



Benbow
ENVIRONMENTAL



“Engineering A Sustainable Future For Our Environment”

CAPABILITY STATEMENT
2016



Benbow
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A.B.N. 17 160 013 641

COMPANY OVERVIEW

Benbow Environmental (BE) is an Australian owned environmental consultancy firm that provides environmental engineering services to government, public and private businesses and the community. We assist in the planning, design, development and management of state, regional and local projects from large scale building developments to heavy industry, manufacturing and farming operations.

We specialise in environmental management and engineering assessments, plans and audits including:

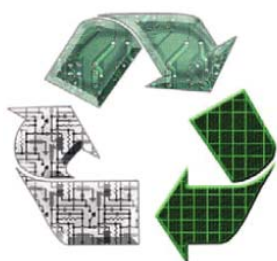
- Noise and acoustics;
- Air and odour;
- Planning and development;
- Environmental Impact Statements (EIS);
- Waste management;
- Dangerous goods, chemicals, risk assessment and fire safety;
- Cleaner production and greenhouse gas assessments;
- Asbestos management;
- Groundwater investigation;
- Site contamination;
- Occupational hygiene;
- Environmental audits;
- Environmental Protection Licence (EPL) compliance audits;
- Pollution Incident Response Management Plans (PIRMP), testing and staff training;
- Emergency Response Plans (ERP) testing and staff training;
- EPA Air Emission Inventory.

Benbow Environmental was founded in 1983 as Dick Benbow and Associates. Since then the Benbow Group of companies continued to expand and this resulted in the formation of Benbow Environmental in 2006. Benbow Environmental combined Dick Benbow and Associates (DBA), Environmental Audits of Australia (EAA), and Australian Occupational Hygiene Services (AOHS). The formation of this single entity resulted in superior service delivery to clients through streamlined operating efficiencies and business processes, as well as a greater ability to continue to meet the expansion of the organisation. We have offices located in Sydney and Wollongong.

BE continually demonstrates environmental commitment to its industry partners through quality assurance. Our programme follows ISO 9002 methods to bring clients valuable and timely recommendations, guidance and action. Benbow Environmental works with all clients, regardless of their size, as partners and warrants that all of its services are conducted with thorough and professional competence.

We invite you to browse through this capability statement to find out how Benbow Environmental can help you achieve cost-effective ways to improve and manage your corporate environmental needs.

R.T. Benbow
Founder and Principal Consultant





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OUR CAPABILITIES

Benbow Environmental specialise in a range of environmental engineering services to assist in the planning and design of new developments and the management and monitoring of existing industrial, manufacturing and farming operations.

Noise and Acoustics

With 30 years of experience, BE are recognised nationally as specialists in the field of Acoustics and Vibration. Our highly skilled noise consultants provide expertise for noise problems for instance from industrial and commercial noise emissions, residential road traffic intrusion, internal noise quality, noise complaints and noise in the workplace. We provide solutions to noise problems by specifying and designing appropriate mitigation measures. Key areas we can assist in are noise impact assessments, noise monitoring and compliance, noise management plans and occupational noise assessments.

Noise impact assessments are often required for development applications for a proposed new industrial or manufacturing facility or as a response to complaints. Assessments involve detailed modelling of several operational scenarios and contour mapping results. BE use NSW EPA recognised modelling program SoundPlan to determine the potential noise effects on the surrounding area. We have a comprehensive range of noise instruments including noise data loggers, sound level meters, dosimeters and a sound intensity analyser that are used as part of our assessments.

BE undertake noise monitoring and compliance testing in response to legal requirements or noise complaints. We can measure noise at the source, monitor noise at the sensitive receptor from industrial operations and check noise exposure of staff in a workplace.

Based on results of noise assessments, modelling and monitoring, Benbow Environmental specify cost-effective noise control and mitigation measures and can prepare noise management plans which advise strategies that can be implemented to reduce noise levels.





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Air and Odour

Benbow Environmental assists industry, regulatory authorities and the wider community by investigating odour and air quality issues and offering pragmatic and cost-effective solutions. This includes measuring emissions and air quality in accordance with Australian Standards, modelling air dispersion and air pollution impacts, developing management programmes and controls, and interpreting the regulations concerning air matters.

