APPENDIX G: NOISE PEER REVIEW

Noise Peer Review – Wilkinson Murray

1. Peer Review Report dated 12 June 2016
2. Response from WCPL dated 22 July 2016
3. Final Peer Review Report dated 15 August 2016
4. Response from WCPL dated 22 August 2016

WILKINSON MURRAY

12 June 2016

WM Project Number: 16120
Our Ref: DoPE16120ltr07062016JW

Matthew Riley
Department of Planning and Environment
GPO Box 39
SYDNEY NSW 2001

Dear Matthew

Re: Noise/Vibration Assessment - Wilpinjong Extension Project - Independent Review

Wilkinson Murray Pty Ltd (WM) has been commissioned to conduct an independent review of the Wilpinjong Extension Project Environmental Impact Assessment (the project), particularly the Noise and Blasting Assessment (NBA), prepared by SLR Consulting Australia Pty Ltd (the consultant).

The scope of the review is:

- Consider the adequacy and accuracy of the noise modelling undertaken for the proposal, including consideration of relevant guidelines and NSW Government policies (including the *NSW Industrial Noise Policy*) and the reasonableness of the inputs used in the model.
- Identify any significant gaps or inconsistencies in the assessment of noise impacts, the reliability of the predictions, and provide advice to the Department about the likely project impacts based on the information in the assessment documentation.
- Consider whether the proposed mitigation measures are reasonable and generally consistent with best practice.
- Consider and recommend any additional mitigation measures that could be imposed to further minimise and mitigate noise impacts, particularly in relation to operations proposed in Pit 8, and the likely benefit of such measures.

Wilkinson Murray has reviewed the project EIS and NBA inclusively. Following is a summary of relevant issues and where appropriate areas of concern are identified. Where particular issues have not been identified, Wilkinson Murray considers that these have been appropriately dealt with in the project documents and/or could be managed through appropriate conditions of approval.

1.0 CONSULTATION AND NOISE MONITORING

Consultation was undertaken with residents in the local area. At the start of the review, a community meeting was conducted at the Wollar Community Hall on Wednesday 20 April 2016. A summary of noise issues raised are presented in Table 1.

Table 1 Noise matters raised by residents

Matters raised by residents	Comment	Where are the matters addressed?
Pit 8 will increase noise levels, particularly at Wollar.	-	Section 3.7
Mine noise levels at Wollar is already dominated by Wilpinjong Coal Mine.	-	Section 3.7
Concern about noise levels at Wollar. The criteria for Wollar should be 35$L_{Aeq,15min}$, rather than the criterion of 37dBA derived through reasonable and feasible at Wollar Noise levels.	-	Section 3.7
Acquisition criteria would be 42$L_{Aeq,15min}$.	-	Section 3.7
Previous environmental assessments under predicted noise impacts.	-	Section 3.3, 3.4, 3.5 and 3.6
Rail Noise and horns audible at Wollar.	Outside the scope of this review as the Wilpinjong Extension Project does not increase rail movements.	Section 3.8
Blasting house shakes due to blasting at Wollar.	-	Section 3.9
Concern that the noise model for Wilpinjong Coal mine has not been reviewed.	-	Section 3.3
Concerns that the unattended noise monitor in Wollar represents the broader village area and that the monitoring report that was used to verify the monitoring location was not accurate.	The report "Wilpinjong Coal, Correlation Noise Monitoring, September 2014" was reviewed. WM concur with the report.	-

To appreciate the noise levels of the area, Wilkinson Murray conducted noise monitoring at Wollar (near the Community Hall) and on Wollar Road directly south of the mine on Thursday 21 April 2016 between 3:30am and 4:30am.

The results of the noise monitoring are presented in Table 2.

Table 2 Results of the noise monitoring.

Location	Start Date and Time	Total L_{Aeq} dB	L_{Ceq}-L_{Aeq}	Total L_{A90} dB	Mining Noise Level L_{Aeq} dB	Comments
Wollar Hall	3:35am – 3:52am (15minute measurement)	33.6	6.4	24.3	Less than 20	Weather conditions were cool and calm. Mine noise not inaudible.
	3:55am – 4:12am (15minute measurement)	33.3	5.0	25.3	Less than 20	
Wollar Road directly south of the mine	4:20am – 4:30am	41.2	10.0	36.7	40	Mining equipment clearly audible. Estimated to be between 1300 and 1500 metres from mining.

The measured noise levels were consistent with those reported in the NBA and previous noise monitoring reports.

2.0 SUBMISSIONS

The Department of Planning and Environment has received more than 700 public submissions. The majority of the submissions are objections. A summary of the objections raised with regard to noise is provided below:

- The noise assessment and proposed monitoring and mitigation measures are inadequate;
- Mine encroaching to within 1.5 km of Wollar – the associated noise impacts will be severe;
- Previous predictions for noise were incorrect and have resulted in more properties being impacted than identified in previous conditions of approval;
- Cumulative noise impacts from machinery operating the mine, increased rail movements from all three mines in the area and major increases in road traffic noise have never been assessed;
- Property 30 km northeast of the mine claims to experience impacts associated with blasting including noise and vibration;
- It is unacceptable that there is no proposal to mitigate increased noise levels by continuing to purchase affected properties;
- Already difficulty sleeping due to mine noise and train movements at night;
- The noise assessment monitoring and mitigation measures required of the proponent are totally inadequate to protect those living and working in the vicinity of the mine; and
- Existing noise levels are a severe intrusion to the Goulburn River National Park – noise can be expected to increase as a result of the proposal leading to more unacceptable noise levels.

3.0 REVIEW OF NOISE ASSESSMENT

Wilkinson Murray has reviewed the project EIS and NBA inclusively and the NBA considered the following relevant guidelines and NSW Government policies:

- The Department of Planning SEARS;
- EPA Industrial Noise Policy (INP);
- EPA Interim Construction Noise Guidelines (ICNG);
- EPA Assessing vibration: a technical guideline (AVTG);
- Australian and New Zealand Environment Council Technical Basis for Guidelines to Minimise Annoyance due to blasting overpressure and ground vibration (TBGMA);
- Voluntary Land Acquisition and Mitigation Policy (VLAMP);
- Rail Infrastructure Noise Guideline (RING); and
- Road Noise Policy (RNP).

The relevant guidelines and NSW Government policies used in the NBA and EIS are appropriate.

3.1 Background Noise Levels and Criteria

The NBA recommends that the same project specific noise levels as previously determined in all the project approvals, namely:

Location	$L_{Aeq(15minute)}$	$L_{Aeq(15minute)}$	$L_{Aeq(15minute)}$	$L_{Aeq(1minute)}$
	Day	Evening	Night	
Wollar Village - Residential	36	35	35	45
All other privately owned land	35	35	35	45
School	External 45 $L_{Aeq(period)}$ when in use			
Church, Hall	External 45 $L_{Aeq(period)}$ when in use			
Passive Recreation	External 50 $L_{Aeq(period)}$ when in use			

WM concurs with the project specific noise levels. The project specific noise levels are consistent with the current consent limits.

3.2 Wilpinjong Coal Mine Existing Noise Management

To prevent exceedance of the noise criteria, the proponent has developed and implemented a project specific Noise Management Plan to ensure that the existing noise limits are achieved on neighbouring properties.

A site visit to Wilpinjong Coal Mine was conducted in the afternoon of Wednesday 20 April 2016. The coal mine implements general noise management measures as part of typical operations, including:

- Coordinating shift changes on site with the shift changes of Moolarben Coal Operations Pty Ltd and UCML to minimise the potential cumulative traffic impacts (including noise impacts).
- Developing an awareness and understanding of noise issues through site inductions for all staff and contractors.

- Maintaining all machinery and plant used on site, in order to minimise noise generation.
- Operating all machinery and plant used on site in a proper and efficient manner (e.g. at correct speed) in order to minimise noise generation.
- Sound power testing of new mobile fleet, and on an annual basis, a sample of mobile equipment and fixed plant operating under dynamic conditions.
- Using the results of continuous real-time noise monitoring to assist in the implementation of pre-emptive management actions to avoid potential non-compliances.
- Communicating the previous 24 hours' noise levels to key personnel at operational and management meetings.
- Employing a dedicated person (Control Room Operator) for monitoring real-time noise levels during day and night shifts.
- Monitoring weather conditions via the on-site automated weather station (AWS) and permanent temperature tower (PTT) and where acoustically adverse conditions are experienced or predicted, operational changes are made to avoid or reduce noise impacts.

The Noise Management Plan and the mines management approach and noise monitoring reflects current best practise in noise management.

3.3 Model Validation

Operational airborne noise has been modelled using the ENM environmental noise modelling software. The factors considered in the noise modelling, as described in Sections 6 the report are in-line with best practice.

It should be noted the noise model was validated which resulted in a noise model calibration factor of minus 1.8 dB. It appears that the existing noise model has been generally consistent with the validated modelled results that have been predicted. This is demonstrated through both the attended monthly compliance monitoring and real-time monitoring and the observed need for implementation of operational stand-down of equipment at times under adverse meteorological conditions. To be conservative this adjustment has not been included for Pit 8. WM concurs with this approach, however it should be noted, there is a possibility that the noise predictions may present marginal over predictions of noise levels.

WM visited the SLR offices on Friday 3 June 2016 to conduct an audit of the noise model due to community concerns that the noise model for Wilpinjong Coal mine had not been reviewed.

The noise model was reviewed and the following items were checked:

- Sound power levels of the sources;
- Location of the sources and receivers;
- Topography of local area;
- Mine plan; and
- Noise reductions calculated for distance, barrier, ground effects, etc.

The output of the ENM noise model in the form of cross section between pit 8 and Wollar and noise attenuation is presented in Appendix A. WM considers the noise model to be very detailed and as accurate possible.

3.4 Noise Source Level Assumptions

For noise modelling to be accurate L_{Aeq} sound power levels (SWLs) should be sourced from field measurements conducted in accordance with a recognised dynamic testing method (eg ISO 6395). For this project this appears to have been done. Additionally, where the measured L_{Aeq} SWL corresponded to the full load of the equipment an allowance was made to cater for the varying SWL output of the source due to varying load. Where site specific measured SWLs was not available, the SWLs were sourced from SLR's SWL database. WM considers that the SWLs used for the noise model are appropriate.

3.5 Low Frequency Noise

The NSW Industrial Noise Policy (INP) (EPA, 2000) recommends that noise sources containing excessive low-frequency content be subject to a 'modifying factor' adjustment of +5 dB to account for the greater annoyance of such noise sources compared with other sources at the same noise level. The INP describes a simple method for identifying an unbalanced spectrum as providing evidence of excessive low frequency noise. The basis for this 'rule-of-thumb' is that a differential of 15 dB or more between the C – weighted sound pressure level and the A – weighted sound pressure level can be used to identify excessive levels of low frequency noise. However this 'rule-of-thumb' has only ever had moderate success as a screening tool and has been generally only been used for assessing locomotives when measured at 15 metres.

