



# UNDERGROUND MINING

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Murray & Roberts Cementation





## UNDERGROUND MINING



## SUSTAINABILITY

### OVERVIEW

The Underground Mining platform provides specialist engineering, construction and operational services in the underground environment to the global mining and metals resources sector. Its geographic footprint is one of the largest in its industry, with a service offering that spans the project value chain including specialist engineering, shaft construction, mine development, raise drilling and contract mining. As a platform operating globally, businesses within the platform leverage each other's capability to enhance the platform's competitive position.

The Underground Mining platform is part of the Murray & Roberts Group and oversees the activities of the following companies.

- Cementation Above Ground
- Cementation Canada & USA
- Merit Consultants International
- Murray & Roberts Cementation
- RUC Cementation Mining

### VALUE CHAIN

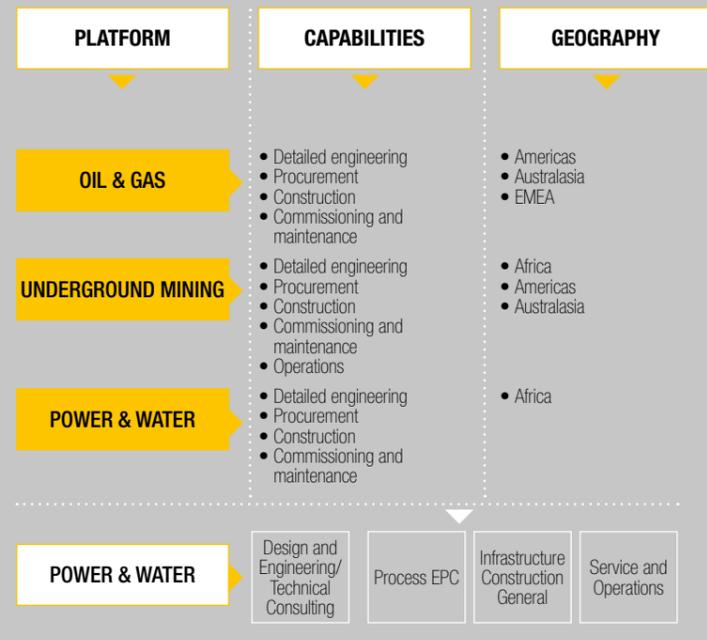
- Planning and engineering
- Construction works
- Operations and facility management

### GEOGRAPHY

- Africa
- Americas
- Australasia

### THE MURRAY & ROBERTS GROUP

A comprehensive service offering across the project lifecycle in selected natural resources markets.



Sustainability is of fundamental importance to the Underground Mining platform and is an integral part of all operations. Like all Murray & Roberts companies, sustainable development encompasses the commitment of all Group companies and is embodied in our attitude towards Safety, Health, Environment and Quality (SHEQ), which is contained in our sustainability policy.

### SAFETY

People remain our most valuable asset, and the safety of employees and stakeholders is not negotiable. We believe that our people and others impacted by our activities are entitled to a safe, healthy and productive life in harmony with nature.

Stop.Think.Act.24/7 is a widely recognised Murray & Roberts health and safety brand aimed at educating and motivating employees to take responsibility for their own and their colleagues' safety at home and in the work environment.

"Act" emphasises the importance of taking action to correct unsafe conditions and behaviours, as well as recognising positive behaviour, whilst "24/7" highlights the need for safety awareness at all times whether at work or at home.

The Zero Harm through Effective Leadership programme aims to increase leadership visibility and to actively build a safety culture.

All platform companies are committed to this. Safety and performance go hand in hand. Each person's accountability and responsibility to ensure safety is a tenet of our philosophy and employees are consistently encouraged to "do it right, first time, safely".

### HEALTH

Employee wellness is of prime importance and we have adopted a holistic approach to all aspects of health. Regular screening of employees ensures early detection of potential occupational diseases.

### ENVIRONMENT

Underground Mining platform companies adopt a proactive environmental management policy to minimise any potentially negative impact by our businesses on the environment.

