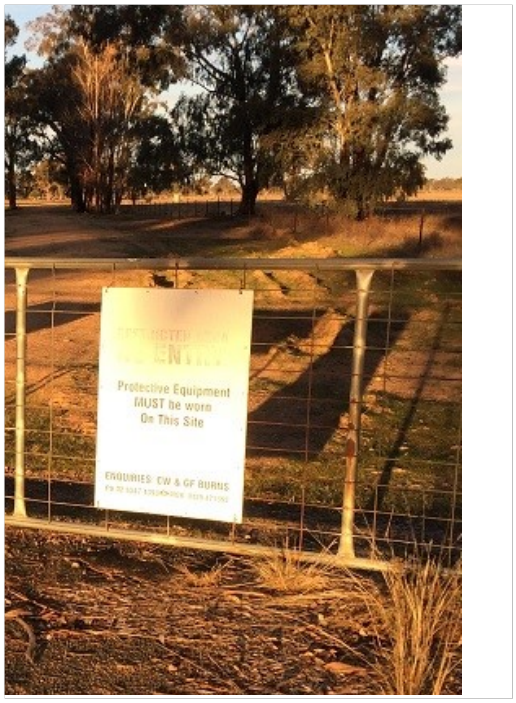
NOISE IMPACT ASSESSMENT

Waste Disposal Facility Expansion, 'Yeronga'

February 2020

Project Number: 19-172



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1. INTRODUCTION

NGH was engaged by Mr. C. Burns to prepare a Noise Impact Assessment (NIA) in relation to an existing waste disposal facility at 'Yeronga', Euroka Road, Quandialla. The subject land includes Lots 1 & 2, DP1039488.

The NIA was prepared to support a modified consent application, under clause 4.55(1)(A) of the *Environmental Planning & Assessment Act 1979,* submitted to Bland Shire Council.

This NIA includes a desktop assessment based on the predicted noise levels arising from the proposed operations. The NIA was completed in accordance with the *NSW Noise Policy for Industry (NPI*). It also addresses matters of noise generation, as raised by the EPA in response to the referral of the development application by Council.

2. PROJECT DESCRIPTION

2.1. OUTLINE

The existing development on the site is defined as a general solid waste landfill. It holds approval to accept up to 10,000 tonnes per annum of non-putrescible waste and special waste (waste tyres only).

The proposed modified consent application relates to the modification of the current development approval DA/2007/083 issued by Bland Shire Council. The proposed modification seeks approval to increase the volume of waste disposed of at the facility from 10,000 tonnes to 18,000 tonnes per annum. The proposed modification also seeks to more accurately describe the types of non-putrescible waste acceptable at the site, based on current work practices, site conditions and waste source arrangements.

The proposed increase in disposal volume would have other implications from a noise management perspective, including a likely increase in the use of machinery on the site and heavy vehicle movements to and from the site. The Statement of Environmental Effects (SEE) from Salvestro Planning (2016), stated that the proposed intensification (from 10,000 to 25,000 tonnes) will result in an increase of two to four heavy vehicles per day to six to eight per day.

As this report states an intensification from 10,000 to 18,000 tonnes per annum, we consider the number of heavy vehicles per day may increase from zero to four per day to approximately four to seven per day. From traffic volume calculations (Appendix A.1), this increase would have a negligible impact on the traffic noise in the region.

2.2. PROPOSAL SITE

The subject land is described as Lot 1 and 2 DP1039488. The property is known as 'Yeronga' located at Euroka Road in the locality of Quandialla. The subject land is approximately 13km south of Quandialla.

The site is set among agricultural land and zoned RU1 Primary Production under the Bland Local Environmental Plan 2011. Surrounding land is actively used for road transport, cropping and grazing.

2.3. SURROUNING RECEIVERS

The nearest affected receivers were identified through aerial maps and during a site visit. There are four occupied residences within 3km of the proposal area (Figure 2-1). The nearest dwelling is approximately 650m west of the proposal area.

2.4. HOURS OF OPERATION

The site would operate during the same hours of operation as currently exists. Those hours of operation include:

8am to 7pm, 7 days per week

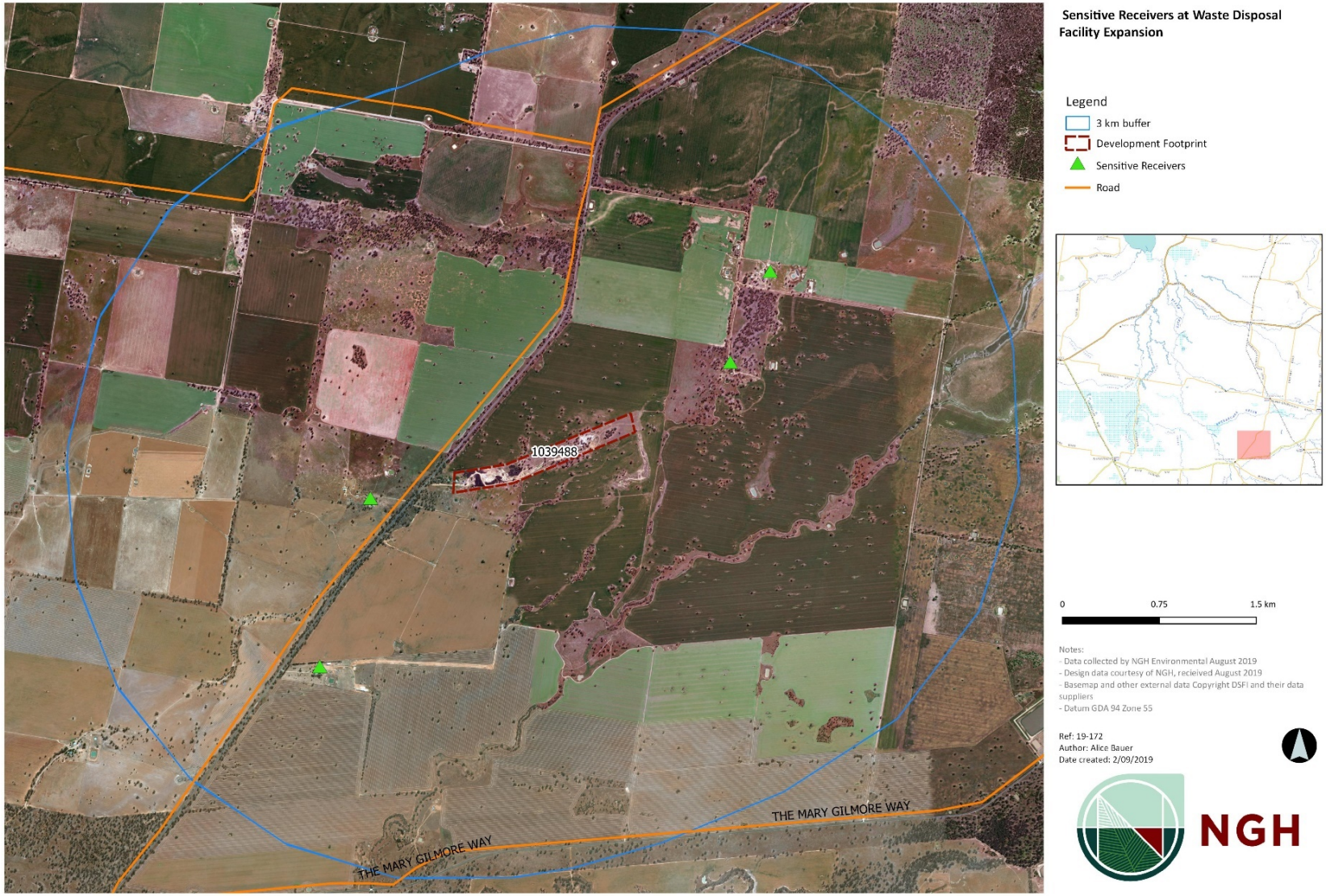


Figure 2-1 Sensitive receivers within 3km of the proposal area.

3. EXISTING NOISE ENVIRONMENT

3.1. OUTLINE

The NSW 'Noise Policy for Industry' (NPI) requires that project intrusiveness noise levels are determined relative to rating background noise levels (RBL). Separate RBLs are described for the daytime, evening and night-time periods. These periods are defined as follows:

- Daytime = 7am to 6pm (Monday to Saturday) and 8am to 6pm (Sundays and public holidays).
- Evening = 6pm to 10pm
- Night-time = the remaining periods.

The existing noise sources are typical of a rural environment. Noise sources include tractors, headers, quad bikes, light vehicles and heavy vehicles. Noise from farm activities including cultivation, sowing, spraying, grain harvest, haymaking and animal movement occur at peak times driven by seasonal conditions. Other noise sources include regular road traffic noise from Euroka Road, and Mary Gilmore Way. Rail noise emanates from the Stockinbingal Parkes Railway line located 8 km from the subject land and also forms part of the noise background. The Stockinbingal Parkes Railway line operates about twice per day for 4-5 minutes on each occasion. The operation of the existing sand extraction site rehabilitation also forms part of the background noise in the area.

Traffic volumes were obtained from the Weddin Shire Council for Morangarell Road, and Mary Gilmore Way (MR398). Traffic volumes recorded on MR398 between Grenfell Street (Bimbi) and Bimbi Thuddungra Road had an Average Daily Traffic (ADT) of 227 in March 2007. Assuming 1.5% annual traffic growth Mary Gilmore Way would have an ADT of about 270 in 2019. Morangarell Road at the Weddin and Bland Shire Boundary, recorded an ADT of 133 in January 2001. Again assuming 1.5% annual traffic growth Morangarell Road would have an ADT of about 160 in 2019. Publicly available traffic volume data for Euroka Road was not available at the time of this assessment. The known ADT's are representative of the rural roads near the site and it can be assumed that Euroka Road ADT is in the order of 200.

3.2. BACKGROUND NOISE LEVELS

Background noise monitoring was not conducted for the proposal. Given the rural environment described above, the minimum background levels from the NPI were adopted in the preparation of this NIA.

Table 2.3 of the NPI describes typical existing background noise levels for land zoned RU1 primary production. The typical existing rating background noise levels (RBL) for RU1 land including:

- 40 dB(A) for daytime
- 35 dB(A) for evening
- 30 dB(A) for night-time

4. OPERATIONAL NOISE ASSESSMENT

4.1. POLICY SETTING

The NPI aims to ensure noise impacts associated with the operation of an industrial development are evaluated and managed consistently and transparently. The NPI specifies noise criteria to protect the community from excessive intrusive noise. The NPI provides guidance on the calculation of project noise trigger levels. Those trigger levels include:

- Intrusive noise levels.
- Amenity noise levels.

4.1.1. Intrusive noise levels

The **L_{Aeq}** descriptor is used for measuring and describing both intrusive noise levels and amenity noise levels. The NPI describes a process for determining project intrusive noise levels (PINLs) for an industrial noise source. Generally, the noise level is acceptable if the equivalent continuous (energy-average) A-weighted level of noise from the source (L_{Aeq}), measured over a 15-minute period, at the receptor, does not exceed the RBL by more than 5 dB(A) or the acceptable intrusive noise level from an industrial noise source at the receptor is the RBL + 5 dB(A). The PINLs has been calculated for the site (Table 4-1).

Table 4-1 Project intrusive noise levels for the proposal

Time period	*RBL dB(A) L_{A90}*	*Intrusive noise = RBL + allowance*	*NML dB(A) L_{A90} (15min)*
Day time *(Monday to Friday 7 am to 6 pm, Saturday,Sunday and public holidays 8 am to 6pm)*	40	= RBL + 5 dB(A)	45
Evening *(Monday to Friday 6 pm to 10pm, Saturday,Sunday and public holidays 6 pm to 10pm)*	35	= RBL + 5 dB(A)	40
Night *(Monday to Friday 10pm to 7am, Saturday,Sunday and public holidays 10pm to 8am)*	30	= RBL + 5 dB(A)	35

4.1.2. Amenity noise levels

The NPI describes amenity noise levels for residential receivers in rural environments (Table 4-2). These amenity noise levels will be used to calculate the amenity noise levels (PANLs) below.

Table 4-2 Amenity noise levels according to NPI

Receiver	*Noise Amenity Area*	*Time period*	*L_{Aeq} dB(A)*
Residential	Rural	Day	50
		Evening	45
		Night	40

The NPI describes a process for determining the project amenity noise levels (PANLs). This aims to limit continuing increases in noise levels from industrial development. The recommended amenity noise levels aim to protect against noise impacts such as speech interference, community annoyance and some sleep disturbance. The PANL represents the objective for noise from a single industrial development at a receiver. The industrial noise during operation should not normally exceed the acceptable noise levels for rural residential properties as detailed in Table 4-3. The NPI provides a method to calculate the PANLs for industrial developments as the recommended amenity noise level minus 5 dB(A) (Table 4-3).