BE has extensive experience in undertaking air and odour impact assessments using EPA-approved air dispersion modelling programs AUSPLUME, AERMOD and CALPUFF for a broad range of industries including metal processing, aerosol manufacturing, the food industry, poultry farms, energy generation and renewable energy plants. Our expertise includes contour mapping of odour, air dispersion and pollution levels that delivers a diagrammatic representation of predicted pollution levels from the source.

Air and odour monitoring is often undertaken due to legal obligations or as a result of a complaint. BE quantitatively determines impacts using odour dilution units (ODU) or odour units (OU) as units of measurements, using olfactometry analysis from a specialised device. From these measurements, specific odour emission rates can be calculated. These test results are used as inputs into the air dispersion modelling programs, and can be objectively validated using a real time field measurement device – the “Nasal Ranger”. BE can also arrange and interpret results of stack testing for stack emissions from industry.

BE undertakes site investigation works to determine sources of odour in workplaces and health sensitive areas such as office buildings, shopping centres and carparks using our extensive expertise in chemicals and material properties, research, analytical methods, and systematic problem solving.

BE design cost-effective solutions to air and odour problems specifying pragmatic controls and developing management programmes to mitigate emission levels. Our expertise extends to design of ventilation equipment, industrial stacks and development of solutions for workplace exposure to air emissions.

An odour enclosure has been developed for the poultry industry that achieves >50% reduction in odour for tunnel ventilated sheds.





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Planning and Development

Benbow Environmental work with public and private clients, government and the community in the planning, design, development and management of projects from large scale building developments to heavy industry, manufacturing and farming operations. Environmental planning is a growing element of the development process and continues to grow in importance as community expectations of sustainable development increase and statutory controls become more stringent.

Planning and development is regulated by state, regional and local plans and policies. We principally assess the environmental impacts of industrial and commercial developments, with over 20 years' experience in this area. Our qualified consultants are highly experienced in the preparation of detailed Environmental Impact Statements for complex developments, and can also provide specialist advice in preparing the necessary documentation and environmental studies for development applications as well as undertake consultation with regulatory authorities and other stakeholders.

Environmental Management Plans and Auditing

Environmental auditing is recognised as a vital step in the management of environmental issues. BE's team of qualified, experienced environmental auditors can undertake a range of audits. Our audit reports offer more than a simple compliance statement by providing risk assessments, corrective actions, pragmatic and best practice recommendations to assist in managing environmental issues. We undertake the following types of audits:

- Compliance audits including environmental and dangerous goods audits;
- Management audits to verify whether stated objectives are being met such as audits of a business' environmental management system or plan; and
- Functional audits such as for water and energy.

Our services include the preparation, testing and staff training of:

- Environmental Management Plans (EMPs);
- Pollution Incident Response Management Plans (PIRMPs);
- Emergency Plans;
- EPA Air Emission Inventory preparation and submission.





Dangerous Goods and Chemicals

Benbow Environmental's experienced consultants can provide expert advice on the handling, storage and transport of dangerous goods and undertake studies required for compliance or to evaluate risk. Our capabilities in this area include:

- Hazardous area zoning;
- Auditing for compliance with zoning requirements;
- Design of engineering solutions to satisfy hazardous area zoning requirements;
- Design of dangerous goods storage areas;
- Notifications to WorkCover;
- Chemical and dangerous goods manifests;
- Emergency Response Plans and staff training;
- Fire safety studies;
- Preliminary hazard analysis;
- Hazard and operability (HAZOP) studies; and
- Assessment of major hazard facilities.

Fire Safety

Fire Safety studies are prepared by Benbow Environmental in response to a client's request or due to regulatory requirements. Our experience includes:

- Assessing fire protection equipment for industrial plants;
- Design of industrial plants to prevent fire-fighting water from polluting stormwater systems;
- Preparation of Emergency procedures for fires at a plant that uses or stores chemicals;
- Computer modelling of risk to a community if a fire occurs at a plant using or storing chemicals;
- Preparing detailed Fire Manifests to Hazmat's exacting requirements;
- Fire management studies for local government approval of industrial development;
- Evaluation of toxic contaminants released from chemicals and fires;
- Training and procedures in fire safety; and
- Due diligence programmes.





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Risk

Risk assessment is a useful management tool that can be applied to decision making for a range of environmental and chemical management issues. Benbow Environmental have developed quantitative risk assessments using an extensive list of potential hazards we have identified from our long history of work experience in manufacturing and chemical processing plants.

