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Jim Betts
Secretary, Department of Planning, Industry and Environment
Level 17, 12 Darcy Street | 4 Parramatta Square | Parramatta NSW 2150

18 December 2020

Dear Mr. Betts

Botany Rail Duplication SSI 9714

Nomination of Acoustics Advisor

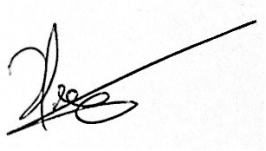
Following the letter from the Australian Rail Track Corporation (ARTC) to the Planning Secretary dated 9 December, 2020, ARTC would like to nominate Mr. Dave Anderson, Mr. David Hanson, Mr. Larry Clark and Ms. Sav Shimada of Acoustic Studio to undertake the Acoustics Advisor (AA) services in accordance with Condition A28 of the Infrastructure Approval SSI 9714 for the Botany Rail Duplication project.

In consideration of this request, please find the following in Attachment A for each nominated AA:

- Curriculum vitae including relevant professional associations
- Declaration of associations and interests

In accordance with Condition A28 of SSI 9714, ARTC is seeking the Planning Secretary to approve Mr. Dave Anderson, Mr. David Hanson, Mr. Larry Clark and Ms. Sav Shimada of Acoustic Studio as the Acoustics Advisor for the Botany Rail Duplication project.

Please contact the undersigned Hadi Johan on 0425 333 182 if you require any further information.



Yours Sincerely

Hadi Johan
Environment Manager, Port Botany Capacity Enhancement Projects

Australian Rail Track Corporation Ltd ACN 081 455 754 ABN 75 081 455 754

ARTC

ATTACHMENT A – CURRICULUM VITAE & DECLRATAION OF ASSOCIATOINS AND INTERESTS

acoustic studio

18 December 2020

Sarah Dobson
Procurement and Contracts Support Specialist
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Dear Sarah

Botany Rail Duplication SSI-9714 - Independence of Acoustic Advisor

With regard to the role of Acoustic Advisor Services for the Botany Rail Duplication SSI-9714 (the Project), Acoustic Studio proposes that I, Dave Anderson, fulfill the role of lead Acoustic Advisor.

It is understood that the Acoustic Advisor team must be independent of the construction and design team for the Project and those involved in delivery of it, including associated design, construction and delivery organisations and I hereby declare that:

- I am not related to any proponent, owner, operator or other entity involved in the delivery of the Project. Such a relationship includes that of employer/employee, a business partnership, sharing a common employer, a contractual arrangement outside of Acoustic Advisor services, or that of a spouse, partner, sibling, parent, or child;
- I am independent of the preparation of the EIS and Submissions Report and independent of the construction and design personnel;
- I do not have any pecuniary interest in the Project, proponent or related entities. Such an interest includes where there is a reasonable likelihood or expectation of financial gain (other than being reimbursed for performing Acoustic Advisor services) or loss as an Acoustic Advisor Representative, or their spouse, partner, sibling, parent, or child;
- I am not intending to join, nor am I in negotiations with a view to joining, the construction and design team for the project, or those involved in its delivery; and
- I will not accept any inducement, commission, gift or any other benefit from Project organisations, their employees or any interested party, or knowingly allow colleagues to do so.

I have been a member of the Institute of Acoustics (UK) since 1994 and a member of the Australian Acoustical Society since 1996. As such, I am bound by and operate under the Code of Ethics and expectations of professional conduct associated with both organisations. I will also ensure that I will exercise my own independent professional judgement in fulfilling the Acoustic Advisor Representative Role and will carry out the role in an objective and professional manner at all times.

To the best of my knowledge and belief, there are no facts or circumstances, past or present, or that could arise in the foreseeable future, that need to be disclosed as they might be of such a nature as to call in to question my independence.

A copy of my CV is attached for reference.

Dave Anderson

Dave Anderson

Acoustic Engineer
Director, Acoustic Studio

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Career Overview

Dave joined **Acoustic Studio** Pty Ltd in 2014, from RailCorp NSW. He has over 25 years of experience in acoustics, noise and vibration across a wide range of fields and is a recognised expert in rail noise and vibration.

Dave graduated from the **Institute of Sound and Vibration Research** in the UK and joined **Arup Acoustics** in 1989. He moved to the Australian office of Arup Acoustics in 1995, and then joined the **Rail Infrastructure Corporation** (which later became RailCorp and Transport for NSW) as in-house noise specialist in 2002.

Dave has in-depth experience in noise and vibration issues associated with rail and tunnel projects and has co-authored numerous technical papers on the subject (a selection of relevant references is attached at the end of this CV).

Dave has extensive experience in communicating with a range of stakeholders, including community, project design teams, researchers, regulators, operations and maintenance personnel and senior executives.

