



Noise & Vibration Impact Assessment

Tumblong Landfill - Modification Assessment

Tumblong Reserve Road, Tumblong, NSW

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MH Earthmoving Pty Ltd
282 Tumblong Reserve Road
Tumblong
NSW

Noise & Vibration Impact Assessment

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Tumblong Reserve Road, Tumblong, NSW

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1 Introduction

1.1 Background

The Tumblong Landfill located at 282 Tumblong Reserve Road, Tumblong, NSW 2729 was established in 2020 and has effectively managed Visy waste for the last 4 years. The landfill accepts only general solid, non-putrescible waste sourced from Visy Paper and Pulp Mill in Tumut, NSW. The facility features two operational landfill cells and two leachate dams (one of which is temporary).

Located approximately 3.5 km from Tumblong and 18 km from Gundagai, the site is on Tumblong Reserve Road, 1.2 km from its intersection with the Old Hume Highway. The Old Hume Highway connects to the Hume Highway 2.3 km east of the site. Tumblong Landfill covers approx. 4.5 hectares, including Lots 7004/DP1028797, 7300/DP1149008, and Lot 10/DP1210362, with part of Crown Road designated as a quarry (Reserve 89508).

The site received Development Consent DA2019/143 from Cootamundra-Gundagai Regional Council (CGRC) on 29 June 2020. It commenced operations the same year and currently operates under Environmental Protection Licence EPL-21440. This licence, including a subsequent variation (Notice Number 1629276), authorizes the landfill to accept up to 60,000 tonnes of General Solid (non-putrescible) Waste per annum, from Visy only.

The site is seeking approval for the following changes to the site operations:

- Increase in the annual waste disposal: allowance at Tumblong Landfill from 60,000 tonnes per annum to 99,000 tonnes per annum. No changes to the total volume of waste disposed at the premises or operational lifespan is proposed – total capacity to remain as approved at 485,000 cubic metres over 10 years from the date of the first load of waste.
- Provide increased surety to the Visy Pulp & Paper Mill: The site is licensed to accept waste only from the Visy Pulp and Paper Mill (Visy) in Tumut. The increase in waste disposal tonnage will allow the paper machine rejects from Visy to be disposed of locally, rather than to landfill further afield.
- Enhance operational efficiency: By increasing the allowable annual waste tonnage, the landfill can streamline operations, improve space utilisation and reduce the frequency of site closures due to capacity constraints.
- Support local and regional development: Expanding the landfill's capacity will provide a stable waste management solution that supports local and regional development.

Waves Acoustic Consulting Pty Ltd (Waves Consulting) has been engaged by MH Earthmoving Pty Ltd (MHE) to prepare a Noise and Vibration Impact Assessment (NVIA) to demonstrate the noise and vibration impacts associated with the proposed modifications. This report presents the results of the assessment and forms part of the modification of DA2019/143 for the project.

This report has been prepared to inform the Environmental Protection Authority (EPA), the Department of Planning, Housing and Infrastructure (DPHI), Cootamundra-Gundagai Regional Council (CGRC) and all relevant stakeholders. The aim of the report is to assess the potential noise and vibration impacts of the proposed modifications on any nearby sensitive receivers and has been prepared in accordance with the guidelines outlined in Section 1.2.

1.2 Relevant Guidelines

Noise from the operation of the proposal has been assessed in accordance with the NSW Noise Policy for Industry (NPI) 2017.

Noise from additional traffic movements on the local road network has been assessed in accordance with the NSW Road Noise Policy (RNP), NSW EPA 2011.

Vibration from the operation and construction of the proposal has been assessed in accordance with Assessing Vibration: a technical guideline (DEC 2006).

