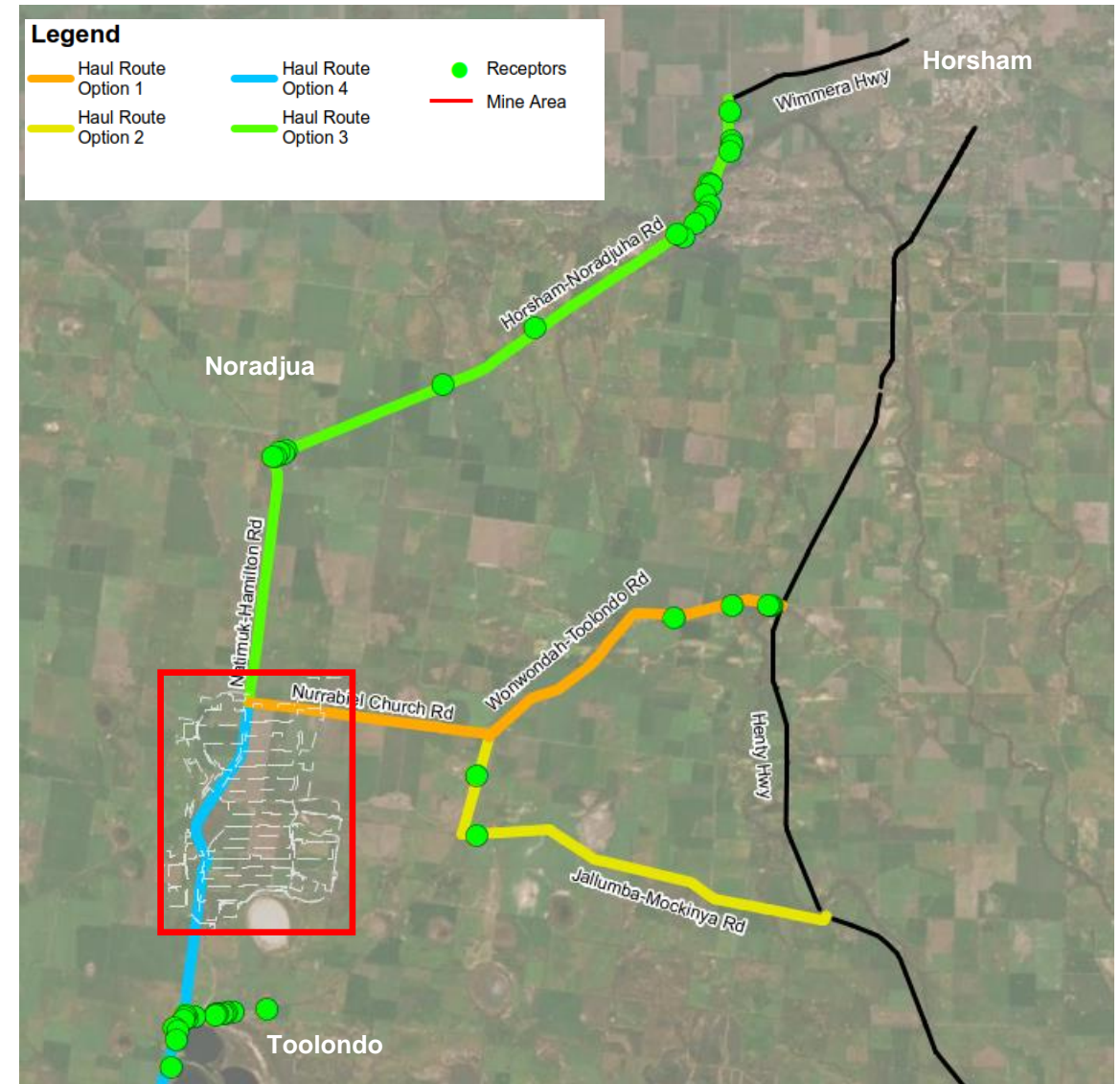
Further noise mitigation measures should be investigated to reduce the noise impacts from:

- Ancillary mobile mining plant and overburden activities.
- Mineral processing plant and facilities.



Noise and vibration assessment - Transport Route

- Four transport route options under consideration.
- 60 truck movements per 24-hour period, (2 to 3 movements per hour).
- Assessment to consider the noise impacts and potential for sleep disturbance at receptors within 100 metres from the road.
- Option 3, north along the Natimuk-Hamilton Road, has the most sensitive receptors <100 metres (20 receptors).
- Mitigation measures may be required to reduce noise impacts.
- Vibration from trucks will not be an issue on maintained road surfaces.
- Further studies required once option selected.



Next steps - development of mitigation measures

- Consultation with the local community to discuss the noise and vibration impact assessment.
- Discussions with the EPA, council and stakeholders.
- Refinement of proposed operations and mitigation measures to satisfy the evaluation objectives set out in the EES scoping requirements.
- Consult with individual landowners regarding the predicted noise impacts at their properties and associated potential mitigation options.
- Development of a noise measurement and event response plan.
- Documentation of how the Project will effectively implement and manage the environmental performance during construction and operations.