The $L_{Ceq} - L_{Aeq}$ method described in the INP suffers from two major failings, being:

1. Over distance, higher frequencies are differentially attenuated at a greater rate than lower frequencies. This means that even a balanced broadband generated noise will generally exceed a $L_{Ceq} - L_{Aeq}$ level of 15 dB at any distances of more than about 2.5 km.

2. Where noise levels are low, much of the low frequency noise spectrum may be below the threshold of hearing. The inclusion of inaudible noise in an assessment of annoyance is therefore not appropriate and may result in false positive identification of low frequency noise impacts.

These limitations are widely known and have been discussed in detail by Leventhal (2003) "A review of Published Research on Low Frequency Noise and its Effects", and Broner, (2010) "A simple criterion for low frequency noise emission assessment".

The EPA has acknowledged the shortcomings of the INP low frequency method in returning perverse outcomes for receivers located at large distances from the noise source, and has proposed a more contemporary approach in the draft Industrial Noise Guideline (dING). The proposed method is underpinned by scientific studies and is generally accepted as contemporary practice.

The NBA presents a detailed discussion of low frequency noise and presents previous noise monitoring resulted at receiver 900 (St Laurence O'Toole Catholic Church) that shows a mean difference of 13 dB between the (mine-contributed) mean intrusive $L_{Aeq(15minute)}$ noise level 33 dBA and the mean $L_{Ceq(15minute)}$ noise level of 46 dBC (i.e. below the INP's low frequency modifying threshold of 15 dB). As such it was concluded in the NBA that noise emissions from the existing mining operation does not contain "dominant low frequency content" in accordance with the INP's assessment procedures.

The low frequency noise assessment conducted in the NBA and its conclusion would probably be considered best practise, however, it is considered that low frequency noise when Pit 8 is operational is a possible risk of the project therefore it is considered that the new approval, if it were to be approved, be changed to use the assessment methodology proposed in the dING.

3.6 Noise Modelling Meteorological

A detailed assessment of meteorological conditions that can enhance noise levels was conducted in accordance with the INP. The data available for the assessment was quite detailed as there is a permanent temperature tower and an automated weather station on site. The resulting INP assessable meteorological noise modelling parameters used for the noise modelling presented in the NBA are presented below in Table 3

Table 3 Meteorological parameters used in noise model

Period	Meteorological Parameter	Air Temperature	Relative Humidity	Wind Speed and Direction	Temperature Gradient
Daytime	Calm	20°C	50%	0 m/s	0°C/100 m
	Autumn Wind 30% (occurrence)	19°C	55%	E 3 m/s	0°C/100 m
Evening	Calm	19°C	56%	0 m/s	0°C/100 m
	Autumn Wind 30% (occurrence)	18°C	63%	ESE 3 m/s	0°C/100 m
	Winter Wind 30% (occurrence)	10°C	71%	WNW, NW 3 m/s	0°C/100 m
Night-time	Calm	14°C	76%	0 m/s	0°C/100 m
	Summer Wind > 30% (occurrence)	19°C	68%	ESE, SE, E 3 m/s	0°C/100 m
	Strong Inversion (10% exceedance)	6°C	86%	0 m/s	5.2°C/100 m

Note: Winter evening and night-time has the same calculated temperature gradient of 5.2°C/100 m. Consistent with the INP this does not get assessment.

WM concurs with the derived INP assessable meteorological noise modelling parameters. The meteorological condition will be discussed in more detail with the noise prediction results.

3.7 Noise Modelling Predictions

The following scenarios were modelled to present the noise impacts:

- 2018 - representative of single fleet operations in the far north of Pit 8, in combination with single fleet operations in Pits 1, 3, 4, 6 and 7;
- 2020 - representative of single fleet operations in the north of Pit 8, in combination with single fleet operations in Pits 2, 3, 5, 6 and 7;
- 2024 - representative of two fleets operating in central Pit 8, in combination with single fleet operations in Pit 3 and Pit 5 (far south) and two fleets operating in Pit 6;

- 2028 - representative of single fleet operations in southern Pit 8, in combination with single fleet operations in Pit 4 and two fleets operating in Pit 6; and
- 2031 - representative of single fleet operations in the far south of Pit 8, in combination with two fleets operating in Pit 6.

The preliminary modelling indicated that, in the absence of additional noise mitigation measures, Project intrusive noise levels at privately owned receivers in Wollar village could range between approximately 34 dBA and 42 dBA under the applicable adverse weather conditions. The NBA presents that there are approximately 8 residences that may exceed the project specific noise criteria, namely:

- 903 Hardiman & Hogan;
- 908 Lynch;
- 914 Nicod;
- 921 Toombs;
- 933 Faulkner;
- 942 Schneider;
- 952 O'Hara; and
- 102 Filipczyk.

All but receiver 102 Filipczyk are located in Wollar.

The unmitigated intrusive ($L_{Aeq(15minute)}$) levels for the 2018, 2020, 2024 and 2028 operating scenarios under the applicable adverse evening 3 m/s winds together with the proposed reasonable and feasible noise mitigation are presented in Table 4 for Wollar village.

Table 4 Reasonably Achievable Intrusive $L_{Aeq(15minute)}$ Noise Levels

Wollar Village	2018			2020			2024			2028		
Dwelling No	942	914	1_953	942	914	1_953	942	914	1_953	942	914	1_953
Unmitigated	39	37	38	38	37	40	41	42	40	38	37	36
Selected Example Mitigation Scenario	Shutdown Pit 8 one mobile fleet as required			Shutdown Pit 8 drills and 2 CAT 789 trucks as required			Attenuate Pit 8 coal and waste fleets Plus Shutdown Pit 8 satellite ROM FEL as required and dozer push, if running			Shutdown Pit 8 2 CAT 789 trucks as required		
Mitigation Scenario Noise Reduction	-2	-1	-3	-1	-2	-3	-4	-5	-5	-1	-1	-0
Reasonably Achievable Noise Level	37	36	35	37	35	37	37	37	35	37	36	36

Note 1: Representative receivers (private dwellings at the time of assessment): 942 - Schneider (central Wollar village), 914 - Nicod (southern Wollar village), 1_953 - Marshall & Muller (northern Wollar village).
Note 2: Predicted $L_{Aeq(15minute)}$ noise level complies with the intrusive PSNL 35 dBA.
Note 3: Predicted negligible noise exceedance 1 to 2 dBA above intrusive PSNL 35 dBA in accordance with the VLAMP.
Note 4: Predicted moderate noise exceedance 3 to 5 dBA above intrusive PSNL 35 dBA in accordance with the VLAMP.
Note 5: Predicted significant noise exceedance >5 dBA above intrusive PSNL 35 dBA in accordance with the VLAMP.

The EIS presented a range of potential noise mitigation options with their estimated capital and operating costs. It was estimated that the proposed reasonable and feasible mitigation proposed for an approximate 5 dB reduction would have a capital and operational cost of $14M over the life of the project. Where a reduction of 7 dB would have an estimated capital and operational cost of $56M.

The EIS does not consider the possibility for the properties impacted by noise to be purchased under the Voluntary Land Acquisition and Mitigation Policy as a reasonable and feasible noise mitigation option. Presumably this is because WCPL has previously committed to maintaining operational noise levels in the village of Wollar to project specific noise levels because of likely social impacts. However purely from a financial point of view the acquisition of houses is likely to be the lowest cost. Taking this into consideration the proposed feasible 5dB noise mitigation at a cost of $14M could be considered reasonable.

With the proposed reasonable and feasible noise mitigation, a further analysis of the noise predictions indicate that there are only significant exceedances of the noise criteria at Wollar in the evening (See Table 5).

Table 5 Daytime, Evening and Night time Intrusive $L_{Aeq(15minute)}$ Noise Levels

Predicted Daytime Noise levels at Wollar

ID No and Landholder	Year 2018		Year 2020		Year 2024		Year 2028		Year 2031		PSNL Consented Noise Limit	
	Calm	Wind	Calm	Wind	Calm	Wind	Calm	Wind	Calm	Wind		
Privately Owned Receivers (East and South-east)												
153 Marskell	13	11	13	11	10	8	15	13	14	12	35	35
903 Hardiman & Hogan	20	17	21	19	21	19	23	20	21	17	36	36
908 Lynch	18	16	20	17	20	18	22	18	18	15		
914 Nicod	18	15	20	17	20	17	21	18	18	14		
921 Toombs	19	16	20	18	20	18	22	18	18	14		
933 Faulkner	19	16	20	18	20	18	21	18	18	14		
942 Schneider	19	16	21	18	21	18	22	18	18	14		
952 O'Hara	20	17	22	19	23	20	22	19	18	14		

Predicted Evening Noise levels at Wollar

Privately Owned Receivers (East and South-east)												
153 Marskell	11	31	12	31	10	30	14	33	14	31	35	35
903 Hardiman & Hogan	17	35	19	34	17	34	22	36	21	35		
908 Lynch	16	34	17	34	16	37	21	35	19	34		
914 Nicod	16	36	17	35	16	37	21	36	18	35		
921 Toombs	16	36	17	36	16	37	21	37	18	36		
933 Faulkner	16	37	17	36	16	36	21	37	18	36		
942 Schneider	16	37	18	37	17	37	21	37	18	36		
952 O'Hara	17	35	18	36	18	35	22	36	18	35		

Predicted Night time Noise levels at Wollar

Privately Owned Receivers (East and South-east)												
153 Marskell	12	30	13	31	10	30	14	33	15	31	35	35
903 Hardiman & Hogan	18	34	19	33	18	33	23	34	21	34		
908 Lynch	16	32	17	32	16	31	22	33	19	32		
914 Nicod	16	32	17	33	16	32	21	33	19	32		
921 Toombs	16	35	18	35	17	35	22	35	18	34		
933 Faulkner	17	35	18	35	17	35	21	35	18	34		
942 Schneider	17	35	18	36	17	35	22	35	18	35		
952 O'Hara	17	34	19	35	18	34	22	34	19	34		

The reason for the evening exceedances appears to be north westerly winds which are predominant in winter evenings only.

No exceedance of the current consent limits of 35 dBA (or the consented noise limits) are predicted at any privately owned receivers during the night-time in 2018, 2020, 2024, 2028 or 2031 except for a negligible exceedance (1 dBA) at receiver 942 Schneider (2020).

