

<b>SUBMITTER No.</b>	<b>419</b>	<b>ISSUE REFERENCE:</b>	<b>16001</b>
<b>SUBMITTER TYPE</b>	Government	<b>TOR CATEGORY</b>	<b>Noise &amp; Vibration</b>
<b>NAME</b>	<b>DERM</b>	<b>RELEVANT EIS SECTION</b>	Volume 5 Appendices, Appendix 20, Section 5.4

## DETAILS OF THE ISSUE

The design planning noise levels are specified as following the DERM guideline Planning for noise control. However in Appendix C, reference is made to AS1055.

The derivation in Appendix C page 69 of the tonal correction and impulsive characteristics correction should refer to the DERM guideline Planning for noise control.

## PROPOSER RESPONSE

Australian Standard AS1055<sup>1</sup> is the basis for the “Planning for noise control” guideline.

The guideline “Planning for noise control” details the procedure for objectively determining adjustments for tonality and impulsivity which are derived from AS1055.

Tonal and impulsive characteristics corrections have been updated to be consistent with the “Planning for noise control” guideline as requested by DERM. Details are contained in Section 3 of the *Supplementary Noise Assessment* report contained in *Appendices – Volume 2* of this SEIS.

<b>SUBMITTER No.</b>	<b>419</b>	<b>ISSUE REFERENCE:</b>	<b>16002</b>
<b>SUBMITTER TYPE</b>	Government	<b>TOR CATEGORY</b>	<b>Noise &amp; Vibration</b>
<b>NAME</b>	<b>DERM</b>	<b>RELEVANT EIS SECTION</b>	Volume 5 Appendices, Appendix 20, Appendix D, Table 26

## DETAILS OF THE ISSUE

According to the guideline, Planning for noise control, the tonal adjustment (K1) should be 2dBA if just detectable and 5dBA if prominent. The impulse adjustment should be 2dBA if just detectable and 5dBA if prominent.

The EIS Table 26 should be amended accordingly, including all repeated versions of Table 26 within the EIS.

## PROPOSER RESPONSE

The updated table regarding adjustments for tonality and impulsivity from the DERM guideline has been included in the revised Planning noise levels in Section 3 and Appendix A of the *Supplementary Noise Assessment* report contained in *Appendices – Volume 2* of this SEIS.

<sup>1</sup> Australian Standard AS 1055. 1997. *Acoustics – Description and measurement of environmental noise*.

<b>SUBMITTER No.</b>	<b>419</b>	<b>ISSUE REFERENCE:</b>	<b>16003</b>
<b>SUBMITTER TYPE</b>	Government	<b>TOR CATEGORY</b>	<b>Noise &amp; Vibration</b>
<b>NAME</b>	<b>DERM</b>	<b>RELEVANT EIS SECTION</b>	Volume 5 Appendices, Appendix 20, Appendix D, Table 27

## DETAILS OF THE ISSUE

It appears that some of the receivers should be in the category ‘Receiver Area Dominant Land Use’ ‘Very Rural’. This would lead to the selection of a different set of recommended background noise.

The EIS should include the Very Rural category and specify which of the sensitive receptors will be attributed to each of the 3 categories selected. A map should be included illustrating each of the three category of the sensitive receptor so the reader can appreciate their distribution.

## PROPOSER RESPONSE

The table has been updated according to the above DERM comments, and clear figures which illustrate the sensitive receivers have been provided Appendix B of the *Supplementary Noise Assessment* report contained in *Appendices – Volume 2* of this SEIS.

<b>SUBMITTER No.</b>	<b>419</b>	<b>ISSUE REFERENCE:</b>	<b>16004</b>
<b>SUBMITTER TYPE</b>	Government	<b>TOR CATEGORY</b>	<b>Noise &amp; Vibration</b>
<b>NAME</b>	<b>DERM</b>	<b>RELEVANT EIS SECTION</b>	Volume 5 Appendices, Appendix 20, Appendix D, Table 28

## DETAILS OF THE ISSUE

There is no justification of the selection of “Shop and commercial office” Receiver area dominant land use for the recommended background noise.

## PROPOSER RESPONSE

The DERM EcoAccess “Planning for noise control” guideline<sup>2</sup> takes into account different “receiver area dominant land use” as detailed in Table 1 of the guideline. This table has been reproduced in the *Supplementary Noise Assessment* report (contained in *Appendices – Volume 2* of this SEIS) and only the relevant “receiver area dominant land use” categories have been used in the assessment. (The “Shop and commercial office” categories were not used for the assessment of receptor criteria).

<sup>2</sup> EPA. 2004. *Guideline – Planning for noise control*. <http://www.ehp.qld.gov.au/register/p01369aa.pdf>

<b>SUBMITTER No.</b>	<b>419</b>	<b>ISSUE REFERENCE:</b>	<b>16005</b>
<b>SUBMITTER TYPE</b>	Government	<b>TOR CATEGORY</b>	<b>Noise &amp; Vibration</b>
<b>NAME</b>	<b>DERM</b>	<b>RELEVANT EIS SECTION</b>	Volume 5 Appendices, Appendix 20, Appendix D, Table 28 and 29

## DETAILS OF THE ISSUE

Only the sensitive noise receptor N1 is listed. Explanation of the selection of the sensitive noise receptor N1 would be required to justify that it is solely representative of sensitive noise receptors. The calculation for each sensitive noise receptor should be presented in this table.

The EIS should include other sensitive sites or justify selecting only one site.

## PROPOSER RESPONSE

Two sites (N1 and N6) were used for derivation of criteria, as it was determined that, based on the measured Rating Background Levels (RBLs), the sites could be simplified into two general groups: those near to a transport corridor, and those which were well isolated from any nearby transport corridors.

A summary of the design planning levels for each receiver (proximity to highways and others) are shown in Table 1. The derivation for these calculations is discussed in Section 3.0 of the attached document and shown in Appendix A of the same document. In terms of the most critical period, the night-time period, the groups of receptors can be divided into two groups: the proximity to the Bruce Highway (near Abbot Point) and those well isolated from any nearby transport corridors. For more detailed criteria which would apply during the day and evening, the results are significantly more varied.