2 Development Description

2.1 Overview of the Development and Potential for Impacts

The site covers an area of approximately 4.5 hectares and is located approximately 3.5 km from the community of Tumblong and 18.7 km from the Gundagai township. The site is on Tumblong Reserve Road, 1.2 km from its intersection with the Old Hume Highway. The Old Hume Highway connects to the Hume Highway 2.3 km east of the site. Tumblong Landfill covers approx. 4.5 hectares, including Lots 7004/DP1028797, 7300/DP1149008, and Lot 10/DP1210362, with part of Crown Road designated as a quarry (Reserve 89508).

The site, situated within the CGRC area, is zoned RU1 – Primary Production and designated “AB2” on the Lot Size Map. It is a remediated gravel quarry with minimal surrounding development, primarily rural farmland. The quarry, previously managed by the NSW Department of Industry (Crown Lands) and now under CGRC, is nearing the end of its useful life. MHE has management rights for the landfill until the quarry is fully rehabilitated, after which it will revert to Crown Lands. Adjacent Lot 1 DP702858, owned by MHE, temporarily stores excavated materials, which will be brought back into the site for landfill remediation. MHE operate the landfill under a commercial lease arrangement with CGRC, MHE pays CGRC a royalty fee for each tonne of waste disposed of on site.

The operational hours for the site remain unchanged. The operational hours are summarised below:

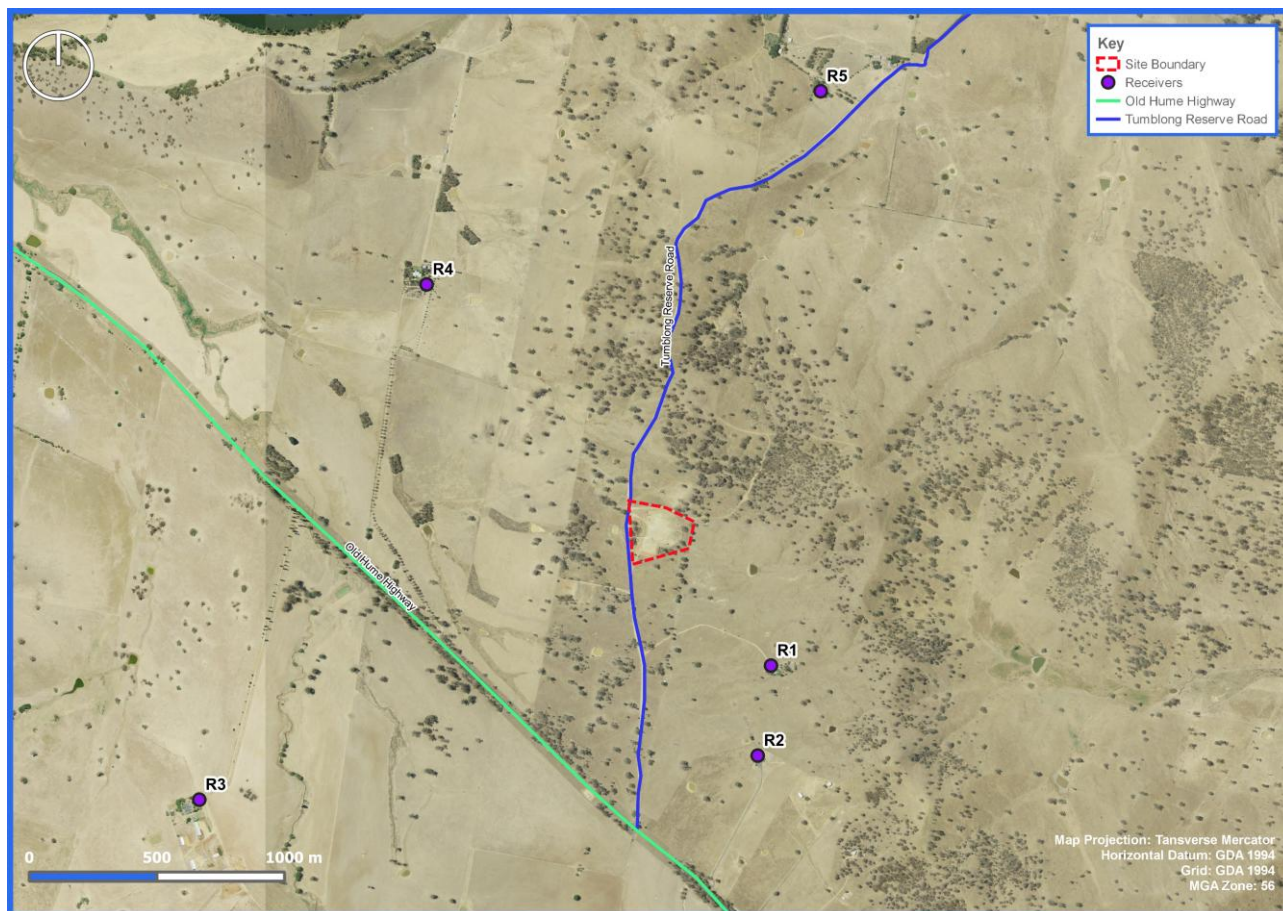
- Opening hours (staffed): 7:00am to 5:00pm Monday to Friday and Saturday 7:00am to 1:00pm
- Closed at all other times.