A marginal exceedance (3 dBA) at receiver 102 Filipczyk (2028) is also predicted.

Consistent with the INP that all reasonable and feasible noise mitigation has been provided for the project and because the night time period is the most sensitive time where noise impacts occur it is recommended for Wollar Village that the noise limits be changed for day and evening to 37 $L_{Aeq(15minute)}$ and that the night time limit remain at 35 $L_{Aeq(15minute)}$.

An additional noise limit of 38 $L_{Aeq(15minute)}$ for day, evening and night time be included in the consent for receiver 102 Filipczyk. In accordance with VLAMP, as the PSNL of this property is exceeded by 3-5dB, it would be classified as being in the Noise Affectation Zone. Therefore the proponent would be required to provide mechanical ventilation/comfort condition systems to enable windows to be closed without compromising internal air quality/amenity.

The consent limits for "all other privately owned land", school and church should remain the same as the current consent.

As the EIS suggests that the passive recreation criterion can be achieved at the Goulburn River National Park and Munghorn Gap Nature Reserve it is recommended that the passive recreation noise limit be deleted from the current consent.

A summary of the recommended noise limits is presented in Table 6.

Table 6 Recommended Noise Limits

Location	$L_{Aeq(15minute)}$	$L_{Aeq(15minute)}$	$L_{Aeq(15minute)}$	$L_{Aeq(1minute)}$
	Day	**Evening**	**Night**	
Wollar Village – Residential 903 Hardiman & Hogan; 908 Lynch; 914 Nicod; 921 Toombs; 933 Faulkner; 942 Schneider; and 952 O'Hara.	37	37	35	45
102 Filipczyk*	38	38	38	48
All other privately owned land	35	35	35	45
School	External 45 $L_{Aeq(period)}$ when in use			
Church, Hall	External 45 $L_{Aeq(period)}$ when in use			

* Noise Affectation Zone.

3.8 Rail Noise

The Project does not involve any change to currently approved rail movements or rail loading hours at the Wilpinjong Coal Mine and therefore there are no rail related noise level increases at the nearest privately owned receivers in the vicinity of the Project. WM concurs with the conclusions of the rail noise assessment.

3.9 Blasting

Blast emissions were predicted at the nearest privately owned receivers, community facilities and historical heritage sites from the Project extension. Based on an upper overburden MIC 3,900 kg, the relevant human comfort and building damage ground vibration and airblast criteria were predicted to not be exceeded at any privately owned receivers, community facilities or historical heritage sites in the project area. WM concurs with the conclusions of the blasting assessment.

3.10 Traffic Noise

A traffic noise assessment was conducted as part of the noise assessment. It was concluded that the relative increase in traffic noise arising from the Project in 2024 in comparison to that forecast without the Project is predicted to be less than 2 dBA which, in accordance with the RNP and represents a minor impact that is considered barely perceptible. WM concurs with the conclusions of the traffic noise assessment.

4.0 CONCLUSION

A review of the Wilpinjong Extension Project Environmental Impact Assessment was conducted by Wilkinson Murray. The general methodology for the noise and blasting assessment was appropriate.

WM recommends that:

- WCPL should be required to provide further justification why the residual 2dB noise impact estimated at Wollar once the proposed reasonable and feasible noise mitigation is incorporated could not be managed through proactive noise management.
- The assessment methodology for low frequency noise assessment proposed in the dING be incorporated in the Approval if the project were to be approved.

I trust this information is sufficient. Please contact us if you have any further queries.

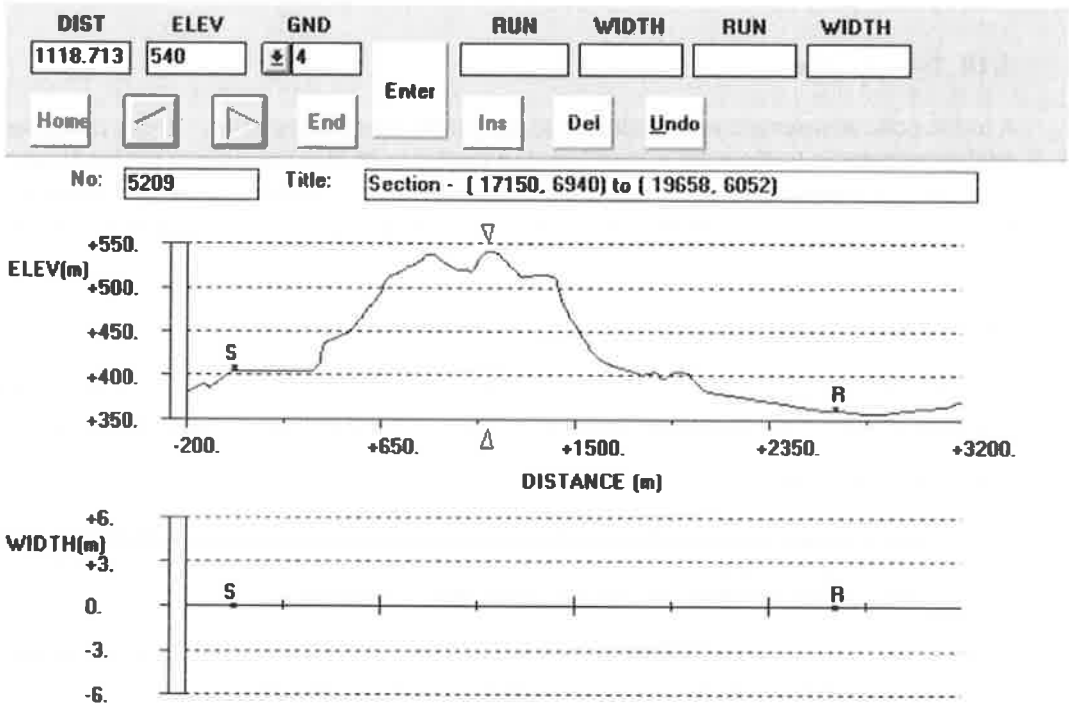
Yours faithfully
WILKINSON MURRAY

John Wassermann
Director

APPENDIX A – Output of ENM noise model

Section:

Dozer – D11 (Pit 8) to Receiver 942 (Wollar)



Night – Calm

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SOURCE  :    349
 Pit 8 - Coal (D11) - RL404m
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	FREQUENCY Hz									
	31.5	63	125	250	500	1k	2k	4k	8k	16k
POWER LEVEL	113.1	116.5	120.4	120.4	123.0	118.8	118.9	114.1	113.0	.0
DIRECTIVITY	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
DISTANCE	79.5	79.5	79.5	79.5	79.5	79.5	79.5	79.5	79.5	79.5
BARRIER	18.4	21.4	24.4	25.0	25.0	25.0	25.0	25.0	25.0	25.0
AIR ABSORPTION	.1	.2	.9	2.7	6.2	11.0	20.6	47.0	145.0	300.0
TEMP & WIND	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
GROUND	4.3	-2.9	-.7	-.5	-1.0	-.5	-2.1	-1.8	-2.4	-2.1
TOTAL AWT 12.5	10.8	18.3	16.4	13.7	13.3	3.8	-4.1	-35.6	-100.0	-100.0

Night – Easterly Wind

Pit 8 - Coal (D11) - RL404m

	FREQUENCY Hz									
	31.5	63	125	250	500	1k	2k	4k	8k	16k
POWER LEVEL	113.1	116.5	120.4	120.4	123.0	118.8	118.9	114.1	113.0	.0
DIRECTIVITY	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
DISTANCE	79.5	79.5	79.5	79.5	79.5	79.5	79.5	79.5	79.5	79.5
BARRIER	17.9	20.9	23.9	25.0	25.0	25.0	25.0	25.0	25.0	25.0
AIR ABSORPTION	.1	.2	.8	2.7	7.0	13.2	23.0	47.0	133.8	300.0
TEMP & WIND	3.2	4.2	6.2	4.2	2.2	4.0	6.9	7.6	7.6	7.6
GROUND	4.3	-2.9	-.7	-.5	-1.0	-.5	-2.1	-1.8	-2.4	-2.1
TOTAL AWT 8.6	8.1	14.6	10.8	9.5	10.3	-2.4	-13.4	-43.1	-100.0	-100.0

Night – Inversion – 5.2 DegreeC/100m

SOURCE : 349
Pit 8 - Coal (D11) - RL404m

	FREQUENCY Hz									
	31.5	63	125	250	500	1k	2k	4k	8k	16k
POWER LEVEL	113.1	116.5	120.4	120.4	123.0	118.8	118.9	114.1	113.0	.0
DIRECTIVITY	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
DISTANCE	79.5	79.5	79.5	79.5	79.5	79.5	79.5	79.5	79.5	79.5
BARRIER	15.1	18.1	21.1	24.1	25.0	25.0	25.0	25.0	25.0	25.0
AIR ABSORPTION	.1	.3	.9	2.4	4.7	8.8	20.0	54.5	183.0	300.0
TEMP & WIND	-2.0	-2.2	-1.4	-.2	-5.0	-4.6	-1.9	-.1	-.2	-.2
GROUND	4.3	-2.9	-.7	-.5	-1.0	-.5	-2.1	-1.8	-2.4	-2.1
TOTAL AWT 18.3	16.1	23.7	21.0	15.1	19.8	10.7	-1.6	-43.0	-100.0	-100.0

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22 July 2016

NSW Department of Planning and Environment
22 – 33 Bridge Street
Sydney NSW 2001

Attention: Mike Young
Director, Resource Assessments

Dear Mike,

RE: WILPINJONG EXTENSION PROJECT (SSD 6764) – NOISE PEER REVIEW – STAGE 1

The report entitled *Noise/Vibration Assessment - Wilpinjong Extension Project - Independent Review* (the Independent Review) (Wilkinson Murray, June 2016) was provided to Wilpinjong Coal Pty Ltd (WCPL) for consideration. Wilkinson Murray generally agrees with the findings of the Wilpinjong Extension Project Noise and Blasting Assessment completed by SLR Consulting.