Table 1. Design PNLs at Residential Receivers (outdoors)

<b>PARAMETER</b>	<b>SITE</b>	<b>DESIGN PLANNING LEVEL (<math>L_{A_{EQ},1\text{ HOUR}, \text{ADJ}}</math> – dBA)</b>		
		<b>Day (7am-6pm)</b>	<b>Evening (6pm-10pm)</b>	<b>Night (10pm-7am)</b>
Proximity to Bruce Highway	N1	44	41	36
Proximity to Capricorn Highway	N5	37	28	28
Others	N2	41	38	28
	N3	34	28	28
	N4	29	31	28
	N6	37	30	28
	N7	28	28	28
	N8	32	28	28
	N9	36	30	28
	N10	33	31	28

<b>SUBMITTER No.</b>	<b>419</b>	<b>ISSUE REFERENCE:</b>	<b>16006 / 16008</b>
<b>SUBMITTER TYPE</b>	Government	<b>TOR CATEGORY</b>	<b>Noise &amp; Vibration</b>
<b>NAME</b>	<b>DERM</b>	<b>RELEVANT EIS SECTION</b>	Volume 5 Appendices, Appendix 20, Appendix D, Table 30

## DETAILS OF THE ISSUE

The selection of the noise area categories are not explained or justified. The EIS should include an explanation for the selection of the respective Noise Area Categories.

## PROPOSER RESPONSE

It was considered that the selection of the noise area categories did not require a great deal of explanation, as they appeared to be self-explanatory.

The receptors were reviewed and categorized for the two sections “Control of Background Noise Creep” and “Management of Variable Noise” in the EPA Guideline<sup>3</sup>. The derivation for these calculations is discussed in Section 3 of the *Supplementary Noise Assessment* report (contained in *Appendices – Volume 2* of this SEIS) and shown in Appendix A of the same document.

### Receptor categorisation for “Control of Background Noise Creep”

In the “Control of Background Noise Creep” section, the great majority of the receptors assessed were considered to be Receiver Land Use: “purely residential, rural residential” (changed in this response to “purely residential, Very rural” at the request of DERM) under the levels specified in the “Recommended Background Levels” section of the Qld EPA Guideline.

Also used was the Receiver Land Use: “Residential area on a busy road, or near an industrial or commercial area, Rural residential”. These receptors included:

- N1 (Proximity to Bruce Highway west of Bowen)
- N2 (adjacent to railway line), and
- N5 (Proximity to Capricorn Highway).

### Receptor categorisation for “Management of Variable Noise”

Under “Management of Variable Noise”, the receptors:

- N1 (Proximity to Bruce Highway west of Bowen)
- N2 (adjacent to railway line), and
- N5 (Proximity to Capricorn Highway)

were selected to be Noise Area Category z4: “Medium density transportation (less than 600 vehicles/hour) or some commerce or industry” due to the receptors’ proximity to road and rail transport corridors. The remainder of the receptors were assessed to be Noise Area Category z1: “Very rural, purely residential. Less than 40 vehicles/hour” and z2: “Negligible transportation” less than 80 vehicles/hour”.

<sup>3</sup> EPA. 2004. *Guideline – Planning for noise control.* [www.ehp.qld.gov.au/register/p01369aa.pdf](http://www.ehp.qld.gov.au/register/p01369aa.pdf)

<b>SUBMITTER No.</b>	<b>419</b>	<b>ISSUE REFERENCE:</b>	<b>16007</b>
<b>SUBMITTER TYPE</b>	Government	<b>TOR CATEGORY</b>	<b>Noise &amp; Vibration</b>
<b>NAME</b>	<b>DERM</b>	<b>RELEVANT EIS SECTION</b>	Volume 5 Appendices, Appendix 20, Appendix D, Table 34 & Table 35

## DETAILS OF THE ISSUE

The sound power levels in Table 34 are not referenced. The sound power levels in Table 35 are referring to a previous EIS.

## PROPOSER RESPONSE

The sound power levels shown in Table 34 in the noise and vibration technical report (EIS – Volume 5 Appendices, Appendix 20, Appendix D) were determined through measurements (to obtain average  $L_{Amax}$ ) and calculations based on measured  $L_{Aeq}$ , the number of trains and train speed (to obtain  $L_{Aeq}$  per metre). These measurements were described in Section 6.7 of the same report along with the data shown in Appendix J.

The sound power levels shown in Table 35 in the noise and vibration technical report contains references to previous EIS documentation for other relevant projects. These references were included to provide complete transparency as to the original source of the information. Open literature does not contain this information. It should be considered that this data was from data on-file.

<b>SUBMITTER No.</b>	<b>419</b>	<b>ISSUE REFERENCE:</b>	<b>16009</b>
<b>SUBMITTER TYPE</b>	Government	<b>TOR CATEGORY</b>	<b>Noise &amp; Vibration</b>
<b>NAME</b>	<b>DERM</b>	<b>RELEVANT EIS SECTION</b>	Volume 3 Rail, Chapter 11, Section 11.1

## DETAILS OF THE ISSUE

It is mentioned in the Introduction that this Chapter identifies sensitive receptors. It seems that the receptors are identified in Volume 5, Appendix 20. The quality objective of the sensitive receptors are however identified 11.2.3.

The EIS should either corrects the paragraph so as to point the reader to where the sensitive receptors are identified, or amends the EIS to read ‘the quality objective of the sensitive receptors are identified.’

## PROPOSER RESPONSE

Figure 1 (Location of Sensitive Receptors and Monitoring Locations Adjacent to the Proposed Rail Alignment) presented in the EIS Volume 5 - Appendix 20, pg 419, identifies the sensitive receptors used. Therefore no amendments are required.

Location of sensitive receptors along the rail are shown in Figure 2 of Appendix B of the *Supplementary Noise Assessment* report contained in *Appendices – Volume 2* of this SEIS.

<b>SUBMITTER No.</b>	<b>419</b>	<b>ISSUE REFERENCE:</b>	<b>16010</b>
<b>SUBMITTER TYPE</b>	Government	<b>TOR CATEGORY</b>	<b>Noise &amp; Vibration</b>
<b>NAME</b>	<b>DERM</b>	<b>RELEVANT EIS SECTION</b>	Volume 3 Rail, Chapter 11, Section 11.2.4.1.2

## DETAILS OF THE ISSUE

Table 2 in the EIS was derived in Volume 5 Appendix 20 Appendix C. This section should reference Volume 5 Appendix 20 Appendix C for the derivation of the values.

## PROPOSER RESPONSE

Updated design planning levels are provided in the *Supplementary Noise Assessment* report contained in *Appendices – Volume 2* of this SEIS, and the derivation is provided in Appendix A of the same report.

<b>SUBMITTER No.</b>	<b>419</b>	<b>ISSUE REFERENCE:</b>	<b>16011</b>
<b>SUBMITTER TYPE</b>	Government	<b>TOR CATEGORY</b>	<b>Noise &amp; Vibration</b>
<b>NAME</b>	<b>DERM</b>	<b>RELEVANT EIS SECTION</b>	Volume 3 Rail, Chapter 11, Section 11.2.4.1.2

## DETAILS OF THE ISSUE

In Table 2 the value for Day time value for Other Areas should be 37 and not 39. However all the derivation of this table needs to be revisited as per Issues discussed above.