Qualifications

Master of Engineering (MEng) in Acoustics and Vibration

Professional Associations

Member of the Australian Acoustical Society

Member of the Institute of Acoustics, UK

Member of the international committee for the **International Workshop on Railway Noise**

Chartered Engineer, UK

Expertise Areas

Dave's in-depth experience in noise and vibration includes prediction, impact assessment and design; the review, assurance and commissioning roles for numerous rail and tunnel projects; trouble-shooting and research & development for operational rail noise issues; and the role of Industry Chair for a Cooperative Research Centre project on rail noise.

In summary, Dave has in-depth experience in all areas of rail and tunnel acoustics, noise and vibration and across all stages of the asset life-cycle.

Key Projects

Sydney Metro ('14 – present)

Sydney Metro is Australia's largest public transport infrastructure project.

Dave leads Acoustic Studio's roles as ***Technical Advisor*** and ***Acoustic Advisor*** for Sydney Metro for acoustics, noise and vibration.

Dave is also the **Independent Reviewer for Ground-borne Noise** appointed under the Planning Approval for the Chatswood to Sydenham project.

Dave's role spans the full life cycle of the project, including requirements specification, construction noise and vibration, engagement with planning authorities and regulators, design review and oversight, testing and measurement, and long-term strategic planning.

Western Sydney Freight Line (current)

Dave is project director of the team delivering noise and vibration technical advice for the Western Sydney Freight Line Stage 2 Project. This includes:

- Noise and vibration modelling and impact assessment;
- Co-design with Engineering and Land Use SMEs, Councils and the community;
- Stakeholder engagement and multi-criteria analysis;
- Novel noise control solutions

Inner West Light Rail (2016)

Dave led the test team investigating curve noise at Glebe. This involved measurement of rolling stock steering performance, noise and vibration, rail profile and rail friction.

Melbourne Metro Rail Project (2016)

Peer review of project noise and vibration impact assessment carried out for the Environmental Effects Statement.

Epping Chatswood Rail Link, Sydney ('02-'09)

Dave had extensive involvement in this project throughout the design, construction and commissioning stages, including:

- Peer review during design phase.
- Construction noise and vibration management during interface works at Chatswood and Epping.
- Noise and vibration design for track support system in Rail Enclosure Structure at Chatswood.
- Technical leader of noise task force during 2008, to resolve issues with in-train noise (culminating in the first use of rail dampers in Australia [3]).

Singapore Circle Line, Stages 2 & 3 (2002), for LTA

Noise & vibration study encompassing empirical and numerical modelling of ground borne noise and vibration from the operation of the new line.

Scope included in-tunnel and ground surface vibration measurements near Novena Station on the existing North-South line.

Singapore Circle Line, Low Stiffness Rail Fastener (2016 and 2018)

In-tunnel and above-ground noise and vibration measurements to assess the effectiveness of replacement rail fasteners.

Sydney Airport Rail Link ('97-'99)

Noise and vibration prediction, assessment, design. Vibration mitigation design included the first significant use of under-ballast mats in Australia [2].

Subiaco Rail Tunnel and Station Redevelopment, WA (1997)

Noise and vibration prediction, assessment and design.

Other Relevant Experience

Sydney Light Rail, Sydney ('95-'97)

Dave provided expert advice to CityWest Development Corporation on noise and vibration impacts and mitigation requirements for residential and commercial redevelopments in Pyrmont, adjacent to the new light rail system.

Rail Clearways, Sydney ('05-'09)

Dave led the in-house technical review of noise and vibration impact assessments and mitigation designs for rail clearways projects, including Cronulla Duplication, Kingsgrove to Revesby Quad and South West Rail Link.

RailCorp Environment Protection Licence ('02-'11)

Dave provided technical support for compliance with Pollution Reduction Programs required under RailCorp's Environment Protection Licence.

Wheel squeal research and development ('04-'13)

Dave has had a long-term involvement with wheel squeal issues, both in NSW and also in collaboration with rail agencies in South Australia and Queensland. The work spans:

- The first use of top-of-rail friction modifiers in Australia;
- The installation of a wayside angle-of-attack monitoring system on a curve (a world first) [4];
- Industry Chair of a Cooperative Research Centre (CRC) project on rail noise, including wheel squeal [6];
- Extensive track-based testing of lubrication and friction modifier treatments;
- Engagement with rail operators to investigate rolling stock curving performance.

Strategic Noise Action Plan, NSW ('12-'13)

Dave was seconded to the Freight and Regional Development Division of Transport for NSW to assist with the implementation of the Strategic Noise Action Plan (SNAP), which addresses noise from rail freight operations by tackling noise at source as well as ensuring appropriate controls are incorporated in the planning and the design of new projects.

Northern Sydney Freight Corridor, NSW ('11-'13)

Technical advice to support the development of the Operational Noise and Vibration Review.

