

4 May 2026

Melissa Dunlop
Department of Planning, Housing and Infrastructure
Via the Major Projects Portal

Dear Mel,

RE: Chain Valley Colliery Consolidation Project (SSD-17017460) Management Plans – Nomination of Experts

Delta Power & Energy (Chain Valley) Pty Ltd (**Delta Coal**) owns and operates Chain Valley Colliery (**CVC**). On 9 April 2026, the NSW Independent Planning Commission (**IPC**) approved the Chain Valley Colliery Consolidation Project (SSD-17017460).

As part of the development consent, a number of environmental management plans are required to be prepared prior to commencing development under SSD-17017460. These management plans are required to be prepared by suitably qualified and experienced person/s whose appointment has been endorsed by the Planning Secretary.

The management plans will be initially reviewed and prepared by suitable staff at Delta Coal, prior to review and update by suitable consultants with experience and expertise in the relevant technical areas. The suitably qualified persons the Delta Coal nominate and seek endorsement from the Planning Secretary for are provided in **Table 1**. Curriculum Vitae (CVs) of the nominated persons are provided in **Attachment 1**.

Table 1 - Delta Coal Environmental Management Plans - March 2026 Review Status

Condition	Management Plan	Nominated Reviewer/s
B8	Noise Management Plan	Teanuanua Villierme, Associate Acoustics Consultant - EMM Consulting Katie Teyhan, National Team Manager Acoustics - EMM Consulting
B16	Air Quality Management Plan	Francine Manansala, Senior Associate and Team Leader - Air Quality and Climate - EMM Consulting Dr Paul Boulter, Associate Director Air Quality and Climate - EMM Consulting





Condition	Management Plan	Nominated Reviewer/s
B27	Water Management Plan	Sally Callander, Associate Water Resources Engineer - Surface Water Lead - EMM Consulting Henry Noakes Associate Hydrogeologist - Groundwater Lead - EMM Consulting Adrienne Harvey Project Manager, Water Resources Engineer – EMM Consulting
C4(a)	First Workings Subsidence Monitoring Plan	Grant Lord, Registered Surveyor – Grant Lord Surveying and Drafting

Please contact the undersigned if you would like any further information or would like to discuss the proposed updates.

Yours sincerely,

Sean Pigott
Environment and Approvals Manager
Delta Coal
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Attachment 1: CVs of Nominated Persons



Teuanua Villierme

Associate Acoustics Consultant
EMM Consulting Pty Limited

Professional Overview

Teuanua is an Associate Acoustics Consultant at EMM, with over 15 years' consulting experience in Australia. Teuanua has worked primarily in the field of environmental noise and vibration across sectors including infrastructure, transport, extractive, waste and remediation, renewables and commercial. His project experience includes detailed noise modelling and the preparation of noise and vibration impact assessments as well as noise monitoring and sound power testing for mines, quarries, construction sites and other industrial and development sites. His skill set includes environmental, building, occupational, road traffic and rail noise monitoring and detailed noise modelling.

Qualifications and licences

Masters of Engineering Management, University of Newcastle, 2011

Bachelor of Applied Science, Southern Cross University, 2009

Member of the Australian Acoustical Society (MAAS) since 2013

Specialisation

Noise and vibration impact assessments

Noise monitoring and sound power testing

Representative experience

Energy, infrastructure and renewables

- Coffs Harbour Bypass, Coffs Harbour NSW (Ferrovia Gamuda Joint Venture) – Noise and vibration consultant
- Snowy 2.0 Exploratory Works, Snowy Mountains NSW (Snowy Hydro) – Noise and vibration consultant
- Hay Sun Farm, Balranald NSW (Overland Sun Farming) – NVIA author and lead noise and vibration consultant
- Hillston Solar Farm, Balranald NSW (Overland Sun Farming) – NVIA author and lead noise and vibration consultant

Mining and quarries

- Chain Valley Colliery Consolidation Project, Chain Valley Bay NSW (Delta Coal) – NVIA author and lead noise and vibration
- Cowal Gold Operations, Lake Cowal NSW – NVIA author and lead noise and vibration. Noise and blast monitoring program review for Noise Management Plan inputs.
- New Cobar Complex Project (Peak Gold Mines) – NVIA author and lead noise and vibration. Noise Management Plan author.
- Dubbo Quarry, Dubbo NSW (Holcim) – NVIA author and lead noise and vibration. Noise Management Plan author.
- Rasp Mine, Broken Hill NSW (Broken Hill Operations) – NIA author and lead noise consultant
- Dargues Gold Mine, Majors Creek NSW (Aurelia Metals) – Noise investigation study author and lead noise consultant
- Balranald Mine, Balranald NSW (Iluka Resources) – NIA author and lead noise consultant
- Potosi Mine, Broken Hill NSW (Perilya) – Noise and vibration consultant
- Ashton Coal, Camberwell NSW (Ashton Coal) – Noise and vibration consultant

