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Re: Response to Planning and Infrastructure (P&I) - Dubbo Zirconia Project

Dear Alex,

1 Introduction

EMGA Mitchell McLennan Pty Limited (EMM) has compiled information requested by Mr Carl Dumbleton of Planning and Infrastructure (DP&I) NSW pertaining to the noise impact assessment for the proposed Dubbo Zirconia Project (DZP).

The information requested is summarised below:

- Assess any onsite activities that are related to mining such as the construction of plant or structures must be assessed as operational noise including two scenarios for;
 - Option 1 - LRSF Areas 2 with year 1 operations; and
 - Option 2 - LRSF Areas 4 with year 5 operations
- Incorporate indicative noise control measures in accordance with AS 2436-2010 for construction activities and show resultant predicted noise levels; and
- Provide comment on the suitability of adopting passive recreation for the Toongi Hall area as a receptor.

2 Findings

2.1 Onsite construction noise assessment

Several on-site construction tasks such as the site access road, processing plant and administration area, residue storage facility areas (LRSF and SRSF), haul road, open cut, WRE and SECs have been assessed as operational noise. Table 1 provides a summary of tasks completed within the operational boundary of the DZP.

Table 1 Constructions activities, type/duration and associated plant items

Activity	Type/duration	Plant items used
1.Processing area (a), haul road (b) and LRSF 1 (c)	Static - 20 weeks	(a) - Compactor, trencher, jackhammer, pneumatic wrench, rock breaker, scrapers, dozer, grader, generators, road trucks (b) - Compactor, grader, water truck, FEL, haul truck, scraper and light vehicle (c) - scrapers, dozers, water truck, excavator, grader and light vehicle
2.LRSF 2	Static - 20 weeks	scrapers, dozers, water truck, excavator, grader and light vehicle
3.LRSF 3	Static - 20 weeks	scrapers, dozers, water truck, excavator, grader and light vehicle
4.LRSF 4	Static - 20 weeks	scrapers, dozers, water truck, excavator, grader and light vehicle
5.Open cut (a), WRE (b) and SRSF (c)	Static - 20 weeks	(a)- Drilling rig, dozer, FEL and haul trucks (b)- Dozer and haul trucks (c)- Grader, scrapers, compactor, water truck, haul trucks and light vehicle

The proposed activities presented in Table 1 will not occur simultaneously onsite, two activities have the potential to coincide with extraction including LRSF Areas 2 (activity 2) with Year 1 operations; and LRSF Areas 4 (activity 4) with Year 5 operations. However, since either activity would utilise the same onsite plant, it is unlikely that both will occur simultaneously. Notwithstanding, modelling results (Table 2) are provided for each activity along with the combined noise emissions for simultaneous extraction operations with activity 2 and activity 4. Results are for day only and are compared against the INP operational noise criteria.

Table 2 Predicted on-site construction noise

Receptor ID	$L_{eq(15-min)}$ criteria, dB(A)	Modelled $L_{eq(15-min)}$ noise level, dB(A) ³				
		Activity				
		1	2 ¹	3	4 ²	5
Privately owned receptors						
R11	50 ⁴	50	32	<30	<30	<30
R13	35 ⁵	33	<30	<30	<30	<30
R18	35	52	<30	<30	<30	30
R19	35	33	30	<30	<30	<30
R20	35	41	31	<30	31	30
R21	35	43	<30	<30	<30	30
R22	35	34	34	<30	32	<30
R23	35	45	35	<30	34	31
R24	35	48	37	<30	33	31
R25	35	47	40	31	33	31

