

Ref: TN20001-7

12/02/2021

1300 251 070
Level 1, 604 Newcastle St
Leederville WA 6007
PO Box 454
Leederville WA 6903

info@talīsconsultants.com.au
www.talīsconsultants.com.au

Peter Jansen
KASA Consulting

Dear Peter,

Lynas Byproducts Storage Facility (BSF) – Environmental Noise Assessment

Lynas is planning on developing a Rare Earths Processing Facility (REPF) in Kalgoorlie WA [1], and at the same time they will also develop a Byproducts Storage Facility (BSF). The BSF will form part of their Kalgoorlie operations.

This briefing note provides a summary of a noise assessment undertaken for the BSF.

1 Aim

The aim of this work is to assess the potential noise impacts of the BSF on surrounding noise sensitive receivers, and if appropriate, define noise control requirements to achieve compliance with the Environmental Protection (Noise) Regulations 1997 [2].

2 Applicable Documents

[1] Talis report “TN20001-1 Lynas Kalgoorlie REPF Noise Assessment Rev4.0”.

[2] Environmental Protection (Noise) Regulations 1997.

3 Operations Overview

The BSF is located approximately 9km East of Kalgoorlie Boulder, and approximately 6km East of the nearest noise sensitive receiver, a community called Ningamia.

Byproducts from the REPF process will be transported via road trains to the BSF for storage. The BSF equipment will primarily comprise mobile equipment used to transport and store the waste including Road Trains, Dozers, Front End Loaders, Moxys and Water Carts.

The BSF will operate 24 hours per day, 7 days a week. The location of the BSF and nearest receivers which have been included in this assessment are shown in Figure 3-1.



Figure 3-1 Location of the BSF

4 Assessment Criteria

Table 4-1 presents the most stringent night-time assigned noise levels which have been applied to the nearest sensitive receivers used to assess the potential noise impacts of the BSF on the community. See APPENDIX A for a more detailed overview of the noise Regulations [2]).

Table 4-1 Assessment Criteria

Receiver	Night-Time Assigned LA10 Noise Level ¹
Hannans North	30
Goldfields Institute	30
Ningamia	30

¹ Includes a -5dB non-significant contributor adjustment, as the existing Kalgoorlie Gold Super Pit operations may affect the receivers East of Kalgoorlie.

5 Noise Modelling Overview

A desktop environmental noise model was created for the BSF to simulate the operational activities using the SoundPlan v8 software program. The model has been used to predict received noise levels at noise sensitive receiver locations and to generate noise contour maps for the area.

The noise modelling method applied to the BSF is consistent with the REPF noise assessment [1]. The following sections summarise the modelling inputs.

5.1 Noise Sources

Table 5-1 presents the noise sources included in the noise model. This assumes that all equipment on-site is 100% utilised, which will provide conservative model predictions as it not likely that all equipment can operate simultaneously.

Table 5-1 Modelled Noise Source Levels

Equipment	Quantity	Sound Power Level dBA (per item)
Water Cart	1	115.2
Front End Loader	2	112.2
Light Vehicle	2	91.0
Dozer	2	109.4
Moxy	2	110.8
Road Train	2	96.6

5.2 Ground Type and Absorption

The acoustic properties of the ground surface influence the propagation of noise. Flat non-porous surfaces such as concrete, asphalt and water are more reflective whereas soft, porous surfaces such as foliage and grass are more absorptive.

Flat ground has been assumed for the model and a CONCAWE ground factor of $G=0.6$ was applied to the model.

5.3 Meteorological Conditions

SoundPlan has a range of different algorithms that it can use to calculate noise levels for user defined meteorological conditions. The CONCAWE algorithm has been used for this assessment, which is accepted by the Department of Water and Environment Regulation (DWER).

Table 5-2 presents the worst-case meteorological conditions applied to the model, which are defined in the Department of Water and Environment Regulation (DWER) “Draft Guideline on Environmental Noise for Prescribed Premises”.