In summary, Wilkinson Murray states:

> *The relevant guidelines and NSW Government policies used in the NBA and EIS are appropriate.*
>
> ...
>
> *The Noise Management Plan and the mines management approach and noise monitoring reflects current best practise in noise management.*
>
> ...
>
> *WM considers the noise model to be very detailed and as accurate possible.*
>
> ...
>
> *WM considers that the SWLs used for the noise model are appropriate.*
>
> ...
>
> *WM concurs with the derived INP assessable meteorological noise modeling parameters.*
>
> ...
>
> *Taking this into consideration the proposed feasible 5dB noise mitigation at a cost of $14M could be considered reasonable.*
>
> ...
>
> *As the EIS suggests that the passive recreation criterion can be achieved at the Goulburn River National Park and Munghorn Gap Nature Reserve it is recommended that the passive recreation noise limit be deleted from the current consent.*
>
> ...
>
> *WM concurs with the conclusions of the rail noise assessment.*
>
> ...
>
> *WM concurs with the conclusions of the blasting assessment.*
>
> ...
>
> *WM concurs with the conclusions of the traffic noise assessment.*

Low Frequency Noise

Wilkinson Murray note that the assessment of low frequency noise conducted in the Wilpinjong Extension Project Noise and Blasting Assessment would be considered best practice under the current guidelines.

However, Wilkinson Murray suggests that the Wilpinjong Extension Project (the Project), if approved, should be assessed against the methodology proposed in the *Draft Industrial Noise Guideline* (dING) (Environment Protection Authority [EPA], 2015).

It is also noted that in the EPA's response to the Wilpinjong Extension Project Response to Submissions (dated 10 June 2016), the EPA references the release of the dING and indicates it would condition the Project with respect to low frequency noise modifying factors in accordance with the NSW *Industrial Noise Policy* (INP) (EPA, 2000), or government policy that supersedes the INP:

> *If the Project is approved, the EPA intends to set the predicted noise levels as licence limits and to include, as usual, that the modification factors for annoying noise characteristics, including major low frequency content, must be applied, as appropriate, to measured noise levels from the mine, in accordance with the INP or government policy that supersedes the INP.*

Given the dING was made available by the EPA for public exhibition and comment between 21 September 2015 and 13 November 2015 prior to its finalisation, WCPL anticipates that the finalisation of the dING by the NSW Government is imminent.

WCPL supports an approach consistent with Wilkinson Murray's recommendation on this matter that recognises that the known limitations with the INP methodology would be resolved by conditioning new projects in accordance with the dING (or the finalised version of the *Industrial Noise Guideline*, if consistent with the low frequency provisions of the dING).

In consideration of this advice, WCPL has commissioned SLR Consulting to re-evaluate the 2012 low frequency noise monitoring data presented in the Wilpinjong Extension Project Response to Submissions against the dING. A letter from SLR summarising the outcomes of this analysis is provided as Attachment 1.

The dING analysis conducted by SLR Consulting supports the assessment in the Environmental Impact Statement (EIS) that the noise generated by the Wilpinjong Coal Mine does not contain dominant low frequency noise content.

Noise Limits in the Village of Wollar

One aspect where Wilkinson Murray suggests a different outcome to the Project EIS is Wilkinson Murray recommends a potential *night-time* noise limit in the Village of Wollar of 35 dBA for all privately-owned receivers as opposed to the maximum of 37 dBA for evening and night-time noise as proposed in the EIS.

While this may be a valid consideration based on the INP, in practice, under adverse weather conditions, achieving 35 dBA in the Village of Wollar during the night-time would require significant additional noise mitigation. This is because adverse noise-enhancing wind conditions also occur during the night-time period. However, the frequencies of these weather conditions are below the level requiring assessment under the INP (i.e. 30% for the period and season). This is illustrated by Attachment A of Appendix E of the Wilpinjong Extension Project Noise and Blasting Assessment (SLR, 2015) (extract provided as Attachment 2 of this letter) that highlights the prevalence of adverse north-westerly winds at night-time in Winter is below the INP assessment threshold, but remains prevalent (i.e. at a frequency of 29.0%).

WCPL is therefore concerned that there would be no recognition in the Development Consent for weather conditions that occur at night that do not meet the assessable thresholds under the INP, but would otherwise fall within applicable meteorological conditions under the Development Consent.

In practice, WCPL will be required to continue real-time monitoring to achieve compliance with Development Consent noise limits under INP non-assessable meteorological conditions that will occur for significant periods of the night-time. If a 35 dBA noise limit in Wollar Village was imposed in the night-time period and 37 dBA in the evening, WCPL would have to implement *additional* noise mitigation to achieve 35 dBA at night-time (i.e. at a cost greater than the $14 million estimated in the EIS).

The substantial additional expenditure required to achieve maximum noise levels of 35 dBA would be unreasonable *during both the evening and the night.* Particularly given the level of predicted noise exceedances would be negligible, in accordance with the NSW Government (2014) *Voluntary Land Acquisition and Mitigation Policy For State Significant Mining, Petroleum and Extractive Industry Developments* (the VLAMP).

It is noted based on the EPA's submission on the EIS dated 10 March 2016, the EPA does not disagree with the assessment of feasible and reasonable mitigation measures as presented in the EIS. In addition the Independent Review also agrees that up to 5 dBA noise mitigation at a cost of some $14 million could be considered reasonable.

It follows that significant additional costs and potential impacts on mine production associated with the implementation of additional proactive noise management and noise mitigation to that considered reasonable by WCPL (i.e. to achieve a maximum of 37 dBA) to achieve an alternative maximum of 35 dBA in the Village of Wollar (as raised in the Independent Review recommendations), would not be reasonable. The estimated cost of achieving a 35 dBA limit in the Village of Wollar has already been articulated in the EIS as approximately $56 million.

Characterisation of Receiver 102 (Filipczyk)

WCPL notes that in Table 6 of the Independent Review, Wilkinson Murray characterises receiver 102 (Filipczyk) as being in the Noise Affectation Zone for the Project. In accordance with the VLAMP, receiver 102 would be subject to mitigation upon request. As no acquisition rights would apply based on the VLAMP, WCPL would characterise this receiver as being in the Noise Management Zone for the Project, not the Noise Affectation Zone.

Implications of Recent Changes to Land Ownership

Since the analysis of reasonable and feasible mitigation measures for the Village of Wollar was conducted for the EIS, WCPL has continued to consult with the remaining private landholders in the Village of Wollar. The majority of the remaining private landholders have now indicated that they would elect to sell their properties to WCPL and have/take the opportunity to move on.

As a result, since submission of the EIS, WCPL has purchased two additional residences in the Village of Wollar (i.e. 921 Toombs and 952 O'Hara), and is currently working through the sale/contractual process with a number of other remaining private landowners.

It is understood from recent discussions with the EPA and the Department that if these other land purchases also proceed as expected, the proposed noise mitigation that was considered to be reasonable at the time of submission of the EIS (i.e. on the basis of seven private residences remaining in the Village of Wollar) may require re-evaluation in light of a revised number of relevant private residences in the Village.

This is consistent with the Independent Review, which states (Wilkinson Murray, 2016):

> *The EIS does not consider the possibility for the properties impacted by noise to be purchased under the Voluntary Land Acquisition and Mitigation Policy as a reasonable and feasible noise mitigation option. Presumably this is because WCPL has previously committed to maintaining operational noise levels in the village of Wollar to project specific noise levels because of likely social impacts. However purely from a financial point of view the acquisition of houses is likely to be the lowest cost.*

WCPL is of the opinion that as the number of private residences in the Village of Wollar decreases, the cost of noise mitigation that would be required to achieve 35 dBA at the remaining private residences becomes more unreasonable.

WCPL is also of the opinion that it would not be reasonable for WCPL to apply in the order of $14 million of noise mitigation to achieve a maximum noise level of 37 dBA in the Village of Wollar, if the remaining number of relevant receivers at Project determination is, for example, only two private residences.

Particularly as some of the residents who advised WCPL they are not currently interested in selling also advised the company on more than one occasion that they are not sensitive to operational noise.

If only a few private residences remain at determination, the NSW government agencies with the key responsibility for regulating operational noise (i.e. EPA and the Department) may decide that it would not be reasonable to require WCPL to expend $ millions to achieve up to a 5 dBA noise reduction in the Village of Wollar.

If this is the case, WCPL would also accept an alternative outcome where the operational noise limits for private residences in the Village of Wollar are conditioned consistent with the *maximum* evening/night-time *unmitigated* noise prediction (i.e. 42 dBA), and all remaining private residence landowners in the Village of Wollar correspondingly afforded acquisition upon request rights under the Development Consent.

Please do not hesitate to contact me on (02) 6370 2528 if you would like to discuss.

Yours sincerely,

Ian Flood
Manager Project Development & Approvals
Wilpinjong Coal Mine
Peabody Energy Australia Pty Ltd

Attachment 1

Low Frequency Noise Assessment of 2012 Noise Monitoring Data in Accordance with the dING

SLR
global environmental solutions

21 June 2016

610 10806 00700 WCM LFN 2012 20160621.docx

Wilpinjong Coal Pty Ltd
C/- Resource Strategies Pty Ltd
PO Box 1842
MILTON QLD 4064

Attention: Mr Ian Flood

Response to the Environment Protection Authority (EPA) Draft Industrial Noise Guideline (DING) Low Frequency Noise (LFN) Analysis

Dear Ian

I refer the Wilpinjong Extension Project Response to Submissions (RTS) dated May 2016 (Part A Section 2.1 Noise) and the EPA's subsequent response dated 10 June 2016 (Noise) that indicates the EPA would condition the Wilpinjong Extension Project with respect to LFN modifying factors in accordance with the DING.

Given SLR has previously collected full spectrum noise measurements that could be compared to the DING, as requested, the following summarises supplementary LFN analysis carried out in accordance with Section 3.3 of the DING on the 2 week unattended noise monitoring data collected at Wollar village in December 2012.

Table 1 from the RTS (Part A Section 2.1 Noise) is reproduced below as Table 1A, with additional results of the outcomes of LFN analysis by comparison with Tables C1 and C2 of the DING.

Table 1A
Measured "C minus A" Noise Levels and Compliance Assessment against the DING[1]

Day and Date (2012)	Logmean $L_{Aeq(15minute)}$	Logmean $L_{Ceq(15minute)}$	Difference	Complies with DING Table C1	Complies with DING Table C2
Tuesday 04-Dec	32 dBA	46 dBC	14.3 dB	Yes	Yes
Thursday 06-Dec	34 dBA	46 dBC	11.6 dB	Yes	Yes
Sunday 09-Dec	35 dBA	47 dBC	12.3 dB	Yes	Yes
Friday 14-Dec	34 dBA	46 dBC	12.4 dB	Yes	Yes
Saturday 15-Dec	32 dBA	45 dBC	12.8 dB	Yes	Yes
Sunday 16-Dec	34 dBA	48 dBC	13.8 dB	Yes	Yes
Monday 17-Dec	32 dBA	41 dBC	9.7 dB	Yes	Yes
Overall	**33 dBA**	**46 dBC**	**12.6 dB**	**Yes**	**Yes**

1 dB re 20 micropascals (μPa) between 0000 hrs and 0500 hrs.