Table 2 Predicted on-site construction noise

Receptor ID	L _{eq(15-min)} criteria, dB(A)	Modelled L _{eq(15-min)} noise level, dB(A) ³					
R26	35	47	32	31	<30	31	
R27	35	34	<30	<30	<30	<30	
R28A	35	<30	<30	<30	<30	<30	
R28B	35	<30	<30	<30	<30	<30	
R30A	35	<30	<30	<30	<30	<30	
R30B	35	<30	<30	<30	<30	<30	
R31A	35	<30	<30	<30	<30	<30	
R31B	35	<30	<30	<30	<30	<30	
R32	35	<30	<30	<30	<30	<30	
R35A	35	<30	30	<30	<30	<30	
R35B	35	30	30	<30	<30	<30	
R36	35	<30	32	<30	<30	<30	
R38	35	32	<30	32	<30	<30	
R4	35	<30	<30	30	<30	<30	
R40	35	31	<30	<30	<30	35	
R42	35	<30	<30	<30	<30	<30	
R43	35	<30	<30	32	<30	30	
R46	35	<30	<30	32	<30	31	
R6	35	<30	<30	35	<30	<30	
R61	35	30	<30	<30	31	30	
R7	35	31	<30	<30	<30	36	
R8A	35	31	30	<30	<30	30	
R8B	35	38	<30	<30	<30	30	
Receptors with a contractual agreement in place with AZL							
R1	35	52	37	<30	35	31	
R2	35	45	35	<30	36	35	
R3	35	36	35	<30	34	43	
R51	35	48	41	32	35	32	
R55	35	50	40	31	35	31	
R58	35	49	41	32	34	32	

Note 1: LRSF Areas 2 combined with year 1 operations

Note 2 : LRSF Areas 4 combined with year 5 operations

Note 3 : results are for worst case prevailing winds where applicable

Note 4 : L_{eq(period)} for passive recreation area (when in use)

Note 5 : Internal noise level for school classroom (when in use)

Results of the onsite construction/operations noise assessment identify that activity 1 has generally the greatest potential to impact offsite receptors. Australian Standard AS 2436-2010 “*Guide to Noise Control on Construction, Maintenance and Demolition Sites*” sets out numerous practical recommendations to assist in mitigating construction noise emissions.

It is estimated that adopting strategies contained in AS2436 may result in the following noise attenuation:

- Up to 10 dB(A) where space limitations allow for the attenuation options available; and
- Up to 20 dB(A) in situations where at source noise mitigation measures (silencers, mufflers, etc.) can be combined with noise barriers and other management techniques;

The noise control and management techniques include, but are not limited to:

- utilise mobile acoustic barriers adjacent to noisy plant where practical;
- radios should not be used and no yelling;
- no slamming of doors;
- prohibit the use of air brakes;
- park plant in accessible and where possible shielded locations prior to being used for out of hours works;
- drive all plant in a conservative manner (no over-revving);
- obtain site access via entry points most remote to receptors;
- do not permit plant to 'warm-up' before the nominated working hours;
- where possible, machinery is to be orientated to direct noise away from the closest sensitive receptors;
- adopt mobile barriers/screens or utilise the location of earth/rock stockpiles adjacent to static rock breaking sources to shield neighbouring receptors;
- undertake regular maintenance of machinery to minimise noise emissions. Maintenance would be confined to standard daytime construction hours and where possible, away from noise sensitive receptors;
- select the quietest suitable machinery reasonably available for each work activity;
- all machinery would have efficient low noise muffler design and be well-maintained;
- maximise the offset distance between noisy items of plant/machinery and nearby sensitive receptors;
- do not queue vehicles adjacent to any residential receptor/catchment;
- where queuing is required, for example due to safety reasons, a site entry position would be selected that is well removed from receptors/catchments. Where this is not feasible, engines are to be switched off to reduce their overall noise impacts on receptors;
- where practicable, ensure the coincidence of noisy plant/machinery working simultaneously in close proximity to sensitive receptors is avoided; and
- monitoring of out of hours work would be undertaken to verify modelled noise levels and to highlight potential mitigation options where relevant for any audible activities.

It is recommended that AZL contractors adopt practices outlined in AS2436 to reduce construction noise emissions. Resultant noise levels at surrounding receptors taking into consideration a typical attenuation of 15 dB for noise management and control as per AS2436 is presented in Table 3. Following the implementation of noise management and control as per AS2436, operational noise criteria would be satisfied for all privately owned receptors, with the exception of R18.