Selected Technical References (copies available on request)

1. Dave Anderson, et al," 1dB per floor? How does noise and vibration propagate in high-rise buildings over railway lines", in Proceedings of the 13th International Workshop on Railway Noise, Belgium 2019
2. Anderson D, Harris M, *"New Southern Railway, Sydney – Noise and Vibration Attenuation Systems"*, Proc ExpoRail (Asia), Hong Kong, 2000
3. Coker D, Anderson D, *"Reducing In-train Noise on the Epping to Chatswood Rail Link"*, Proceedings of Conference on Rail Engineering 2010
4. Jiang J, Anderson D, Dowdell D, Wang C, *"The impact of angle of attack on curve squeal"*, Proceedings of World Congress on Railway Research (WCRR) 2013, Sydney, Australia
5. Anderson D and Hiller D, "Noise and vibration issues in tunnels", Tunnel Management International, 2000

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18 December 2020

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Dear Sarah

Botany Rail Duplication SSI-9714 - Independence of Acoustic Advisor

With regard to the role of Acoustic Advisor Services for the Botany Rail Duplication SSI-9714 (the Project), Acoustic Studio proposes that I, David Hanson, fulfill the role of alternate Acoustic Advisor.

It is understood that the Acoustic Advisor team must be independent of the construction and design team for the Project and those involved in delivery of it, including associated design, construction and delivery organisations and I hereby declare that:

- I am not related to any proponent, owner, operator or other entity involved in the delivery of the Project. Such a relationship includes that of employer/employee, a business partnership, sharing a common employer, a contractual arrangement outside of Acoustic Advisor services, or that of a spouse, partner, sibling, parent, or child;
- I am independent of the preparation of the EIS and Submissions Report and independent of the construction and design personnel;
- I do not have any pecuniary interest in the Project, proponent or related entities. Such an interest includes where there is a reasonable likelihood or expectation of financial gain (other than being reimbursed for performing Acoustic Advisor services) or loss as an Acoustic Advisor Representative, or their spouse, partner, sibling, parent, or child;
- I am not intending to join, nor am I in negotiations with a view to joining, the construction and design team for the project, or those involved in its delivery; and
- I will not accept any inducement, commission, gift or any other benefit from Project organisations, their employees or any interested party, or knowingly allow colleagues to do so.

I have been a member of the Australian Acoustical Society since 2004 and a Chartered Professional Engineer with Engineers Australia since 2009. As such, I am bound by and operate under the Code of Ethics and expectations of professional conduct associated with both of these organisations. I will also ensure that I will exercise my own independent professional judgement in fulfilling the Acoustic Advisor Representative Role and will carry out the role in an objective and professional manner at all times.

To the best of my knowledge and belief, there are no facts or circumstances, past or present, or that could arise in the foreseeable future, that need to be disclosed as they might be of such a nature as to call in to question my independence.

A copy of my CV is attached for reference.

Dr David Hanson MIEAust CPEng NER APEC Engineer IntPE(Aus)

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Dr. David Hanson

Director
Acoustic Studio

Ph: 0448 003 886
E: david.hanson@acousticstudio.com.au

Career Overview

Dave joined **Acoustic Studio** Pty Ltd in November 2018, from Transport for NSW. He has 20 years of experience in rail across a wide range of fields and is a recognised expert in rail noise and vibration.

Dave started as an engineering cadet with A Goninan and Co (now UGL) building locomotives, wagons and passenger cars. Dave was awarded a PhD by the **University of NSW** in 2007 and worked for five years for **Sinclair Knight Merz** in their Advanced Analysis and Test team. He moved to **RailCorp** in 2011 and then **Transport for NSW** in 2013, becoming Senior Manager Freight Performance in 2017.

Dave has in-depth experience in rolling stock, track and wheel/rail interface issues associated with freight and passenger heavy rail and light rail. As Senior Manager Freight Performance, Dave led the team that pioneered the understanding of wagon steering, and wrote the TfNSW wagon steering standard. Dave also wrote the TfNSW rail lubrication standard (now adopted in modified form by RISSB as the national standard) and has co-authored numerous technical papers (a selection of relevant references is attached at the end of this CV).

Dave has extensive experience in communicating with a range of stakeholders, including community, project design teams, researchers, regulators, operations and maintenance personnel and senior executives.

Qualifications

PhD, Bachelor of Engineering (BEng, Hons 1) in Mechanical Engineering

Professional Associations

Member of the Australian Acoustical Society
Chartered Professional Engineer, Engineers Australia

Expertise Areas

Dave's experience includes:

- Railway noise and vibration including measurement, analysis, prediction, review and assurance for both rolling stock and infrastructure projects. This includes ground-borne noise and vibration, in-car noise and tunnel mitigation, air-borne noise and ride comfort.
- Management wheel squeal, including developing inexpensive and effective solutions, financial and fleet analysis, and policy and regulation.
- Rail friction management, including designing wayside friction management systems.

In summary, Dave has in-depth experience across the rail industry, covering manufacturing, maintenance, operations, policy and regulation.