Table 4-3 Project amenity noise levels for the proposal

Receiver type	*Noise amenity area*	*Time period*	*Noise Level L_{Aeq} dB(A)*	
			Recommended amenity noise level	*Project amenity noise levels*
Residence	Rural	Day	50	45
		Evening	45	40
		Night	40	35

4.1.3. Project noise trigger levels

Operational impacts at sensitive receivers would be measured against the Project Noise Trigger Levels (PNTLs) (Table 4-4). The project noise trigger level provides a benchmark or objective for assessing a proposal or site. It is not intended for use as a mandatory requirement. The project noise trigger level is a level that, if exceeded, would indicate a potential noise impact, and so 'trigger' a management response; for example, further investigation of mitigation measures (EPA 2017).

The project noise trigger level, feasible and reasonable mitigation, and consideration of residual noise impacts are used together to assess noise impact and manage the noise from a proposal or site. It is the combination of these elements that is designed to ensure that acceptable noise outcomes are determined by decision makers (EPA 2017).

Comparing the amenity and intrusiveness criteria indicates that the amenity and intrusiveness criteria are the same for all time periods. Compliance with either the amenity criteria or the intrusiveness criteria would be acceptable.

Table 4-4 Project Noise Trigger Levels (PNTLs)

Receiver	*Time of Day*	*L_{Aeq} dB(A)*
Residential	Day	45
	Evening	40
	Night	35

4.2. OPERATIONAL NOISE SOURCES

Operational noise impacts would likely be from the operation of equipment used as part of the extraction void backfilling. A number of key activities on site that are likely to produce the most noise include:

- Receiving and depositing of waste.
- Excavation and backfilling of waste.
- Movement of vehicles on site.

The activities above use readily available earthmoving equipment. As such, noise levels associated with that equipment (Table 4-5 Noise levels for equipment (RMS construction calculator).Table 4-5) and activity are well understood.

Table 4-5 Noise levels for equipment (RMS construction calculator).

Equipment	*No.*	*Sound power level (dB(A)) at 7m*	*Sound pressure level (dB) at 7m*	*Sound power level (dB) at 1m*
Dump truck	1	85	74	101.9
Water cart	1	82	71	98.9
Front end loader	1	66	55	82.9
Excavator (tracked) 35t	1	85	74	101.9

4.3. OPERATIONAL NOISE ASSESSMENT

It is proposed that the facility would receive 18,000 tonnes of waste per annum. With the facility operating 250 days a year, it is expected that 72 tonnes of waste per day would be received, on average. On average a dump truck has a 23-tonne carrying capacity. Therefore, three to four trucks per day would be required to deliver 72 tonnes of waste.

Based on this figure, it is considered that the site would receive between zero and seven loads per day. Changes to road traffic noise for the addition of 14 heavy vehicles was calculated (see Appendix 8.1). The results show that 14 heavy vehicles per day would change the road traffic noise from 30 dB(A) to 32 dB(A). As an increase of 2 dB(A) is not audible to the human ear, it is considered unlikely that the changed traffic conditions on Euroka Road would impact the nearest receivers. No additional mitigation measures are considered necessary.

The facility, as indicated in the SEE, would only operate for a maximum of one hour into the evening period (Salvestro Planning, 2016). This procedure will protect the sensitive receivers from noise impacts during the more sensitive times of the day.

Noise levels have been calculated for two operational scenarios using the equipment sound power levels, known distance of sensitive receivers and the RMS construction noise calculator. In general, it would be unlikely for the all plant items to be operating at the same time. However, for the purposes of the scenarios and noise estimation it is assumed that all equipment in the scenario is operating at full power simultaneously. As such the activities selected provide a worst-case scenario for noise generated from the site.

The operational noise predictions area based on noise attenuation with distance from source. They do not take into account any obstacles between the source or weather conditions which can influence the level of noise perceived.

4.3.1. Scenario 1

Scenario 1 represents the noise levels emitted during waste delivery to the project site. The dump truck would arrive on site with a load of rubbish. The dump truck would tip the waste on to level ground next to the pit for inspection. If the waste is acceptable the front-end loader would then push rubbish into the cell and cover it with earth (see Table 4-6). If undue contamination is discovered the waste would be loaded on to the truck for return.

Table 4-6 Operational equipment for Scenario 1.

Equipment	*No.*	*Sound power level (dB(A)) at 7 m*
Dump truck	1	85
Front end loader	1	66

Table 4-7 Predicted noise levels for Scenario 1.

Receiver	*Distance (m) from works*	***Predicted Noise Level dB(A)*** ***Green = no exceedance*** ***Yellow = Minor exceedance*** ***Orange = Substantial exceedance*** *Red = highly noise affected*	***Compliant with PNTLs for day and evening.***	***Description*** ***Clearly audible = < 10 dB(A) above NML*** ***Moderately intrusive = 10 – 20 dB(A) above NML*** *Highly intrusive = > 20 dB(A) above NML*	*Recommended mitigation measures*
1	647	34	Yes	Not noticeable	N/A
2	864	30	Yes	Not noticeable	N/A
3	1530	21	Yes	Not noticeable	N/A
4	1700	20	Yes	Not noticeable	N/A

Based on the calculated noise impacts associated with Scenario 1, no exceedances are expected for the day or evening period. As such no additional noise mitigation measures are required above best practice requirements.

4.3.2. Scenario 2

Scenario 2 demonstrates the noise levels generated during excavating and backfilling of waste. This process would utilise the excavator to move earth around the site for the covering of waste and final capping of cells. During this work a water cart would be used for dust suppression (see Table 4-8).

In general, only two-personnel are onsite during the operation of the business. As such the simultaneous use of three onsite vehicles would rarely occur. The addition of a third vehicle would likely be a light vehicle. One light vehicle moving around the site would be unlikely to impact the sound profile enough to affect the overall generation of noise form the site or any offsite sensitive receivers. This is due to the sound power of a light vehicle being significantly less than both a water cart and an excavator.

Table 4-8 Operation equipment for Scenario 2

Equipment	*No.*	*Sound power level (dB(A)) at 7 m*
Water cart	1	82
Excavator (tracked 35t)	1	85

Table 4-9 Predicted noise levels for Scenario 2.

Receiver	*Distance (m) from works*	*Predicted Noise Level dB(A)* *Green = no exceedance* *Yellow = Minor exceedance* *Orange = Substantial exceedance* *Red = highly noise affected*	*Compliant with PNTLs for day and evening.*	*Description* *Clearly audible = < 10 dB(A) above NML* *Moderately intrusive = 10 – 20 dB(A) above NML* *Highly intrusive = > 20 dB(A) above NML*	*Recommended additional mitigation measures*
1	647	35	Yes	Not noticeable	N/A
2	864	31	Yes	Not noticeable	N/A
3	1530	23	Yes	Not noticeable	N/A
4	1700	22	Yes	Not noticeable	N/A

Based on the calculated noise impacts associated with Scenario 2, no exceedances are expected for the day or evening period. As such no additional noise mitigation measures are required above best practice requirements.

