

Creating and delivering
environmental solutions
for the mining sector

Resourcing the world

Veolia Australia and New Zealand
www.veolia.com.au



Veolia is a leading provider of environmental solutions to the mining sector across water and wastewater services, industrial cleaning, facilities maintenance, waste management, resource recovery and energy services.

Veolia helps companies in the mining sector to maximise productivity while limiting their environmental footprint.



Improve mine profitability, productivity and stakeholder engagement

A valued partnership with Veolia provides customers within the mining sector:

- > **Security of supply:** Exceptional project planning and implementation ensures our customers facilities run at full operational capacity; minimising delays, equipment downtime and interruptions.
- > **Access to flexible and highly skilled labour:** National coverage and a significant employee base allows our customers the flexibility required for various projects, including remote and/or regional operations. With over \$4M spent on training in 2014 alone, Veolia can provide the skilled labour needed to deliver efficiency and reliability to the mining sector.
- > **Delivery of technical innovation:** Veolia works closely with customers to deliver innovative technical solutions to increase efficiencies, reduce risks and increase safety performance.
- > **Access to both specialised and bundled service capabilities:** Veolia can provide solutions which bundle our specialised capabilities across water, waste, industrial solutions and energy services; delivering economies of scale and a truly robust environmental competence.
- > **Community consultation and stakeholder engagement:** Our goal is to work with your organisation on delivering meaningful community education around water, waste and energy management in relation to mining, ensuring transparency and accessibility.

Delivering innovation to meet our customers' needs

TOMAGO ALUMINIUM:

Partnering with heavy industry to deliver an integrated solution across energy, industrial cleaning and wastewater management

Tomago Aluminium is a leading manufacturer of aluminium products currently representing 25% of Australia's primary aluminium capacity. Tomago Aluminium is operated by Rio Tinto Alcan, Gove Aluminium Finance Ltd (CSR and AMP) and Hydro Aluminium.

Building a trusted partnership

With an initial 4 year contract awarded in 2005 to Veolia's industrial cleaning and environmental services division, the relationship between both companies is long-standing and has become a partnership built on trust and reliability. Within that time, Veolia has also introduced a fully integrated service to Tomago which now also includes water and energy management.

By integrating industrial cleaning, HVAC and water treatment capabilities, Veolia have been able to deliver the following solutions for Tomago Aluminium:

- > **Amalgamated plant services:** high pressure water jetting, vacuum loading, materials separation and recycling, general support services to smelting operations
- > **Waste management and resource recovery:** handling of process waste for recovery, general waste and recyclables, hazardous liquid waste collection
- > **Facilities and civil maintenance:** electrical, plumbing, carpentry, roof replacement, road and concrete repairs, painting, road sweeping

- > **Refractory services:** potline and ladle strip out, installation, commissioning and equipment
- > **Integrated energy management:** HVAC services including on-site mobile plant monitoring
- > **Water management:** off-site water management, with on-site water recycling and reuse proposed to Client

Addressing client's challenges with innovative solutions

Integration delivers benefits to the client and provides a framework for future solutions for mining and heavy industry sectors. At Tomago, the following benefits have been delivered by partnering with Veolia:

- > Single source supplier managing a suite of services at a consistent level of safety and quality
- > Reduced administration and management support functions
- > Stringent KPI system which is reported and reviewed monthly with all key stakeholders
- > Formal continuous improvement process; delivering recordable and sustainable cost savings to Tomago
- > Asset register and total cost of ownership focus
- > Effective cost management
- > Environmentally sustainable solutions for the recovery of waste materials, recycling and reuse of water and greater energy efficiency



Case studies

ENERGY RESOURCES AUSTRALIA:

An advanced water treatment solution that is protecting the fragile surrounding eco-system

Challenge: Ranger Uranium Mine operated by Energy Resources of Australia (ERA) is used to generate around one per cent of the world's electricity, with minimal carbon emissions. ERA required an environmental solution that would treat wastewater created during the uranium refining process in order to protect the fragile surrounding ecosystem.

Solution: In 2013, ERA selected advanced brine concentrator technology from Veolia to treat and reduce process water inventory from its Ranger Uranium Mine.

Veolia's operations group lent their assistance in the early design stages of the Brine Concentrator and was subsequently awarded an operations and maintenance contract by ERA to effectively manage the system and to achieve the desired performance outcomes.

The solution is now a critical part of ERA's overall water management strategy and environmental protection initiatives.



CENTENNIAL COAL:

Partnering with Australia's coal mining industry to secure hot water supply

Challenge: The Clarence Colliery located in NSW's Blue Mountains region is owned by Centennial Coal and produces approximately 2.5 million tonnes of coal per annum. A key challenge for the Client was the high demand for hot water at end of work shifts, often leading to hot water supply issues.