Table 5-2 Weather conditions applied to the model

Temperature (°C)	Relative Humidity (%)	Wind Speed (m/s)	Wind Direction	Pasquil Stability Class (PSC)
15	50	3	Worst case (source to receiver)	F

6 Noise Model Results

Table 6-1 provides the worst case noise model predictions for the BSF and a compliance assessment against the Regulations. Figure 6-1 shows a predicted noise contour map for the facility.

Table 6-1 Noise Model Results

Receiver	Night-Time LA10 Noise Level		Exceedance (dB)
	Assigned Level ¹	Predicted Level	
Hannans North	30	25.4	Nil
Goldfields Institute	30	25.1	Nil
Ningamia	30	27.7	Nil

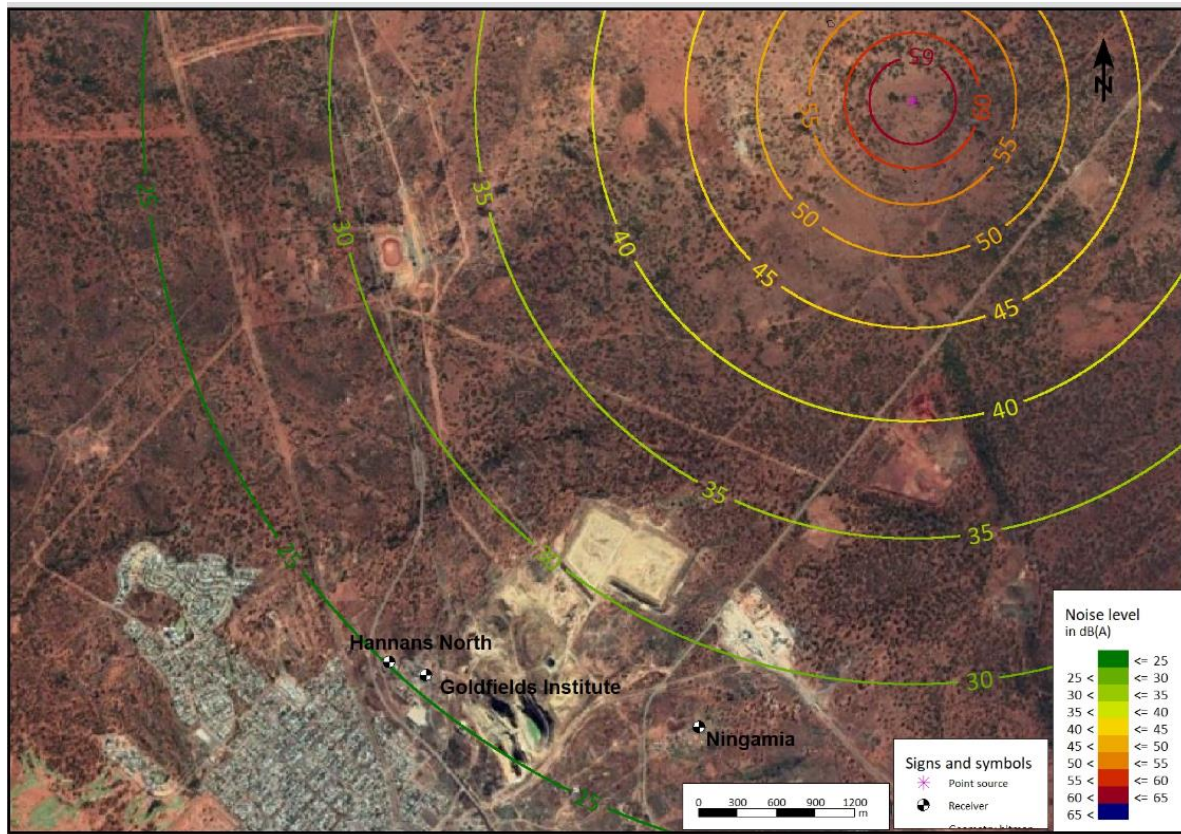


Figure 6-1 Noise Contour Map

7 Conclusions

The BSF is predicted to be compliant with the Regulations. As a result, no mitigation or management measures are proposed.