As seen in Figure 4.1 and Figure 4.2, all identified sensitive receivers are located outside noise zones/buffers where adverse noise impacts may occur. As can be seen in Figure 4.2, one sensitive receiver looks to be located on the buffer line, but on closer inspection the house occurs just outside the noise affected area.

The facility has not and would not operate during night time. Therefore, it is not necessary to consider sleep disturbance impacts on surrounding receivers.

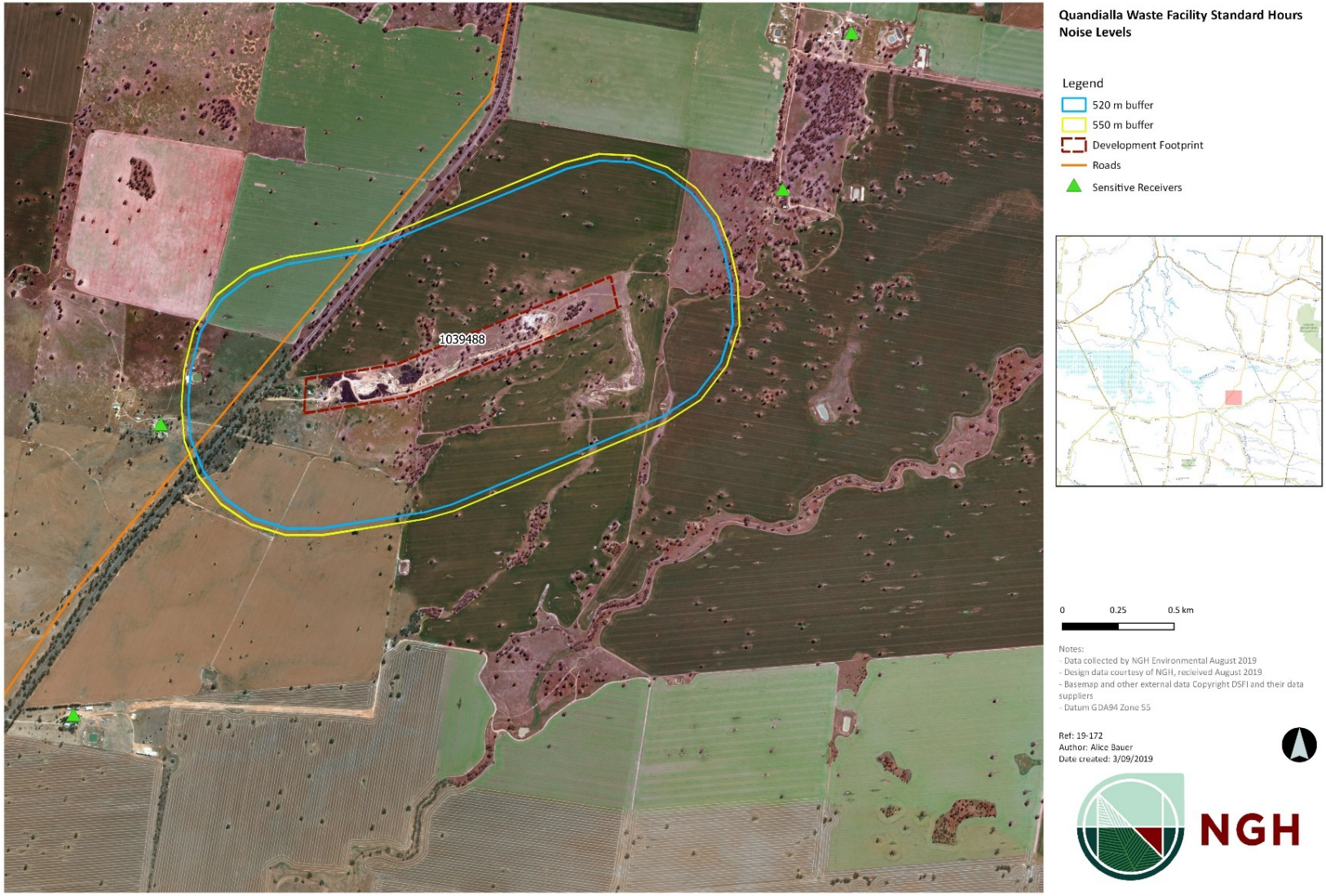


Figure 4-1 Noise Management Level exceedance buffers during Standard Hours of operation