- Newstan Colliery, Fassifern NSW (Centenial Coal) – Noise and vibration consultant
- Clermont Open Cut, Clermont Qld (Glencore) – Noise and vibration consultant
- Willow Tree Quarry, Willow Tree NSW (Willow Tree Gravels) – NVIA author and lead noise and vibration consultant
- Teven Quarry, Teven NSW (Boral) – Noise and vibration consultant
- Muswellbrook Coal Mine, Muswellbrook NSW (Muswellbrook Coal) – Noise and vibration consultant
- Johns River Quarry, Johns River NSW (Boral) – NVIA author and lead noise and vibration consultant
- Gunlake Quarry, Marulan NSW (Gunlake) – NVIA author and lead noise and vibration consultant
- Tritton Copper Mine, Hermidale NSW (Tritton Resources) – NVIA author and lead noise and vibration consultant
- Dubbo Zirconia Project, Toongi NSW (Alkane Resources) – NVIA author and lead noise and vibration
- Talbragar Quarry, Talbragar NSW (Boral) – NVIA author and lead noise and vibration

Commercial and industrial

- Warnervale Resource Recovery Facility, Warnervale NSW (Tricon Mining Equipment) – NVIA author and lead noise and vibration
- Georges Cove Marina, Moorebank NSW (Benedict Industries) – NIA author and lead noise and vibration
- Girraween Waste Recycling and Transfer Facility, Girraween NSW (Benedict Recycling) – NVIA author and lead noise and vibration
- Marsden Park Warehousing and Industrial Estate, Marsden Park NSW (Logos Property) – NVIA author and lead noise and vibration consultant
- Mayfield West Recycling Facility, Mayfield West NSW (Benedict Industries) – NVIA author and lead noise and vibration consultant
- St Peters Operations, St Peters NSW (Boral) – NVIA author and lead noise and vibration

Training services

- Preparation and delivery of noise training material (general acoustic theory, noise measurement and assessment) to Glencore environmental team



Katie Teyhan

Acoustics Team Manager
Associate Director - Acoustics Consultant
EMM Consulting Pty Limited

Professional Overview

Katie is EMM's national Acoustics Team Manager and a Director of the Association of Australasian Acoustical Consultants (AAAC, www.aaac.org.au). She has over 20 years' consulting experience in environmental acoustics for mining, industry, road and railway transportation systems. She is a practitioner in the measurement, prediction and assessment of noise and vibration associated with developments, as well as land use planning near infrastructure and industrial sites.

Katie's experience has provided many opportunities to demonstrate effective communication with regulators, community members and clients. She has been endorsed by the NSW Department of Planning and Environment (DPE) to conduct peer reviews, prepare management plans and act as Acoustics Advisor on major infrastructure projects. She has undertaken audits and prepared expert evidence in relation to noise and vibration assessment, methodology and compliance. Katie has demonstrated experience in delivering expert noise and vibration advice and has contributed to innovative solutions regarding the measurement and assessment of noise emissions from industrial and transport developments.

She has developed and delivered external acoustics and vibration training services and has been a lecturer at the University of Newcastle in the faculty of Engineering and the Built Environment.

She enjoys a collaborative approach to problem-solving and can effectively communicate regarding the highly technical topics of noise and vibration to a variety of audiences.

Qualifications and licences

Bachelor of Engineering, Mechanical (Hons I), University of Newcastle, 2002

Bachelor of Mathematics, University of Newcastle, 2001

Advanced Diploma of Management, University of Ballarat, 2013

Certificate IV Training and Assessment, Forsythes, 2020

Specialisation

Environmental acoustics

Measurement, prediction and assessment of noise and vibration

Noise and vibration methodology and compliance

Representative experience

Energy and Infrastructure

- Borumba Pumped Hydro Project, Technical Lead – Noise (Queensland Hydro)
- Coffs Harbour Bypass – noise and vibration consultant (Ferrovia Gamuda Joint Venture)
- Suburban Rail Loop Works Package D – noise and vibration consultant (Terra Verde)
- Albury to Ilabo, Inland Rail – Acoustics Advisor (ARTC)
- M4-M5 Link – part of the WestConnex project, tunnelling construction noise and vibration impact statement, LSBJV

Mining and quarries

- Gunlake Quarry, Marulan - noise assessment, compliance monitoring, preparation of noise management plan and ongoing advice (Gunlake Quarries)
- Mangoola, noise assessment and monitoring since 2015 including targeted low frequency noise investigations, ongoing acoustical advice and development of noise prediction tool; Hunter Valley NSW (Glencore)
- Tahmoor Colliery, noise impact assessment, continuing advice for the noise mitigation program for Tahmoor South Project, noise management plan review (Simec)

Commercial and industrial

- Waste Recycling Facility, operational noise impact assessment to accompany EIS and modifications, Kurri Kurri NSW (Central Waste Services)
- Gunlake Concrete Batch Plants (various), noise investigations and noise impact assessments (Gunlake Concrete)
- Alspeck Business Park, noise assessment for Masterplan and development applications (HB+B Property Pty Ltd)

Land use planning

- Broadmeadow Place Strategy – noise and vibration technical advice to inform the strategic and master planning for the project (NSW DPPI)
- Narrabri Special Activation Precinct (SAP), preparation of the technical noise study to inform the MasterPlan, NSW (Department of Planning and Environment)

Independent audits and peer review

- Hunter Valley Continued Operations project noise impact assessment peer review; Hunter Valley NSW (Glencore)
- Bulga Coal independent environmental noise audit – noise specialist

Training services

- Preparation and delivery of noise training material (general acoustic theory, noise measurement and assessment, managing and mitigating noise) to a variety of government and industry groups: Fulton Hogan, Gamuda, Parkes Shire Council, EPA Tasmania, Queensland Urban Utilities, Boral, AGL and various mining companies
- Lecturer at the University of Newcastle in the faculty of Engineering and Built Environment, 2003 and 2004

Expert witness

- Proposed mosque, Elemore Vale NSW



Francine Manansala

Senior Associate and Team Leader - Air Quality and Climate
EMM Consulting Pty Limited

Professional Overview

Francine has over 17 years of environmental consulting experience specialising in air quality. Her areas of expertise include emission and dispersion modelling.