Also attached are graphical outputs of the measured Z weighted noise levels for comparison against the EPA's modified DEFRA criteria (Table C2 of the DING).

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(PO Box 176 Lane Cove NSW 1595 Australia) T: +61 2 9427 8100 F: +61 2 9427 8200
E: sydney@slrconsulting.com www.slrconsulting.com
ABN 29 001 584 612

As discussed in the RTS, of the 147 15 minute individual measurements analysed under the adverse temperature inversion conditions, some 18% (26) of the periods illustrated a difference between dBC and dBA of greater than 15 dB. Half of these periods however coincided with A-weighted monitoring results of less than 30dBA. Only some 9% of the results (i.e. some 13 from 147) recorded a difference between dBC and dBA of greater than 15 dB (i.e. range 15.5 dB to 18.8 dB) and also coincided with A-weighted monitoring results above 30 dBA.

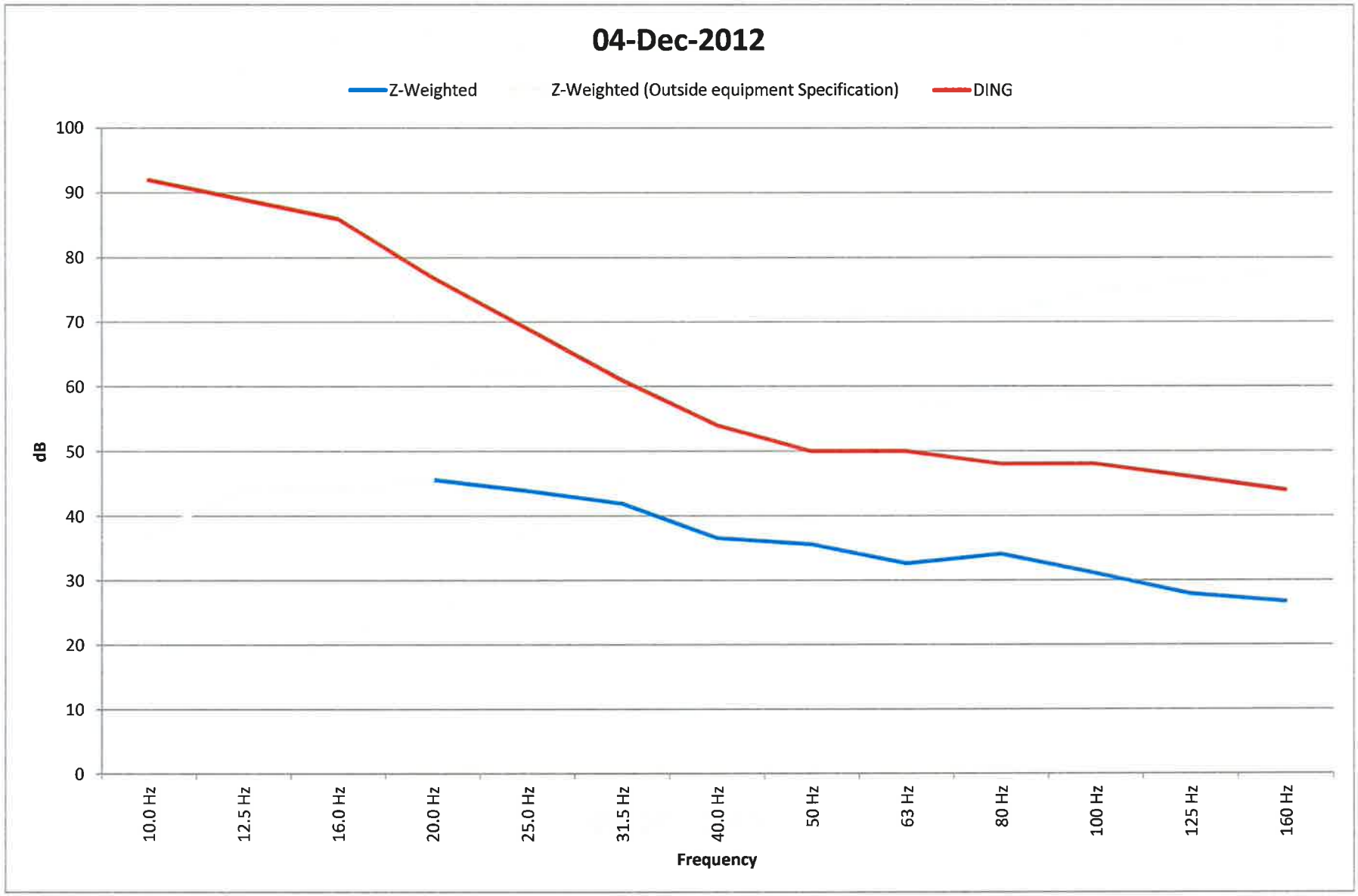
The same 147 15 minute individual measurements have been further analysed in accordance with Tables C1 and C2 of the DING. Some 146 (out of the 147) comply with Table C2 of the DING. One individual 15 minute measurement at 1am on 16 December 2012 exceeded the Table C2 1/3 octave band criterion of 46 dBZ (@ 125Hz) by a marginal 1.7 dB. However in this 15 minute period, the overall A weighted noise level was 37.0 dBA and the corresponding overall C weighted noise level was 50.9 dBC (i.e. a difference of 13.9 dB) and therefore this noise level is not assessable for LFN in accordance with Table C1 of the DING.

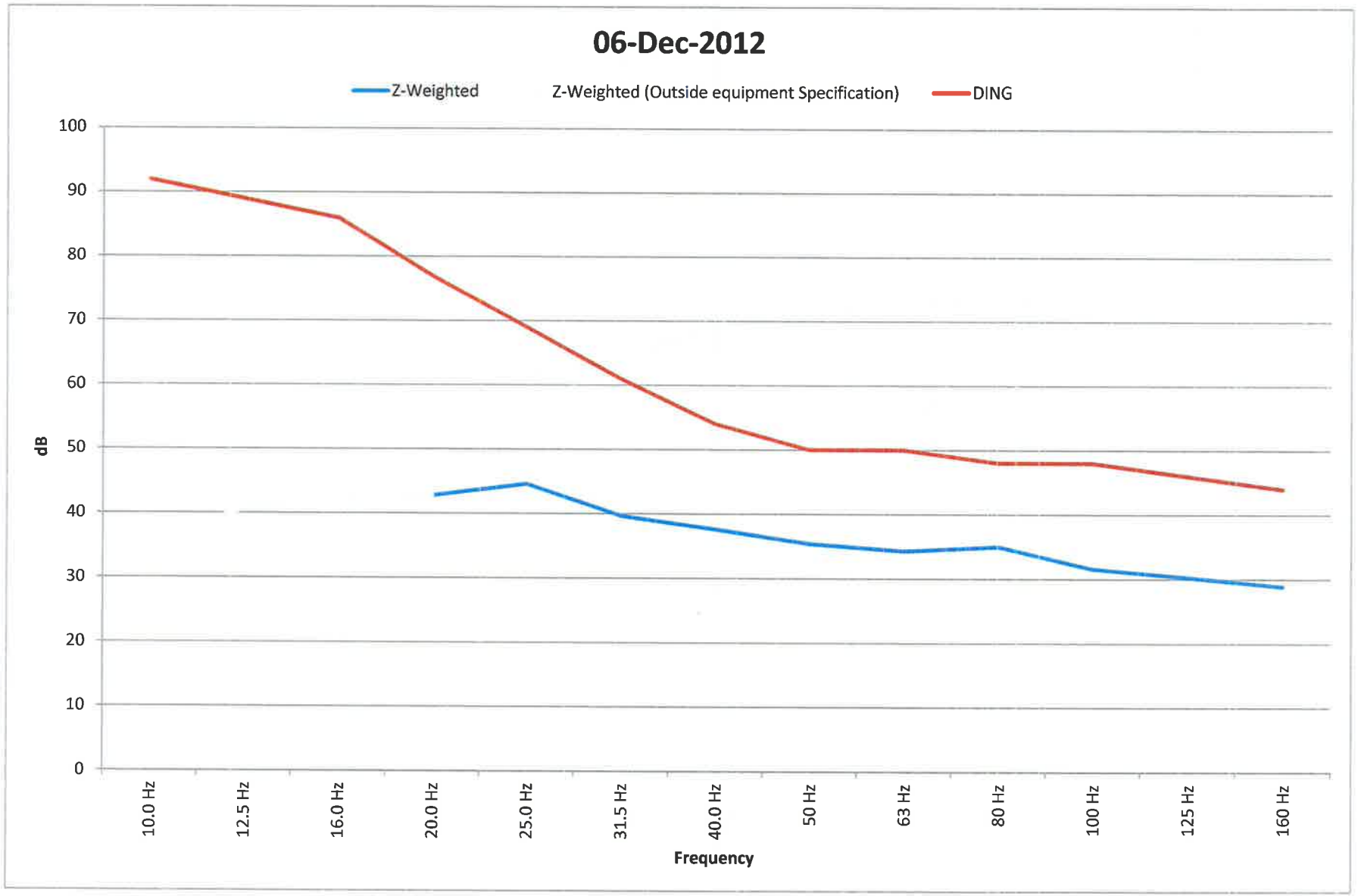
This supplementary LFN noise analysis of the 2 week unattended noise monitoring data collected at Wollar village in December 2012 is considered conservative (i.e. assumes that all filtered intrusive noise levels generated over the selected analysis period coinciding with temperature inversions is likely to have been solely mine-contributed or at least significantly mine-contributed) and provides confirmation that the current Wilpinjong Coal Mine's noise emissions do not contain "dominant low frequency content" in accordance with Tables C1 and C2 of the DING.