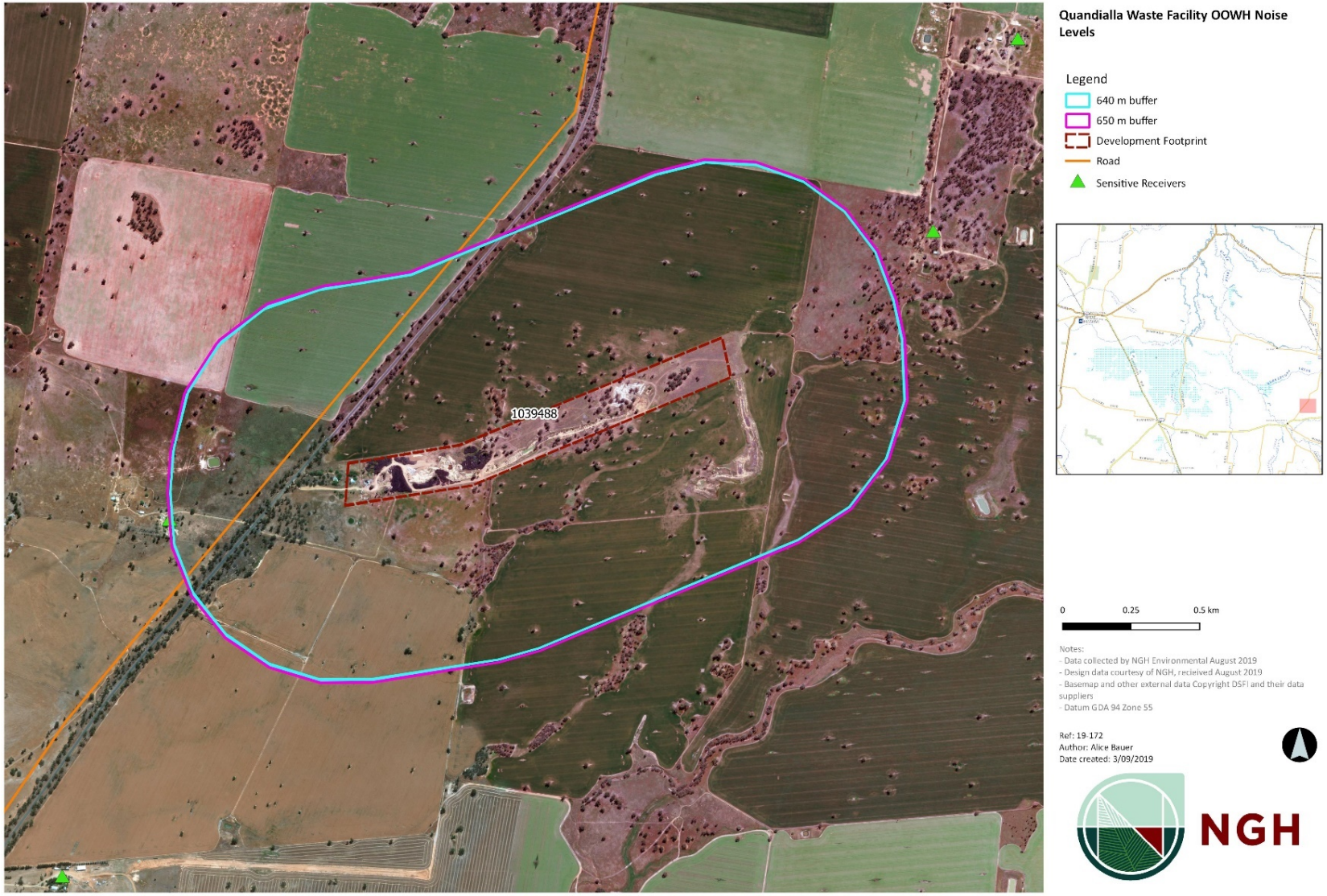


Figure 4-2 Noise Management Level exceedance buffers during OOHW Period 1 operation

Based on the rating background levels, operational noise levels, and plant equipment calculations, operational noise impacts would not exceed the PNTLs at nearby receivers. Further the maximum predicted project noise levels at the closest receiver would be less than the RBLs for daytime and evening.

It is anticipated that landfill activities would continue to evolve in an easterly direction across the site. As a result, the separation distance between the closest receiver and the noise generating activities would increase over time. Accordingly, it is expected that noise attenuation due to distance would increase in future. This would result in reduced noise project levels at the closest sensitive receiver.

5. SAFEGUARDS AND MITIGATION MEASURES

No.	*Mitigation strategies*
NS1	Works will be restricted to: • *8am to 7pm, 7 days per week* Any proposal to work outside the hours above would require separate monitoring and approval.
NS2	Operate plant in a conservative manner, which includes: • Plant is turned off when not in use. • Selection of the quietest suitable machinery. • Avoidance of noisy machinery working simultaneously where practical. • Avoidance of excessive machine reversing.
NS3	Verification of noise and vibration levels following reasonable complaints should be undertaken within a period of 14 days from the commencement of operational activities.
NS4	All staff on-site should be informed of procedures to operate machinery and equipment in a quiet and efficient manner. Provide toolbox meetings, training and education.
NS5	Plant and equipment are to be routinely maintained and kept in good working order to minimise noise emissions during operations.

6. CONCLUSIONS

NGH was engaged to prepare a Noise Impact Assessment (NIA) in relation to an existing waste disposal facility at 'Yeronga', Euroka Road, Quandialla. The subject land includes Lots 1 & 2, DP1039488.

The NIA was prepared to support a modified consent application, under clause 4.55(1)(A) of the *Environmental Planning & Assessment Act 1979,* submitted to Bland Shire Council. The existing development on the site is defined as a general solid waste landfill. It is currently approved to accept up to 10,000 tonnes per annum of non-putrescible waste and special waste (waste tyres only).

Approval is sought to increase this to 18,000 tonnes. This NIA includes a desktop assessment based on the predicted noise levels arising from the proposed operations at 18,000 tonnes per annum.

This noise assessment considers the limited nature of the operation and the substantial distance to identified surrounding sensitive receivers (being 647 m, 864 m, 1530 m, and 1700 m). Activities at the facility include and are generally limited to receiving and depositing of waste, excavation and backfilling of waste and the movement of vehicles on site.

This assessment demonstrates that the activities on site are not likely to exceed the Project Noise Trigger Levels at the sensitive receivers.

With the implementation of the safeguards and mitigation measures, noise from the activities described above is unlikely to be intrusive or affect the amenity of the area.

7. REFERENCES

Department of Environment and Climate Change (2009). *Interim Construction Noise Guideline.* Sydney: Department of Environment and Climate Change.

EPA (2017). *Noise Policy for Industry*. Sydney: EPA.

Salvestro Planning (2016). *State of Environmental Effects (Revised) - Proposed Modification of Development Consent DA/2007/083 Waste Disposal Facility.* Wagga Wagga.

APPENDIX A NOISE CALCULATIONS

A.1 CALCULATION OF ROAD TRAFFIC NOISE

Calculation of ROAD traffic noise.

This Java-program calculates Ldn-levels of road traffic on a straight road without barriers or obstacles. There is more explanation here.
Full screen

Data on road			
Road traffic input data help	**Day: 7.00-22.00**	**Night: 22.00-7.00**	
Motorcycles per hour	1	1	
Cars per hour	11.25	3.75	
Speed cars	100	100	◉ kilometers per hour ○ miles per hour
Number of vans/hr	0	0	
Number of heavy trucks/hr	1.2		
Speed trucks	90	90	
Road surface help	Twinlay asphalt		

data on geometry help	
Heigth of road	0
Horizontal distance in meters from **center** of road *Fill in 0 (zero, not blank!) when you want to calculate the distance for a given noise level*	250
Heigth of house or observer	1.5
View angle (127 grad= full view)	127
Fraction sound absorbing soil (0=all hard, non absorbing; 1= all absorbing)	0.2
Percentage reflection from opposite side (0=no surface; 1= all reflective).	0
Distance to reflective surface on opposite side	0
Heigth of reflecting object (must be at least 5 m)	5
Distance to intersection	2000
Calculated Noise Level (Ldn) *(Or fill in (>40) if you want to calculate distance; distance must be set to zero)*	31
Night LAeq is	23

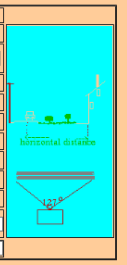
Click Here to Reset | Compute

Calculation of ROAD traffic noise.