Risk assessments are applied to our work in occupational hygiene, air modelling, chemical management and hazard analyses. Techniques have been developed to use computational methods to quantify consequences of events. These methods include the latest air dispersion models, fault tree analyses, and TNO Effects model for heat of radiation, explosions and release of toxic emissions.

Our depth of environmental engineering and understanding of processes enables our clients to benefit from pragmatic and cost effective solutions to reduce the risk to acceptable levels.

Cleaner Production and Greenhouse Gas Assessments

A cleaner production assessment identifies opportunities to reduce waste and pollution that increase business productivity and efficiency. Benbow Environmental prefer a pragmatic approach involving development of an on-site cleaner production team that includes site personnel to assist our consultants provide a meaningful assessment.

The assessment identifies process inefficiencies and opportunities for improvement. Taken further, feasibility studies can be undertaken on specific opportunities to enable potential financial and environmental savings to be realised.

Greenhouse gas assessments are now a standard requirement for many development applications. Our GHG assessments follow the accepted GHG standards and protocols and base calculations for GHG emissions on the GHG Protocol Corporate Standard and the National Greenhouse Accounts (NGA) Factors. Direct and indirect GHG emissions are estimated in tonnes of CO₂-e per annum. Options to reduce sources of greenhouse gas emissions are also provided.





Asbestos Management

Asbestos management involves a staged process specifically designed for the problem that exists. This usually involves the first step of a hazardous substance audit.

A rigorous auditing protocol is followed involving inspecting the site, buildings, yard areas, roof spaces, under floor and air conditioning for presence of friable asbestos, asbestos insulations and asbestos containing materials. The audit includes lead-based paints and polychlorinated biphenyls (PCB's).

A NATA approved laboratory independent of Benbow Environmental is used to analyse the samples.

BE has experience in asbestos management that spans 30 years. Many difficult and unique projects have been successfully undertaken such as:

- Roadways surfaced with road bases containing fragments of chrysotile and tremolite;
- Quarrying basalt with seams of tremolite for a breakwater project;
- Decontaminating primary schools;
- Addressing teachers and parents; and
- Remediation of numerous sites.

Our services include preparation of health and safety plans, supervision and air monitoring, and certificates of clearance.

Contamination

Benbow Environmental have extensive experience in undertaking assessments to determine the extent and nature of existing site contamination and potential health risks. An assessment is usually required to satisfy a requirement of a development approval or to determine environmental liabilities prior to purchase of a site. Our services include:

Phase I Environmental Site Assessment – site history to determine the likelihood that contamination exists at the site.

Phase II Environmental Site Assessment involving on-site investigation and testing of soil and groundwater to confirm the nature and extent of contaminants that exist at the site. This information is then used to assess whether there would be an unacceptable risk to human health and the environment exists as a result of the proposed land use.

Benbow Environmental uses a best practice approach to soil sample a potentially contaminated site which has a greater accuracy than conventional methods for identifying hotspots.





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Environmental Monitoring

Benbow Environmental can provide environmental monitoring services appropriate to your company's needs. We have experienced personnel capable of developing and undertaking environmental monitoring programs in noise, water, groundwater, soil, air (dust, odour, smoke and gas) and occupational hygiene. Our specialised monitoring equipment, an independent NATA approved analytical laboratory together with our experienced consultants can undertake sampling, evaluate results and provide a detailed report. Our services in environmental monitoring include:

- Noise - long term logging, attended measurements, traffic noise monitoring;
- Water/Groundwater monitoring for compliance and auditing;
- Soil/Contamination – including Phase 1 and Phase 2 Site contamination studies, Remediation Action Plans (RAP), acid sulphate soil management plans (ASSMP), salinity management plans;
- Air monitoring for compliance and auditing;
- Sampling and assessment of a range of substances including, respirable dust, inhalable dust, respirable quartz, volatile organic compounds (VOCs), and stannic chloride;
- Sampling of moulds in office environments (Sick Building Syndrome).

Occupational Hygiene

Our occupational dust experience extends over 20 years. In conjunction with our occupational hygiene laboratory and an independent NATA approved analytical laboratory, a wide range of particulate matters can be measured. Predominant amongst these is respirable quartz. We maintain a large number of personal sampling pumps, anemometers, Dusttraks and other air quality devices. Our services in occupational hygiene include:

- Personal and static pump sampling;
- Sampling and assessment of a range of substances including, respirable dust, inhalable dust, respirable quartz, volatile organic compounds (VOCs), and stannic chloride;
- Sampling of moulds in office environments;
- Annual sampling programmes;
- Design of solutions to contaminant exposure; and
- Recommendations of appropriate personal protective equipment (PPE).





