



Environmental Resources Management for the mining industry

Delivering Occupational, Health and Safety Excellence

Veolia's operating divisions are focused on excellence across occupational health and safety. Veolia employees are trained in risk identification and mitigation to reduce safety incidents and ensure that Veolia demonstrates an exemplary health and safety record.

Veolia hold safety, environmental and quality international certifications in line with international and local regulations

Committed to Sustainable Development

Veolia is committed to the principles of sustainable development. As such, we are focused on delivering economic, environmental and social benefits 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 is publishing an annual Sustainable Development Report available on our website.



Introducing **Veolia**

Veolia Middle East Africa is a leading provider of environmental solutions across water and wastewater services, industrial cleaning, waste management, resource recovery and energy services.

Delivering value for the mining sector

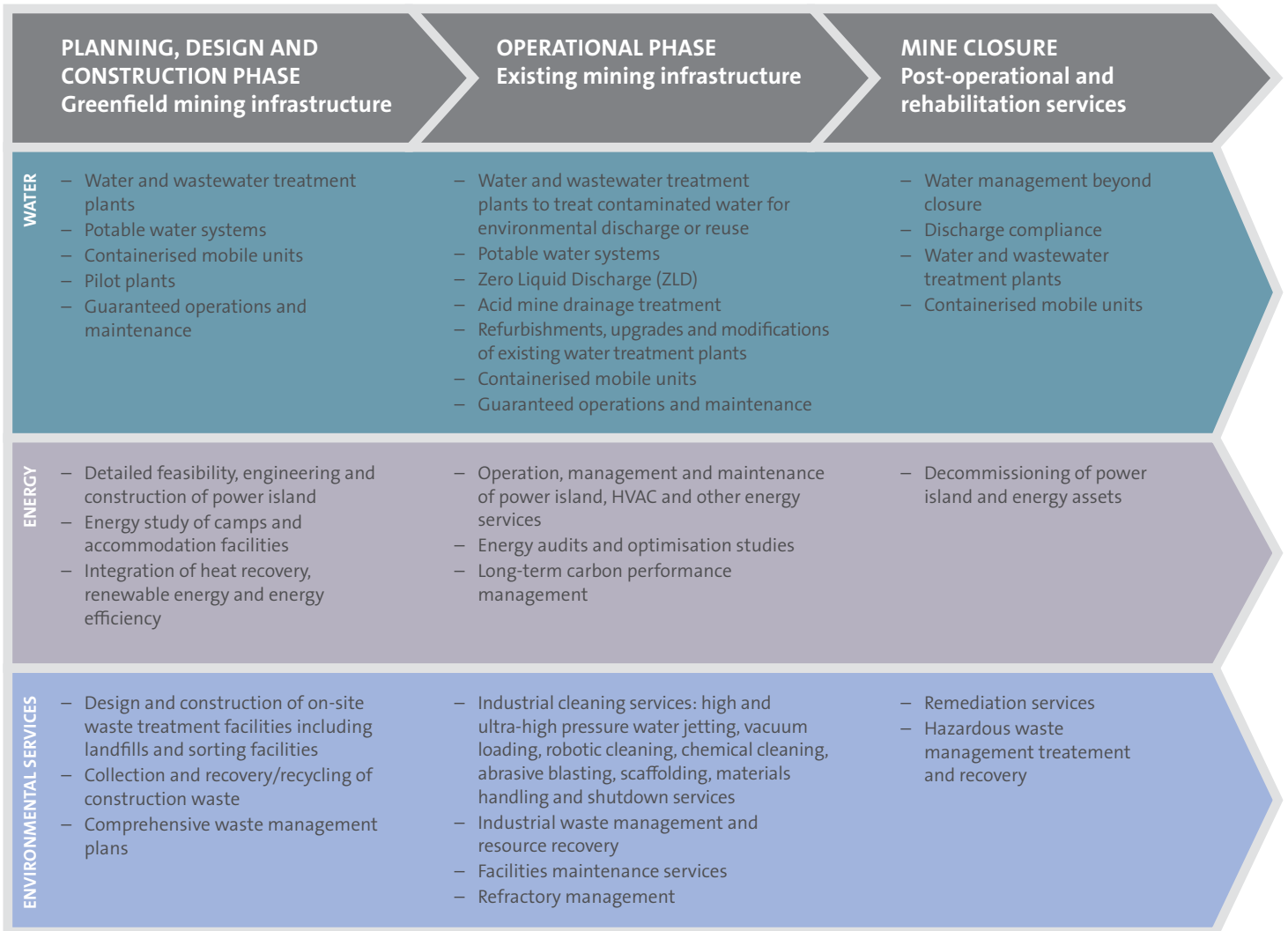
A valued partnership with Veolia allows customers within the mining sector:

- **Security of supply:** Exceptional project planning and implementation ensures our customers facilities run at full operational capacity; minimising delays and interruptions.
- **Access to flexible and highly skilled labour:** Global-local coverage and a significant employee base allows our customers the flexibility required for various projects, including remote and/or regional operations. Veolia can provide the skilled labour needed to deliver efficiency and reliability to the mining sector.
- **Delivery of technical innovation:** Veolia works closely with our 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 cleaning and energy services; delivering economies of scale and a truly robust environmental competence.



Delivering solutions

at every stage of the mining lifecycle



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 (drums and tanker)
- **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 HVAC services:** including on-site mobile plant monitoring
- **Water management:** current off-site water management, with Client agreement for future on-site water recycling and reuse infrastructure

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



AngloGold Ashanti Ghana's gold mine:

Operations & maintenance of existing water treatment facility

Since July 2014, Veolia operates and maintain the existing water treatment facility of the gold mine. Veolia cares for the proper operation and maintenance of the treatment plant, so that the water resource is managed adequately and environmentally-friendly.

Iduapriem mine is located in the western region of Ghana. It is an open-pit gold mine with an annual average gold production of about 195 000 ounces and a recovery factor of about 95.8%.

Water must be managed cautiously to avoid flooding of operations, that could lead to water contamination and potential health and safety issues. Moreover, gold extraction in particular requires the use of cyanide, a hazardous material, used to dissolve and separate gold from ore.

Wheal Jane: *Operating & maintaining wastewater treatment facilities of closed mine*

Abandoned mines fill with water, once operational pumping comes to an end and the high acidity of the water, brings other toxic metals in solution.

At Wheal Janen in 1992, over 10 million gallons of polluted water containing iron and other metals was released into Restronguet Creek, Carnon River and Falmouth Bay due to failure of a plug in the underground Nangiles Adit.

Veolia took over and optimized existing facilities on the site of an abandoned tin mine. The plant treats in excess of 1.5 million gallons per year at significantly reduced cost and energy consumption. Since the treatment plant came on stream, the concentrations of metals in the mine water have been reduced up to 800 tons of metals removed per year.

The collaboration between Veolia and the Coal Authority has enhanced expertise for improving water quality, process optimization, innovation and overall best practices.

OKD: *Increased energy efficiency at the site through tri-generation*

Since 2010, Veolia has been managing facilities used to produce and supply heating, electricity and compressed air for the OKD Group, based in Ostrava.

Modernizing mining facilities and ensuring the safety of miners have been a focal point of the initiatives. One of Veolia's solutions has involved installing a tri-generation plant to supply heating, electricity and compressed air – all in line with mining requirements, which leave no room for error.

Veolia also supplies cooling to provide air-conditioning for a mine shaft reaching to a depth of 1,300 meters. Cooling is generated by three turbo compressors with an output of 10 MW, which could subsequently be boosted to 13 MW. All three machines use environmentally friendly coolant.

Resourcing the world