This Java-program calculates Ldn-levels of road traffic on a straight road without barriers or obstacles. There is more explanation here.
Full screen

Data on road			
Road traffic input data help	**Day: 7.00-22.00**	**Night: 22.00-7.00**	
Motorcycles per hour	1	1	
Cars per hour	11.25	3.75	
Speed cars	100	100	◉ kilometers per hour ○ miles per hour
Number of vans/hr	0	0	
Number of heavy trucks/hr	0		
Speed trucks	90	90	
Road surface help	Twinlay asphalt		

data on geometry help	
Heigth of road	0
Horizontal distance in meters from **center** of road *Fill in 0 (zero, not blank!) when you want to calculate the distance for a given noise level*	250
Heigth of house or observer	1.5
View angle (127 grad= full view)	127
Fraction sound absorbing soil (0=all hard, non absorbing; 1= all absorbing)	0.2
Percentage reflection from opposite side (0=no surface; 1= all reflective).	0
Distance to reflective surface on opposite side	0
Heigth of reflecting object (must be at least 5 m)	5
Distance to intersection	2000
Calculated Noise Level (Ldn) *(Or fill in (>40) if you want to calculate distance; distance must be set to zero)*	30
Night LAeq is	23



Click Here to Reset | Compute

A.2 RMS NOISE CALCULATOR RESULTS

Transport Roads & Maritime Services

Construction Noise Estimator

Please input information into yellow cells
Please pick from drop-down list in orange cells

Project name	Quandialla Waste Facility
Scenario name	Scenario 1
Receiver address	
Select area ground type	Rural
Select type of background noise level input	User Input

		Representative Noise Environment	User Input
Noise area category			
RBL or LA90 Background level (dB(A))	**Day**		40
	Evening		35
	Night		30
LAeq(15minute) Noise mangement level (dB(A))	**Day**		35
	Day (OOHW)		30
	Evening		30
	Night		25

Is all plant at the same representative distance to the receiver? Y/N	Y	
Representative distance (m)	647	***All at Representative Distance***

Is all plant at the same representative distance to the receiver? Y/N	Y	
Representative distance (m)	647	***All at Representative Distance***

investigated on a project-by-project basis. Please contact a Roads and Maritime noise speciliast for more information)

Type/ model plant (See Sources Sheet)	SWL LAeq (dB(A))	SPL @7m (dB(A))	Quantity	Individual distance to receiver (m)	Is there line of sight to receiver? Y/N	Quantity correction (dBA)	Shielding correction (dBA)	Distance used in calculation (m)	Contribution SPL (dB(A))
dump truck	110	85	1		Yes	0	0	647	34
front end loader	91	66	1		Yes	0	0	647	15
			0		Yes	0	0	647	-888
			0		Yes	0	0	647	-888
			0		Yes	0	0	647	-888
			0		Yes	0	0	647	-888
			0		Yes	0	0	647	-888
			0		Yes	0	0	647	-888
			0		Yes	0	0	647	-888
			0		Yes	0	0	647	-888
			0		Yes	0	0	647	-888
			0		Yes	0	0	647	-888
			0		Yes	0	0	647	-888
			0		Yes	0	0	647	-888
			0		Yes	0	0	647	-888
			0		Yes	0	0	647	-888
			0		Yes	0	0	647	-888
			0		Yes	0	0	647	-888
			0		Yes	0	0	647	-888
			0		Yes	0	0	647	-888

Total SPL $L_{Aeq(15minute)}$ (dB(A))	***34***

			Non-residential receivers						
		Residential receiver	*Classroom at schools and other educational institutions*	*Hospital wards and operating theatres*	*Place of worship*	*Active recreation*	*Passive recreation*	*Industrial premise*	*Offices, retail outlets*
Noise Management Level (dB(A))	Standard hours	35	55	65	55	65	60	75	70
	Day (OOHW)	30	55	65	55	65	60	75	70
	OOHW Period 1	30		65	55	65	60	75	70
	OOHW Period 2	25		65	55			75	70
Level above background (dB(A))	Standard hours								
	Day (OOHW)								
	OOHW Period 1								
	OOHW Period 2	4							
Level above NML (dB(A))	Standard hours								
	Day (OOHW)	4							
	OOHW Period 1	4							
	OOHW Period 2	9							
Additional mitigation measures	Standard Hours	-	-	-	-	-	-	-	-
	Day (OOHW)	-	-	-	-	-	-	-	-
	OOHW Period 1	-		-	-	-	-	-	-
	OOHW Period 2	-		-	-			-	-

investigated on a project-by-project basis. Please contact a Roads and Maritime noise speciliast for more information)

Is all plant at the same representative distance to the receiver? Y/N	Y	
Representative distance (m)	864	*All at Representative Distance*

Type/ model plant (See Sources Sheet)	SWL LAeq (dB(A))	SPL @7m (dB(A))	Quantity	Individual distance to receiver (m)	Is there line of sight to receiver? Y/N	Quantity correction (dBA)	Shielding correction (dBA)	Distance used in calculation (m)	Contribution SPL (dB(A))
dump truck	110	85	1		Yes	0	0	864	30
front end loader	91	66	1		Yes	0	0	864	11
			0		Yes	0	0	864	-888
			0		Yes	0	0	864	-888
			0		Yes	0	0	864	-888
			0		Yes	0	0	864	-888
			0		Yes	0	0	864	-888
			0		Yes	0	0	864	-888
			0		Yes	0	0	864	-888
			0		Yes	0	0	864	-888
			0		Yes	0	0	864	-888
			0		Yes	0	0	864	-888
			0		Yes	0	0	864	-888
			0		Yes	0	0	864	-888
			0		Yes	0	0	864	-888
			0		Yes	0	0	864	-888
			0		Yes	0	0	864	-888
			0		Yes	0	0	864	-888
			0		Yes	0	0	864	-888
			0		Yes	0	0	864	-888

Total SPL L Aeq(15minute) (dB(A))	***30***

		Residential receiver	*Non-residential receivers* Classroom at schools and other educational institutions	Hospital wards and operating theatres	Place of worship	Active recreation	Passive recreation	Industrial premise	Offices, retail outlets
Noise Management Level (dB(A))	Standard hours	*35*	55	65	55	65	60	75	70
	Day (OOHW)	*30*	55	65	55	65	60	75	70
	OOHW Period 1	*30*		65	55	65	60	75	70
	OOHW Period 2	*25*		65	55			75	70
Level above background (dB(A))	Standard hours								
	Day (OOHW)								
	OOHW Period 1								
	OOHW Period 2	*0*							
Level above NML (dB(A))	Standard hours								
	Day (OOHW)	*0*							
	OOHW Period 1	*0*							
	OOHW Period 2	*5*							
Additional mitigation measures	Standard Hours	-	-	-	-	-	-	-	-
	Day (OOHW)	-	-	-	-	-	-	-	-
	OOHW Period 1	-		-	-	-	-	-	-
	OOHW Period 2	-		-	-			-	-

investigated on a project-by-project basis. Please contact a Roads and Maritime noise speciliast for more information)