## PROPOSER RESPONSE

Waratah Coal acknowledge that the daytime planning noise level of 39dBA shown for “Other areas” in the referenced table does contain a typographical error. The daytime planning noise level should be 37dBA  $L_{Aeq, 1hour, adj}$ .

The updated table of the design planning levels for each receiver (proximity to highways and others) is shown in Table 3. Design PNLs at Residential Receivers (outdoors) Table 3 in the response to Issue reference 16005. The derivation for these calculations is shown in Appendix A of the *Supplementary Noise Assessment* report contained in *Appendices – Volume 2* of this SEIS. The daytime planning noise levels for the areas isolated from transportation corridors ranges from 28dBA to 41dBA  $L_{Aeq, 1hour, adj}$ .

<b>SUBMITTER No.</b>	<b>419</b>	<b>ISSUE REFERENCE:</b>	<b>16012</b>
<b>SUBMITTER TYPE</b>	Government	<b>TOR CATEGORY</b>	<b>Noise &amp; Vibration</b>
<b>NAME</b>	<b>DERM</b>	<b>RELEVANT EIS SECTION</b>	Volume 3 Rail, Chapter 11, Section 11.2.4.1.2

## DETAILS OF THE ISSUE

Table 3 is a reproduction from Volume 5 Appendix 20 Appendix C Table 26.

The EIS should reference Volume 5 Appendix 20 Appendix C for the derivation of the values of Table 3. Table 3 should be amended to reflect previous issue of the table in Volume 5 Appendix 20 Appendix D.

## PROPOSER RESPONSE

As described in Issue Reference 16001 and 16002, the updated table regarding adjustments for tonality and impulsivity from the DERM guideline has been included in the revised Planning noise levels in Section 3 of the *Supplementary Noise Assessment* report contained in *Appendices – Volume 2* of this SEIS, and the derivation is contained in Appendix A of the same document.

<b>SUBMITTER No.</b>	<b>419</b>	<b>ISSUE REFERENCE:</b>	<b>16013</b>
<b>SUBMITTER TYPE</b>	Government	<b>TOR CATEGORY</b>	<b>Noise &amp; Vibration</b>
<b>NAME</b>	<b>DERM</b>	<b>RELEVANT EIS SECTION</b>	Volume 3 Rail, Chapter 11, Section 11.2.4.2, Table 4

## DETAILS OF THE ISSUE

The RBL values are based only on the measurement of site N1- Salisbury Plain in the first line table 4 and site N6 - Lambton Meadow for the second line.

Table 2 from Volume 5 Appendix 20 gives the rating background noise levels. The EIS should either include all the rating background noise levels in the proximity of the railway (6 according to text) in the calculation, or state and explain why site N1 and site N6 are the only sites used for rating background noise levels.

## PROPOSER RESPONSE

The “representative six locations” mentioned in the text is a typographical error. This should read “representative two locations”. These two areas are representative of receiver areas which are in “Proximity to Bruce Highway west of Bowen” and “Other remote rural areas”. This categorisation is dependent on the proximity of the receptors to existing transport corridors.

The updated table of the design planning levels for each receiver (proximity to highways and others) is shown in Table 3 in the response to Issue Reference 16005. The derivation for these calculations is shown in Appendix A of the *Supplementary Noise Assessment* report contained in *Appendices – Volume 2* of this SEIS.

As the RBL values are not specifically used for derivation of the rail noise criteria, these are for reference purposes only and to provide additional information.

<b>SUBMITTER No.</b>	<b>419</b>	<b>ISSUE REFERENCE:</b>	<b>16014</b>
<b>SUBMITTER TYPE</b>	Government	<b>TOR CATEGORY</b>	<b>Noise &amp; Vibration</b>
<b>NAME</b>	<b>DERM</b>	<b>RELEVANT EIS SECTION</b>	Volume 3 Rail, Chapter 11, Section 11.2.4.2, Table 5

## DETAILS OF THE ISSUE

In Table 5 the title of the first column should be reworded as “Typical Noise Reduction NR (dBA)” unless the noise reduction has been measured.

## PROPOSER RESPONSE

Table 5 first column title is “Typical Façade Noise Reduction”. This table is a direct reproduction of Table 7 of DERM guideline Planning for noise control<sup>4</sup>. This could be modified to be clearer by including a unit type in brackets: “Typical Façade Noise Reduction (dBA)”, though it is considered that this heading requires no further modification, as it was not measured and is what the guideline describes as typical.

<b>SUBMITTER No.</b>	<b>419</b>	<b>ISSUE REFERENCE:</b>	<b>16015</b>
<b>SUBMITTER TYPE</b>	Government	<b>TOR CATEGORY</b>	<b>Noise &amp; Vibration</b>
<b>NAME</b>	<b>DERM</b>	<b>RELEVANT EIS SECTION</b>	Volume 3 Rail, Chapter 11, Section 11.2.4.2, Table 5

## DETAILS OF THE ISSUE

The Table 5 reference is not appropriate. The EIS should state the full reference to the guideline.

## PROPOSER RESPONSE

The chapter takes the reference wholesale from the technical report in which the DERM guideline Planning for Noise control is referred to extensively. The shortening of the description to “the Guideline” is outlined in Section 11.2.2 (EIS, Volume 3) specifically.

For the sake of brevity and readability, the shorter reference was used.

<b>SUBMITTER No.</b>	<b>419</b>	<b>ISSUE REFERENCE:</b>	<b>16016</b>
<b>SUBMITTER TYPE</b>	Government	<b>TOR CATEGORY</b>	<b>Noise &amp; Vibration</b>
<b>NAME</b>	<b>DERM</b>	<b>RELEVANT EIS SECTION</b>	Volume 3 Rail, Chapter 11, Section 11.2.4.2

## DETAILS OF THE ISSUE

In the final paragraph of this section the units are not correct for the transient pass-by event. The EIS should correct the unit to dBA (max LpA).

## PROPOSER RESPONSE

This was a typographical error, and has been corrected in the *Supplementary Noise Assessment* report contained in *Appendices – Volume 2* of this SEIS.

<b>SUBMITTER No.</b>	<b>419</b>	<b>ISSUE REFERENCE:</b>	<b>16017</b>
<b>SUBMITTER TYPE</b>	Government	<b>TOR CATEGORY</b>	<b>Noise &amp; Vibration</b>
<b>NAME</b>	<b>DERM</b>	<b>RELEVANT EIS SECTION</b>	Volume 3 Rail, Chapter 11, Section 11.2.4.2

## DETAILS OF THE ISSUE

The EIS should provide a suitable scaled map of the sensitive receptors to allow the reader to understand the relation of the sites in reference to the proposed train line. Particular reference to sites N1 and N6 in relation to the others should be included.