The Group implements industry best practices and leads through example in assuming the accountability and responsibility required of highly respected corporate citizens.

### QUALITY

Quality has always formed the foundation of all our operations, projects and contracts. We are committed to provide quality of service and this is acknowledged by our clients.



**Murray & Roberts  
Cementation**

*As a leading underground mining contracting company, Murray & Roberts Cementation offers a comprehensive range of capabilities and services covering the full spectrum of the mining value chain. By 2020 Murray & Roberts Cementation will be successfully established as the leading mining contractor of choice in Africa.*

### **ABOUT US**

Murray & Roberts Cementation is a world class mining contracting company headquartered in Johannesburg, South Africa. The company has served the mining industry for more than a century and we are a leader in shaft sinking, contract mining and raise drilling and specialised mining services with a strong track record of successful mine project delivery worldwide. We provide services for clients both in Africa and internationally.

### **CAPABILITIES**

Murray & Roberts Cementation offers global expertise in shaft sinking, tunnelling, raise drilling, contract mining and engineering and design. The company provides a comprehensive range of services which encompass all aspects of mine project delivery from concept to commissioning. Our capabilities also include mine development and mine engineering.

### **MINE DEVELOPMENT**

Murray & Roberts Cementation offers a complete range of mine development services including vertical and decline shaft sinking and equipping, mine haulage development and tunnelling, underground chamber excavation and support and equipment installation and shaft refurbishment.

### **CONTRACT MINING**

Murray & Roberts Cementation introduced the concept of contract mining and is a recognised leader in this field. We offer a variety of services including mine design and planning, specialist pre-feasibility and feasibility studies, mining equipment and fleet maintenance studies, underground infrastructure design and installation, mechanised and semi-mechanised development and stoping.

### **MINE SERVICES**

Murray & Roberts Cementation offers a comprehensive range of mining services to support its mine development and contract mining operations.

Our services used extensively throughout the industry include:

- Underground exploration drilling
- Medium and large diameter raiseboring and drainhole drilling
- Directional drilling
- Drop raising
- High pressure underground water management including cementation, water doors, cover drilling and grouting
- Underground dam and high pressure bulkhead construction
- Grout plant design, construction and operation and grout pack installation.

### **MINE ENGINEERING**

Murray & Roberts Cementation has identified a need within the mining industry for independent design-build services for shaft sinking and related mining. This specialist service was a natural extension expansion of our in-house design services provided to support operational divisions. The service integrates the practical knowledge of the operations with the design ability of the mine engineering department and the data banks of the estimating and scheduling department. Mine engineering delivers mine access designs, shaft sinking and equipment designs and mining layout ore depletion designs. The result is a service that provides clients with a practical design function which has close links with the operational services provided by the company.

Murray & Roberts Cementation includes the following businesses operating in Africa:

- Murray & Roberts Cementation Zambia
- Murray & Roberts Cementation DRC
- Murray & Roberts Cementation Tanzania
- Many other areas of Africa through Group operating companies.



**Cementation Canada, USA**

*Our mission is to earn the distinction of being the contractor of choice of both clients and employees. We do this through our commitment to working safely and through our performance. We aim to build long term relationships with our clients based on a "best for project" philosophy.*

### **ABOUT US**

Cementation Canada is an underground mining contracting and engineering company based in Canada, providing services for clients throughout North and South America. We are a leading provider of underground mining contracting and engineering services and specialise in the design and construction of underground facilities.

### **CAPABILITIES**

Cementation Canada is highly experienced in shaft sinking, lateral development, raise drilling, underground construction, raising and contract mining.

### **SHAFT SINKING**

Cementation Canada has a reputation as a premier shaft sinking contractor and is recognised as the most active in North America. The company has sunk the deepest shaft in the world outside of South Africa at the Kidd Mine in Canada.

### **MINE DEVELOPMENT**

Cementation Canada is actively involved in development work throughout North America, including lateral development, ramp development, and underground caverns and bins.