Relevant Experience

Western Sydney Freight Line (current)

Dave is project manager of the team delivering noise and vibration technical advice for the Western Sydney Freight Line Stage 2 Project. This includes:

- Noise and vibration modelling and impact assessment;
- Co-design with Engineering and Land Use SMEs, Councils and the community;
- Stakeholder engagement and multi-criteria analysis;
- Novel noise control solutions

Sydney Metro (2018 - present)

Dave is currently part of the team delivering Noise and Vibration Technical Advisor services to Sydney Metro. This includes:

- Development of Acoustics, Noise and Vibration requirements for the Sydney Metro Design Standards Manual;
- Design reviews covering ground-borne noise and vibration, in-car noise, station design, PA systems, and airborne noise from train operations and fixed facilities;
- Measurement of construction noise and vibration, including from tunnel boring machines and cross passage excavation; and,
- Development of requirements specifications and contracts as relates to noise and vibration.

Cabramatta Loop Project (current)

Dave led the test team measuring ground-borne noise and vibration as part of the Interim ONVR.

Strategic Noise Action Plan, Transport for NSW (2013-2018)

Dave was an integral part, and then leader, of the team delivering the Transport for NSW Strategic Noise Action Plan. Key achievements include:

- Implementing the world's first wheel squeal performance standard, targeting rolling stock steering, including significant engagement across industry and government;
- Developing and proving, in partnership with private freight operators, inexpensive and effective mitigation measures to eliminate wheel squeal. This includes nearly 100 upgraded wagons currently in revenue service on which curve squeal has now been eliminated;
- Delivering the $50m Freight Noise Attenuation Program;
- Delivering the rail lubrication system for the Epping to Thornleigh Third Track Project;
- Delivering the first new engineering standard of the Asset Standards Authority, on rail lubrication; and,
- Delivering the TfNSW Bogie Test Rig, the only such facility in Australia.

Inner West Light Rail (2016)

Dave undertook an investigation into curve noise at Glebe. This involved measurement of rolling stock steering performance, noise and vibration, rail profile and rail friction.

Ground-borne Noise and Vibration Trackform Design - Theatre Royal (2011)

Dave led the test and analysis team investigating vibration isolating trackforms that could be implemented in-situ beneath the Theatre Royal on the Eastern Suburbs Rail Line in Sydney. This involved:

- Assessment of the vibration isolation performance of the existing trackform through measurements of noise, vibration and displacement under under revenue service;
- Design of vibration isolating trackforms that could be implemented without interrupting services;
- Management of in-car noise; and,
- Control of corrugation growth, and wheel and rail roughness.

Dave also contributed to a follow-up study into corrugation control at this location. This involved quantifying the impact of top-of-rail lubrication.

ESR Relief Ground-Borne Noise and Vibration Investigation (2011)

Dave led the team investigating community complaints of ground-borne noise above the Illawarra Relief Line in Redfern, Sydney. This included both attended and unattended noise and vibration measurements, including in the tunnel and in residences above the tunnel. The analysis included assessment of existing building isolation performance and the contribution from rail roughness to the noise in the residence.

ESR Viaduct NAP Study (2009)

Dave was a key member of the team undertaking the Rail Noise Abatement Program pilot study at Woolloomooloo in Sydney. This included both assessment of both airborne noise, and structure borne noise and vibration. Dave's assessment included noise source separation techniques to quantify the contributions of noise from the rails, wheels and viaduct to the noise at nearby residences. Dave undertook not only in-service noise and vibration measurements, but also track decay rate and rail roughness measurements to support this analysis.

Epping Chatswood Rail Link, Sydney (2008-2010)

Dave was a core member of the noise task force formed in 2008 to resolve issues with in-train noise (culminating in the first use of rail dampers in Australia). Dave developed the in-car noise prediction tool that formed the basis of the final mitigation design, developed and implemented the rail grinding strategy for the ECRL, and wrote the follow-up rail noise and vibration systems engineering guideline for RailCorp incorporating lessons learned from ECRL.

Passenger Car Ride Comfort Investigation, Sydney (2007-2008)

Dave was the central structural dynamics engineer involved in solving a passenger car ride comfort issue in NSW (specific project confidential). This involved introducing, for the first time, advanced vibration analysis and testing techniques to the rail industry in Australia. Dave performed the first transfer-path-analysis on an operating rail vehicle in Australia (possibly the world) and pioneered the use of operational modal analysis in the Australian rail industry. Dave was intimately involved in the commissioning of tuned mass dampers and the trialling of active vibration control systems, the first application of either technology in an Australian rail vehicle.

Selected Technical References (copies available on request)

1. Hanson D, Jiang J, Dowdell B, Dwight R, *"Curve Squeal: Causes, Treatments and Results"*, Proceedings of Internoise 2014, Melbourne
2. David Hanson, Jiandong Jiang, Bruce Dowdell, *Freight wagon steering - insights from wayside condition monitoring measurements*, Proceedings of CORE2016 Melbourne, 2016
3. Curley D, Anderson D, Jiang J, Hanson D, *"Field trials of gauge face lubrication and top-of-rail friction modification for curve noise mitigation"*, Proceedings of 11th International Workshop on Rail Noise, Sweden 2013

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18 December 2020

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Dear Sarah

Botany Rail Duplication SSI-9714 - Independence of Acoustic Advisor

With regard to the role of Acoustic Advisor Services for the Botany Rail Duplication SSI-9714 (the Project), Acoustic Studio proposes that I, Larry Clark, fulfill the role of alternate Acoustic Advisor.