Francine has been responsible for the detailed technical work on air quality management plans and assessments for various sectors and industries, including road transport, mining and odour. She has undertaken the modelling work for several major road infrastructure projects, including the three stages of WestConnex and associated projects, as well as several large open-cut coal mines in the Gunnedah and Hunter regions.

Francine has also led various air quality and/or odour assessment projects for industrial activities, greenhouse gas assessments, air quality monitoring, air quality management plans, NPI reporting, auditing, and risk-based construction works. She has recently led Climate Change Risk Assessments (CCRA) and has experience in providing clients with advice on the Safeguard Mechanism.

Qualifications and licences

Bachelor of Arts in Resource and Environmental Management,
Macquarie University, 2008

CASANZ Certified Air Quality Professional (CAQP)

President of the Clean Air Society Australia & New Zealand
(CASANZ)

Specialisation

Air quality management plans

Emission and dispersion modelling

Greenhouse gas assessments

Air quality monitoring

NPI reporting

Risk based construction works

Climate change risk assessment

Representative experience

Air quality management plans

- 200 Aldington Road Industrial Estate Lot F construction air quality management plan (Stockland Fife Kemps Creek Pty Ltd)
- Suburban Rail Loop East Package D environmental air quality and dust management plan (TerreVerde on behalf of Suburban Rail Loop Authority)
- Boral Geelong Clinker and Slag Grinding Facility, air quality management plan (Boral Cement Ltd)
- Dubbo Quarry air quality and greenhouse gas management plan (Holcim Pty Ltd)
- Vopak Port Botany Project: Site B Expansion Stage B4A, air quality management plan (Vopak)

Air quality impact assessments

- Western Harbour Tunnel and Beaches Link, air quality assessments, Sydney NSW (Jacobs)
- Sydney Gateway project, air quality assessment, Sydney NSW (WSP/GHD)
- F6 Extension – Stage 1, air quality assessment, Sydney NSW (AECOM)
- WestConnex - M4 East, New M5 and M4-M5 Link, air quality assessments, Sydney NSW (Sydney Motorway Corporation)

- Dartbrook Open Cut Project, air quality assessment, Dartbrook NSW (Australian Pacific Coal Limited)
- Shenhua Watermark coal project, air quality impact assessment, Breeza NSW (Shenhua Watermark)

Technical air quality guidance

- Good Practice Guide for the Assessment and Management of Air Pollution from Road Transport Projects (CASANZ)
- Optimisation of the application of GRAL in the Australian context, Sydney NSW (Roads and Maritime Services)
- GRAL model guidance for Brisbane City Council (BCC)

Transport and infrastructure

- CPB Contractors, BAM, Ghella and UGL Joint Venture - Cross River Rail Southern Portal worksite - emissions and dispersion modeling of activities at the Southern Portal and Woolloongaba Cross River Rail construction sites, QLD
- Model comparison study, Sydney NSW (Roads and Maritime Services)
- Iron Cove Link portal study, Sydney NSW (Roads and Maritime Services)
- Lane Cove Tunnel ventilation investigation, Sydney NSW (Roads and Maritime Services)
- Review and quality checking of TRAQ (Tool for Roadside Air Quality), Sydney NSW (Roads and Maritime Services)
- Lane Cove Tunnel: a comparison of monitoring data before and after construction of the tunnel and an assessment of impacts, Sydney NSW (Roads and Maritime Services)
- Sydney Airport air quality master plan, Sydney NSW (Sydney Airport Corporation Limited)
- Port Macquarie Airport Parallel Taxiway air quality impact assessment, Port Macquarie NSW (King & Campbell Pty Ltd)
- Construction Dust Assessment for the Olympic Dam South and Roxby Downs West Accommodation Villages, Adelaide SA (BHP Billiton Olympic Dam Corporation Pty Ltd)

Mining and extractive

- Eva Copper Mine Pty Ltd - Eva Copper Project - AQIA for the proposed Eva Copper Project, northwest QLD

- Queensland Pacific Metals - Townsville Energy Chemicals Hub – AQIA and GHG assessments completed for a proposed laterite ore refinery south of Townsville
- QPM Pacific Metals Pty Ltd - Proposed new interim storage facility at Port of Townsville - prediction of air quality impacts from the new storage facility at the Port of Townsville, QLD
- Upper Hunter regional primary particle model, NSW (NSW Environment Protection Authority)
- ACARP Project C26024: Coal mine particulate emission factor validation, Sydney NSW (ACARP)
- Mount Owen Continued Operations, air quality impact assessment, Upper Hunter Valley NSW (Glencore)
- Boggabri, Tarrawonga, Maules Creek Emissions Estimation, Upper Hunter Valley NSW (Idemitsu Australia Resources and Whitehaven Coal Limited)
- Rocky Hill Coal Project, air quality impact assessment, Rocky Hill NSW (RW Corkery)
- Stratford Coal Mine extension, air quality impact assessment, Stratford NSW (Gloucester Coal & Resources Strategies)
- South Keswick Quarry, air quality impact assessment, South Keswick NSW (Regional Hardrock Pty Ltd)
- Bylong Coal Project, air quality impact assessment, Bylong NSW (KEPCO Bylong Australia Pty Ltd)