4 EPA. 2004. *Guideline – Planning for noise control*. [www.ehp.qld.gov.au/register/p01369aa.pdf](http://www.ehp.qld.gov.au/register/p01369aa.pdf)

## PROPOSER RESPONSE

Figures showing the monitoring locations with respect to both the proposed mine site and the proposed rail alignment are shown in Figure 1 and Figure 2 respectively in Appendix B of the *Supplementary Noise Assessment* report contained in Appendices – Volume 2 of this SEIS.

<b>SUBMITTER No.</b>	<b>419</b>	<b>ISSUE REFERENCE:</b>	<b>16018</b>
<b>SUBMITTER TYPE</b>	Government	<b>TOR CATEGORY</b>	<b>Noise &amp; Vibration</b>
<b>NAME</b>	<b>DERM</b>	<b>RELEVANT EIS SECTION</b>	Volume 3 Rail, Chapter 11, Section 11.3, Figure 1

## DETAILS OF THE ISSUE

The monitoring locations in Figure 1 are expected to be in proximity of the railway. Some of the monitoring locations are beyond 10km while some sensitive receptors in proximity of the railway have not been monitored. Only two sensitive receptors in proximity of the railway have been monitored.

The EIS should provide a sound explanation for the selection of monitoring locations.

## PROPOSER RESPONSE

Background measurements are not required in this chapter of the EIS since the background noise levels are not used to determine rail noise or sleep disturbance criteria. Background levels have been included for reference purposes.

<b>SUBMITTER No.</b>	<b>419</b>	<b>ISSUE REFERENCE:</b>	<b>16019</b>
<b>SUBMITTER TYPE</b>	Government	<b>TOR CATEGORY</b>	<b>Noise &amp; Vibration</b>
<b>NAME</b>	<b>DERM</b>	<b>RELEVANT EIS SECTION</b>	Volume 3 Rail, Chapter 11, Section 11.4

## DETAILS OF THE ISSUE

The TOR requires seasonal variations. Only autumn and winter are presented. While the four seasons are not expected, comments relating to the choice or restrictions and corresponding consequences are required. The EIS should provide an explanation of those choices and restrictions.

## PROPOSER RESPONSE

The matter of season variations is discussed in Section 4.2.1 in the noise and vibration technical report in the EIS, Volume 5, Appendix 20.

Winter is considered to be worst case assessment, primarily for the reduction and often cessation of insect activities during the evening and night period during this season. During summer and spring the background noise levels, particularly during the evening and night period, would be potentially up to 15dBA to 20dBA higher. Use of data measured during this period without accounting for this seasonal activity could potentially result in rating background levels significantly higher than those which would occur during the colder months of the year. The analysis carried out on the data collected during the winter/autumn period is considered to be conservative, resulting in the strictest noise criteria.

<b>SUBMITTER No.</b>	<b>419</b>	<b>ISSUE REFERENCE:</b>	<b>16020</b>
<b>SUBMITTER TYPE</b>	Government	<b>TOR CATEGORY</b>	<b>Noise &amp; Vibration</b>
<b>NAME</b>	<b>DERM</b>	<b>RELEVANT EIS SECTION</b>	Volume 3 Rail, Chapter 11, Section 11.4, Table 8 and Table 9

## DETAILS OF THE ISSUE

Receptors N8 (Lenore Station) and N9 (Glenalpine) are the only sensitive receptors close to the railway line that have been monitored. The other receptors are irrelevant to this section. Using 2 receptors is insufficient for this assessment. The following sensitive receptors; Bakara, Birralee, Warrigal, Riverview, Skye should also be measured.

## PROPOSER RESPONSE

As discussed in response to Issue Reference 16018, Figure 1 in Volume 3, Chapter 11 of the EIS, shows that four sensitive receptors in proximity to the railway line were monitored (Monklands/Logger Location 7, Glenalpine, Lenore Station and N1 near Abbot Point), while an additional two locations were selected to measure in the proximity of a nearby rail line used for coal trains (Havilah & Logger Location 3). These monitoring locations are also illustrated in Figure 1 and Figure 2 in Appendix B of the *Supplementary Noise Assessment* report contained in Appendices – Volume 2 of this SEIS.

It has been concluded that additional baseline measurements are not required to be conducted, as the rail noise criteria is not based on the ambient noise levels but primarily on the prevention of sleep disturbance. Consequently additional noise measurements would not enhance the assessment nor change the criteria.

<b>SUBMITTER No.</b>	<b>419</b>	<b>ISSUE REFERENCE:</b>	<b>16021</b>
<b>SUBMITTER TYPE</b>	Government	<b>TOR CATEGORY</b>	<b>Noise &amp; Vibration</b>
<b>NAME</b>	<b>DERM</b>	<b>RELEVANT EIS SECTION</b>	Volume 3 Rail, Chapter 11, Section 11.5, Table 11

## DETAILS OF THE ISSUE

There are no indications or specifications of any of the parameters used for those predictions. The EIS should provide the modelling parameters.

## PROPOSER RESPONSE

The parameters used for the noise modeling along with the modeling methodology were provided in detail in Section 6.7 of the noise and vibration technical report in Volume 5, Appendix 20 of the EIS.

The parameters were defined in Appendix B of the same document and are reproduced below:

- $L_{Aeq(24hour)}$ , Time averaged A-weighted equivalent continuous sound pressure level over a time period of 24 hours
- $maxL_pA$ , Maximum instantaneous noise level

<b>SUBMITTER No.</b>	<b>419</b>	<b>ISSUE REFERENCE:</b>	<b>16022</b>
<b>SUBMITTER TYPE</b>	Government	<b>TOR CATEGORY</b>	<b>Noise &amp; Vibration</b>
<b>NAME</b>	<b>DERM</b>	<b>RELEVANT EIS SECTION</b>	Volume 3 Rail, Chapter 11, Section 11.5.2, Table 12

### DETAILS OF THE ISSUE

The EIS does not provide any indication of how the ground vibration peak particle velocity for the train was derived. For a standard train travelling at 50mph, the r.m.s. particle velocity is over 2mm/s at 20m. The peak particle velocity would therefore be above 2.8mm/s.

### PROPOSER RESPONSE

The additional information provided regarding rail vibration can be seen in Section 4.0 of the *Supplementary Noise Assessment* report contained in *Appendices – Volume 2* of this SEIS.

