



DAY DESIGN PTY LTD
CONSULTING ACOUSTICAL ENGINEERS

SUITE 17, 808 FOREST ROAD, PEAKHURST 2210
P. 02 9046 3800 ACOUSTICS@DAYDESIGN.COM.AU WWW.DAYDESIGN.COM.AU
ABN 73 107 291 494

Additional Acoustic Peer Review Wilpinjong Mine Extension Project

REPORT No
5838-2.1R

DATE ISSUED
30 November 2016

Prepared for and instructed by:
Wollar Progress Association
C/- Wollar PO
Wollar NSW 2850



Revision History

Report	Date	Prepared	Checked	Comment
Draft	28/11/2016	Stephen Gauld	William Wang	To client for comment
Final	30/11/2016	Stephen Gauld	William Wang	

Document R\5838-2.1r, 11 pages plus attachments

The work presented in this document was carried out in accordance with the Day Design Pty Ltd Quality Management System. Day Design is certified to ISO9001.

Day Design Pty Ltd reserves all copyright of intellectual property in any or all of Day Design's documents. No permission, license or authority is granted by Day Design to any person or organisation to use any of Day Design's documents for any purpose without written consent of Day Design.

This report has been prepared for the client only and cannot be relied or used by any third party. Any representation, statement, opinion or advice, expressed or implied in this report is made in good faith but on the basis that Day Design is not liable (whether by reason of negligence, lack of care or otherwise) to any person for any damage or loss whatsoever which has occurred or may occur in relation to that person taking or not taking (as the case may be) action in any respect of any representation, statement, or advice referred to above.

Recommendations made in this report are intended to resolve acoustical problems only. No claims of expertise in other areas are made and no liability is accepted in respect of design or construction for issues falling outside the specialist field of acoustical engineering including but not limited to structural, fire, thermal, architectural buildability, fit for purpose, waterproofing or other aspects of building construction. Supplementary professional advice should be sought in respect of these issues.

The information in this document should not be reproduced, presented or reviewed except in full. Prior to passing onto a third party, the Client is to fully inform the third party of the specific brief and limitations associated with the commission.



TABLE OF CONTENTS

EXECUTIVE SUMMARY.....	4
RECOMMENDATIONS.....	5
INTRODUCTION.....	5
ABOUT THE AUTHOR.....	6
RECOMMENDATIONS IN THE INITIAL DAY DESIGN REVIEW.....	7
LOW FREQUENCY NOISE.....	9
VOLUNTARY ACQUISITION.....	10
NOISE CONTROLS.....	11
APPENDICES.....	11



EXECUTIVE SUMMARY

1. Day Design Pty Ltd has been engaged by Wollar Progress Association to provide an expert Acoustic Peer Review of the Independent Review conducted by Wilkinson Murray dated 12 June 2016 (WM Review) as part of the NSW Government's Planning and Environment Department's assessment of the Wilpinjong Mine Extension project.
2. This report is intended to be included in the submission by the Wollar Progress Association to be presented to the Planning Assessment Commission.
3. I have reviewed the Noise/Vibration Assessment – Wilpinjong Extension Project – Independent Review prepared by Wilkinson Murray dated 12 June 2016.
4. This peer review focuses on the unresolved issues raised in our initial review dated 10 March 2016 (DD Review) related to the likely acoustic impact to the Wollar residential community due to the proposed extension of the Wilpinjong mine.
5. Given the unsatisfactory response by both Wilkinson Murray and SLR Consulting, I have no confidence that the extension of the Wilpinjong Coal mine will not cause a significant impact on the acoustic amenity for residents of Wollar to the East of the mine.
6. There is little comfort in the SLR report for the residents of Wollar as the predicted noise levels exceed the Project Specific Noise Level (PSNL) at all but one residential location to the East and South East of the Mine during the night (SLR Report, Table 25).
7. SLR Consulting has not included a Low Frequency Noise (LFN) modifying factor as described in the Industrial Noise Policy. If LFN is found to be a contributor to the acoustic environment, which is common, the Wilpinjong mine will significantly fail to meet the noise criteria.
8. In my opinion, the expected noise impact of the proposal will significantly disturb the amenity of the residents in the Wollar community due to the fact that the ambient noise levels are extremely quiet and the PSNLs are generally exceeded, resulting in a very large emergence of mine noise above the background noise levels.