The main noise and vibration sources from the proposed modifications will include:

- Offsite vehicle movements on the nearby road network.
- Onsite vehicle movements - mainly an excavator, loader, watercart, truck and dog (deliveries).

Figure 1 below illustrates the proposed development site and the proximity of the residential receivers in the surrounding area.

Figure 1. Site Location & Surrounding Area



Aerial photography courtesy of NSW Imagery

The site is situated in an area surrounded by rural residential dwellings, which are the only noise sensitive receivers in the area. Table 1 below summarises the distance between the site boundary and the nearest residential dwellings.

Table 1. Nearest Noise Sensitive Receiver Summary

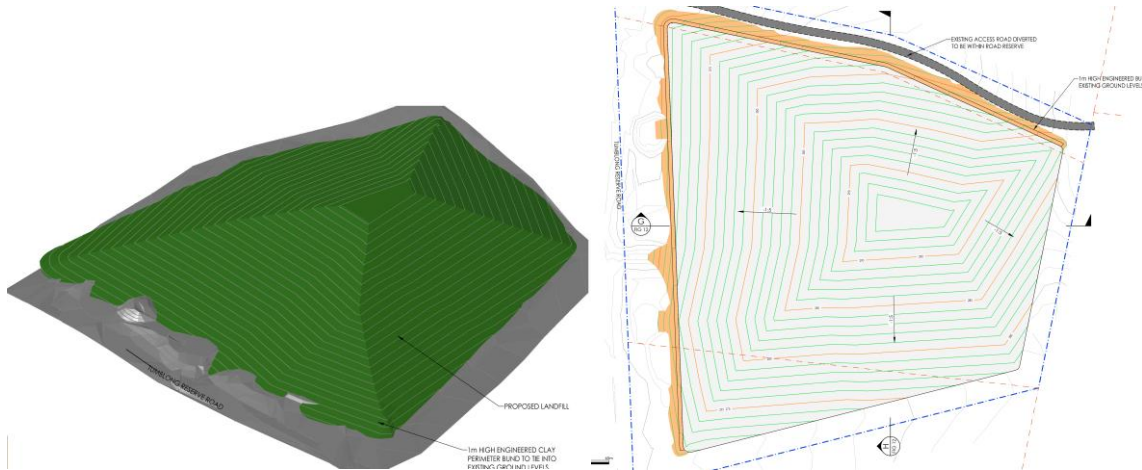
Residential Receiver	Address	Distance to Site (m)	Direction
R1	68 Tumblong Reserve Road	580	South East
R2	108 Old Hume Highway	840	South South East
R3	419 Old Hume Highway	1900	South West
R4	346 Old Hume Highway	1100	North West
R5	335 Tumblong Reserve Road	1750	North North East

Adjacent to the site is Tumblong Reserve Road (a local road), which provides the main access for road traffic to the site. The next nearest road (local road) is The Old Hume Highway which is located approximately 1 km directly south of the site.