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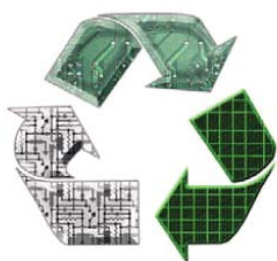
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Waste

Benbow Environmental are highly experienced in providing advice regarding waste, including design of waste management facilities, resource recovery facilities and landfills. We assist businesses with waste avoidance and reduction initiatives, develop waste minimisation programs, undertake waste audits and advise on classification of waste.

Specialised Services

Benbow Environmental's broad range of expertise allows us to provide assistance to clients with specific environmental needs. We have facilitated government funded environmental programs and been involved in research and development of environmental initiatives in areas such as pollution control and waste management. We have also tailored environmental training programs to suit clients' requirements. If you have a specific environmental need, please contact us to find out how we can help!





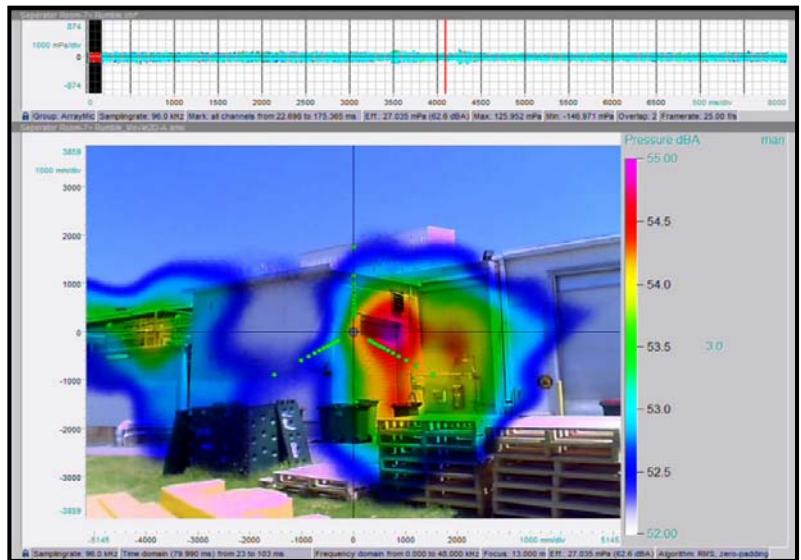
OUR PROJECTS

Benbow Environmental undertake a broad range of projects for small, medium and large clients. The following are just a small sample of some recent projects we have been involved in:

- Energy Developments Ltd** Occupational noise assessments requiring specification of hearing protection for workers in specific areas at each site, across 11 sites in Victoria and South Australia.
- Bega Cheese** Noise source investigation using a number of techniques to identify the main noise contributors on site and recommend and design noise control measures to comply with the site's Environmental Protection Licence for the Bega Cheese manufacturing facility in NSW.
- Michael Brown Planning Strategies** Noise Impact Assessment, Air and Odour Impact Assessment, Greenhouse Gas Assessment and Waste Management Plan to support an Environmental Impact Statement for expansion of a poultry processing facility in NSW.

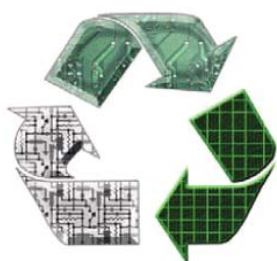


Application of "pyrotek" a noise control product.



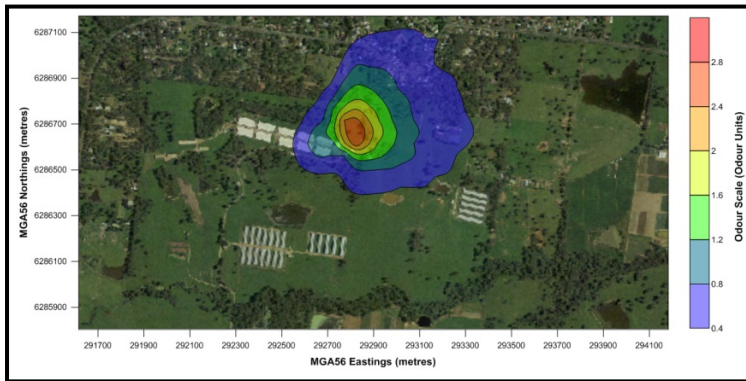
Noise hot spots as seen through an acoustic camera.