Solution: In 2009, Veolia's energy business was commissioned to deliver a solution to address the hot water supply issues. The project involved the supply and installation of new variable speed air compressors with heat recovery from the facility's oil cooling system to significantly reduce electrical energy consumption of the main bathhouse at their facility. This project has reduced greenhouse gas emissions by approximately 1,390 tonnes of CO2-e per year; equating to an annual energy saving of 1,311MWh for Centennial Coal.



BHP BILLITON:

Minimising environmental impacts through technical innovation

Challenge: BHP Billiton Iron Ore (BHPBIO) required a solution to minimise iron dust levels in Port Hedland, WA; resulting from iron ore mining and processing activities within the region.

Solution: In 2009, Veolia's industrial cleaning division was engaged by BHPBIO to assist them in reducing their iron dust levels. As such, Veolia provides vacuuming and sweeping of ore and dust across the facility. An additional crew has also been engaged to provide constant hosing of onsite structures and chutes to reduce dust.

Veolia also invested in a specialised fleet of sweepers, modified to include: increased hydraulic oil capacity, double spray nozzles, larger water pump, larger auxiliary engine for torque, and 200% increased water capacity to deliver longer online sweeping.

These sweepers allow BHPBIO to maintain black roads in and around the site.



Delivering solutions at every stage of the mining lifecycle

PLANNING, DESIGN AND CONSTRUCTION PHASE
Greenfield mining infrastructure

OPERATIONAL PHASE
Existing mining infrastructure

MINE CLOSURE
Post-operational and rehabilitation services

WATER

- Water and wastewater treatment plants
- Potable water systems
- Containerised mobile units
- Pilot plants
- Guaranteed operations and maintenance

- Water and wastewater treatment plants to treat contaminated water for environmental discharge or reuse
- Potable water systems – Zero Liquid Discharge (ZLD)
- Acid mine drainage treatment
- Refurbishments, upgrades and modifications of existing water treatment plants
- Containerised mobile units – Guaranteed operations and maintenance

- Water management beyond closure
- Discharge compliance – Water and wastewater treatment plants
- Containerised mobile units

ENERGY

- Detailed feasibility, engineering and construction of power plant (gas turbine, gas engine, diesel engine)
- Energy study of camps and accommodation facilities
- Integration of heat recovery, renewable energy and energy efficiency

- Operation, management and maintenance of power plant (gas turbine, gas engine, diesel engine), HVAC and other energy services
- Energy audits and optimisation studies
- Energy performance contracting
- Long-term carbon performance management
- Remote management of energy related assets through Veolia's Energy Savings Centre

- Decommissioning of power plant and energy assets

WASTE / INDUSTRIAL SERVICES

- Design and construction of on-site waste treatment facilities including landfills and sorting facilities
- Collection and recovery/recycling of construction waste
- Comprehensive waste management plans
- Dust suppression, chemicals and logistics

- Industrial cleaning services: high and ultra-high pressure water jetting, vacuum loading, robotic cleaning, chemical cleaning, abrasive blasting, scaffolding, materials handling and shutdown services
- Industrial waste management and resource recovery
- Facilities maintenance services
- Refractory management

- Remediation services
- Hazardous waste management treatment and recovery

Sustainability

COMMITTED TO THE COMMUNITY AND SUSTAINABLE DEVELOPMENT

Since 1999, Veolia has also made a commitment to the principles of sustainable development. As such, we are focused on delivering economic, environmental and social benefits across Australasia as we face immediate and long-term challenges.

We know that our customers and the community expect us to be responsible and transparent and as such, Veolia in Australia has been publishing an annual Sustainable Development Report since 2003.

DELIVERING OCCUPATIONAL, HEALTH AND SAFETY EXCELLENCE

Veolia's operating divisions are focused on excellence across occupational health and safety. Veolia's 4000 employees are trained in risk identification and mitigation to reduce safety incidents and ensure that Veolia demonstrates an exemplary health and safety record. In 2014 alone, Veolia's lost time injury frequency rate was reduced by 60%.

Veolia's divisions also hold certification across Safety AS/NZ 4801, Environment ISO 14001 and Quality ISO 9001.

OUR VISION FOR RECONCILIATION

Veolia Australia's vision for reconciliation is to walk alongside and work together in partnership with Aboriginal and Torres Strait Islander peoples to offer leadership, enhance respect and understanding, and create sustainable opportunities in the communities in which we live and operate.

Our first Reconciliation Action Plan (RAP) was implemented on 27 May 2014 and provides a formal commitment by our company and by all of our employees to extend opportunities to indigenous Australians.