2.2 Proposed Waste Profile

Figure 2 illustrates the end-of-life waste profile for the development. The main noise sources associated with the operation of the facility will be the outdoor movement of vehicles to deliver, handle and manoeuvre waste material around the site.

Figure 2. End-of-Life Waste Profiles



As the site develops over time the mobile noise sources will progress from operating below the surrounding ground level (ie in the quarry hole), to level with the surrounding ground, to finally above the surrounding ground level (ie a small hill).

This assessment report will determine the worst-case noise impacts throughout the lifetime of the development ie as the noise sources change locations horizontally and vertically (below ground level, level and above ground level) across the site.

2.3 Potential Operational Noise Impacts

Potential noise impacts from operation of the proposed development which will be assessed in this report include:

- Noise emission from vehicle and plant movements on site to any nearby sensitive receivers ie delivery truck, excavator and loader movements.
- Additional noise emission from vehicle movements on the adjacent roads to any nearby sensitive receivers.

2.4 Potential Vibration Impacts

The offset distances (in all directions) between the vibrationally intensive equipment and any sensitive receivers is large (> 500 m). The potential for vibration impacts due to the operation of the development are effectively nil. All vibration criteria with respect to cosmetic damage to buildings and human comfort impacts will be satisfied as a result.

No further consideration of vibration impacts is given in this assessment as a result.

2.5 Operational Noise Levels

Table 2 provides the overall Sound Power Level for the proposed outdoor equipment / activities which have been used in this assessment. These levels have been based on recent site measurements for the plant and equipment at a similar site (as per Gundagai Landfill: Equipment SWL Testing – Advitech Environmental 21 July 2017) or Waves Consulting noise database.

Table 2. Worst-Case Sound Power Level of the Proposed Outdoor Plant

Description	Overall LWA (dB re 1pW)
Volvo L120 front end loader	107
Volvo 360 excavator	107
Hino watercart (10,000 L capacity)	106
Truck & Dog	106
Moxy Dump Truck	108
Compactor	106

2.6 Operational Hours

The proposed operational hours were provided by MHE and are summarised in Table 3.

Table 3. Summary of Operational Hours

Operational Activity	Hours
Landfill Activities – deliveries, front end loader, moxy, compactor, water cart & excavator movements	0700 to 1700 hrs Monday to Friday. 0700 to 1300 hrs on Saturday. No evening, night-time or weekend activities.

2.7 Operational Traffic Generation

The proposed traffic movements for receipt of material at the site were taken from the traffic report prepared by McLaren Traffic Engineering and Road Safety Consultants (June 2025). At full development the site will be capable of receiving, processing and storing up to 99,000 tonnes per annum.

This level of operation is estimated to generate up to 20 vehicle trips per day (10 inbound and 10 outbound) comprising 40 tonne truck and dog or semi-trailers. These vehicles will travel to and from the site via the Old Hume Highway and the Hume Highway. The average dwell time for incoming trucks is 15 minutes. The 98th percentile demand results in a total of two (2) incoming vehicles at any one time.

In addition to the heavy vehicles, the site is predicted to generate up to eighteen (18) light vehicle trips per day due to staff attending the site and parking.

3 Operational Noise Criteria

3.1 Consent Conditions

The development consent conditions DA 2019 /143, Clause L4.1 as issued by the CGRC enforces the noise limits for the site as described in Table 4 below.

Table 4. Summary of DA 2019 / 143 Clause L4.1 Noise Limits

Residential Receiver	Address	Noise Limit – Day LAeq,15min
R1	68 Tumblong Reserve Road	40
R2	108 Old Hume Highway	40
R3	419 Old Hume Highway	40
R4	346 Old Hume Highway	40
R5	335 Tumblong Reserve Road	40

Notes: 1. Day means the period from 7am to 6pm Monday to Friday and 7am to 1pm Saturday.
2. Applicable under enhanced meteorological conditions: Stability Categories A, B, C, D and E with wind speeds up to and including 3 metres per second m/s) at 10 metres above ground level.
3. To be determined in an area within 30 metres of a residence facade, but not closer than 3 metres where any residence on the property is situated more than 30 metres from the property boundary closest to the premises.