RECOMMENDATIONS

9. Four recommendations were made in our initial review of the SLR Report. There has been no direct response or mention of the DD Review in either the WM Review or the Department Assessment Report. To not address expert evidence makes a mockery of the 'consultation' phase of the assessment period. (Clauses 23 to 29)
10. The currently unresolved issue of Low Frequency Noise and whether a modifying factor is required in the noise assessment should be resolved prior to development approval. (Clauses 30 to 34)
11. Acquisition of residential properties does not reduce the noise impact for all residences and therefore noise controls will still be required. (Clauses 35 to 40)
12. If the predicted noise level of 37 dBA at some residential premises with \$14 million in noise controls is conservative, as is stated by SLR, then the noise limit should be set at 35 dBA allowing for a 2 dB exceedance when measuring compliance in accordance with the INP. (Clauses 41 to 45)

INTRODUCTION

13. I, Stephen Gauld, Principal Acoustical Engineer and Managing Director of Day Design Pty Ltd, have been engaged by Wollar Progress Association to provide an additional review of the WM Review commissioned by the Department as part of the Secretary's Environmental Assessment Report for the Wilpinjong Mine Extension.
14. In this report, I provide a critical review of the Noise and Blasting Assessment to assist the Department in their consideration of the matter.
15. Since the preparation of the DD Review I have read some additional documents provided to me, as listed in Appendix "B".
16. I have not visited Wollar or any other areas surrounding the Wilpinjong mine. My review is limited to a desktop study.



ABOUT THE AUTHOR

17. I, Stephen Gauld, am the Managing Director and Principal Acoustical Engineer at Day Design Pty Ltd, Consulting Acoustical Engineers, of Suite 17, 808 Forest Road, Peakhurst, NSW, 2210.
18. I have practiced as a Consulting Acoustical Engineer since December 1997. I was awarded my Bachelor of Engineering (Mechanical) in 1997 and my Masters of Engineering Science (Noise and Vibration) in 2007. My curriculum vitae is attached in Appendix "A".
19. I have read Division 2, Part 31 of the Uniform Civil Procedure Rules 2005 and the Expert Witness Code of Conduct in Schedule 7. This report is prepared in accordance with these documents and I agree to be bound by their terms.
20. My evidence in this statement is within my area of expertise, except where I state that I have relied upon the evidence of another person.
21. I have spoken to the author of the WM Review, John Wasserman and he informs me that he was provided a copy of the DD Review. There is no evidence in the WM Review that he addressed any of the issues raised in the DD Review.
22. I have spoken to the author of the SLR Report, Glenn Thomas. Mr Thomas advised me that he is unable to discuss the matter with me without the express permission of his client.



RECOMMENDATIONS IN THE INITIAL DAY DESIGN REVIEW

23. Four recommendations were made in our initial review of the SLR Report. There has been no direct response or mention of the DD Review in either the WM Review or the Department Assessment Report. To not address expert evidence makes a mockery of the 'consultation' phase of the assessment period.
24. In this section I provide comment on the extent to which the WM Review or the Department has addressed each issue.
25. *The ambient noise level data measured in 2004 during the day at 900 St Laurence O'Toole Catholic Church should be re-analysed to determine the correct RBL. (DD Review, Clauses 22 to 34)*

There is no evidence that this has been addressed or carried out.

26. *The data sample taken in December 2012 at St Laurence O'Toole Catholic Church used to determine whether a low frequency modifying factor should be applied, should be re-analysed to determine the C-A difference for each 15 minute set of data, rather than the mean difference. This will allow a more accurate comparison to determine whether a low frequency modifying factor should be applied. (DD Review, Clauses 53 to 63)*

There is no evidence that this has been addressed or carried out. The SLR Consulting letter dated 21 June 2016 provides further analysis in Table 1A. The mean difference method has again been used in error. By definition, the mean is an average of a range of numbers. If the mean is close to 15 dB, which it is on some days, the range of differences will most likely exceed 15 dB. The data has been averaged hence the likely exceedance of the 15 dB threshold cannot be seen.

The mean difference method is not described or required in the NSW INP and is patently in error. This method will always ignore the higher differences and therefore be more likely to return a "no modifying factor" required result.

I cannot comprehend how the WM Review states that "The low frequency noise assessment conducted in the NBA and its conclusion would probably be considered best practise ..." when it is clearly outside of the INP guidelines.

The data should be re-analysed to determine the C-A difference for each 15 minute set of data, rather than the mean difference.

It is disturbing that the Department has not addressed this error.



27. *The same data sample taken in December 2012 should be re-analysed to determine the $LA_{1(1min)}$ - $LA_{90(15min)}$ for each 15 minute set of data. This will allow a more accurate comparison to determine whether sleep disturbance is likely. (DD Review, Clauses 64 to 71)*

There is no evidence that this has been addressed or carried out.

28. *The proposed mitigation for Year 2024, should be applied from Year 2018 and the benefit of attenuation to the Pit 8 coal and waste fleets be realised 6 years earlier. If this were carried out 6 years earlier in 2018, based on SLR calculations, the PSNLs would be met up until 2024. (DD Review, Clauses 73 to 78)*

There is no evidence that this has been considered.