The company carries out both track and trackless ramp and lateral development work by employing either our own extensive fleet of equipment or by operating the client's equipment. These development projects range from substantial new mine development programmes to mine expansion and refurbishing projects.

### **RAISE DRILLING**

Cementation Canada specialises in large diameter raise drilling and operates some of the largest raiseboring machines in the world. Raise drilling, an alternative method for shaft and raise development between levels, is the most cost effective form of vertical raising and provides the fastest, safe form of shaft development. We introduced large diameter hardrock raiseboring into Canada in 2004 and currently hold the record for the largest diameter (5.52m) and deepest (694m) raisebored shaft in the Canadian mining industry.

### **MINE ENGINEERING**

Our underground construction work includes a full range of speciality mine construction such as dewatering and electrical installations, hydrostatic bulkheads, ventilation and material handling systems, shop facilities and services.

Cementation Canada has significant capabilities for underground construction and installation projects for mining and civil applications.

### **ENGINEERING**

Cementation Canada employs an in-house team of engineers and designers with capabilities in mining, mechanical, electrical, civil, structural and geotechnical disciplines. Our engineering expertise has established us as a leading provider for design-build mine access projects. The company delivers engineering services from concept stage through to detailed engineering for mine access and material handling infrastructures.

Cementation Canada operating within the Americas, comprises the following companies:

- Cementation Above Ground
- Cementation Canada Inc.
- Cementation Mining Mexico SA de CV
- Cementation USA Inc.
- Merit Consultants International.



## RUC Cementation Mining

*A diversified underground mining contractor with an extensive portfolio of completed projects throughout Australia and the Asia-Pacific. Our positioning statement, "Diverse-Innovative-Assured", reflects the nature of our offering. We embrace diversity, encourage and reward innovation and above all else we deliver a service which is of the highest quality, reliable and safe.*

### ABOUT US

Established in 1990 as a shaft sinking and raise drilling specialist, we have grown into a business operating in five countries, where we have partnered with some of the biggest names in the mining industry across the full range of their underground development and production requirements.

With our extensive fleet of modern equipment and a highly experienced and qualified team of mining professionals, the company has gained a reputation for successfully tackling the most complex and challenging assignments.

RUC Mining, a Western Australian based Underground Mining contractor, has a purpose built head office complex located in West Kalgoorlie, which includes administration offices, maintenance workshops, a safety and training centre as well as a manufacturing and fabrication/welding shop.

Part of the global Murray & Roberts Group, RUC Mining is a confident and steadfast partner, committed to innovation in designing ever safer working practices and more efficient development and production techniques. Operating in locations from the remote to the highly urbanised, the company seeks to maximise the engagement of local workers, whilst maintaining world's best practices.

InCycle Shotcrete Pty Ltd (ICS) is a proud member of the RUC Mining group. Through ICS we are able to provide in-house remote high quality shotcrete and concrete products for raise drilling, shaft sinking, construction and development projects.

We have an experienced professional team of managers, supervisors and maintenance personnel who provide assistance and expertise to our associated companies as well as our own international projects.

### CAPABILITIES

RUC Cementation's expertise lies in the design and excavation of "ore body access" solutions. Our proven experience and technical skill set allows us to analyse, design, install and develop both vertical and decline shaft systems to any practical depth.

Our proven experience and technical skill set allows us to compete very effectively in the design and extraction of bulk excavations and general underground mining.

Our capabilities include:

- Mechanised mining
- Shaft sinking
- Large excavations
- Underground construction
- Specialist ground support & grouting
- Boxhole boring
- Raise drilling.

### SHAFT SINKING

Our shaft sinking capability includes blind sinking and strip and line operations, allowing us to effectively offer a total solution from installing collars and excavating pre-sinks to the sinking and equipping of large diameter shafts in some of the most challenging environments in the world.

### UNDERGROUND CONSTRUCTION

In addition RUC Cementation has extensive experience in underground construction. We have completed the bulk excavation and civil construction of rock tipples, crusher chambers, ore bins, apron feeders and transfer points as well as various other civil construction works, including the installation of pastefill pipelines, cables, etc.