3.2 NSW Road Noise Policy (RNP)

Responsibility for the control of noise emissions in New South Wales is vested in Local Government and the NSW EPA. The EPA oversees the Road Noise Policy (RNP, January 2011) which provides a framework and process for deriving traffic noise criteria. The RNP criteria applicable to this development are given in Table 5 below.

Where the existing noise levels due to traffic already exceed the assessment criteria given in Table 5 then the RNP requires that the total traffic noise level increase should be limited to 2 dB for situations where additional traffic is generated on existing roads by changes to land use developments.

Table 5. RNP Road Traffic Noise Criteria for Residential Land Uses.

Road Category	Type of Project / Land Use	External Assessment Criteria (dB re 20 µPa)	
		LAeq,15hr (Day)	LAeq,9hr (Night)
Freeway / arterial / sub-arterial roads	Existing residences affected by additional traffic on existing freeways / arterial / sub-arterial roads	55 LAeq,15hr (Day)	50 LAeq,9hr (Night)
Local roads	generated by land use developments	55 LAeq,1hr (Day)	50 LAeq,1hr (Night)

4 Operational Noise Modelling

Noise modelling of the site was undertaken using SoundPLAN modelling software.

The noise model was constructed from a combination of aerial photography, existing ground topography and design masterplans for the development. The local terrain, design of the development, receiver buildings and structures have been digitised in the noise model to develop a three-dimensional representation of the operations of the development and surrounding environment.

4.1 Noise Model Parameters

The parameters in Table 6 were defined in the noise model to calculate noise levels at sensitive receivers.

Table 6. Noise Model Parameters

Variable	Parameter
Calculation Standard	CONCAWE
Topography	Surrounding Area – 5m resolution
Ground Absorption	0.75 (mainly soft vegetation)
Receiver Height	1.5 m (mainly first storey receivers)

4.2 Noise Enhancing Meteorological Conditions

Noise model predictions were performed using noise enhancing meteorological conditions given in the NSW Noise Policy for Industry (NPI).

The noise enhancing meteorological conditions used in this assessment are given in Table 7 below. For all conditions the worst-case wind direction (source to receiver) for each receiver was assessed.

Table 7. Noise Enhancing Meteorological Conditions Used in the Noise Assessment

Period	Meteorological Parameters
Day / Evening	Stability categories A-D with light winds up to 3 m/s at 10 m AGL
Night	Stability category F with winds up to 2 m/s at 10 m AGL

Note 1. AGL = Above Ground Level.

Note 2. Stability categories are based on the Pasquill–Gifford stability classification scheme.

Note 3. Worst-case stability category D taken for Day / Evening periods.

This provides a conservative prediction of the potential noise impacts from the development at the surrounding sensitive receivers.

4.3 Operational Scenarios

With reference to Section 2 the proposed operational scenarios can be summarised as per Table 8 below.

Table 8. Proposed Operational Scenarios

Time of Day	Description of Operational Noise Sources in Worst-Case 15-minute Period
Monday to Friday (0700 to 1700 hrs) Saturday (0700 to 1300 hrs)	Materials Handling / Stockpiling – Front end loader and excavator full load (ie max engine revs) operation for 100% of the time. Watercart, Moxy and Compactor at full load operating for 50% of the time. All vehicles assumed to move throughout the site Deliveries / Truck Movements – Up to two (2) truck and dogs moving throughout the site. Full load (ie max engine revs) operation for 50% of the time
Evening (1800 to 2200 hrs)	No Operational Activities – no assessment required.
Night-time (2200 to 0700 hrs)	