Post commissioning noise monitoring of the BSF will be undertaken which will be used to confirm the model outcomes.

Yours sincerely,

Granger Bennett
Noise Section Lead

TALIS CONSULTANTS

APPENDIX A Regulatory Framework

Noise management in Western Australia is implemented via the Environmental Protection (Noise) Regulations 1997 (the Regulations), which operate under the Environmental Protection Act 1986.

The Regulations define maximum allowable noise levels which apply to noise received at noise sensitive premises, such as residential areas. These are determined by a combination of a base noise level plus an Influencing Factor (IF). The result is termed the “assigned level”.

The assigned noise levels include LA1, LA10 and LAMAX noise parameters, defined as:

- L_{AMAX} means an assigned level which is not to be exceeded at any time.
- L_{A1} means an assigned level which is not to be exceeded for more than 1% of time.
- L_{A10} means an assigned level which is not to be exceeded for more than 10% of time.

For noise sensitive premises, the time of day also affects the assigned noise levels. As the Spearwood facility will operate 24 hours a day, 7 days a week, noise emissions have been assessed against the most stringent night-time assigned levels (10pm-7am).

Table A 1 presents the assigned noise levels defined in the Regulations. Three (3) noise sensitive receivers have been identified as the closest receivers to the BSF, which have been used to assess the potential noise impacts of the BSF on the community.

Table A 1 Environmental Protection (Noise) Regulations - Assigned Noise Levels

Sensitive Receiver	Time of day	Assigned Levels (dB)		
		L _{A10}	L _{A1}	L _{Amax}
Noise Sensitive Premises	0700 to 1900 hours Monday to Saturday	45 + influencing factor	55 + influencing factor	65 + influencing factor
	0900 to 1900 hours Sundays and public holidays	40 + influencing factor	50 + influencing factor	65 + influencing factor
	1900 to 2200 hours all days	40 + influencing factor	50 + influencing factor	55 + influencing factor
	2200 hours on any day to 0700 hours Monday to Saturday and 0900 hours Sunday and public holidays	35 + influencing factor	45 + influencing factor	55 + influencing factor
Boundary	all times	65	80	90

A.1 Influencing Factors

The Influencing Factor (IF) is based on the surrounding land use adjacent to each of the noise sensitive receivers, including the amount (%) of industrial and commercial premises as well as the number and proximity of major and secondary roads.

No Influencing Factor (IF=0) has been applied to the receivers for this assessment.

A.2 Adjustments

Received noise levels are subject to adjustments if the noise exhibits intrusive or dominant characteristics i.e. if the noise is impulsive, tonal or modulating. These adjustments, shown in Table A 2 , are cumulative up to a maximum of 15 dB.

Section 9 of the Regulations sets out objective tests to assess whether the received noise is free of these characteristics.

Table A 2 adjustments for intrusive and dominant characteristics

Tonality	Modulation	Impulsiveness
+ 5dB	+5 dB	+10 dB

As the existing Kalgoorlie Gold Super Pit is located on the East of Kalgoorlie, it has been assumed that these operations already affect the Recievers in this assessment, and as such, the BSF must not significantly contribute to an exceedance. As such, a non-significant contributor adjustment of -5dB has been applied to the assigned levels.

As the presence of other industries has been acknowledged and accounted for, no adjustments for tonality or modulation is applicable.

A.3 Non-Significant Contributor

The Regulations require that “noise emitted from any premises when received at other premises must not cause, or significantly contribute to, a level of noise which exceeds the assigned level in respect of noise received at premises of that kind”.

A noise emission is taken to significantly contribute to a level of noise if the noise emission exceeds a value which is 5 dB below the assigned level at the point of reception. This means that received noise from the proposed facility must not exceed a level which is 5 dB below the assigned level.

As the presence of other industry is acknowledged, the BSF must not significantly contribute to an exceedance at any of the receivers, and as a result, a 5 dB non-significant contributor penalty has been applied.