It is understood that the Acoustic Advisor team must be independent of the construction and design team for the Project and those involved in delivery of it, including associated design, construction and delivery organisations and I hereby declare that:

- I am not related to any proponent, owner, operator or other entity involved in the delivery of the Project. Such a relationship includes that of employer/employee, a business partnership, sharing a common employer, a contractual arrangement outside of Acoustic Advisor services, or that of a spouse, partner, sibling, parent, or child;
- I am independent of the preparation of the EIS and Submissions Report and independent of the construction and design personnel;
- I do not have any pecuniary interest in the Project, proponent or related entities. Such an interest includes where there is a reasonable likelihood or expectation of financial gain (other than being reimbursed for performing Acoustic Advisor services) or loss as an Acoustic Advisor Representative, or their spouse, partner, sibling, parent, or child;
- I am not intending to join, nor am I in negotiations with a view to joining, the construction and design team for the project, or those involved in its delivery; and
- I will not accept any inducement, commission, gift or any other benefit from Project organisations, their employees or any interested party, or knowingly allow colleagues to do so.

I have been a member of the Australian Acoustical Society since 1997. As such, I am bound by and operate under the Code of Ethics and expectations of professional conduct associated with this organisation. I will also ensure that I will exercise my own independent professional judgement in fulfilling the Acoustic Advisor Representative Role and will carry out the role in an objective and professional manner at all times.

To the best of my knowledge and belief, there are no facts or circumstances, past or present, or that could arise in the foreseeable future, that need to be disclosed as they might be of such a nature as to call in to question my independence.

A copy of my CV is attached for reference.

Larry Clark

acoustic studio

Larry Clark

Acoustic Specialist, Consultant

Career Overview

Larry joined **Acoustic Studio** in September 2018, from the **NSW Environment Protection Authority**. He has over 30 years of experience in noise and vibration, environmental approvals and regulation, environmental sampling and measurements.

Prior to joining Acoustic Studio Larry was **Manager Technical Assessments Noise Unit** at the NSW EPA from 2005, and a Senior Noise Officer for the three years before.

Larry joined the EPA after fifteen years as a noise specialist and environmental scientist with **URS Corporation**, **Woodward-Clyde** and **Dames and Moore**.

During his University studies Larry had a number of jobs including stream sediment sampling in the Northern Territory, farm labourer and small business assistant.

Larry's diverse career assists him to relate comfortably to people of many backgrounds, and to communicate complex technical matters in simpler terms.

Qualifications

Bachelor of Natural Resource Management (BNatRes)

Professional Associations

Member of the Australian Acoustical Society, since 1997

Project involvement since joining Acoustic Studio

- One of 3 Acoustic Advisors approved by the NSW Department of Planning Industry and Environment for the Sydney Metro. In this role Larry's responsibilities include approvals for Out of Hours (night) works and endorsing of Construction Noise and Vibration Impact Statements, Construction Noise and Vibration Management Plans and the like.
- Witnessing external airborne, and internal ground borne, noise compliance measurements for new rail operations.
- Measuring noise levels of an existing operating rail line.
- Advice supporting negotiations on noise limits and conditions proposed in an Environment Protection Licence for a new rail line.
- Expert advice on noise and vibration associated with rail line excavation and tunnelling affecting a Melbourne heritage building.
- Noise and vibration impact assessment for redevelopment of a rail maintenance facility.
- Compliance measurements and reports for new and upgraded plant as part of a Sydney building redevelopment.
- Background noise measurements, various NSW locations.

Selection of NSW EPA experience

At the EPA Larry's core role was leading a team that critiqued literally hundreds of noise and vibration impact assessments, recommended conditions of approval and license limits and assisted EPA operational officers to negotiate those with developers and consent authorities. As manager, Larry reviewed and approved advice prepared by officers in his Unit.
EPA advice was usually published as a submission in the Major Projects Register on the Department of Planning and Environment's public website.

Compliance Assessments

Larry's EPA Unit measured noise from major industries and analysed the results to assess compliance with license limits. The team developed novel ways of processing audio and data files to support their findings.

Construction Noise

Larry worked closely with EPA, Department of Planning and Environment officers, and other stakeholders in developing license and consent conditions to minimize the construction noise impact of major infrastructure projects.

Locomotive and rail

Larry's unit reviewed the noise measurement results submitted with applications for new and substantially modified locomotives to operate on the NSW rail network. When an interstate locomotive was retrofitted with an upgraded muffler, Larry and staff measured noise levels alongside the operator's acoustic consultant, to verify that the noise levels had been reduced to meet NSW limits.

Larry's experience led to him recommend changes to the measurement of locomotive noise levels, which are in the process of being incorporated into environment protection licences for railway systems activities.