4.4 Mobile Operational Noise Source Levels

Mobile operational noise sources include:

- Delivery vehicles were modelled entering the site from Tumblong Reserve Road and then moving around the site. For a worst-case noise assessment, the loudest vehicle has been assessed which is a 40 tonnes truck & dog combination with a typical Sound Power Level of 106 dB LWA. Delivery trucks were assumed to operate at full load (ie max engine revs) for 50% of the time while manoeuvring around the site.
- Permanent onsite vehicles which can move anywhere around the site and have noise levels as given in Table 2. The vehicles were assumed to operate at full load (ie max engine revs) for the percentage of time as indicated below:
 - a. Volvo L120 front end loader 100% of the time in any 15-minute period.
 - b. Volvo 360 excavator 100% of the time in any 15-minute period.
 - c. Hino watercart (10,000 L capacity) 50% of the time in any 15-minute period.
 - d. Moxy 50% of the time in any 15-minute period.
 - e. Compactor 50% of the time in any 15-minute period.

4.5 Corrections for Annoying Noise Characteristics

Where a noise source contains certain characteristics, such as tonality, intermittency, irregularity or dominant low-frequency content, there is evidence to suggest that it can cause greater annoyance than other noise at the same noise level. On the other hand, some sources may cause less annoyance where only a single event occurs for a limited duration.

The NPI identifies correction factors for annoying noise characteristics which must be applied to the predicted noise levels before assessing against the PNTLs. All of the noise sources in this report have been assessed, based on the noise data available, for annoying noise characteristics. The proposed operational noise sources are generally broadband in nature and have not demonstrated any annoying characteristics as per the definitions in Fact Sheet C of the NPI.

5 Predicted Operational Noise Impacts

5.1 Predicted Operational Noise Impacts

Noise modelling of the onsite noise sources has been used to predict the noise emissions from the typical operation of the facility to the surrounding sensitive receivers.

A selection of the predicted worst-case operational noise levels due to onsite noise sources are summarised and compared against the noise limits levels in Table 9. These predictions include the worst-case noise levels throughout the lifetime of the development.

In addition, a noise contour map for the daytime period is provided in Appendix A. The noise contours presented are taken at 1.5 m elevation to simulate first storey receivers (ie typical residential receivers in the area). The noise contours show how the noise emission from the proposed development propagates into the surrounding environment.

Table 9. Predicted Operational Noise Levels Compared to Consent Conditions Clause L4.1

Location	Worst-Case LAeq,15m			Clause L4.1 Exceedance LAeq,15m			LAeq,15m Sleep Disturbance
	Day	Eve	Night	Day	Eve	Night	
Residential				40	35	35	45
R1	40	-	-	0	-	-	-
R2	37	-	-	0	-	-	-
R3	28	-	-	0	-	-	-
R4	33	-	-	0	-	-	-
R5	≤20	-	-	0	-	-	-

The results from Table 9 and Appendix A demonstrate that the noise emissions from the site to the surrounding environment are low. The proposed development satisfies the consent conditions at all nearby residential receivers during all time periods.

5.2 Predicted Operational Noise Impacts – RNP

Table 10 summarises the existing traffic volumes and noise characteristics of the roads potentially impacted by operation of the proposed development (ie the surrounding roads used by vehicles accessing and exiting the site).

Table 10. Summary of Existing Traffic Volumes on the Surrounding Roads

Road	Existing Traffic Volume per Day	Percentage Heavy Vehicles %	Road Type	RNP Assessment Criteria	Estimated Existing Noise Levels ³
Tumblong Reserve Road	< 20 ¹	10%	Local	55 LAeq,1hr (Day)	< 20 LAeq,1hr (Day)
Old Hume Highway	< 100 ²	10%	Local	55 LAeq,1hr (Day)	< 35 LAeq,1hr (Day)
Hume Highway	10,877 ²	34%	Arterial	55 LAeq,15hr (Day)	> 55 LAeq,15hr (Day)

Note: 1. Estimated by Waves Consulting.
2. Taken from Seca Solution Traffic Report (June 2019) – which provided traffic data for the original DA assessment.
3. Estimated using CoRTN traffic model (with Australian conditions corrections) to the nearest residential receiver (R2).