- Super Retail Group Sydney** Preliminary Hazard Analysis (PHA), Final Hazard Analysis (FHA), and Environmental Assessment Strategy to support a development application for the proposed warehousing and distribution centre containing dangerous goods.

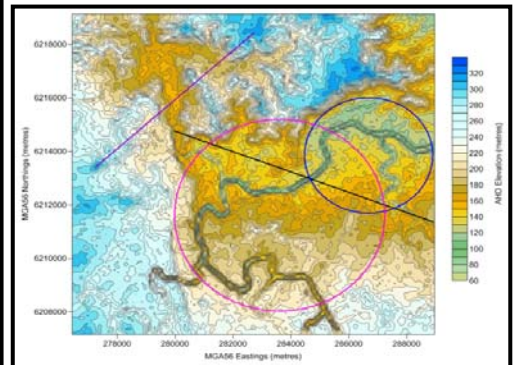




- Statewide Planning** Environmental Impact Statement, Preliminary Hazard Analysis and Safe Work Method Statement for the remediation of a heavily asbestos-contaminated site at Camellia (former James Hardie site)
- Washington Brown** Environmental sustainability and hazardous materials due diligence audits for large shopping complexes and buildings in NSW, QLD and VIC.
- Lincoln Electric** Phase I and II Environmental Site Assessments for soil and groundwater, Asbestos register identifying presence of asbestos and hot spots, soil gas sampling for divestment of a manufacturing site that has ceased operations in NSW.
- Pool Resources** Emergency and Pollution Incident Response Management Plan for operation of a chemical warehousing and distribution facility in Bankstown, NSW.



Odour concentration isopleths.



CALPUFF Modelling: Selection of parameters.

- NSW Poultry Industry** Facilitation of the Industry Partnership Program – Profiting from Cleaner Production, funded by NSW EPA.
- Ingal Civil Products** Environmental Impact Statement to support a development application for the relocation and upgrade of a steel fabrication and galvanising facility in Minto, NSW.



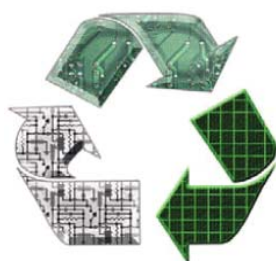


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CSR Limited	Environmental management system audit.
ABC Paper and Paper Mill	Load based licensing calculations and annual return for EPA licensing requirements.
Anyfil Skip Bins	Air and Greenhouse Gas Impact Assessment to support a development application for a proposed skip bins and waste recycling facility.
State Asphalts NSW	Fire Safety Study and Emergency Plan to support a development application for a proposed mobile asphalt plant.
APCS Pty Ltd	Preparation of Emergency Response Plan (ERP), Safety Report, Security Plan and Safety Management System for the operation of the Petrochemical Storage facility located at Williamson Road, Ingleburn.
Hytec Pty Ltd	Noise and air impact assessments relating to the extension of the existing Hartley Quarry and Air Quality Assessment for proposed extension of the Austen Quarry. Environmental assessments and detail of control measures for large production capacity concrete plants operating 24/7.
Catholic Schools Office	Hazardous substances audit of various primary and secondary schools.
3M Australia Pty Ltd	Statement of Environmental Effects (SEE) to address the environmental issues related to the proposed development at Blacktown.
Industrial Galvanizers Pty Ltd	Environmental Site Assessment of the landholding at Preston, Victoria.
Peteli Uniting Church	A remediation programme was undertaken at the site of the Peteli Uniting Church at Cecil Park. The programme involved decontaminating the site of the new Church and the Church grounds where asbestos cement, i.e bonded asbestos contamination was known to exist. The remediation followed the Remediation Action Plan prepared by Benbow Environmental.
Bega Co-operative Society Limited	Dangerous Goods Risk Assessment report presents the findings of a dangerous goods audit and risk assessment for the Facility operated by Bega Co-operative Society Limited at Bega.
Hardman Australia	Emergency and Pollution Incident Response Management Plan (plan) for the operation of a chemical processing plant by Hardman Australia at Seven Hills.