Industrial emissions

- Perilya North Mine stacks modelling, Perilya NSW (Leuhr Filter)
- Allied Mills food ingredient site upgrade, air quality assessment, Tamworth NSW (Allied Mills Pty Ltd)
- Wollert brickworks, air quality assessment, Wollert VIC (Austral Bricks)
- Orica Kooragang Island release incident, air quality assessment, Kooragang Island NSW (Orica Limited)

Odour assessment

- Wilsonton retail development, odour impact assessment (FKG Group)
- Box Hill, Schofields and West Schofields Precinct Planning, odour impact assessments, Box Hill/Schofields NSW (Department of Planning and Environment)
- Proposed East Tahmoor residential rezoning, odour impact assessment, East Tahmoor NSW (Wollondilly Shire Council)
- Several residential development projects in Tahmoor, odour impact assessments, Tahmoor NSW (Wollondilly Shire Council)
- Several residential development projects in Leppington/Austral, odour impact assessments, Leppington and Austral NSW (Cardno, Liverpool Council and private developers)
- Four Lanterns Estate, odour impact assessment, Leppington NSW (Aspen Group)
- Leppington Childcare Centre, odour impact assessment, Leppington NSW (The Great Indoors)
- KFC Manly, odour impact assessment, Manly NSW (Cardno)

Publications

Over 100 technical reports and papers. Details are available on request. Selected publications:

- Manansala, F, Boulter, P, Barnett, J & Kurz, C 2017, Optimisation of the application of GRAL in the Australian context. Report AQU-NW-012-21062: http://www.chiefscientist.nsw.gov.au/__data/assets/pdf_file/0011/125030/ACTAQ-GRAL-optimisation-MAIN.pdf
- Boulter, P & Manansala, F 2014, Lane Cove Tunnel ventilation investigation, report prepared for NSW Roads and Maritime Services, September 2014. Pacific Environment, North Sydney.
- Manansala, F, Boulter, P & Barnett, J 2014–2018, WestConnex M4 East, New M5 and M4-M5 Link – Environmental Impact Statements. Technical Working Paper: Air Quality. NSW Roads and Maritime Services.
- Manansala, F, Boulter, P, Barnett, J & Kurz, C 2017, Performance of the GRAMM-GRAL model system in the vicinity of an urban arterial road. Paper presented at the *23rd International Clean Air and Environment Conference*, Brisbane, Queensland, 15-18 October 2017.
- Barnett, J, Manansala, F 2013, 'The NSW EPA 'Dust Stop: Pollution reduction program' for coal mines – an overview and analysis', paper presented at the CASANZ Conference, Sydney, NSW, September 2013
- Manansala, F, Holmes, K 2011, Review of the air quality monitoring and modelling predictions before and after the opening of the Lane Cove Tunnel, Sydney, paper presented at the *CASANZ Conference*, Auckland, New Zealand, August 2011.



Dr Paul Boulter

Associate Director Air Quality and Climate
EMM Consulting Pty Limited

Professional Overview

Paul has 30 years of research and consultancy experience in air pollutant emissions and air quality, and has a detailed understanding of the science, legislation and policy. He has worked with a range of public and private clients in Australia and overseas, including the Australian Government, Transport for NSW, NSW Department of Planning and Environment, EPA Victoria, the UK Government and the European Commission.

Paul has extensive knowledge of air quality management, including impact assessment, modelling, monitoring and mitigation. He has successfully delivered air quality assessments for some of Australia's largest infrastructure projects, including WestConnex, the Western Harbour Tunnel and Beaches Link. He has also led multi-disciplinary teams of scientists, engineers, health specialists and economists, and has coordinated complex assessments of projects, technologies, measures, regulations and policies. Many of Paul's projects have involved the synthesis and analysis of large datasets, as well as detailed technical reviews. He has recently managed reviews of the national air quality standards in Australia, and a national cost-benefit analysis for the management of non-road diesel engine emissions.

Qualifications and licences

Doctor of Philosophy (Road Vehicle Emissions), University of Middlesex, 2002

Master of Science (Atmospheric Sciences), University of East Anglia, 1994

Bachelor of Science (Hons) (Chemistry), University of Manchester, 1991

Clean Air Society of Australia and New Zealand (CASANZ) Certified Air Quality Professional (CAQP)

Specialisation

Transport-related emissions and air quality

Air quality impact assessment, modelling, monitoring and mitigation

Analysis to support the development of emissions and air quality policy and regulation

Representative experience

Air quality management plans

- Russel Vale Colliery (Wollongong Coal)
- Moorebank Avenue Realignment Works – Construction Air Quality Management Plan (Arcadis)
- Rasp Mine (CBH Resources)

Air quality impact assessments

- River Torrens to Darlington (T2D) Project (T2D Alliance on behalf of the South Australian Government)
- M5 East Air Licence Application (TfNSW)
- Sydney Harbour Tunnel air emissions and pollution studies (SHTC)
- Moorebank Avenue realignment (Sydney Intermodal Terminal Alliance)
- Western Harbour Tunnel and Beaches Link, air quality assessments, Sydney NSW (Jacobs)
- F6 Extension – Stage 1, air quality assessment, Sydney NSW (AECOM)