<b>SUBMITTER No.</b>	<b>419</b>	<b>ISSUE REFERENCE:</b>	<b>16023</b>
<b>SUBMITTER TYPE</b>	Government	<b>TOR CATEGORY</b>	<b>Noise &amp; Vibration</b>
<b>NAME</b>	<b>DERM</b>	<b>RELEVANT EIS SECTION</b>	Volume 3 Rail, Chapter 11, Section 11.5.2, Table 12

### DETAILS OF THE ISSUE

The base curves given in AS2670.2 for buildings correspond to the maximum level of vibration before annoyance or complaints are anticipated. Those curves are given for both the z axis (vertical axis) and the x, y axis (corresponding to horizontal vibrations). Those vibration values are given in r.m.s. (root mean square) as opposed to peak values. Further the value for the x, y axis is not correct. The difference of values between the vertical axis and horizontal axis are not explained and give the impression to the reader that the criteria apply to different frequency range.

The EIS should explain the difference of axis criteria. The r.m.s values are 0.1mm/s r.m.s for the z direction for frequencies above 8Hz and 0.28mm/s r.m.s for the x and y directions for frequencies above 2 Hz. Those values should be then corrected to translate them into Peak values.

### PROPOSER RESPONSE

The explanation of the human comfort criteria for vibration can be seen in Section 4.1.1 of the *Supplementary Noise Assessment* report contained in *Appendices – Volume 2* of this SEIS.

<b>SUBMITTER No.</b>	<b>1840</b>	<b>ISSUE REFERENCE:</b>	<b>16024</b>
<b>SUBMITTER TYPE</b>	Council	<b>TOR CATEGORY</b>	<b>Noise &amp; Vibration</b>
<b>NAME</b>	<b>Barcaldine Regional Council</b>	<b>RELEVANT EIS SECTION</b>	3.1.15

### DETAILS OF THE ISSUE

Any specific sensitive receptors in respect of the noise and vibration?

## PROPOSER RESPONSE

It is assumed that this question is referring to Section 3.1.15 of the EIS executive summary. Specific sensitive receptors around the mine site were identified in Volume 2, Chapter 11, Figure 1 (p309) of the EIS. Specific sensitive receptors in proximity to the proposed rail line were identified in Volume 3, Chapter 11, Figure 1 (p419).

<b>SUBMITTER No.</b>	<b>1840</b>	<b>ISSUE REFERENCE:</b>	<b>16025</b>
<b>SUBMITTER TYPE</b>	Council	<b>TOR CATEGORY</b>	<b>Noise &amp; Vibration / Cumulative Impacts</b>
<b>NAME</b>	<b>Barcaldine Regional Council</b>	<b>RELEVANT EIS SECTION</b>	11

## DETAILS OF THE ISSUE

Due to social impacts associated with removal of residential users from the affected area all methods to mitigate potential impacts need to be explored.

The cumulative impacts of noise and vibration from the activities of a number of proponents with the region may require a coordinated approach between proponents and with State Authorities for noise impacts or activities (blasting/ excavation/load out) and any associated road/infrastructure closure.

## PROPOSER RESPONSE

All methods of mitigating potential impacts will be taken before the removal of residential users, including attenuation at the source of the noise, use of attenuation between the source and receiver and at the receptor. The relocation of the receptor to a location which would achieve the required noise and vibration criteria would also be considered. Removal of the residential users from the affected area would only be considered when there are no other methods to achieve acceptable conditions of amenity for the receptor.

Cumulative impacts of noise and vibration was addressed in Section 8 of the noise and vibration technical report (EIS, Volume 5E, Appendix 20). Impacts on noise levels from other projects will be managed under their relevant environmental authorities for those projects. All projects will have planning noise levels determined from DERM documents including the Ecoaccess Planning for Noise Control Guideline<sup>5</sup>, which are specifically designed to mitigate cumulative noise impact, referred to as ‘background creep’. This will therefore ensure that potential cumulative impacts are minimised.

<b>SUBMITTER No.</b>	<b>443</b>	<b>ISSUE REFERENCE:</b>	<b>16026</b>
<b>SUBMITTER TYPE</b>	Individual	<b>TOR CATEGORY</b>	<b>Noise &amp; Vibration</b>
<b>NAME</b>	<b>Name withheld</b>	<b>RELEVANT EIS SECTION</b>	

## DETAILS OF THE ISSUE

Impact from railway – increased noise impact on people and livestock on Degulla Station.

## PROPOSER RESPONSE

The predicted noise levels at Degulla Homestead are shown in the following Table. These results relate to the noise model scenarios described in Section 4.2.1 in the noise and vibration technical report in the EIS Volume 5E, Appendix 20.

<sup>5</sup> EPA. 2004. *Guideline – Planning for noise control*. [www.ehp.qld.gov.au/register/p01369aa.pdf](http://www.ehp.qld.gov.au/register/p01369aa.pdf)

Table 4: Predicted Rail Noise Levels at Degulla Homestead

PREDICTED NOISE LEVELS AT RESIDENCES (dBA)	RESIDENTIAL RECEIVER – DEGULLA HOMESTEAD
Initial Capacity (40mtpa) $L_{Aeq, 24hr}$	25
Ultimate Capacity (400mtpa) $L_{Aeq, 24hr}$	34
Pass-by Max LpA	29

From the rail noise levels shown in the above tables, it can be seen that the predicted noise levels comply with the rail noise criteria for consideration of human receptors, which are 37dBA  $L_{Aeq, 24hr}$  and 42dBA max  $L_{PA}$ .

A study by the EPA<sup>6</sup> showed that exposure to loud noises (such as aircraft flyovers and exploding paperbags) resulted in altered livestock behaviour. Exposed cattle were observed to have abnormal milk production, whilst swine showed increases in heart rate. These effects, however, rapidly subsided; suggesting that acclimatisation to the noise had occurred. Given the expected noise generated from the proposed rail line will not exceed sleep disturbance criteria for human receptors, prolonged negative effects amongst nearby livestock are not expected.

Based on the literature available, as the predicted noise levels would achieve the noise criteria for human receptors, it is concluded that there would not be a substantial impact to livestock/cattle by the movements of coal trains on the proposed railway line.

SUBMITTER No.	<b>556</b>	ISSUE REFERENCE:	<b>16027</b>
SUBMITTER TYPE	Individuals	TOR CATEGORY	<b>Noise &amp; Vibration</b>
NAME	<b>Names withheld</b>	RELEVANT EIS SECTION	

## DETAILS OF THE ISSUE

Noise and vibration from railway line causing relocation of residences.

## PROPOSER RESPONSE

As discussed in the response to Issue Reference 16025, the removal of residences is the last resort, with relocation of the residences (if possible) being a far more attractive solution. Before either of these options is approached, other methods such as the erection of noise barriers adjoining the railway line will be investigated.

SUBMITTER No.	<b>668</b>	ISSUE REFERENCE:	<b>16028</b>
SUBMITTER TYPE	NGO	TOR CATEGORY	<b>Noise &amp; Vibration</b>
NAME	<b>Road Accident Action Group (RAAG)</b>	RELEVANT EIS SECTION	3.10.2

## DETAILS OF THE ISSUE

Road Noise. Taking into account our prediction there will be a much higher AADT for the Peak Downs Highway than has been taken into account, much more account should be made for road noise through Clermont, taking into account fuel tankers work 24/7.