Yours sincerely

GLENN THOMAS
Director

Checked/
Authorised by: MB


04-Dec-2012
Z-Weighted
Z-Weighted (Outside equipment Specification)
DING
100
90
80
70
60
50
40
30
20
10
0
dB
10.0 Hz
12.5 Hz
16.0 Hz
20.0 Hz
25.0 Hz
31.5 Hz
40.0 Hz
50 Hz
63 Hz
80 Hz
100 Hz
125 Hz
160 Hz
Frequency


06-Dec-2012
Z-Weighted
Z-Weighted (Outside equipment Specification)
DING
100
90
80
70
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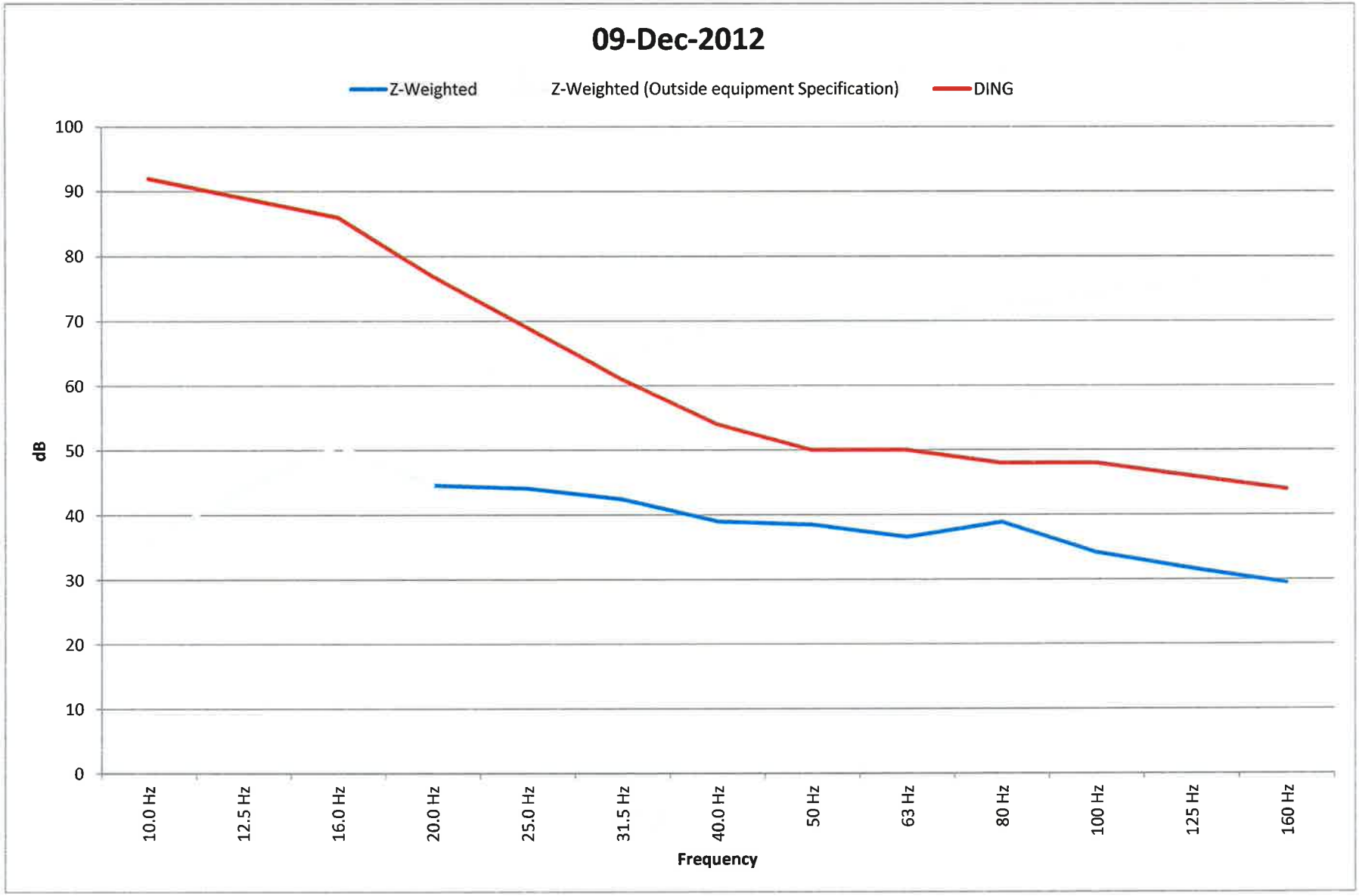
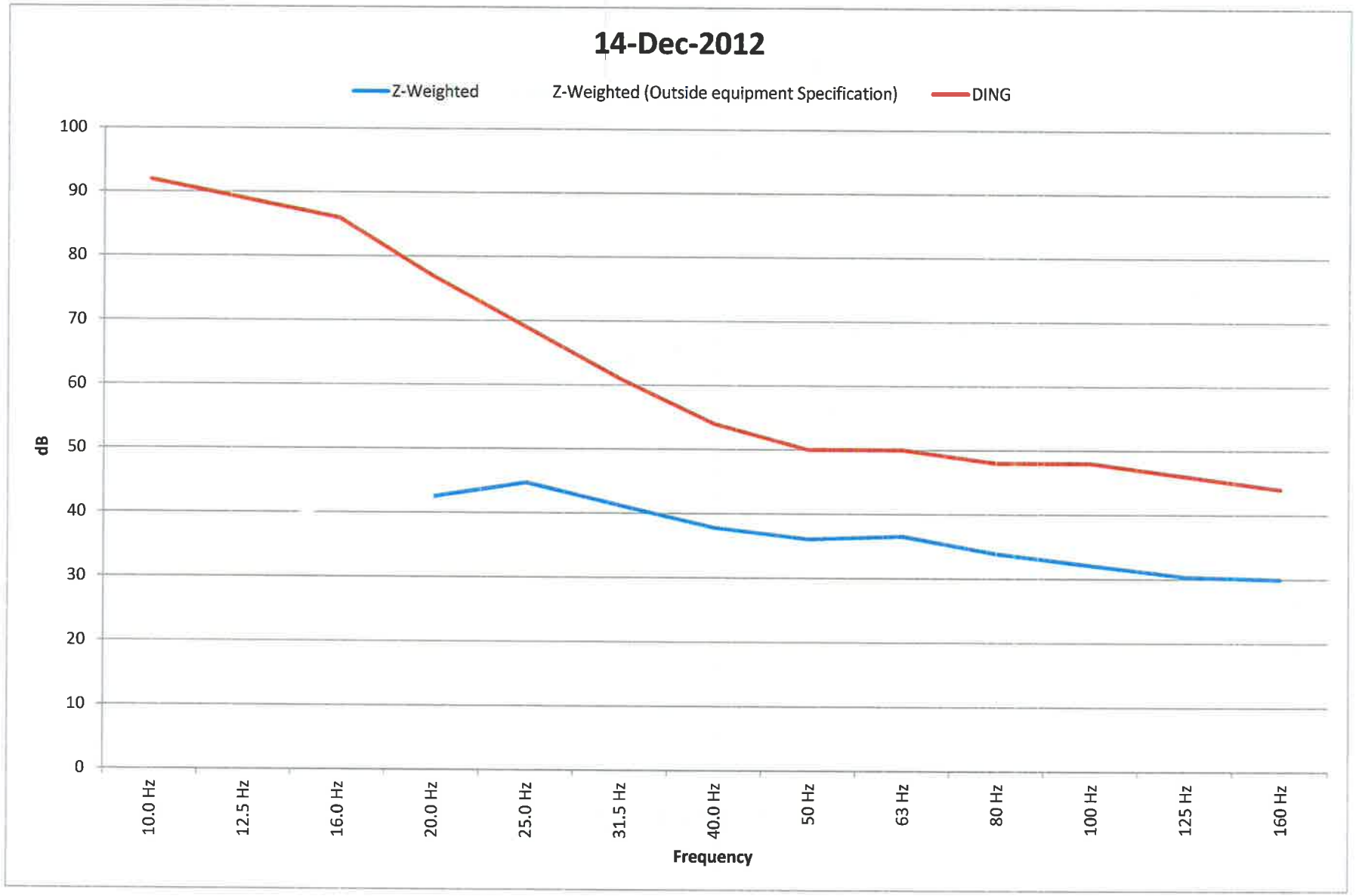
50
40
30
20
10
0
dB
10.0 Hz
12.5 Hz
16.0 Hz
20.0 Hz
25.0 Hz
31.5 Hz
40.0 Hz
50 Hz
63 Hz
80 Hz
100 Hz
125 Hz
160 Hz
Frequency


09-Dec-2012
Z-Weighted
Z-Weighted (Outside equipment Specification)
DING
100
90
80
70
60
50
40
30
20
10
0
dB
10.0 Hz
12.5 Hz
16.0 Hz
20.0 Hz
25.0 Hz
31.5 Hz
40.0 Hz
50 Hz
63 Hz
80 Hz
100 Hz
125 Hz
160 Hz
Frequency


14-Dec-2012
Z-Weighted
Z-Weighted (Outside equipment Specification)
DING
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dB
10.0 Hz
12.5 Hz
16.0 Hz
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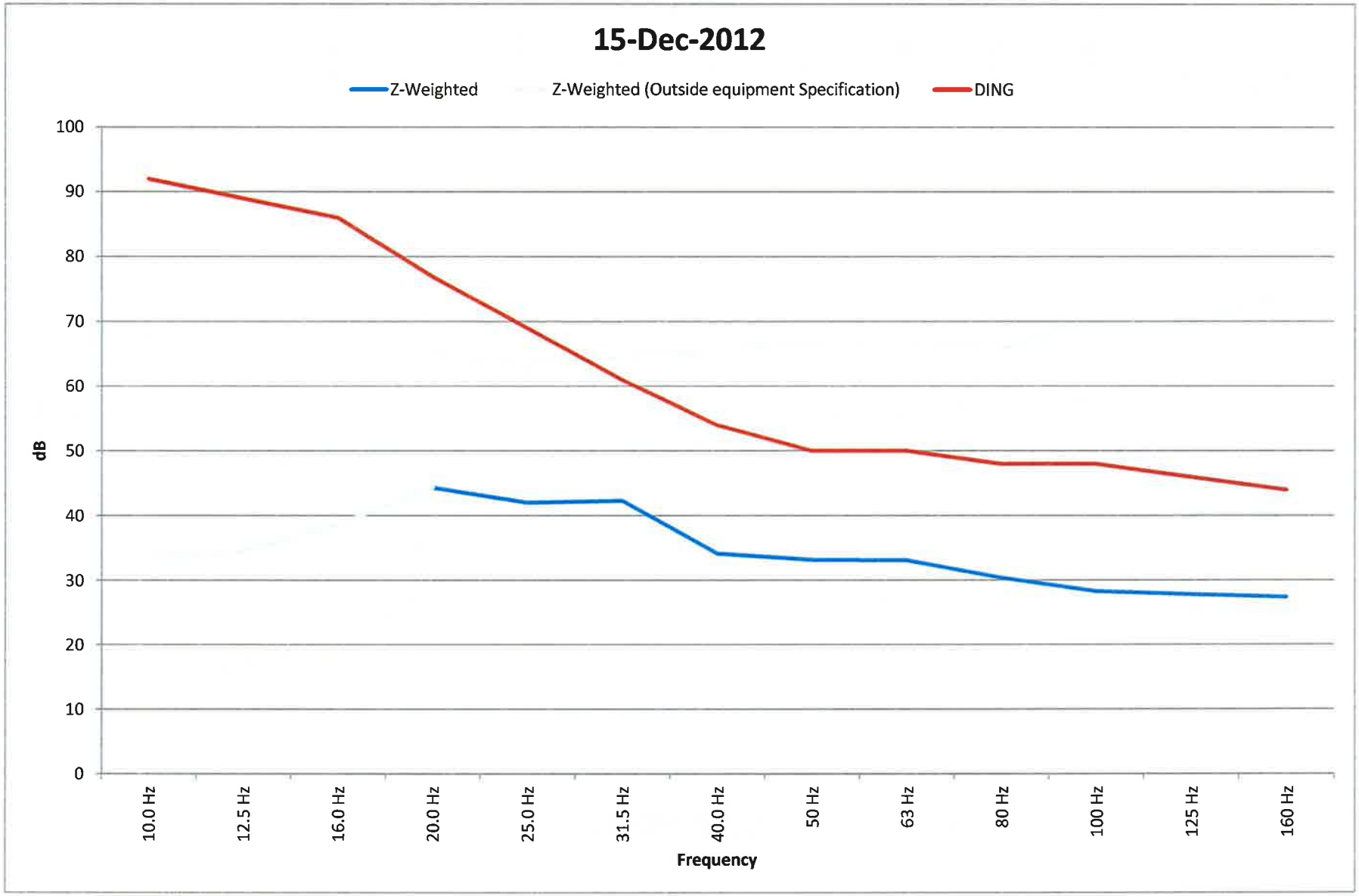
100 Hz
125 Hz
160 Hz
Frequency