- WestConnex - M4 East, New M5 and M4-M5 Link, air quality assessments, Sydney NSW (Sydney Motorway Corporation)
- F6 Extension project, air quality and greenhouse gas assessment, Sydney NSW (Aurecon)
- Post-project air pollution impact assessment, Ireland (National Roads Authority)
- Sydney Airport T2/T3, air quality assessment, including EDMS development, Sydney NSW (AECOM)
- Sydney Airport - air quality assessments for various developments including Terminal 1 ground access improvements, an air traffic control tower and a Virgin Hangar, Sydney NSW (AECOM)
- Air quality study to support the Sydney Airport Master Plan and Environment Strategy, Sydney NSW (AECOM)
- Perth MAX light rail, air quality assessment, Perth WA (WA Department of Transport)
- Rail emission modelling (UK Department for Transport)

Greenhouse gas assessment

Pumped hydro and reservoirs:

- Oven Mountain Pumped Hydro Energy Storage Project (OMPS)
- Lake Lyell Pumped Hydro Energy Storage (EnergyAustralia)
- Clarrie hall dam Clarrie Hall Dam Wall Raising (KBR)
- Muswellbrook PHES (Muswellbrook Pumped Hydro)

Energy:

- Restart of Redbank Power Station and use of biomass as a fuel (Verdant Earth Technologies)
- Woodlawn Advanced Energy Recovery Centre (Veolia Environmental Services)

Mining:

- Rasp Mine – Modification 13 (Broken Hill Operations)
- Eva Copper Project Amendment (Eva Copper Mine)
- HVO Continuation Project Amendment (HV Operations)
- Clarence Colliery Modification 11 (Centennial)

Policy and regulation

- Cost-benefit analysis of options for managing non-road diesel engine emissions in Australia (Department of Agriculture, Water and the Environment)
- Market analysis of the non-road diesel engine sector (Marsden Jacob Associates)
- Review of Airports (Environment Protection) Regulations 1997 (Department of Infrastructure, Transport, Regional Development, Communications and the Arts)
- Review of the Ambient Air Quality NEPM standards for SO₂, NO₂ and O₃, Vic (Environment Protection Authority Victoria)
- Information report to enable NEPC decision on whether to vary the PM standards in the AAQ NEPM (NEPC Service Corporation)
- Economic analysis of the National Plan for Clean Air (particles) (NEPC Service Corporation)
- Methodology for Valuing Health Impacts of Changes in Particle Emissions, NSW (Office of Environment and Heritage)
- TEDDIE, development of a new test procedure for the measurement of NO/NO₂ and PM emissions during the periodic technical inspection of road vehicles (European Commission)
- PM_{2.5} concentrations, sources and regulatory impacts of new policy frameworks in the UK (SNIFFER)
- Electric vehicles: Review of type-approval legislation and potential risks (European Commission)

Climate change risk assessment

- Oven Mountain Pumped Hydro Energy Storage Project (OMPS)
- Lake Lyell Pumped Hydro Energy Storage (EnergyAustralia)
- Clarrie hall dam Clarrie Hall Dam Wall Raising (KBR).
- Restart of Redbank Power Station and use of biomass as a fuel (Verdant Earth Technologies)

Precincts

- Narrabri Special Activation Precinct – noise, air quality and odour studies (NSW DCCEEW)
- Moree Special Activation Precinct – technical assessment framework (NSW Regional Growth Development Corporation)

Publications

More than 250 technical reports, journal papers, book chapters and articles. Details are available on request.

Selected publications:

- Smit R & Boulter P 2024, Impacts of mode shift on well-to-wheel emissions from inter-capital transport in Australia: Part II – Sea and air transport. *Explora: Environment and Resource*, 2024, 1(1), p. 3471.
- Smit R & Boulter P 2024, Impacts of mode shift on well-to-wheel emissions from inter-capital transport in Australia: Part I – Road and rail transport. *Explora: Environment and Resource*, 2024, 1(1), p. 3470.
- Boulter P, Cope M, Hanigan I, Chaston T, Morgan G, Kulkarni K, Noonan J & Vander Hoorn S 2023, Towards the regulation of non-road diesel emissions in Australia – a national impact pathway model, *Air Quality and Climate Change*, 57(2).

- Boulter P & Kulkarni K 2019, A review of the Australian air quality standards for SO₂, NO₂ and O₃, *Air Quality and Climate Change*, 54(1).
- Manansala F, Boulter P, Barnett J & Kurz C 2017, Optimisation of the application of GRAL in the Australian context. Report AQU-NW-012-21062: http://www.chiefscientist.nsw.gov.au/__data/assets/pdf_file/0/011/125030/ACTAQ-GRAL-optimisation-MAIN.pdf
- Martin A N, Boulter P G, Roddis D, McDonough L, Patterson M, Rodriguez M, Mattes A & Knibbs L D 2016, In-vehicle nitrogen dioxide concentrations in road tunnels *Atmospheric Environment* Volume 144, pp. 234–248.
- Boulter P G, Borken-Kleefeld J & Ntziachristos L 2012, The evolution and control of NO_x emissions from road transport in Europe *Handbook of Environmental Chemistry*, DOI 10.1007/698_2012_162, Springer-Verlag, Berlin.
- Boulter P 2012, Surface transportation impacts on air quality *Encyclopedia of Sustainability Science and Technology* (Robert A. Meyers (ed.)), pp. 244–279, Springer Science and Business Media.
- Smit R, Ntziachristos L & Boulter P G 2010, Validation of road vehicle and traffic emission models: A review and meta-analysis *Atmospheric Environment* Volume 44, pp. 2943–2953.
- Sokhi R S et al 2008, An integrated multi-model approach for air quality assessment: development and evaluation of the OSCAR air quality assessment system *Journal of Environmental Modelling and Software* Volume 23, pp. 268–281.
- Thorpe A J, Harrison R M, Boulter P & McCrae I S 2007, Estimation of particle resuspension source strength on a major London Road *Atmospheric Environment* Volume 41, pp. 8007–8020.