<sup>6</sup> United States Environmental Protection Agency. (1980). *Effects of Noise on Wildlife and Other Animals, Review of Research Since 1971*. Washington DC.

## PROPOSER RESPONSE

The data provided by TTM (EIS Volume 5F, Appendix 21) for the Peak Downs Hwy includes the following:

- Current traffic volumes (2010 data):
  - Clermont – Moranbah: 610 AADT, 20% Heavy
  - Moranbah – Nebo: 3,000 AADT, 15% Heavy
  - Nebo – Mackay: 3,400 AADT, 15% Heavy
- Estimated Volumes without Waratah Coal Activities included (2032 design horizon), using advice from TTM that traffic volumes from the mine will be less than 10 vehicles per day, assumed both directions:
  - Clermont – Moranbah: 1,780 AADT, 20% Heavy
  - Moranbah – Nebo: 8,780 AADT, 15% Heavy
  - Nebo – Mackay: 9,980 AADT, 15% Heavy
- Estimated Volumes with Waratah Coal Activities included (2032 design horizon):
  - Clermont – Moranbah: 1,800 AADT, 20% Heavy
  - Moranbah – Nebo: 8,800 AADT, 15% Heavy
  - Nebo – Mackay: 10,000 AADT, 15% Heavy

The above is based on 5% per annum growth, which is expected to incorporate minor traffic volumes accessing the Galilee Basin projects.

The traffic movements above and the calculated differences in traffic noise levels (calculated in terms of  $L_{A10(18hour)}$ ) are summarised in Table 5.

Table 5: Traffic noise predictions on Peak Downs Highway with and without Waratah Coal movements

PEAK DOWNS HIGHWAY SEGMENT	AADT FOR DIFFERENT SCENARIOS		COMMERCIAL VEHICLES (%)	DIFFERENCE IN $L_{A10(18hour)}$ FOR 2032 SCENARIO WITH AND WITHOUT WARATAH COAL (dBA)	
	YEAR 2010	YEAR 2032 (Design Horizon)			
Clermont – Moranbah	610	1780	1800	20	0.05
Moranbah – Nebo	3000	6780	6800	15	0.01
Nebo – Mackay	3400	9980	10000	15	0.01

In terms of traffic noise emissions, the difference in the future scenario with or without the inclusion of Waratah Coal Activities is minor, with the difference in the predicted  $L_{A10(18hour)}$  noise levels being less than 0.1dBA, as shown in the table. This is acoustically not a significant impact.

<b>SUBMITTER No.</b>	<b>420</b>	<b>ISSUE REFERENCE:</b>	<b>16029</b>
<b>SUBMITTER TYPE</b>	Government	<b>TOR CATEGORY</b>	<b>Noise &amp; Vibration</b>
<b>NAME</b>	<b>Queensland Health</b>	<b>RELEVANT EIS SECTION</b>	Noise, Vol 2, Chapter 11 (Mine)

## DETAILS OF THE ISSUE

The proponent within S11.2.4.2 p303 describes the sleep disturbance criteria relevant for mining operations, however no sleep disturbance assessment has been conducted within S11.5.2.1. A broad statement is made within this section (11.5.2.1) that mining operations don't adversely affect sleep at sensitive receptors and that the noise generated by the mine is "constant". This section however does identify "Monklands" property as potentially being affected, however as stated no assessment of the mines impact on sleep disturbance was undertaken.

Section 11.5.1 identifies exceedances in the other noise criteria ( $LA_{eq,adj,1hr}$ ) at various sensitive receptors surrounding the mine. These exceedances range from 2dB to 26dB. S11.6 further highlights mitigation / management measures but the proponent only commits to undertaking further investigations into attenuating plant and equipment and negotiating with land owners (S11.8 p315). The proponent has not committed to any other management options and there is no assessment showing that attenuation of plant and equipment will satisfactorily reduce noise levels.

This section should emphasise that the impact on human health at the sensitive receivers will be appropriately mitigated to achieve a satisfactory internal noise level for the preservation of health and well-being identified within the Environmental Protection (Noise) Policy 2008. It is recommended that the proponent provides details of any proposed management options to be implemented if it is not possible to reduce noise emissions of sources sufficiently to ensure compliance with the Environmental Protection (Noise) Policy 2008, including the  $LA_{1,adj,1hr}$  and  $LA_{eq,adj,1hr}$  criterion, at all sensitive receivers.

## PROPOSER RESPONSE

The Acoustic Quality Objectives as shown in Schedule 1 of the Environmental Protection (Noise) Policy 2008 are not appropriate criteria to ensure that noise amenity is achieved at the nearest sensitive receptors. Use of the acoustic quality objectives would result in more lenient noise criteria (approximately 35dBA  $L_{Aeq, adj, 1hr}$  and 45dBA  $L_{A1, adj, 1hr}$  externally using a conservative 5dB offset from indoors to outdoors) than what was determined in the assessment. This noise criteria would also not comply with the required methodology of the DERM guideline Planning for Noise control for industrial noise emissions by having no reference to the measured baseline noise levels.

The "Monklands" property was assessed and found that the adjusted predicted noise levels from the mine site would be 26dB in exceedance of the design PNL. As discussed in Volume 2 Chapter 11 Section 11.6.1.2 of the EIS, Monklands is the only receptor which would receive significant noise contribution from mobile plant, and hence be exposed to significant amount of transient noise as the location of the mobile plant changes over time (transient noise is the principal mechanism for sleep disturbance). It is proposed that "Waratah Coal will consult with the property owner at Monklands with a view to potentially using the dwelling for a purpose other than residential, relocating the dwelling or the possibility of acquiring the property."

Thus the only sensitive receptor that would be expected to receive a significant amount of transient noise and be affected by the sleep disturbance criteria has been addressed. All other receptors are affected primarily by the more constant noise sources such as crushing plant, coal wash plant, and conveyors in the mine area. In those cases, the design PNL of 28dBA  $L_{Aeq, adj, 1hr}$  is 14dB below the sleep disturbance criterion of 42dBA  $maxL_{PA}$ . As the variation from the adjusted average noise level would be approximately 5-10dBA for these type of noise sources at these types of distances, the sleep disturbance criterion would be easily achieved with the design PNL achieved. Therefore the design PNL is the more stringent criterion.