Larry provided expert scrutiny and technical guidance for the EPA's Diesel Locomotive Emissions Upgrade Kit Demonstration Project – Fuel Efficiency, Emissions and Noise Testing (https://www.epa.nsw.gov.au/-/media/epa/corporate-site/resources/air/diesel-locomotive-emissions-report.pdf?la=en&hash=88154EACADC62F3017667750E257BB0F57D4D876)

Since 1984 there have been noise limits for new locomotives wanting to operate on the NSW rail network. Applications included measured noise levels, which were held by the EPA in paper reports. This made analyses difficult, such as comparisons between locomotives and assessment of trends with time,

locomotive make or engine power. Larry managed a project that entered the reported levels into a database, included an electronic form that applicants needed to provide their data on so that it could be input to the database, and which allowed the levels to be presented graphically, for one or more locomotives, for ease of comparison.

Larry was the technical expert assigned to the policy officer during development of the **NSW Rail Infrastructure Noise Guideline**.

Larry was a member of the Steering Committee for development of the **Noise Policy for Industry**. The Committee was responsible for a number of innovative changes from the preceding **Industrial Noise Policy**.

Training

Larry and his team provided practical noise measurement training to groups during courses and also to individual EPA officers in the field. Larry directed development of a tablet-based noise monitoring form using the iauditor app.

Key Projects

Larry was EPA's technical expert providing noise impact and communication advice for other government departments in relation to the inaugural Newcastle Supercar series.

Following a request from NSW Police, Larry and a colleague provided specialist assistance on a homicide case, measuring, recording and reporting noise levels during a half day possession of a house.

Larry lead a team of noise officers scoping, resourcing and reporting airblast overpressure and ground vibration levels at a number of locations for the blast demolition of the tallest stack in the southern hemisphere. The demolition required evacuation of many houses and attracted a huge amount of local and media attention, causing traffic jams and overloading the mobile communications network. Due to adequate preparation, levels were successfully measured and EPA were able to provide them to the public within hours of the event.

EPA Publications and Projects

Assessing Compliance at Target Shooting Ranges
Larry led the EPA's response to a request for clarification of old guidance on measurement of shooting noise. This included scoping and directing field measurements by noise officers, method development, and writing of the technical guideline. (https://www.epa.nsw.gov.au/your-environment/noise/regulating-noise/target-shooting-ranges-noise) The method has since been made into NSW legislation: (https://legislation.nsw.gov.au/#/view/regulation/2017/449/sch2)

Validating Methods of Estimating Inversion Strengths
Larry was successful in obtaining a grant from the NSW Environmental Trust to evaluate the accuracy of lapse rate measurements for establishing the strength of atmospheric inversions.
The project included a desktop review of results from WA and two campaigns of measurements in the NSW Hunter Valley. (https://www.epa.nsw.gov.au/your-environment/noise/industrial-noise/nsw-industrial-noise-policy/estimating-inversion-strength)
The results were reported in a discussion paper written by Larry and his recommendations had direct relevance in development of sections in the NSW Noise Policy for Industry.

Wind analysis program
The NSW Noise Policy for Industry requires consideration of noise enhancement by wind, if light winds occur frequently in the day, evening or night of each season. Larry managed a project that developed a simple program that generated the necessary information from standard Bureau of Meteorology format data. (https://www.epa.nsw.gov.au/your-environment/noise/industrial-noise/nsw-industrial-noise-policy/wind-analysis-program)

URS, Woodward-Clyde, Dames and Moore

Larry began his career with a research project measuring dust emissions on open cut coal mines. He has installed meteorological and other environmental monitoring equipment in locations such as the Solomon Islands, remote Western Australia and Queensland. He had a significant part in a major health risk assessment of emissions from sewage sludge incinerators at North Head and Malabar. Larry was Environment Coordinator for the Amoco Australia Petroleum Company during exploration drilling, seismic surveys and production well testing for coal bed methane across the Sydney Basin.

Selection of experience:

- Expert witness, NSW Land and Environment Court, proposed hard rock quarry at Rydal, NSW.
- Expert Opinion Report for appeal in the NSW Land and Environment Court in relation to a Direction restricting activities.
- Noise Impact Assessment for Australian Defence Industries (ADI) Mulwala Munitions Facility Development.
- Environmental noise impact assessment, Macquarie Generation's gas turbine power station at Tomago, NSW.
- Environmental noise impact assessment (including computer model noise prediction), responses to noise issues raised at a Commission of Inquiry, and negotiation with EPA of General Terms of Approval, waste management facility, Woodlawn, NSW.
- Environmental noise impact assessment, using ENM computer noise prediction model, GTL Resources proposed methanol plant, Burrup Peninsula, Western Australia.
- Environmental noise impact assessment, preparation of Noise and Vibration Management and Monitoring Plans, and supervision of ongoing monitoring, for Goulburn-Murray Water's Remedial Works, Yarrawonga Weir, NSW/Victoria.
- Environmental noise impact assessments, gas turbine power plants at Somerton, Victoria and Hallet, South Australia, for AGL.
- Environmental noise impact assessment, hard rock quarry, New Caledonia, for Agence pour l'Eau et l'Environnement du Pacifique (A2EP).
- Noise measurements and text, Environmental Impact Statement for Introduction of the Hawk Lead-In Fighter, Department of Defence.
- Review of Noise Issues, Fleet Base East and Garden Island, for Department of Defence.