Sally Callander

Associate Water Resources Engineer
EMM Consulting Pty Limited

Professional Overview

Sally has over 17 years' experience in the water industry. She has been a consultant to mining and extraction companies and worked in local government. Sally is an experienced practitioner in surface water assessments and management plans, water balance assessments, water quality assessments, hydrologic and hydraulic modelling and floodplain impact assessment and risk management development and policy. Sally has also been involved in draining and flooding development assessments, stormwater and flooding policy development and strategic advice, and community and stakeholder engagement.

Qualifications and licences

Bachelor of Engineering, Environmental (Hons I), University of Newcastle, 2008

Specialisations

Mine water management

Surface water assessment and management plans

Water licensing and regulation

Water balance and water quality assessments

Floodplain impact assessment and risk management

Representative experience

Water management

- Boggabri Coal Mine Modification Project, surface water impact assessment, North West NSW (Idemitsu)
- Fingerboards Minerals Sands Project, conceptual mine water management strategy, East Gippsland VIC (Kalbar Resources)
- New Cobar and Peak Complexes, water management plan, Cobar NSW (Aurelia)
- Moorland Quarry, surface water impact assessment and post approval documentation, Moorland NSW (Dronhawk)
- Hunter Transmission Project, surface water impact Assessment, Hunter Valley NSW (EnergyCo)
- Mt Holland Lithium Mine, water disposal options assessment, Mt Holland WA (Covalent Lithium)
- Chain Valley Coal, water management plan review, Lake Macquarie NSW (Lake Coal)
- Airly Mine, surface water impact assessment, Central Tablelands NSW (Centennial Coal)
- Newstan Colliery, water management plan, Lake Macquarie NSW (Centennial Coal)
- Awaba Colliery, pollution control dam assessment, Lake Macquarie NSW (Centennial Coal)
- Newstan Colliery, erosion and sediment control plan, Lake Macquarie NSW (Centennial Coal)
- Watermark, feasibility study, Breeza NSW (Shenhua Watermark)
- Al Ba'itha Bauxite Mine, gap analysis, Saudi Arabia (Ma'aden Alcoa)
- Boggabri Coal Mine, feasibility study, Boggabri NSW (Idemitsu)

- Awaba Colliery, management plans, Lake Macquarie NSW (Centennial Coal)
- Mandalong Colliery, groundwater assessment, Lake Macquarie NSW (Centennial Coal)

Water licensing and regulation

- Stratford and Duralie Mines, mine closure water licensing review, Gloucester NSW (Yancoal)
- Stratford and Duralie Mines, hydroline reassessment, Gloucester NSW (Yancoal)
- Liverpool Range Wind Farm, water access advice, Liverpool Range NSW (CPB Contractors)
- Hunter Transmission Project, preliminary water source options assessment, Hunter Region NSW (EnergyCo)
- Boggabri Coal Mine, water licensing review, Boggabri NSW (Idemitsu)

Water balance

- Brockman Syncline 2 Pit 8, closure pit lake water balance and water quality assessment, Pilbara WA (Rio Tinto Iron Ore)
- Moolart Well Duketon Gold Mine, closure pit lake water balance and water quality assessment, Bandya WA (Regis Resources)
- Dargues Gold Mine, Mod 6 water balance, NSW (Aurelia)
- Carrapateena Gold and Copper Mine, water reliability assessment, South Australia (OzMinerals)
- Ophthalmia Dam - Eastern Pilbara Hub, water balance updates and forecasting, Pilbara WA (BHP)
- Fingerboards Minerals Sands Project, water balance, East Gippsland VIC (Kalbar Resources)
- Western Coalfield, regional water balance, Lithgow NSW (Centennial Coal)
- Newstan Colliery, water balance, Lake Macquarie NSW (Centennial Coal)
- Coal Logistics, master water balance assessment and options assessment, Lake Macquarie NSW (Centennial Coal)
- Charbon Mine, water balance, Charbon NSW (Centennial Coal)
- Angus Place Colliery, water balance, Angus Place NSW (Centennial Coal)

- Awaba Colliery, water balance, Lake Macquarie NSW (Centennial Coal)

- Telarah stormwater quality investigation, Maitland NSW (Maitland City Council)

Floodplain management

- Newstan Colliery, flood impact assessment, Lake Macquarie NSW (Centennial Coal)
- Residential flood level assessment, Red Rock NSW (Confidential Client)
- Tank burst assessment, Central Pilbara WA, (Sherps Consulting for Rio Tinto)
- Fill impact assessment, Coffs Harbour NSW (Confidential Client)
- Medowie floodplain risk management plan and study, Medowie NSW – Port Stephens Council Project Manager
- Anna Bay and Tilligerry Creek flood study, Anna Bay NSW – Port Stephens Council Project Manager
- Lower Hunter Flood Emergency Tool Project, Lower Hunter Valley NSW – Port Stephens Council Project Manager
- Development Control Plan, flood chapter revision (Port Stephens Council)
- Floodplain risk management advice on developments including rezonings, single scale developments and large scale residential and industrial developments (Port Stephens Council)