Tumblong Reserve Road and the Old Hume Highway have estimated existing noise levels which are below the RNP assessment criteria. For these roads the combined existing traffic volumes and future predicted volumes (due to the proposed modification) need to be assessed against the RNP assessment criteria.

However, for the Hume Highway we find that the RNP criteria are already likely to be exceeded. Based on this, the allowable increase in noise due to traffic from the proposed site must not exceed 2 dB as per the RNP requirements.

Table 11 summarises the predicted noise levels on the nearest affected roads due to the traffic generated by operation of the modified site. These predictions use the future traffic volumes as described in Section 2.7 above.

Table 11. Summary of Operational Traffic Noise on Surrounding Roads (from available traffic data)

Road	Future Traffic Volume per Day	Percentage Heavy Vehicles %	Road Type	RNP Assessment Criteria	Estimated Future Noise Levels	Increase in Noise Levels (dB)
Tumblong Reserve Road	< 60	44%	Local	55 LAeq,1hr (Day)	< 20 LAeq,1hr (Day)	NA
Old Hume Highway	< 140	23%	Local	55 LAeq,1hr (Day)	< 35 LAeq,1hr (Day)	NA
Hume Highway	10,917	34%	Arterial	55 LAeq,15hr (Day)	> 55 LAeq,15hr (Day)	< 0.5

The predicted operational traffic noise levels on Tumblong Reserve Road and the Old Hume Highway are significantly below the RNP assessment criteria for local roads. Therefore, the RNP criteria for these roads are satisfied as a result.

Since the existing traffic noise levels on the Hume Highway (arterial road) likely exceed the RNP assessment criteria, all new traffic noise increases must satisfy the 2 dB increase criteria. Table 11 shows that the proposed development generates negligible additional traffic noise on this road. The RNP criteria are satisfied as a result.

The site will not operate during the night-time, which means all traffic noise impacts during the night will be nil.

6 Conclusion

Waves Consulting has conducted a noise and vibration impact assessment of the proposed landfill modifications at Tumblong Reserve Road, Tumblong NSW. The proposed modification proposes to increase the annual waste disposal allowance to 99,000 tonnes per annum. This assessment has investigated the worst-case noise emissions associated with the operation of the site after the proposed modifications.

This assessment has demonstrated that the predicted noise emissions from the site to the surrounding environment are low. The proposed modifications satisfy the consent conditions DA 2019 /143, Clause L4.1 as issued by the CGRG. No remedial measures are required as a result.