15-Dec-2012
Z-Weighted
Z-Weighted (Outside equipment Specification)
DING
100
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dB
10.0 Hz
12.5 Hz
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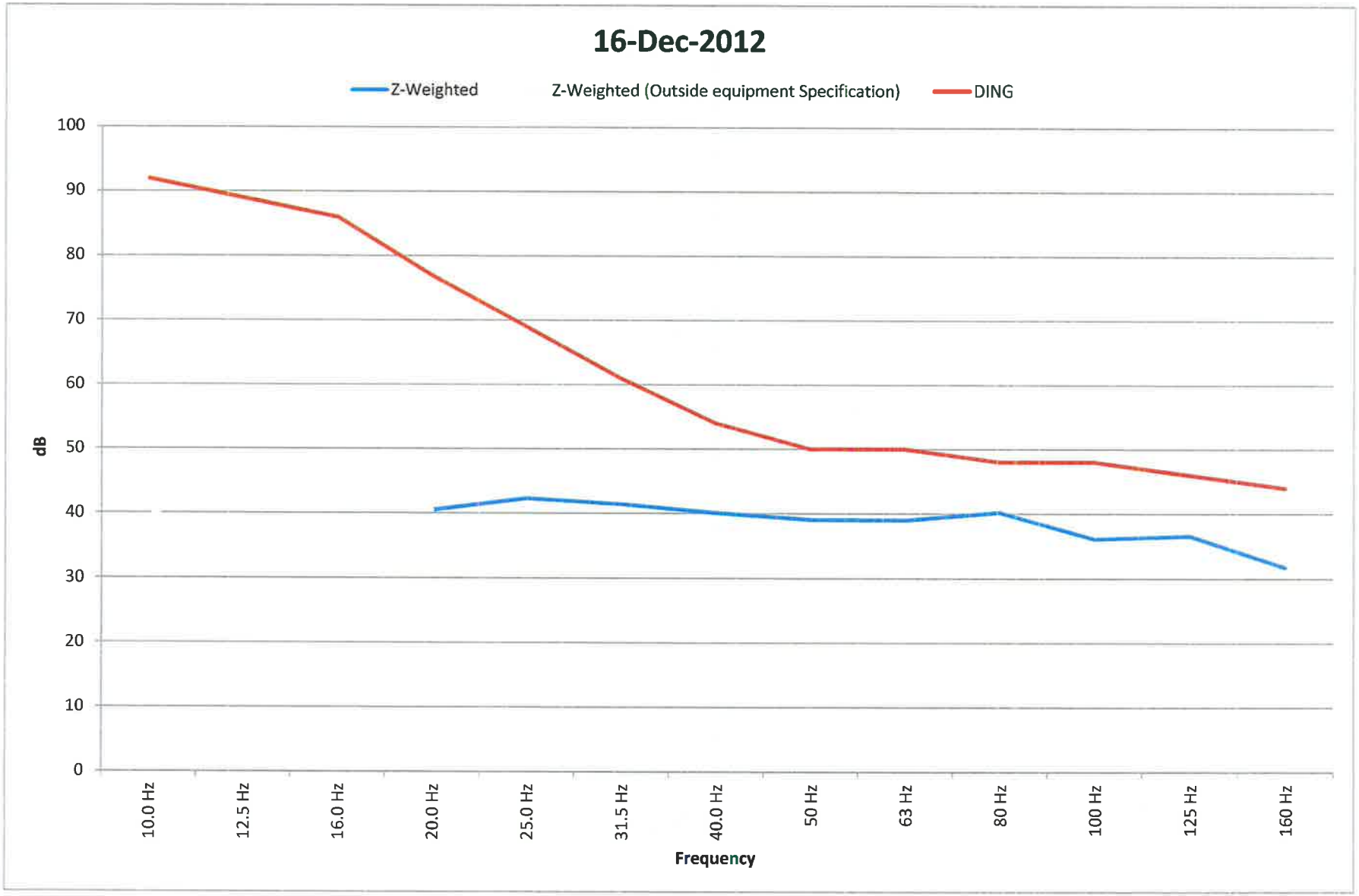
160 Hz
Frequency


16-Dec-2012
Z-Weighted
Z-Weighted (Outside equipment Specification)
DING
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12.5 Hz
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63 Hz
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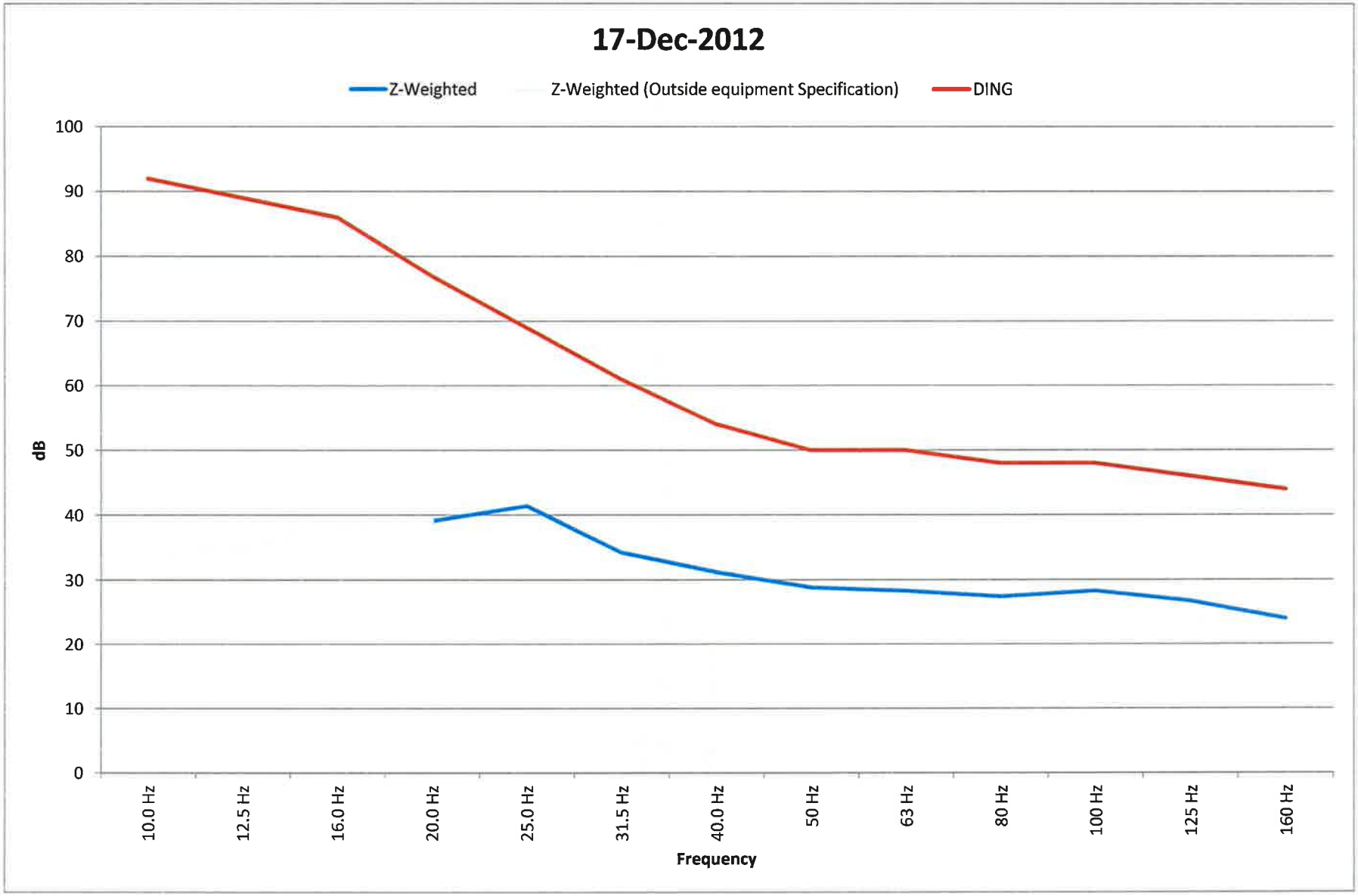
100 Hz
125 Hz
160 Hz
Frequency


17-Dec-2012
Z-Weighted
Z-Weighted (Outside equipment Specification)
DING
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40
30
20
10
0
dB
10.0 Hz
12.5 Hz
16.0 Hz
20.0 Hz
25.0 Hz
31.5 Hz
40.0 Hz
50 Hz
63 Hz
80 Hz
100 Hz
125 Hz
160 Hz
Frequency

Attachment 2

Extract from SLR Consulting (2015) Illustrating Seasonal Frequency Occurrence of Winds

ATTACHMENT A - On-site Automatic Weather Station - August 2011 to July 2014

Seasonal Frequency of occurrence 10 m Wind Velocity - Daytime

Period	Calm (<0.5 m/s)	Wind Direction ±45°	Wind Speed		
			0.5 to 2 m/s	2 to 3 m/s	0.5 to 3 m/s
Annual	6%	E	13.9%	9.8%	23.7%
Summer	3%	E	14.5%	14.5%	29.0%
Autumn	7%	E	17.9%	11.7%	29.6%
Winter	9%	WNW	9.0%	9.1%	18.1%
Spring	6%	E	10.4%	6.5%	16.9%