Civil design

- Boggabri Coal Rail, detailed design, Boggabri NSW (Idemitsu)

Industrial water management

- Windfarm water access advice, Hunter Valley NSW (confidential client)
- Three Mile Hill Landfill, surface water impact assessment, Blackhill NSW
- Warnervale Recycling Facility, surface water impact assessment, Warnervale NSW (Tricon Equipment)
- Polo Flat, surface water impact assessment, Cooma NSW (Snowy Hydro)
- Teven Quarry, water management plan revision, Teven NSW (Holcim)
- Clarence Colliery, irrigation area assessment, Clarence NSW (Centennial Coal)
- Scone Abattoir, water management plans, Scone NSW (Primo)
- Surface water impact assessment and water management plans for cable manufacturing plant, Tomago NSW (Midal Cables)

Urban and infrastructure water management

- Water quality monitoring advice for the M12RT motorway extension project, Black Hill to Raymond Terrace (Transport for NSW)
- Water quality and quantity impact assessment of a residential development on a downstream wetland, Lake Macquarie NSW (Confidential Client)
- Molonglo stormwater quality options assessment, Canberra ACT (ACT Planning and Land Authority)



Henry Noakes

Hydrogeologist
EMM Consulting Pty Limited

Professional Overview

Henry has more than 10 years' experience in environmental and groundwater consulting, with a focus on long-term groundwater remediation projects and the groundwater aspects of renewable energy transitions. He is proficient and confident in the delivery of large-scale, complex groundwater projects for critical state significant infrastructure development applications and post approval client support. Henry has led multiple assessments for state significant approval applications, including work-planning, site investigation works and lead-authoring assessments to inform groundwater conceptualisation and impact assessment. He has experience interfacing with key project stakeholders including government, regulators, subcontractors and project delivery agencies to ensure communication pathways are clear and flexibility is maintained in response to stakeholder concerns.

Henry's recent experience has encompassed multiple pumped hydro energy storage (PHES) project, including extensive involvement with Snowy 2.0, Lake Lyell PHES, Oven Mountain PHES and Muswellbrook PHES.

Qualifications and licences

Bachelor of Civil Engineering (Hons), University of Newcastle, 2014

Member Engineers Australia

Member International Association of Hydrogeologists

Member Australasian Land and Groundwater Association

Member Australian Geomechanics Society

Specialisation

Delivery of groundwater impact assessments

Water resources and licensing

Remediation planning

Infrastructure design

Representative experience

- Snowy 2.0 – Modification 3 groundwater impact assessment, Cooma NSW (Snowy Hydro Limited)
- Snowy 2.0 – Model validation, Cooma NSW (Snowy Hydro Limited)
- Snowy 2.0 – Dashboard development project, Cooma NSW (Snowy Hydro Limited)
- Snowy 2.0 – Stage 4 groundwater drilling investigations and water supply securement, Cooma NSW (Snowy Hydro Limited)
- Cowal Gold Operations water supply options assessment, Lake Cowal NSW (Evolution Mining)
- McPhillamys Gold Project, Hydrogeologist, Blayney NSW (Regis Resources)
- Waratah Rivulet hydrogeological conceptualisation and remediation, Helensburgh NSW (Peabody Energy)
- Geological model conceptualisation and development, Newcastle NSW (Subsidence Advisory)
- Collie open pit dewatering exploration program, Collie WA (Griffin/ Lanco Resources)
- Munmorah Power Station contaminant plume investigation and remediation, Lake Munmorah NSW (Generator Property Management)
- Gove Operations groundwater contamination investigation, drilling supervision, hydraulic testing and groundwater sampling, Nhulunbuy, NT (Rio Tinto Alcan)
- Kurnell Landfill hydrogeological conceptualisation and quality assurance, Kurnell NSW (Breen Resources)
- Summerhill Waste Management Centre, hydrogeological conceptualisation and subsidence damage assessment, Wallsend NSW (City of Newcastle)
- Kembla Grange Recycling Centre, groundwater monitoring network rationalisation, Kembla Grange NSW (Bingo Industries)
- Moranbah North Coal, underground expansion hydrogeological drilling supervision and conceptualisation, Moranbah NSW (Anglo American)
- Rockhampton Landfill, hydrogeological conceptualisation and monitoring network rationalisation, Rockhampton QLD (Rockhampton Council)
- Orica Kooragang Island, heavy metal and hydrocarbon plume investigation and remediation, Kooragang Island NSW (Orica)
- WestConnex, pumping tests, aquifer simulations and ongoing groundwater monitoring for major tunnel infrastructure, Sydney NSW (LDSJV)



Adrienne Harvey

Water Resources Engineer
EMM Consulting Pty Limited

Professional Overview

Adrienne is a water resources engineer with approximately 5 years' experience in water assessments across the mining, energy, and waste sectors. Adrienne's key areas of work include delivering water impact assessments and post approval management plans for major mining and renewable projects in NSW, water licensing and regulation assessments and water management assessments. She is proficient in water balance modelling software (GoldSim) and has delivered several water balance model assessments for mining clients in NSW.

She is a curious and practical problem solver with a strong interest in achieving positive environmental outcomes. Adrienne produces clear and thorough reporting and analysis with a very high attention to detail. She aims to meet all project timeframes and communicates effectively with all stakeholders.