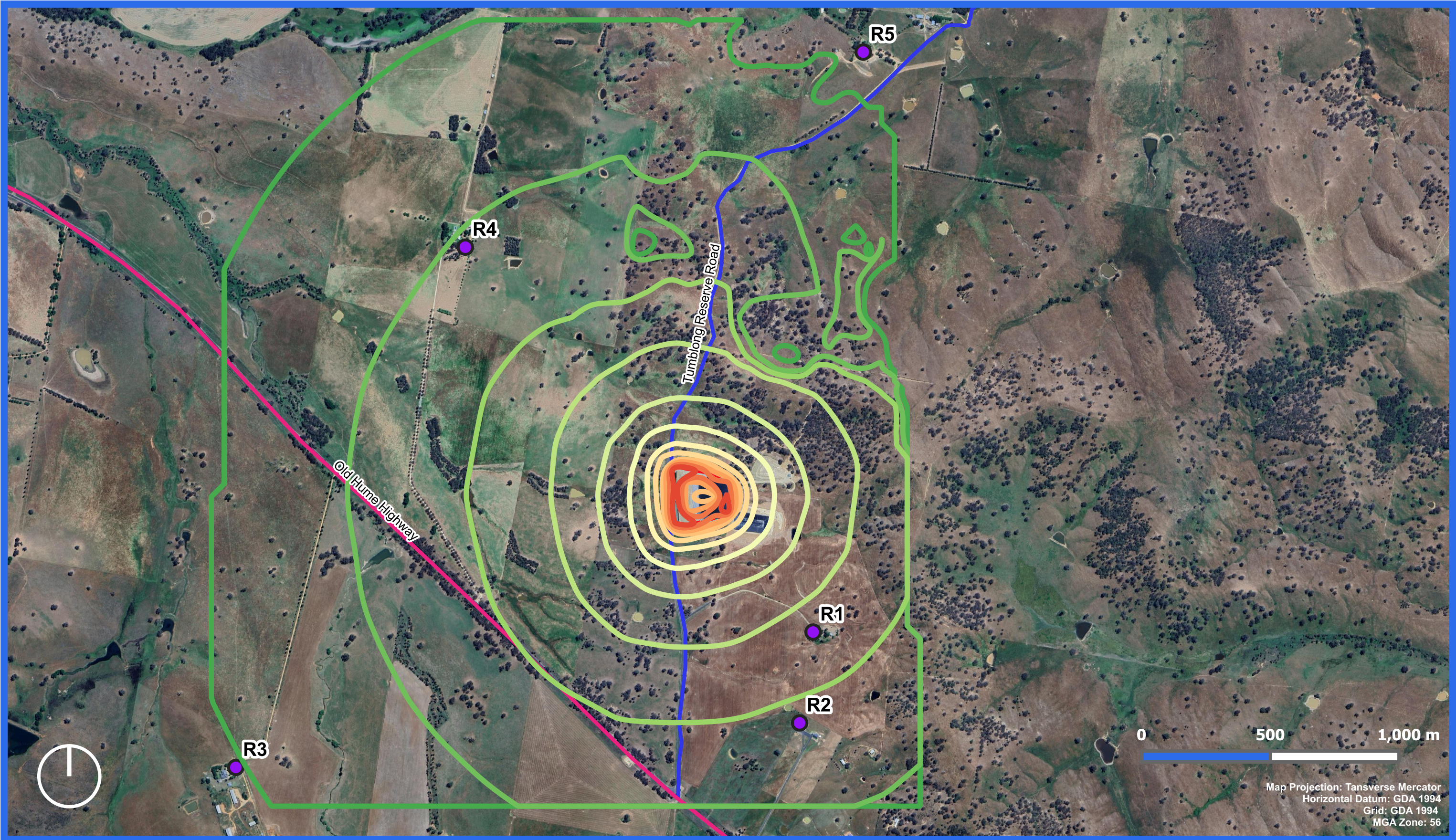
The operational traffic noise levels on the nearby affected roads have been assessed. Table 11 of this assessment shows that the proposed modification generates negligible operational traffic noise. The NSW Road Noise Policy (RNP) criteria are satisfied as a result.

The offset distances (in all directions) between the vibrationally intensive equipment and any sensitive receivers is large (> 500 m). The potential for vibration impacts due to the operation of the development are effectively nil. All vibration criteria with respect to cosmetic damage to buildings and human comfort impacts will be satisfied as a result.

It is concluded that the proposed project is a complying development with respect to noise and vibration impacts and is therefore suitable for operation.



APPENDIX A: NOISE CONTOUR MAPS



- Key**
- Site Boundary
 - Receivers
 - Old Hume Highway
 - Tumblong Reserve Road

LAeq (dB) - Daytime			
35	40	45	50
55	60	65	70
			75
			80

OPERATIONAL NOISE CONTOURS

Tumblong Landfill (Modification)
282 Tumblong Reserve Road, Tumblong, NSW

waves
CONSULTING

Project Number: 60.00805.02
Date: 23 June 2025
Revision: 01
Prepared by: TC