<b>SUBMITTER No.</b>	<b>420</b>	<b>ISSUE REFERENCE:</b>	<b>16030</b>
<b>SUBMITTER TYPE</b>	Government	<b>TOR CATEGORY</b>	<b>Noise &amp; Vibration</b>
<b>NAME</b>	<b>Queensland Health</b>	<b>RELEVANT EIS SECTION</b>	Vol 3 Chapter 11 (Rail)

## DETAILS OF THE ISSUE

**Rail Noise.** Although it is recognised that the *Environmental Protection Act 1994* exempts noise from rail infrastructure (schedule 1, part 1, section 1) it is recommended that the noise criteria specified within the World Health Organisation's Guidelines for Community Noise (available at <http://whqlibdoc.who.int/hq/1999/a68672.pdf>) and the enHealth Council's The health effects of environmental noise – other than hearing loss (available at [www.nphp.gov.au/enhealth/council/pubs/pdf/noise.pdf](http://www.nphp.gov.au/enhealth/council/pubs/pdf/noise.pdf)) be adopted. This identifies a level of 45 dB(A)  $L_{A\text{Max}}$  as the recommended sleep disturbance criteria. The proponent within Volume 3, Chapter 11 - Noise and Vibration does not analyse  $L_{A\text{Max}}$  noise impacts. The assumption of  $L_{A\text{Max}}$  being only 5dB below  $L_{A\text{eq},24\text{hr}}$  needs further justification and a more extensive analysis of the maximum noise levels emitted by the proposed freight trains towing the expected level / weight of coal needs to be undertaken before a sleep disturbance assessment can be undertaken. This may significantly effect the mitigation required to ensure no adverse human health affects occur. The proponent has provided some mitigation options within S11.6.1, however the proponent specifies that these mitigation measures will only be "considered" (S11.8).

The proponent should ensure that all sensitive receptors affected by rail noise have been appropriately assessed against the relevant sleep disturbance criteria utilising an approved methodology and that adequate mitigation measures are undertaken to ensure the health and well-being of occupants is maintained. It is important that the proponent confirms that any proposed noise attenuation measures will mitigate any adverse affect on human health.

## PROPOSER RESPONSE

The 42dBA  $\text{max}L_{PA}$  criterion (external) used for sleep disturbance is more stringent than the 45dBA  $L_{A\text{Max}}$  criterion (internal) suggested. This criterion would translate to an external criterion of 50dBA  $L_{A\text{Max}}$  using a conservative façade noise reduction of 5dBA.

$L_{A\text{Max}}$  has not been assumed to be 5dBA below  $L_{A\text{eq},24\text{hr}}$ , rather the sleep disturbance criterion of 42dBA  $\text{max}L_{PA}$  has been used to derive an appropriate  $L_{A\text{eq},24\text{hr}}$  criterion, rather than use the Queensland Rail criterion of 65dBA  $L_{A\text{eq},24\text{hr}}$ . This was discussed in more detail in Section 5.6 in the noise and vibration technical report in Volume 5, Appendix 20.

The rail noise criteria was determined to primarily ensure that the passby noise levels from coal train movements would achieve the sleep disturbance criterion of 42dBA  $\text{max}L_{PA}$ , which is a significantly more stringent criterion than the Queensland rail criterion of 87dBA  $L_{A\text{Max}}$ . The 37dBA  $L_{A\text{eq},24\text{hr}}$  criterion is extremely stringent for rail noise, particularly when compared to the Queensland Rail criterion for rail noise of 65dBA  $L_{A\text{eq},24\text{hr}}$ .

The determination of an appropriate noise criterion for the long term average rail noise level,  $L_{A\text{eq},24\text{hr}}$  was based on experience, taking into consideration both the level of 42dBA  $\text{max}L_{PA}$  as well as other recommended noise levels for the preservation of sleep. The 37dBA  $L_{A\text{eq},24\text{hr}}$  criterion, applied externally, is anticipated to achieve the 30dBA  $L_{A\text{eq}}$  level described in the World Health Organization (WHO) Guidelines for Community Noise<sup>7</sup> for the prevention of sleep disturbance during the night-time inside bedrooms with windows partially open.

The methodology of how the noise emissions from coal trains was determined based on measurements of similar coal trains in the field was described in detail in Section 6.7 in the noise and vibration technical report in Volume 5, Appendix 20 of the EIS.

<sup>7</sup> World Health Organization (WHO) (2000). *Guidelines for Community Noise*, Berglund B., Lindvall T., Schwela D., and Goh K.T. (Eds.). WHO, Geneva.

The recommended attenuation measures were described in Section 7.3.3 of the noise and vibration technical report in Volume 5, Appendix 20 of the EIS. The assessment showed that the noise emissions from the proposed train corridor could be either attenuated or managed to ensure that the impact of the proposed rail corridor would not be significant.

<b>SUBMITTER No.</b>	<b>356</b>	<b>ISSUE REFERENCE:</b>	<b>16031 / 4110</b>
<b>SUBMITTER TYPE</b>	Government	<b>TOR CATEGORY</b>	<b>Noise &amp; Vibration</b> / Health & Safety
<b>NAME</b>	<b>DTMR</b>	<b>RELEVANT EIS SECTION</b>	Volume 5 – Appendices, Appendix 23 – Social Impact Assessment , p xiii; and Volume 1 – Project Overview, Chapter 5 – Cumulative Impacts, p77

## DETAILS OF THE ISSUE

It is stated that the rail alignment is expected to traverse 36 properties which vary in size from 1,000ha to almost 40,000ha. Four houses are located within 2km of the proposed railway route. Coal train will increase the level of noise, dust and the risk of fire and decrease visual amenity.

It also states that' Waratah Coal will develop a best practice Noise And Vibration Management Plan for both construction and operation of its infrastructure'.

It is considered that the EIS should ensure that any potential health impacts the project may have on local communities are identified and that appropriate mitigation measures are in place so as to protect the nearby communities.

The department is supportive that Waratah Coal includes a Noise And Vibration Management Plan.

The department requests that the Noise And Vibration Management Plan be cognisant of, and undertake measures to mitigate, the potential impacts the project may have on residents, including air, water, and noise pollution (including dust and soil erosion).

## Comment

It is considered that the EIS should ensure that any potential health impacts the project may have on local communities are identified and that appropriate mitigation measures are in place so as to protect the nearby communities.

## PROPOSER RESPONSE

Waratah Coal has commissioned a new draft EM Plan for the mine and a draft Environmental Management Plan (EMP) for the for rail. Both Plans cover the construction and operational phases of the project. It is acknowledged that the draft EMP included in the EIS provided much information on impacts and control measures for the construction phase and said less about the operational and decommissioning/rehabilitation phases. This has now been addressed (in fact most of this information was contained in the EIS chapters and simply had not been repeated in the draft EMP). Environmental values and impacts have been transferred from the EIS to the draft EM Plan and draft EMP for all project phases. Environmental protection objectives have been developed.