Qualifications and licences

Bachelor of Engineering (Environmental) (Hons 1) University of Newcastle, 2021

Specialisation

Surface water resources engineering, including Surface Water Impact Assessment and Water Regulation

Representative experience

Water Impact Assessment

- Northparkes Mine Modification 10, author, Water Management Assessment, Goonumbla NSW (Evolution)
- Northparkes Mine Modification 11, author, Water Management Assessment, Goonumbla NSW (Evolution)
- Constellation Copper Mine Project, author, Water Impact Assessment, Girilambone, NSW (Aeris)
- Airly Mine Modification 5, author, Water Balance Assessment, Capertee NSW (Centennial Airly)
- Dapper Solar Farm, author, Water Impact Assessment, Central West Orana REZ (Origin Energy)
- Steel River East Battery Energy Storage facility, author, Water Impact Assessment, Newcastle NSW (Ausgrid)
- Homebush Battery Energy Storage facility, author, Water Impact Assessment, Homebush NSW (Ausgrid)
- Mount Piper to Wallerawang Transmission project, author, Water Impact Assessment, Wallerawang and Portland, NSW (Transgrid)
- Bromelton Composting facility in Bromelton SDA, co-author, water assessment, Bromelton QLD (Soilco)
- Boggabri Coal Mine, author, response to submissions, Water balance climate change modelling, Boggabri NSW (Idemitsu)
- Water resources assessment for a Water Treatment Project in NSW (confidential)
- Water resources assessment for a Coal Mining Modification in NSW (confidential)
- Water resources assessment for a Hydrogen, Solar Farm and Transmission project in NSW (confidential)

Environmental assessments

- Springvale Mine Water Management Options Assessment, co-author, Newnes, NSW (Centennial Springvale)

- Confidential Gold Mine, author and site lead, water management assessment, NSW (confidential)
- Airly Mine, author and site lead, quarterly water monitoring reports 2021–2023, Capertee, NSW (Centennial Airly)
- All Centennial sites, monthly site water balance updates modelling and author 2023–2025 (Centennial)

Water Management Plans

- TGO and SAR Mines, author, Water Management Plan, Central west NSW (Alkane resources)
- Federation and Hera Copper Mine, author, Water Management Plan, central west NSW (Aurelia)
- Existing copper mine, author, Water Management Plan, central west NSW (Harmony) *ongoing*
- Newstan Colliery, Project manager and lead author, Newstan Coal Complex Water Management Plan, multiple coal mines in western Lake Macquarie (Centennial Newstan)
- Several western Lake Macquarie/Western Coal Field mine Water Management Plans and Extraction Plan Water Management Plans

Mine closure and asset transition

- Leadville Silver Mine, author, surface Water and Soils Rehabilitation Water Management Plan, central west NSW (Legacy Mines)
- Surface water closure approvals pathway assessment for power station in NSW (confidential)
- Confidential Coal Mine, author, closure surface water strategy, including water balance (confidential)

Water licensing and regulation

- Mine in southeast NSW, co-author of Harvestable Rights review and assessment, south-east NSW (Confidential)
- Mount Arthur Coal, author, NSW Non-Urban Metering reform advice, Muswellbrook, (BHP)
- Moolarben Coal Complex, co-author, Water licensing review, Moolarben, NSW (Yancoal)
- Moolarben Coal Complex, author, Water Metering Review, Moolarben, NSW (Yancoal)
- Water licensing support advice for a gold mine in central west NSW (confidential)

CURRICULUM VITAE

GRANT LORD

Career Summary

I am registered as a Mining Surveyor (unrestricted) in NSW, with over 45 years experience working in the Australian coal mining industry. During this time I have worked both as the Statutory Mine Surveyor and in charge of the Technical Services Departments of various mining operations within the Hunter Valley and Bowen Basin.

Extensive experience in surveying, mine subsidence, mining legislation, leases, property, mine planning and budgeting, as well as historical mine plan research and the development of Subsidence Management Plan / Extraction Plan applications and associated management plans and programs.

I have previously set up the surveying departments for 3 new mining operations, including initial surveys, staff recruitment and office/data storage setup. Over the past 20 years I have had the opportunity to mentor a number of young up and coming surveyors, mentoring them into achieving their registration as mine surveyors.

Professional Experience

- Currently the Registered Mine Surveyor at Chain Valley Colliery (since 2021).
- Senior Mine Surveyor at Carborough Downs longwall operations.
- Registered Mine Surveyor of Abel Underground Mine, including historical mine workings research in relation to potential inrush issues.
- Registered Mine Surveyor Chain Valley Colliery in a caretaker role while mentoring site surveyor to achieve his registration.
- Development of rejects emplacement applications and management plans for Ravensworth Mine and United Colliery.
- In charge of Surface Infrastructure & Technical Services at Newpac No.1 (Ravensworth) Underground Mine.
- Registered Mine Surveyor of Tasman Underground Mine, carrying out initial and ongoing surveys for start of mining operations
- Registered Mine Surveyor Awaba Colliery.
- Project Surveyor for Kayuga Underground Coal Project - including survey control of incline drifts intersecting the adjacent Dartbrook Mine workings, interseam bin and ventilation shaft construction.
- Registered Mine Surveyor / Technical Services at Nardell / Newpac No.1 underground mine.
- Statutory Mine Surveyor / Technical Services Coordinator at Wallarah Colliery.
- Extensive research into historical mines and associated risks (particularly inrush) to the Wallarah underground operation.