29. It is disappointing to see that none of the issues raised in the DD Review have been considered by either Wilkinson Murray in the WM Report, or by the Department in their Report or by Peabody Energy in their response. To not address expert evidence makes a mockery of the 'consultation' phase of the assessment period.



LOW FREQUENCY NOISE

30. The issue of Low Frequency Noise (LFN) remains unresolved. SLR has assessed LFN using an approach that is not consistent with the INP or the dING and have found that a modifying factor need not be applied. This approach is incorrect.
31. The Department's assessment (page 26) notes that the EPA monitored LFN in June 2016 and found the difference between the dBC and dBA to be greater than 15 dB, which results in a modifying factor of 5 dB required to be applied. In that case that mine noise was 30-31 dBA without the modifying factor and 35-36 dBA with the modifying factor.
32. If the noise from the Wilpinjong Extension Project is higher than that measured by the EPA in June 2016, which is predicted in the SLR report, it is reasonable to assume that the noise would contain significant low frequency content, which is typical for mining related noise, and therefore a modifying factor would be required in accordance with the INP.
33. Applying a modifying factor for low frequency noise will significantly change the outcome of the noise assessment as the noise emission at a particular location can change from being complying with the INP noise criteria to being significantly exceeding the INP noise criteria (+5dB above).
34. The issue of LFN and whether a modifying factor is likely to be required should be resolved prior to development approval to provide certainty for both Peabody Energy and the residential community of Wollar and surrounds.



VOLUNTARY ACQUISITION

35. I note that the long term strategy of Peabody Energy is to acquire as many private residences in the Wollar community as possible. This is supported by the statement *“WCPL is continuing to purchase properties through its noise acquisition strategy and currently only 5 residences remain in private ownership ... 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.”*
36. For those residents who live in the Wollar area, they are faced with two options. The first is to accept purchase of their property by WCPL and leave the Wollar area.
37. The second is to reject the offer from WCPL and remain in Wollar.
38. My understanding is that the predicted noise level at residential premises is above the minimum acquisition level, there will be no noise criteria applied to those premises if the project is approved. Therefore there will be no noise limit at these residences. This does not seem like a reasonable second option and in my opinion the residents would be subjected to offensive noise as defined by the Protection of the Environment Operations Act 1997.
39. In addition, the residential premises just outside of the Wollar Village would be subjected to much the same noise levels as in the Wollar Village. Even if the entire Wollar Village is bought by WCPL, the predicted noise level from the extension project will adversely impact these other residences.
40. Acquisition does not reduce the noise impact for all residences and therefore noise controls will still be required.



NOISE CONTROLS

41. The letter from WM dated 15 August 2016 discusses the value of proposed noise controls and whether \$14 million or \$56 million is reasonable to achieve a further 2 dB reduction.
42. There is no discussion of the overall cost of the project, the expected profits or the percentage of turnover. I am not an expert in costs, however I would have thought that the reasonableness of costs of noise controls is relative to other costs and profits of the project.
43. For WM to conclude that “mitigation to achieve noise levels below 37 dBA are not warranted in terms of being feasible and reasonable” is outside of their expertise, especially if the perspective of other costs/profits are not discussed.
44. It is true that a 2 dB change in noise level is considered negligible, however if the consent noise limit is set to 37 dBA instead of 35 dBA as “a 2 dB change in noise level is considered negligible” and then when compliance is measured at 39 dBA it is stated that “a 2 dB change in noise level is considered negligible” the overall result is 4 dB above the INP noise limit, which is 1 dB from being a significant exceedance.
45. If the predicted noise level of 37 dBA with \$14 million in noise controls is conservative, as is stated by SLR, then the noise limit should be set at 35 dBA allowing for a 2 dB exceedance when measuring compliance in accordance with the INP.



Stephen Gauld, BE (Mech), MEngSc (Noise and Vibration), MIEAust, MAAS
Managing Director and Principal Acoustical Engineer

On behalf of Day Design Pty Ltd

APPENDICES

- **Appendix A** – Stephen Gauld’s Curriculum Vitae
- **Appendix B** – List of Documents Supplied and Read





SUITE 17, 808 FOREST ROAD, PEAKHURST 2210
P. 02 9046 3800 ACOUSTICS@DAYDESIGN.COM.AU WWW.DAYDESIGN.COM.AU

Curriculum Vitae

Stephen Gauld

Stephen Gauld is the Managing Director of Day Design Pty Ltd and works in a technical capacity as the Principal Acoustical Engineer. Stephen provides oversight on all projects and checks the majority of the reports that leave the office. He manages the larger projects and provides training to staff in acoustic measurement and noise control design. Sound level meters and long-term noise monitors are used in the field to measure different types of noise sources and computer software is used to analyse and design noise control.