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18 December 2020

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acoustic studio is a member of the Association of Australasian Acoustical Consultants

Dear Sarah

Botany Rail Duplication SSI-9714 - Independence of Acoustic Advisor

With regard to the role of Acoustic Advisor Services for the Botany Rail Duplication SSI-9714 (the Project), Acoustic Studio proposes that I, Sav Shimada, fulfill the role of alternate Acoustic Advisor.

It is understood that the Acoustic Advisor team must be independent of the construction and design team for the Project and those involved in delivery of it, including associated design, construction and delivery organisations and I hereby declare that:

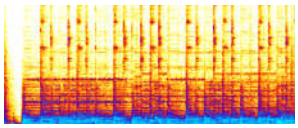
- I am not related to any proponent, owner, operator or other entity involved in the delivery of the Project. Such a relationship includes that of employer/employee, a business partnership, sharing a common employer, a contractual arrangement outside of Acoustic Advisor services, or that of a spouse, partner, sibling, parent, or child;
- I am independent of the preparation of the EIS and Submissions Report and independent of the construction and design personnel;
- I do not have any pecuniary interest in the Project, proponent or related entities. Such an interest includes where there is a reasonable likelihood or expectation of financial gain (other than being reimbursed for performing Acoustic Advisor services) or loss as an Acoustic Advisor Representative, or their spouse, partner, sibling, parent, or child;
- I am not intending to join, nor am I in negotiations with a view to joining, the construction and design team for the project, or those involved in its delivery; and
- I will not accept any inducement, commission, gift or any other benefit from Project organisations, their employees or any interested party, or knowingly allow colleagues to do so.

I have been a member of the Australian Acoustical Society since 2004. As such, I am bound by and operate under the Code of Ethics and expectations of professional conduct associated with this organisation. I will also ensure that I will exercise my own independent professional judgement in fulfilling the Acoustic Advisor Representative Role and will carry out the role in an objective and professional manner at all times.

To the best of my knowledge and belief, there are no facts or circumstances, past or present, or that could arise in the foreseeable future, that need to be disclosed as they might be of such a nature as to call in to question my independence.

A copy of my CV is attached for reference.

Sav Shimada



acoustic studio

Key Personal Data

Qualifications

BE (Hons) Mechanical Engineering
BA (Hons) Japanese, German

Professional Associations

Member of the Australian Acoustical Society

Career and Professional Information

Sav joined Acoustic Studio Pty Ltd in February 2014 from RailCorp NSW, and became a Director in July 2017.

Before discovering acoustic engineering, she researched New York City residential development trends for the Japanese Ministry of Housing and Urban Development, edited a children's science magazine, was a freelance writer and translator, and taught English in Japan.

Sav worked as an acoustic consultant in architectural acoustics, building services noise and vibration control and environmental noise, before working as an in-house noise specialist at RailCorp from 2006 to 2013. Her work spanned technical advice and research, strategy and policy, regulation and rail projects.

Sav's interest in a wide range of engineering and design disciplines informs her drive for integrated acoustic design with the aim of delivering environmentally viable systems which are comfortable and functional for the end users.

Projects and Experience

During her career as an acoustic engineer, Sav has worked on a range of cultural, educational, residential, commercial, health and road and rail operation and developments. She has experience in construction, transportation noise and vibration, room acoustics, mechanical services and human factors and safety.

Transportation and Construction

Technical Noise Advisor and Alternate Acoustic Advisor, Sydney Metro
Independent acoustic review role for operational and construction noise and vibration from Sydney Metro.

Melbourne Metro Technical Review
Technical reviewer for Melbourne Metro, of operational and construction noise and vibration assessments.

Technical Advisor B-Line Project
Independent technical advisor for Northern Beaches B-Line construction noise management.

Major Building Construction Noise Management Advisor
Advice to major building projects including Australian War Memorial and Queensland Performing Arts Centre, to ensure that construction practices are planned and managed to avoid impacts on these heritage-listed buildings.

Taronga Zoo African Savannah and Congo, UNSW Mathews Building
Construction noise and vibration assessment and management plans to manage impacts on animals.

Rail Maintenance Noise Review
Managed review of Sydney Trains' maintenance works practices to identify potential improvements.

Safety-related Acoustics
Led reviews of Level Crossing Audible Warning System standards, and stabling yard horn audibility requirements.

Station Public Address Systems
Design review and environmental policy development for railway station public address system upgrade.

Rail Infrastructure Noise Research
Topics included friction modifiers to control curve noise; turnout noise; steel bridge structure borne noise; corrugated rail and grinding-induced noise.