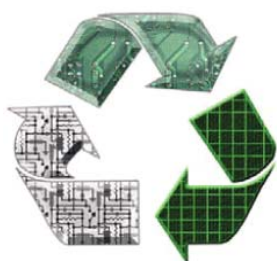
LIST OF CLIENTS

This is a list of recent clients that Benbow Environmental have had the privilege to assist with their environmental concerns.

- ABC Paper and Paper Mill Pty Ltd
- Alcoa Australia Rolled Products
- AMCOR Pty Ltd
- APCS Pty Ltd
- Back to Earth The Mulchmakers
- Bega Cheese
- Big W
- Carbon Polymers
- Catholic Schools Office
- CSR Limited
- CQMS Razer
- Downer EDI Rail
- Energy Developments Limited
- Glass Recovery Services
- Goulburn Holdings Group Pty Ltd
- Hamilton Gray Properties Pty Ltd
- Holcim Australia Pty Ltd
- Hosking Munro Pty Ltd
- Hy-Tec Industries Pty Ltd
- Industrial Galvanizers Corporation Pty Ltd
- Ingal Civil Products
- Silk Logistics
- Lincoln Electric Pty Ltd
- Macquarie University
- Marist Brothers
- Mixed Media
- North Byron Parklands
- Nu-Tech Group Pty Ltd
- Owens Illinois (Australia) Pty Limited
- Pool Resources Pty Ltd
- Prysmian Group
- Red Bull Australia Pty Ltd
- Rochford Winery
- SCE Recycling Pty Ltd
- Shinagawa Refractories Australasia
- Sika Australia
- Sims Metal
- Sydney Harbour Federation Trust
- Statewide Planning Pty Ltd
- Numerous Poultry Farms
- Visy Pulp and Paper Pty Ltd
- Warner Music
- Washington Brown
- Woolworths Pty Ltd

INSURANCE DETAILS

- Professional Indemnity Insurance \$ 10,000,000 each claim or \$ 20,000,000 in aggregate
- Public Liability Insurance \$ 20,000,000 each claim
- Workers Compensation \$ 575,000





ACCREDITATIONS

- Acoustics – Benbow Environmental is a member firm of the Association of Australian Acoustical Consultants (AAAC). RT Benbow was the past Vice Chairman of AAAC for a 6 year period.
- Chemicals – Accredited Dangerous Goods Consultant Classes 2, 3, 4, 5, 6.1, 8 & 9. R T Benbow was founding Vice President and wrote the Code of Practice on Ethics.
- Occupational Dust – Mines Inspection Division.

PROFESSIONAL ASSOCIATIONS

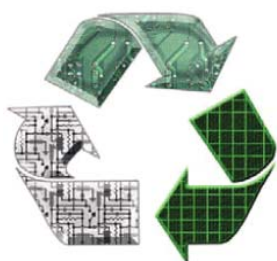
Benbow Environmental is represented in the following professional associations:

- Environment Institute of Australia and New Zealand (EIANZ);
- Australian Acoustical Society (AAS);
- Association of Australian Acoustical Consultants (AAAC);
- Clean Air Society of Australia and New Zealand (CASANZ);
- Australian Institute of Occupational Hygienists (AIOH);
- Australasian Institute of Dangerous Goods Consultants (AIDGC);
- Engineers Australia;
- Planning Institute of Australia (PIA);
- Waste Management Association of Australia (WMAA); and
- Australian Institute of Building (AIB)
- American Conference of Governmental Industrial Hygienists (ACGIH).
- National Fire Protection Association (NFPA)

WHAT YOU CAN EXPECT

Benbow Environmental are committed to customer service excellence and employ highly qualified and experienced consultants who work closely with our clients to understand their requirements and deliver pertinent outcomes. We strive to engineer sustainable solutions to make the world a healthier place for the future. Our mission is to:

- deliver complete, cost-effective and sustainable solutions.
- work in close consultation with our clients to provide a personalised level of service and cater for their specific needs whilst maintaining a high standard of technical expertise and practical experience.
- promote environmental sustainability for our clients businesses by providing best practice guidance.
- work as a strategic partner with our clients, regulatory authorities and the community to strengthen environmental and occupational health performance and greenhouse gas management.





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