- Qualifications:** Bachelor of Engineering (Mechanical),
University of New South Wales (1997)
- Masters of Engineering Science (Noise & Vibration),
University of New South Wales (2007)
- Memberships:** Member - Institution of Engineers Australia (2001)
- Member - Australian Acoustical Society (2001)
- Corporate Member – Association of Australian Acoustical
Consultants
- Professional Experience:** *February 2004 - Present*
Managing Director and Principal Acoustical Engineer
Day Design Pty Ltd
- October 1998 – February 2004*
Consulting Acoustical Engineer
Day Design Pty Ltd
- November 1997 – October 1998*
Acoustical\Quality Engineer
Acoustic Dynamics Pty Ltd, Glebe, NSW
Consulting Acoustical Engineers



• AIRCRAFT, ROAD TRAFFIC AND TRAIN NOISE CONTROL
• ARCHITECTURAL ACOUSTICS • INDUSTRIAL NOISE AND VIBRATION CONTROL
• ENVIRONMENTAL NOISE IMPACT INVESTIGATION AND CONTROL
• OCCUPATIONAL NOISE INVESTIGATION • QUIET PRODUCT DEVELOPMENT



A short overview of the nature of **Mr Gauld's Professional Experience** is provided below:

Churches and Places of Worship:	Thornleigh Uniting Church; Corrimal Uniting Church; Glenmore Park Anglican Church; St Johns Church Kirribilli; Roseville Uniting Church; Lakes Baptist Church; Dapto Anglican Church; Heathcote Gospel Trust; Holy Family; Marayong.
Schools and Child Care Centres:	Schools located at Prestons, Bass Hill, Greenacre, Edensor Park. Childcare Centres located at Kingsgrove, Greenacre, Quakers Hill, Gymea, Kirrawee, Mount Annan and Thornleigh.
Hotels/Clubs	Bangor Tavern; Narellan Hotel; Billabong Hotel; Royal Oak Hotel; Dooleys Lidcombe Catholic Club; Easts Leagues Club; Gymea Hotel; Summer Hill Hotel; St Johns Park Bowling Club; Five Dock RSL Club; Royal Hotel at Richmond; Welcome Inn at Thirlmere; Wentworth Leagues Club.
Hearing Loss Assessments:	Assessment of occupational noise exposure for many and varied occupations including but not limited to, sheet metal workers, printers, labourers, hotel employees and drivers.
Industrial and Mining:	Gulf Conveyor Engineering - Appin Colliery main conveyor; BHP Billiton Illawarra Coal – West Cliff Mine; IE Engineered Products – New Ackland Coal Mine machinery; Hanson Construction Materials – Hanson's Quarry, Seaham.
Legal Assignments:	SHCAG Pty Ltd v the Minister for Planning and Infrastructure & Anor, Berrima Colliery Dewharp Pty Ltd v Sutherland SC, Night Club Noise Impact; Ghassibe v Wingecarribee SC, Dog Breeding Facility; Shelly Bear Pty Ltd v Canterbury CC, Child Care Centre; Martin v Camden Council, Child Care Centre; Robert Creed Architects v Strathfield MC, Residential Development Spiro Houteas v Parramatta CC, Residential Development.
Occupational Noise:	Pilkington Alexandria and Ingleburn; United Group Rail; Franklins; Transfield Services; King Gee Clothing; Tyco Electronics.
Residential:	Building Defect Claims - Sydney Mansions and 'The Rivage'; Collins Street, Kiama; Gymea Bay Rd, Gymea Bay; Chapel Street, Rockdale; Auburn Centre; Main St, Blacktown; Taylor Street, Annandale; Queen Victoria Street, Bexley; Willoughby Rd, Crows Nest; Trelawney Street, Woollahra.
Traffic:	Casula Powerhouse Arts Centre; Davies Road Expansion at Padstow; Lindenwood Development at Kellyville; Residential Units at McEvoy Street, Alexandria; President Avenue, Miranda; Bulwara Road, Ultimo; Soho Apartments, Waterloo.



List of Documents Supplied and Read:

5838-2
Appendix B

1. Letter titled Noise/Vibration Assessment – Wilpinjong Extension Project – Independent Review prepared by John Wasserman of Wilkinson Murray dated 12 June 2016.
2. *State Significant Development Assessment*, Wilpinjong Extension Project (SSD 6764) prepared by NSW Government Planning and Environment Department dated November 2016.
3. Wilpinjong Extension Project – Response to Submissions, prepared by Peabody Energy dated May 2016.