Sav Shimada

Acoustic Engineer, Director

Operational Rail Noise Impact Assessment
Carried out noise impact assessments for projects including concept reviews for a regional rail maintenance facility, heavy rail operational timetable noise impacts, and Wyong rail realignment.

Rail infrastructure project reviews
RailCorp acoustic advisor for Epping to Chatswood Rail Link, South West Rail Link, Kingsgrove to Revesby Quadruplication, and Stabling Yards.

Environmental Noise

Acoustic Reviews of Draft Environmental Noise Policies
Carried out acoustic reviews on behalf of TfNSW on draft guidelines including NSW EPA Rail Infrastructure Noise Guideline (RING, 2013), Noise Policy for Industry (NPfI, 2017), the Interim Construction Noise Guideline (2009) and the Construction Noise Guideline (currently in draft).

Alexandria and Paddington Town Halls
Acoustic options reviews for façade and internal upgrades to enable these heritage-listed buildings to be used for various functions including live music in residential areas.

Outdoor Developments

Taronga Zoo
Acoustic State Significant DA for Centenary Theatre, Sumatran Tiger Exhibit, and African Savannah and Congo precinct, review of outdoor Concert Series noise.

Sydney Opera House Forecourt
Acoustic State Significant DA for outdoor events.

UNSW Kensington Village Green
Acoustic DA for temporary Pavilions with regular live music and functions.

Training and Awareness

TfNSW RailCorp, Infrastructure and Services, Sydney Metro - Internal Training
Developed RailCorp noise and vibration Environmental Management System documentation and associated tools, and delivered training sessions for RailCorp, I&S and Sydney Metro to environmental professionals and project managers.

Acoustic "Mentor" – Internal Training

Acoustic mentoring and training session for architectural firm to assist with acoustic risk management in design.

Performance Venues

Performing Arts Venues
Currently leading the acoustic design for New Performing Arts Venue (Brisbane QPAC), Sutherland Entertainment Centre, and Whitehorse Centre (VIC). Performance space specialist for the Reimagining Arts Centre Melbourne project, and Geelong Arts Centre Stage 3 redevelopment.

Theatre acoustic modelling
Acoustic design and ODEON modelling for PLC Melbourne Creative Arts Centre, Bunjil Place (Casey), Cairns Performing Arts Centre, Sydney Lyric Theatre refurbishment, Wyong Art House, Roseville College Auditorium, Sydney Opera House – Opera Theatre (2003-2004 renewal concepts).

CarriageWorks at Eveleigh
Three flexible theatre spaces, workshop and offices in a heritage listed building. The acoustic works included mitigation for airborne and ground borne railway noise, mechanical services noise and variable room acoustic control.

Multi-use Developments with Acoustically Sensitive Spaces

Australian War Memorial Redevelopment
Acoustic lead for the redevelopment of four major buildings in the AWM grounds. Includes site-wide construction noise assessment and oversight, site-wide acoustic design guidelines, and acoustic design lead for all four buildings which house museum and gallery spaces, a theatre, function room, film studio, research, office, café, and central energy plant facilities.

Bunjil Place (Casey Cultural Precinct)
Acoustic design for library, council facilities, function space, theatre, art gallery, and performance studio.

UNSW Roundhouse refurbishment
Acoustic design for live performance space and student / conference facilities.

Hillsong Epicentre
Acoustic design of auditorium, TV and music studios and recording facilities, college and children's educational facilities, and indoor recreation spaces.

Cairns Convention Centre
Acoustic design for refurbishment and new additions to the convention centre.

Surry Hills Community Centre
Acoustic design for state of the art, sustainable design Surry Hills Community Centre, including a library, conference space and child care centre.

Recording Studios

Chief Entertainment Relocation
Acoustic services from concept to commissioning, for purpose-built TV studios, audio recording facilities, edit suites and control rooms.

UNSW Goodsell Media Production
Acoustic concept design to completion of Media Production Rooms in existing building.

Greenland Creative Hub
Acoustic design review on behalf of the City of Sydney, for recording studios, rehearsal rooms, and control rooms, including review of vibration isolation design requirements to manage ground borne noise from the future Sydney Metro tunnel.

Building Acoustics

Tertiary Educational and Research Buildings – New Facilities
Acoustic Design for UNSW School of Art and Design EPIC (STEAM) and Human Robotics projects, UNSW Electrical Engineering Building, UNSW Health Quadrangle, and the University of Wollongong Molecular Life Sciences Building.

Tertiary Educational and Research Buildings – Refurbishments
Acoustic advice and design for refurbishment and retro-fit solution projects for UNSW Library Levels 2 and 9 refurbishments, Tyree Building SPREE (research laboratories) building services upgrade project, Business School E12 and E15, Aviation K15 TARS, Façade refurbishments involving reviews of potential noise and vibration impacts on research animals.

Secondary Educational Buildings
St Luke's Grammar Multipurpose Hall; PLC Melbourne Creative Arts Centre; Stella Maris Science and Technology; Roseville College performing arts complex.