Environmental Protection Objectives specific to Noise and Vibration are detailed in Section 2 of the *Supplementary Noise Assessment* report contained in *Appendices – Volume 2* of this SEIS.

<b>SUBMITTER No.</b>	<b>420</b>	<b>ISSUE REFERENCE:</b>	<b>12029 / 16032</b>
<b>SUBMITTER TYPE</b>	Government	<b>TOR CATEGORY</b>	Air Quality / Noise & Vibration
<b>NAME</b>	<b>Queensland Health</b>	<b>RELEVANT EIS SECTION</b>	

## DETAILS OF THE ISSUE

The EIS does not identify construction camps as sensitive receptors. The construction camps may be located in areas where the emissions from the project's construction may adversely affect the health and well-being of the workers. Queensland Health (QH) is therefore unable to assess whether the risks to workers involved in the project.

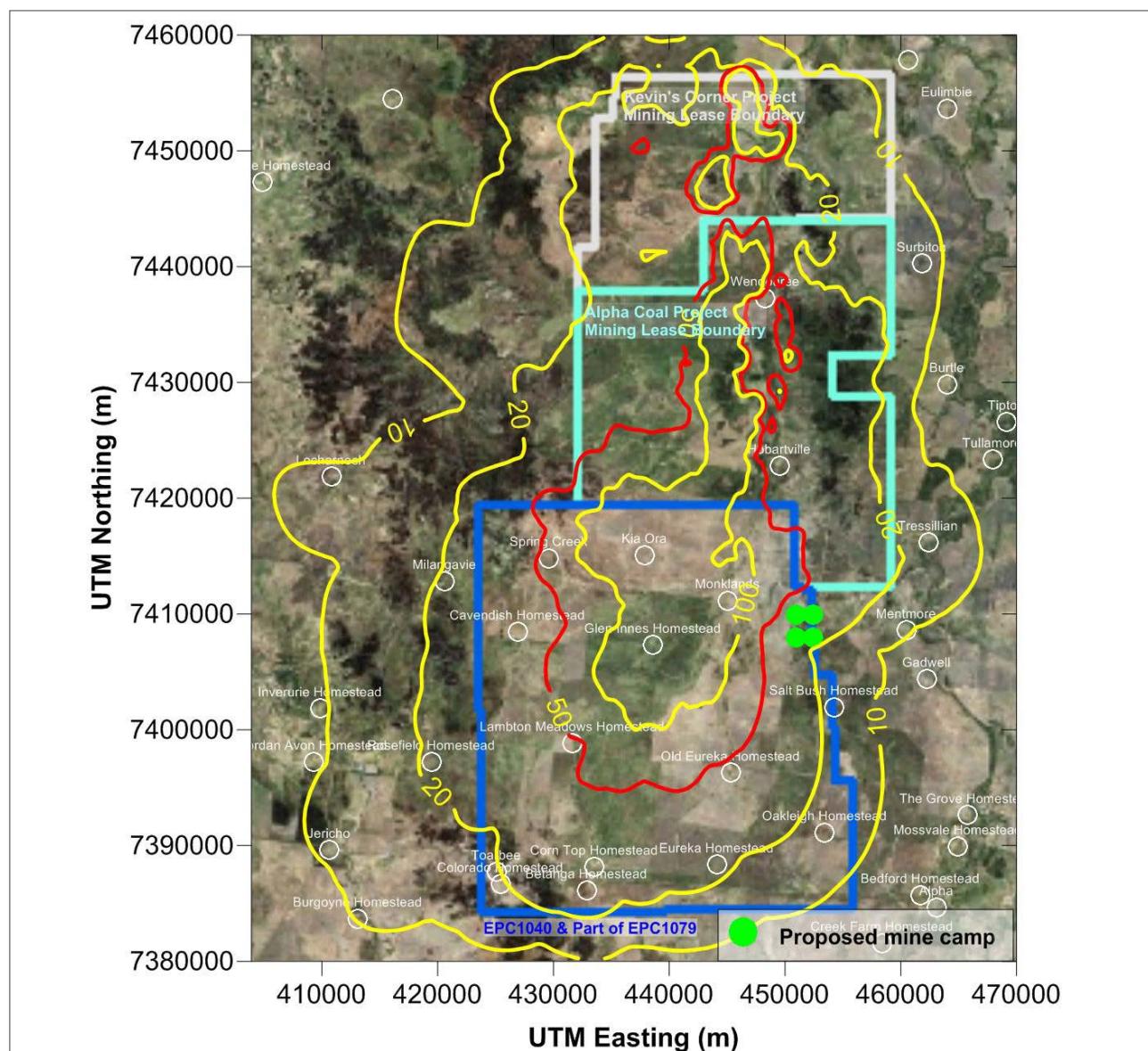
The proponent must assess the environmental values, incorporating human health and well-being as described in the Terms of Reference for the project, as they pertain to the proposed construction camps. In particular, assessments of the acoustic and air environments at the construction camps should be made, with appropriate mitigation measures put in place to ensure compliance with the relevant acoustic and air quality standards identified within the EIS.

## PROPOSER RESPONSE

The location of the mine camp and the maximum predicted 24 hour PM<sub>10</sub> concentration are shown in Figure 1. The concentration contour plot for the 24 hour PM<sub>10</sub> is the most stringent in terms of the predicted area of impact surrounding the Galilee Coal Project. Therefore, Figure 1 shows that all relevant TSP, PM<sub>10</sub> and PM<sub>2.5</sub> air quality guidelines are expected to be achieved at the mine camp location.

Final location, layout and design of the proposed construction camp is being finalised (see Figure 1 – Mine Infrastructure Area – at Issue Reference 6017 in Part C – Project Description) for proposed location of the mine construction and operation camp), with ground-truthing of the proposed area to be carried out in the near future. The proposed construction camp has been located at a suitable distance (and will be designed appropriately) to ensure that construction noise and vibration will achieve the noise criteria in the environmental management plan, specified in Table 1 in Section 2.0 the *Supplementary Noise Assessment* report contained in *Appendices – Volume 2* of this SEIS.

Figure 1: Cumulative air quality impact assessment – Predicted 24 hour maximum PM<sub>10</sub> concentrations and location of the mine camp



SPECIES:	LOCATION:	SCENARIO:	PERCENTILE:	AVERAGING TIME:
PM <sub>10</sub>	Galilee Coal Project	Project emissions (Year 19) – maximum emissions and maximum emissions for the proposed Alpha coal mine and Kevin's Corner coal mine	Maximum	24 hour
MODEL USED:	UNITS:	GUIDELINE:	MET DATA:	PLOT:
CALPUFFv6	µg/m <sup>3</sup>	Qld EPP (Air) = 50 µg/m <sup>3</sup>	TAPM Generated	J Weidmann

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