Seasonal Frequency of occurrence 10 m Wind Velocity - Evening

Period	Calm (<0.5 m/s)	Wind Direction ±45°	Wind Speed		
			0.5 to 2 m/s	2 to 3 m/s	0.5 to 3 m/s
Annual	12%	ESE	12.5%	9.5%	22.0%
Summer	3%	E	11.6%	13.4%	25.0%
Autumn	14%	ESE	18.7%	14.2%	33.0%
Winter	23%	WNW, NW	17.8%, 19.1%	12.7%, 10.4%	30.6%, 29.6%
Spring	13%	W	10.8%	9.7%	20.5%

Seasonal Frequency of occurrence 10 m Wind Velocity - Night-Time

Period	Calm (<0.5 m/s)	Wind Direction ±45°	Wind Speed		
			0.5 to 2 m/s	2 to 3 m/s	0.5 to 3 m/s
Annual	25%	ESE	18.8%	10.2%	28.9%
Summer	10%	ESE, E, SE	26.6%, 24.5%, 21.9%	17.6%, 16.3%, 14.6%	44.1%, 40.7%, 36.5%
Autumn	26%	ESE	21.3%	9.8%	31.0%
Winter	39%	NW	19.7%	9.3%	29.0%
Spring	31%	ESE	16.1%	8.0%	24.1%

WILKINSON MURRAY

MEMORANDUM

DATE: **15 August 2016**

FROM: **John Wassermann**

TO: **Matt Reilly DPE**

SUBJECT: **Review of Peabody letter 22 July 2016.**

Dear Matt

As requested by DPE Wilkinson Murray has reviewed the Peabody letter 22 July 2016 - WILPINJONG EXTENSION PROJECT (SSD 6764) – NOISE PEER REVIEW – STAGE 1. The letter provided additional information with regard to the following:

- Low Frequency Noise;
- Noise Limits in the Village of Wollar;
- Characterisation of Receiver 102 (Filipczyk); and
- Implications of Recent Changes to Land Ownership.

Low Frequency Noise

SLR Consulting conducted an analysis of low frequency noise using the methodology presented in the draft Industrial Noise Guideline. The analysis supported their EIS conclusion that the noise generated by the Wilpinjong Coal Mine does not contain dominant low frequency noise content. Wilkinson Murray concurs with this conclusion.

Characterisation of Receiver 102 (Filipczyk)

Wilkinson Murray concurs that receiver 102 (Filipczyk) as being in the Noise Management Zone for the Project.

Noise Limits in the Village of Wollar

The Peabody letter states that they cannot achieve the Wilkinson Murray recommended level of 35dBA at night, due to adverse north-westerly winds at night-time in Winter being below the INP assessment threshold, but still remaining prevalent (i.e. at a frequency of 29.0%).

SLR identify a north west gradient wind vector for the afternoon of 29.6% (approximately 30%) and therefore relevant for assessment. That's why a prediction of 37/38dB(A) during the evening is presented. The predicted night time levels were based on a temperature inversion of 5.2 degrees Celsius /100m only as the predicted north west winds at 29% at night was not considered relevant. The predicted noise levels with a temperature inversion of 5.2 degrees Celsius/ 100m resulted in a 35/36dB(A) during the night.

While this may be a rigid interpretation of the INP, it is not reasonable. The INP does in fact state: "It is recommended that locations approaching 30% occurrence level as well as those locations that either equal to or exceed the 30% level be considered when assessing the effects of temperature inversions on noise levels", albeit in Appendix F and not E. It would have been prudent for the assessment to identify the noise levels for north west winds at night, rather than conceal them.

Previously, WCPL considered it reasonable and feasible to spend $14 million to achieve proposed criteria at night in Wollar village. It is now understood that this cost was to achieve 37 dB(A) and not 35 dB(A). The cost to achieve 35 dB(A) is estimated at being in the order of $56 million. The INP and the VLAMP recognise that a change in noise levels of 2 dB(A) is considered negligible, and in this context an expenditure of an additional $42 million to attenuate a small number of residences by a negligible amount cannot be considered reasonable.

As such, Wilkinson Murray considers that mitigation to achieve noise levels below 37dBA are not warranted in terms of being feasible and reasonable.

Implications of Further Changes to Land Ownership

It is understood that WCPL is continuing to purchase properties through its noise acquisition strategy and that currently only 5 residences remain in private ownership in Wollar village. Should this number of residences further reduce, or noise agreements be negotiated with some or all of the remaining residents, it may be appropriate to revisit whether the expenditure of $14 million to achieve 37 dBA still represents a reasonable mitigation requirement.

WCPL state that they would accept alternative outcomes such as affording all remaining private residence landowners in the Village of Wollar acquisition upon request rights under the Development Consent. If the Department wishes to pursue such options, then acquisition and mitigation should consider the processes outlined in the INP and VLAMP.

I trust this information is sufficient. Please contact us if you have any further queries.

Yours faithfully
WILKINSON MURRAY

John Wassermann
Director

WILPINJONG COAL PTY LTD

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South Brisbane Qld 4101

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Fax + 61 (0) 2 6373 4524

22 August 2016

NSW Department of Planning and Environment
22 – 33 Bridge Street
Sydney NSW 2001

Attention: Mike Young
Director, Resource Assessments

Dear Mike,

RE: WILPINJONG EXTENSION PROJECT (SSD 6764) – NOISE PEER REVIEW - STAGE 2

As requested, Wilpinjong Coal Pty Ltd (WCPL) has reviewed the Memorandum *Review of Peabody Letter 22 July 2016* prepared by Wilkinson Murray (2016) (i.e. the Stage 2 Noise Peer Review) and provides the following response.

WCPL notes that in the Stage 2 Noise Peer Review Wilkinson Murray concurs with WCPL's advice provided in a letter dated 22 July 2016 with respect to the following matters:

- Low Frequency Noise.
- Characterisation of Receiver 102 (Filipczyk).

Two other matters are then discussed and WCPL's response on each matter is articulated below.

Noise Limits in the Village of Wollar

With respect to noise limits in the Village of Wollar, Wilkinson Murray states the following:

> *The Peabody letter states that they cannot achieve the Wilkinson Murray recommended level of 35dBA at night, due to adverse north-westerly winds at night-time in Winter being below the INP assessment threshold, but still remaining prevalent (i.e. at a frequency of 29.0%).*
>
> *SLR identify a north west gradient wind vector for the afternoon of 29.6% (approximately 30%) and therefore relevant for assessment. That's why a prediction of 37/38dB(A) during the evening is presented. The predicted night time levels were based on a temperature inversion of 5.2 degrees Celsius /100m only as the predicted north west winds at 29% at night was not considered relevant.*
>
> *The predicted noise levels with a temperature inversion of 5.2 degrees Celsius/ 100m resulted in a 35/36dB(A) during the night.*
>
> *While this may be a rigid interpretation of the INP, it is not reasonable. The INP does in fact state: "**It is recommended that locations approaching 30% occurrence level as well as those locations that either equal to or exceed the 30% level be considered when assessing the effects of temperature inversions on noise levels**", albeit in Appendix F and not E. It would have been prudent for the assessment to identify the noise levels for north west winds at night, rather than conceal them.*

Previously, WCPL considered it reasonable and feasible to spend $14 million to achieve proposed criteria at night in Wollar village. It is now understood that this cost was to achieve 37 dB(A) and not 35 dB(A). The cost to achieve 35 dB(A) is estimated at being in the order of $56 million. The INP and the VLAMP recognise that a change in noise levels of 2 dB(A) is considered negligible, and in this context an expenditure of an additional $42 million to attenuate a small number of residences by a negligible amount cannot be considered reasonable.

As such, Wilkinson Murray considers that mitigation to achieve noise levels below 37dBA are not warranted in terms of being feasible and reasonable.

WCPL would like to reiterate that the determination of relevant adverse weather conditions by SLR Consulting was conducted in accordance with the Industrial Noise Policy. The reference quoted by Wilkinson Murray from Appendix F of the Policy (highlighted above) to justify its contrary opinion in fact refers specifically to the use of a supplied F-Class inversion dataset for determining the relevance of temperature inversions at various assessment locations in the Hunter Valley.

It is noted that Wilkinson Murray concurs with WCPL in the quote above that mitigation to achieve noise levels at night below 37 dBA in the Village of Wollar is not warranted in terms of being feasible and reasonable.

In addition, as requested by the Department, WCPL has reviewed potential noise levels under the winter night-time north west wind for two representative dwellings in the Village of Wollar.

Based on advice from SLR Consulting, WCPL can confirm that the results at the nearest private receivers under this alternative night-time weather condition when unmitigated are generally within 0.5 dBA of the comparable evening adverse wind prediction (i.e. typically slightly higher than the evening unmitigated predictions, due to a lower temperature and higher relative humidity being adopted for night-time noise modelling).

After reviewing the modelled efficacy of a range of mitigation measures for these two receptors under this alternative night-time weather condition, WCPL can confirm that the reasonable and feasible outcome under this condition would also be 37 dBA at private residences in the Village of Wollar.

The mitigation required to achieve this outcome would be either the same as, or very similar to, the mitigation options already reported in the EIS for achieving a maximum of 37 dBA under the comparable evening adverse wind. WCPL is therefore satisfied that the results under the night-time north west wind are generally comparable to the reported evening adverse wind condition results, and reasonable and feasible noise levels up to 37 dBA in the Village of Wollar would also be achieved at night, under this alternative weather condition.

Implications of Further Changes to Land Ownership

With respect to future changes in land ownership in the Village of Wollar, Wilkinson Murray states the following:

It is understood that WCPL is continuing to purchase properties through its noise acquisition strategy and that currently only 5 residences remain in private ownership in Wollar village. Should this number of residences further reduce, or noise agreements be negotiated with some or all of the remaining residents, it may be appropriate to revisit whether the expenditure of $14 million to achieve 37 dBA still represents a reasonable mitigation requirement.

WCPL state that they would accept alternative outcomes such as affording all remaining private residence landowners in the Village of Wollar acquisition upon request rights under the Development Consent. If the Department wishes to pursue such options, then acquisition and mitigation should consider the processes outlined in the INP and VLAMP.

WCPL generally concurs with this conclusion.

WCPL also notes that since its letter of 22 July 2016, a further property in the Village of Wollar has been acquired (i.e. 914 Nicod), and therefore the number of private residences remaining is now four.

Please do not hesitate to contact me on (02) 6370 2528 if you would like to discuss.

Yours sincerely,

Ian Flood
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