



# WorleyParsons

resources & energy

## Infrastructure

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Ref:  
File:

Mark Jefferies  
Office of the Environmental Protection Agency  
The Atrium  
168 St Georges Terrace  
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Dear Sir

## NOISE CALCULATIONS CLARIFICATION

This response has been prepared to address an issue raised at EPA Board Meeting #995, (9 December 2010). In essence the EPA required additional information on estimated  $L_{A(10)}$  noise levels<sup>1</sup> at Dampier's closest noise sensitive premises located 6km from the Dampier Marine Service Facility (DMSF). The  $L_{A(10)}$  noise limit is the most significant during the operation phase since this is representative of continuous noise emissions from the proposed Development. The construction activities will be carried out in accordance with the control of environmental noise practices set out in Section 6 of AS 2436-1981 Guide to Noise Control on Construction, Maintenance and Demolition Sites.

As outlined in the specialist report (WorleyParsons 2009)<sup>2</sup>, the maximum "worst case" noise levels ( $L_{Amax}$ ) are estimated by applying the specified sound power levels for all potentially operating equipment to AS 2436-1981. Using this methodology the predicted  $L_{Amax}$  experienced at Dampier is calculated to be 40dB(A). This predicted noise level  $L_{Amax}$  40 (A) is 15dB(A) below the *Environmental Protection (Noise) Regulations 1997* minimum assigned noise level  $L_{Amax}$  55(A). Levels of noise are expected to be further reduced by screening provided from land topography between the facility and Dampier (Figure 1).

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<sup>1</sup> An LA10 level is an A-weighted noise level which is exceeded for 10 percent of the measurement period. An  $L_{A10}$  level is considered to represent the "intrusive" noise level.

<sup>2</sup> WorleyParsons (2009). Dampier Marine Services Facility - Noise Screening Assessment.



The  $L_{A10}$  noise limit is the most significant for the Dampier operations since this is representative of continuous noise emissions from the port operations. The town of Dampier is predominantly a noise sensitive residential area and so the following noise limits apply:

Time of day	$L_{A10}$	$L_{A1}$	$L_{Amax}$
0700 – 1900 Monday to Saturday	45 dB(A)	55 dB(A)	65 dB(A)
0900 – 1900 Sundays and Public Holidays	40 dB(A)	50 dB(A)	65 dB(A)
1900 – 2200 All days	40 dB(A)	50 dB(A)	55 dB(A)
2200 – 0700 Monday to Saturday	35 dB(A)	45 dB(A)	55 dB(A)
2200 – 0900 Sundays and Public Holidays	35 dB(A)	45 dB(A)	55 dB(A)

Under the *Environmental Protection (Noise) Regulations 1997* assigned noise levels at noise sensitive premises in Dampier will vary depending on their proximity to industrial and commercial areas, proximity to major and secondary roads and also on the time of day. However for the purposes of this assessment the most stringent assigned noise level of  $L_{A(10)}$  35dB(A) will be used as the permissible noise level. This level is only assigned to noise sensitive premises located greater than 450m from land zoned for industrial or commercial use and greater than 100m from major or secondary roads.

Environmental noise modelling of the proposed Dampier Port Expansion was undertaken in 2003 for Rio Tinto (formerly Hamersley Iron). As part of this study a noise model for the existing facility (excluding the 95 Mt/a Port Expansion equipment) was developed. The assessment showed that noise emissions has the potential to exceed the assigned noise levels when temperature inversions and light North-Westerly or North-Easterly winds occur, and when all ore handling equipment (stackers and reclaimers) at Parker Point are operating at the end of the stockpiles nearest Dampier. Rio Tinto have undertaken annual environmental noise monitoring within the Dampier Township to assess the compliance of the Port Operations with the adopted regulations<sup>3</sup>. In comparison to these activities at Parker point, the proposed development during operations will cater for small ships, small cranes and trucks and any increases in noise is predicted to be imperceptible, with continual noise emissions rather than tonal noise, and as such the  $L_{A(1)}$ , is not predicted to be exceeded.

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<sup>3</sup> SVT-Engineering Consultants (2004). Environmental Noise Management Program for Dampier Port Facilities.



Figure 1 Typical overland rough geology between the site and Dampier

The Pilbara Iron Ore and Infrastructure, (Lloyd Acoustics 2004)<sup>4</sup> identified  $L_{A(10)}$ , and  $L_{A(Max)}$  noise levels from long term noise monitoring of Port Hedland port operations at a noise sensitive premises. The noise monitoring demonstrates a noise reduction between  $L_{Amax}$  and  $L_{A10}$  noise levels of 10 to 15 dB(A). The minimum reduction of -10dB(A) has been applied to the predicted  $L_{Amax}$  noise levels emanating from the DSMF to determine a predicted  $L_{A10}$ .

The table below provides the AS 2436-1981 calculated  $L_{Amax}$  noise level and a predicted  $L_{A10}$  noise level based on the assessment of long term noise measurements of Port Hedland port operations. As mentioned earlier the proposed development during operations will cater for small ships, small cranes and trucks and not stackers and reclaimers as experienced in Port Hedland, and as such this comparison is considered conservative.

Noise Criteria	Distance from Noise Source	$L_{Amax}$	$L_{A10}$
Predicted Noise Level at Dampier	6km	40	30
Assigned Noise Level <sup>5</sup>	-	55 (to max of 80)	35 (to max of 60)
Difference from Assigned Noise Level		-15	-5

<sup>4</sup> Lloyd Acoustics (2004). Environmental Noise Assessment. Pilbara Iron Ore and Infrastructure Project Stage A Port and North-South Railway.

<sup>5</sup> *Environmental Protection (Noise) Regulations 1997*



The above assessment shows the predicted  $L_{A(10)}$  noise level from the operation of the DMSF expansion at Dampier, 6km from the facility will be 30dB(A), this;

- is 5dB(A) below the minimum permissible  $L_{A(10)}$  noise level assigned by the EPA; and
- will have an imperceptible impact on existing background noise levels measured at Dampier of between 34 and 41dB(A)<sup>6</sup>.

I hope these clarifications meets your requirements, if you have any additional queries please feel free to contact me.

Yours sincerely  
WorleyParsons

A handwritten signature in black ink, appearing to read 'Dehlia Goundrey', written in a cursive style.

Dehlia Goundrey  
Principle Scientist

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<sup>6</sup> WorleyParsons (2009). Dampier Marine Services Facility - Noise Screening Assessment