Is all plant at the same representative distance to the receiver? Y/N	Y	
Representative distance (m)	1530	*All at Representative Distance*

Type/ model plant (See Sources Sheet)	SWL LAeq (dB(A))	SPL @7m (dB(A))	Quantity	Individual distance to receiver (m)	Is there line of sight to receiver? Y/N	Quantity correction (dBA)	Shielding correction (dBA)	Distance used in calculation (m)	Contribution SPL (dB(A))
dump truck	110	85	1		Yes	0	0	1530	21
front end loader	91	66	1		Yes	0	0	1530	2
			0		Yes	0	0	1530	-888
			0		Yes	0	0	1530	-888
			0		Yes	0	0	1530	-888
			0		Yes	0	0	1530	-888
			0		Yes	0	0	1530	-888
			0		Yes	0	0	1530	-888
			0		Yes	0	0	1530	-888
			0		Yes	0	0	1530	-888
			0		Yes	0	0	1530	-888
			0		Yes	0	0	1530	-888
			0		Yes	0	0	1530	-888
			0		Yes	0	0	1530	-888
			0		Yes	0	0	1530	-888
			0		Yes	0	0	1530	-888
			0		Yes	0	0	1530	-888
			0		Yes	0	0	1530	-888
			0		Yes	0	0	1530	-888
			0		Yes	0	0	1530	-888

Total SPL L Aeq(15minute) (dB(A))	***21***

		Residential receiver	*Non-residential receivers* Classroom at schools and other educational institutions	Hospital wards and operating theatres	Place of worship	Active recreation	Passive recreation	Industrial premise	Offices, retail outlets
Noise Management Level (dB(A))	Standard hours	*35*	55	65	55	65	60	75	70
	Day (OOHW)	*30*	55	65	55	65	60	75	70
	OOHW Period 1	*30*		65	55	65	60	75	70
	OOHW Period 2	*25*		65	55			75	70
Level above background (dB(A))	Standard hours								
	Day (OOHW)								
	OOHW Period 1								
	OOHW Period 2								
Level above NML (dB(A))	Standard hours								
	Day (OOHW)								
	OOHW Period 1								
	OOHW Period 2								
Additional mitigation measures	Standard Hours	-	-	-	-	-	-	-	-
	Day (OOHW)	-	-	-	-	-	-	-	-
	OOHW Period 1	-		-	-	-	-	-	-
	OOHW Period 2	-		-	-			-	-

NSW GOVERNMENT | Transport Roads & Maritime Services

Construction Noise Estimator

Please input information into yellow cells
Please pick from drop-down list in orange cells

Project name	Quandialla Waste Facility
Scenario name	Scenario 2
Receiver address	
Select area ground type	Rural
Select type of background noise level input	User Input

		Representative Noise Environment	User Input
Noise area category			
RBL or LA90 Background level (dB(A))	Day		40
	Evening		35
	Night		30
LAeq(15minute) Noise mangement level (dB(A))	Day		35
	Day (OOHW)		30
	Evening		30
	Night		25

Is all plant at the same representative distance to the receiver? Y/N	Y	
Representative distance (m)	647	*All at Representative Distance*

Is all plant at the same representative distance to the receiver? Y/N	Y	
Representative distance (m)	647	*All at Representative Distance*

investigated on a project-by-project basis. Please contact a Roads and Maritime noise speciliast for more information)

Type/ model plant (See Sources Sheet)	SWL LAeq (dB(A))	SPL @7m (dB(A))	Quantity	Individual distance to receiver (m)	Is there line of sight to receiver? Y/N	Quantity correction (dBA)	Shielding correction (dBA)	Distance used in calculation (m)	Contribution SPL (dB(A))
water cart	107	82	1		Yes	0	0	647	31
excavator (tracked) 35 t	110	85	1		Yes	0	0	647	34
			0		Yes	0	0	647	-888
			0		Yes	0	0	647	-888
			0		Yes	0	0	647	-888
			0		Yes	0	0	647	-888
			0		Yes	0	0	647	-888
			0		Yes	0	0	647	-888
			0		Yes	0	0	647	-888
			0		Yes	0	0	647	-888
			0		Yes	0	0	647	-888
			0		Yes	0	0	647	-888
			0		Yes	0	0	647	-888
			0		Yes	0	0	647	-888
			0		Yes	0	0	647	-888
			0		Yes	0	0	647	-888
			0		Yes	0	0	647	-888
			0		Yes	0	0	647	-888
			0		Yes	0	0	647	-888
			0		Yes	0	0	647	-888

Total SPL L Aeq(15minute) (dB(A))	***35***

		Residential receiver	Non-residential receivers						
			Classroom at schools and other educational institutions	Hospital wards and operating theatres	Place of worship	Active recreation	Passive recreation	Industrial premise	Offices, retail outlets
Noise Management Level (dB(A))	Standard hours	35	55	65	55	65	60	75	70
	Day (OOHW)	30	55	65	55	65	60	75	70
	OOHW Period 1	30		65	55	65	60	75	70
	OOHW Period 2	25		65	55			75	70
Level above background (dB(A))	Standard hours	[illegible]							
	Day (OOHW)	[illegible]							
	OOHW Period 1	0							
	OOHW Period 2	5							
Level above NML (dB(A))	Standard hours	0							
	Day (OOHW)	5							
	OOHW Period 1	5							
	OOHW Period 2	10							
Additional mitigation measures	Standard Hours	-	-	-	-	-	-	-	-
	Day (OOHW)	-	-	-	-	-	-	-	-
	OOHW Period 1	-		-	-	-	-	-	-
	OOHW Period 2	N		-	-			-	-

investigated on a project-by-project basis. Please contact a Roads and Maritime noise speciliast for more information)

Is all plant at the same representative distance to the receiver? Y/N	Y	
Representative distance (m)	864	*All at Representative Distance*

Type/ model plant (See Sources Sheet)	SWL LAeq (dB(A))	SPL @7m (dB(A))	Quantity	Individual distance to receiver (m)	Is there line of sight to receiver? Y/N	Quantity correction (dBA)	Shielding correction (dBA)	Distance used in calculation (m)	Contribution SPL (dB(A))
water cart	107	82	1		Yes	0	0	864	27
excavator (tracked) 35 t	110	85	1		Yes	0	0	864	30
			0		Yes	0	0	864	-888
			0		Yes	0	0	864	-888
			0		Yes	0	0	864	-888
			0		Yes	0	0	864	-888
			0		Yes	0	0	864	-888
			0		Yes	0	0	864	-888
			0		Yes	0	0	864	-888
			0		Yes	0	0	864	-888
			0		Yes	0	0	864	-888
			0		Yes	0	0	864	-888
			0		Yes	0	0	864	-888
			0		Yes	0	0	864	-888
			0		Yes	0	0	864	-888
			0		Yes	0	0	864	-888
			0		Yes	0	0	864	-888
			0		Yes	0	0	864	-888
			0		Yes	0	0	864	-888
			0		Yes	0	0	864	-888