Table 3 Predicted on-site construction noise, with noise control and management as per AS2436

Receptor ID	L _{eq(15-min)} criteria, dB(A)	Modelled L _{eq(15-min)} noise level, dB(A)	
		Activity	
		1 (no attenuation)	1 (with attenuation)
Privately owned receptors			
R11	50 ²	50	35
R13	35 ³	33	<30
R18	35	52	37
R19	35	33	<30
R20	35	41	<30
R21	35	43	<30
R22	35	34	<30
R23	35	45	<30
R24	35	48	<30
R25	35	47	<30
R26	35	47	<30
R27	35	34	<30
R28A	35	<30	<30
R28B	35	<30	<30
R30A	35	<30	<30
R30B	35	<30	<30
R31A	35	<30	<30
R31B	35	<30	<30
R32	35	<30	<30
R35A	35	<30	<30
R35B	35	30	<30
R36	35	<30	<30
R38	35	32	<30
R4	35	<30	<30
R40	35	31	<30
R42	35	<30	<30
R43	35	<30	<30
R46	35	<30	<30
R6	35	<30	<30
R61	35	30	<30
R7	35	31	<30
R8A	35	31	<30
R8B	35	38	<30
Receptors with a contractual agreement in place with AZL			
R1	35	52	37
R2	35	45	30
R3	35	36	<30
R51	35	48	33
R55	35	50	35
R58	35	49	34

Note 1: results are for worst case prevailing winds where applicable

Note 2 : L_{eq(period)} for passive recreation area (when in use)

Note 3 : Internal noise level for school classroom

2.2 Off site construction noise assessment

It is recommended that AZL contractors also adopt practices outlined in AS2436 for all offsite construction work to reduce noise exposure to the community. Resultant noise levels at surrounding receptors taking into consideration a typical attenuation of 15 dB for noise management and control as per AS2436 is presented in Table 4. Following the implementation of noise management and control as per AS2436, the highly noise affected criteria of the ICNG would be satisfied for all privately owned receptors.

Table 4 Noise Levels from offsite construction activities at closest receptor

Task	Noise affected $L_{eq(15-min)}$ criteria, dB(A)	Highly noise affected $L_{eq(15-min)}$ criteria, dB(A)	Modelled $L_{eq(15-min)}$ noise level, dB(A) ¹	Modelled $L_{eq(15-min)}$ noise level, with noise control dB(A) ¹
Gas Pipeline Corridor	40	75	78	63
Rail Line upgrade	40	75	79	64
Water Pipeline	40	75	72	57
Obley Road upgrade	40	75	77	62
Wambangalang Creek Bridge	40	75	45	30
Hyandra Creek Bridge	40	75	52	37
Twelve Mile Creek Bridge	40	75	53	38

Note 1: modelled level is to the nearest receptor from construction activities

2.3 Toongi Hall area

It is understood that the Toongi Hall area may be used by the public for camping and other activities, therefore P&I require more clarification why adoption of a passive recreation receiver category (Table 2.1 of the INP) has been adopted rather than a residential category.

The exact extent and frequency of use of the hall is unclear, as the area relies on an honesty system of a gold coin donation from patrons. Notwithstanding, local residents have indicated that the hall is used sporadically throughout the year. Therefore, as no individuals permanently reside in this locality, adopting a residential receiver category in accordance with Table 2.1 of the INP is considered inappropriate. Furthermore, it is not considered suitable to apply an amenity based criteria that limits noise exposure over a range of assessment periods (day, evening and night) for a space that has no tangible hours of occupancy. Therefore, this area has been considered a passive recreation area, and is consistent with receptor categories such as national parks where camping is also permissible.

We trust this letter addresses your outstanding questions, if you wish to discuss the above please contact the undersigned.

Yours Sincerely



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Review : NI