Total SPL L Aeq(15minute) (dB(A))	***31***

		Residential receiver	*Non-residential receivers: Classroom at schools and other educational institutions*	*Hospital wards and operating theatres*	*Place of worship*	*Active recreation*	*Passive recreation*	*Industrial premise*	*Offices, retail outlets*
Noise Management Level (dB(A))	Standard hours	*35*	55	65	55	65	60	75	70
	Day (OOHW)	*30*	55	65	55	65	60	75	70
	OOHW Period 1	*30*		65	55	65	60	75	70
	OOHW Period 2	*25*		65	55			75	70
Level above background (dB(A))	Standard hours								
	Day (OOHW)								
	OOHW Period 1								
	OOHW Period 2	*1*							
Level above NML (dB(A))	Standard hours								
	Day (OOHW)	*1*							
	OOHW Period 1	*1*							
	OOHW Period 2	*6*							
Additional mitigation measures	Standard Hours	-	-	-	-	-	-	-	-
	Day (OOHW)	-	-	-	-	-	-	-	-
	OOHW Period 1	-		-	-	-	-	-	-
	OOHW Period 2	-		-	-			-	-

investigated on a project-by-project basis. Please contact a Roads and Maritime noise speciliast for more information)

Is all plant at the same representative distance to the receiver? Y/N	Y	
Representative distance (m)	1530	*All at Representative Distance*

Type/ model plant (See Sources Sheet)	SWL LAeq (dB(A))	SPL @7m (dB(A))	Quantity	Individual distance to receiver (m)	Is there line of sight to receiver? Y/N	Quantity correction (dBA)	Shielding correction (dBA)	Distance used in calculation (m)	Contribution SPL (dB(A))
water cart	107	82	1		Yes	0	0	1530	18
excavator (tracked) 35 t	110	85	1		Yes	0	0	1530	21
			0		Yes	0	0	1530	-888
			0		Yes	0	0	1530	-888
			0		Yes	0	0	1530	-888
			0		Yes	0	0	1530	-888
			0		Yes	0	0	1530	-888
			0		Yes	0	0	1530	-888
			0		Yes	0	0	1530	-888
			0		Yes	0	0	1530	-888
			0		Yes	0	0	1530	-888
			0		Yes	0	0	1530	-888
			0		Yes	0	0	1530	-888
			0		Yes	0	0	1530	-888
			0		Yes	0	0	1530	-888
			0		Yes	0	0	1530	-888
			0		Yes	0	0	1530	-888
			0		Yes	0	0	1530	-888
			0		Yes	0	0	1530	-888
			0		Yes	0	0	1530	-888

Total SPL L Aeq(15minute) (dB(A))	***23***

		Residential receiver	*Non-residential receivers: Classroom at schools and other educational institutions*	*Hospital wards and operating theatres*	*Place of worship*	*Active recreation*	*Passive recreation*	*Industrial premise*	*Offices, retail outlets*
Noise Management Level (dB(A))	Standard hours	*35*	55	65	55	65	60	75	70
	Day (OOHW)	*30*	55	65	55	65	60	75	70
	OOHW Period 1	*30*		65	55	65	60	75	70
	OOHW Period 2	*25*		65	55			75	70
Level above background (dB(A))	Standard hours								
	Day (OOHW)								
	OOHW Period 1								
	OOHW Period 2								
Level above NML (dB(A))	Standard hours								
	Day (OOHW)								
	OOHW Period 1								
	OOHW Period 2								
Additional mitigation measures	Standard Hours	-	-	-	-	-	-	-	-
	Day (OOHW)	-	-	-	-	-	-	-	-
	OOHW Period 1	-		-	-	-	-	-	-
	OOHW Period 2	-		-	-			-	-

investigated on a project-by-project basis. Please contact a Roads and Maritime noise speciliast for more information)

Is all plant at the same representative distance to the receiver? Y/N	Y	
Representative distance (m)	1700	*All at Representative Distance*

Type/ model plant (See Sources Sheet)	SWL LAeq (dB(A))	SPL @7m (dB(A))	Quantity	Individual distance to receiver (m)	Is there line of sight to receiver? Y/N	Quantity correction (dBA)	Shielding correction (dBA)	Distance used in calculation (m)	Contribution SPL (dB(A))
water cart	107	82	1		Yes	0	0	1700	17
excavator (tracked) 35 t	110	85	1		Yes	0	0	1700	20
			0		Yes	0	0	1700	-888
			0		Yes	0	0	1700	-888
			0		Yes	0	0	1700	-888
			0		Yes	0	0	1700	-888
			0		Yes	0	0	1700	-888
			0		Yes	0	0	1700	-888
			0		Yes	0	0	1700	-888
			0		Yes	0	0	1700	-888
			0		Yes	0	0	1700	-888
			0		Yes	0	0	1700	-888
			0		Yes	0	0	1700	-888
			0		Yes	0	0	1700	-888
			0		Yes	0	0	1700	-888
			0		Yes	0	0	1700	-888
			0		Yes	0	0	1700	-888
			0		Yes	0	0	1700	-888
			0		Yes	0	0	1700	-888
			0		Yes	0	0	1700	-888

Total SPL L $_{Aeq(15minute)}$ ***(dB(A))***	**22**

			Non-residential receivers						
		Residential receiver	*Classroom at schools and other educational institutions*	*Hospital wards and operating theatres*	*Place of worship*	*Active recreation*	*Passive recreation*	*Industrial premise*	*Offices, retail outlets*
Noise Management Level (dB(A))	Standard hours	*35*	55	65	55	65	60	75	70
	Day (OOHW)	*30*	55	65	55	65	60	75	70
	OOHW Period 1	*30*		65	55	65	60	75	70
	OOHW Period 2	*25*		65	55			75	70
Level above background (dB(A))	Standard hours								
	Day (OOHW)								
	OOHW Period 1								
	OOHW Period 2								
Level above NML (dB(A))	Standard hours								
	Day (OOHW)								
	OOHW Period 1								
	OOHW Period 2								
Additional mitigation measures	Standard Hours	-	-	-	-	-	-	-	-
	Day (OOHW)	-	-	-	-	-	-	-	-
	OOHW Period 1	-		-	-	-	-	-	-
	OOHW Period 2	-		-	-			-	-