



**Murray
& Roberts**



MINING
A GLOBAL MINING PLATFORM



MINING - A GLOBAL MINING PLATFORM

The Murray & Roberts Mining platform provides specialist engineering, construction and mining contracting services in the underground environment to a diverse group of clients including blue chip majors, mid-tier and junior operators in the global mining and metals resources sector.

The Mining platform achieved a turnover of ZAR 10.9 billion in FY19 with a confirmed order book of more than ZAR 20 billion. Its geographic footprint is one of the largest in its industry, covering Africa, the Americas, Australia and Asia. Our capabilities span the project value chain including specialist engineering, shaft construction, mine development, raise drilling and contract mining.

As an international operation, businesses within the platform leverage each other's capabilities, positioning them to serve both regional and global mining companies with world-class services. The Mining platform is part of the Murray & Roberts Group and oversees the activities of the following regional entities:

MURRAY & ROBERTS GROUP

PLATFORM	CAPABILITIES	GEOGRAPHY
ENERGY, RESOURCES & INFRASTRUCTURE	<ul style="list-style-type: none"> + Detailed engineering + Procurement + Construction + Commissioning & maintenance 	AFRICA AMERICAS ASIA AUSTRALIA EUROPE
MINING	<ul style="list-style-type: none"> + Detailed engineering + Procurement + Construction + Commissioning & maintenance + Operations 	AFRICA AMERICAS ASIA AUSTRALIA EUROPE
POWER, INDUSTRIAL & WATER	<ul style="list-style-type: none"> + Detailed engineering + Procurement + Construction + Commissioning & maintenance 	AFRICA

MINING PLATFORM

COMPANY	GEOGRAPHY
	ASIA AUSTRALIA
	AMERICAS
 	AFRICA



SUSTAINABILITY

SAFETY

People remain our most valuable asset, and the safety of employees and stakeholders is non-negotiable.

Many projects are delivering best-in-class safety performances. Murray & Roberts Cementation, Cementation Americas and RUC are currently 52 months, 61 months and 27 months fatality free respectively. The platform prioritises the implementation of fatal risk management programmes to prevent serious incidents and fatalities on projects

Stop.Think.Act.24/7 is a widely-recognised Murray & Roberts health and safety brand developed to educate and motivate employees to be responsible for their own and their colleagues' safety in the work environment and also at home. "Act" emphasises the importance of taking action to correct unsafe conditions and behaviours, as well as recognising positive behaviour, while "24/7" highlights the need for safety awareness at all times.

The **Zero Harm through Effective Leadership Programme** aims to increase leadership visibility and to continuously develop a culture of safety.

Our safety goal is **Zero Harm**. Safety and performance work in unison and every employee's commitment to accountability and responsibility to ensure safety is a tenet of our safety philosophy.

HEALTH

The health and wellness of our employees is a priority. We have adopted a holistic approach to health by providing a comprehensive wellness programme to employees and their dependents.

We implement healthcare education and awareness initiatives across project sites to encourage healthy lifestyle choices. The Occupational Medicine Programme uses pre-employment, periodic and exit medical examinations to prevent and manage potential workplace-related diseases and other conditions early.

ENVIRONMENT

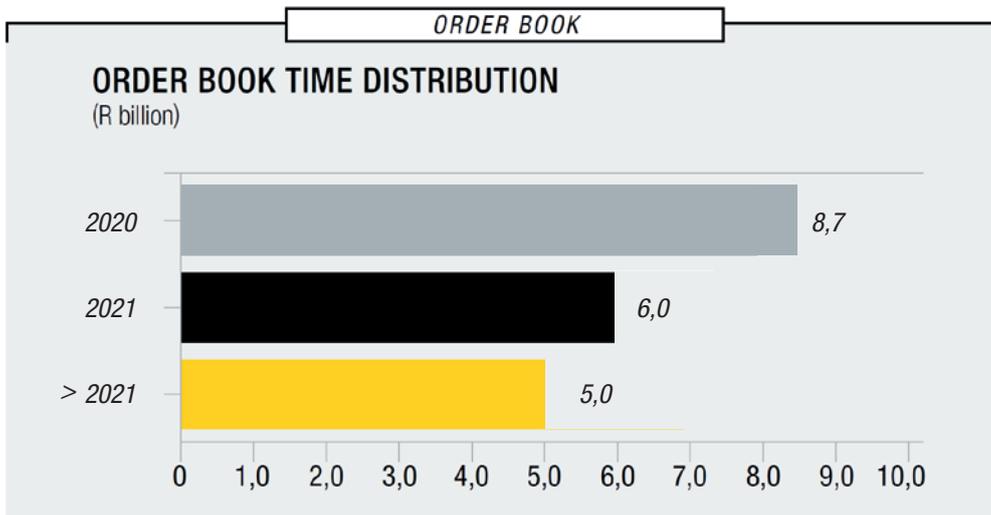
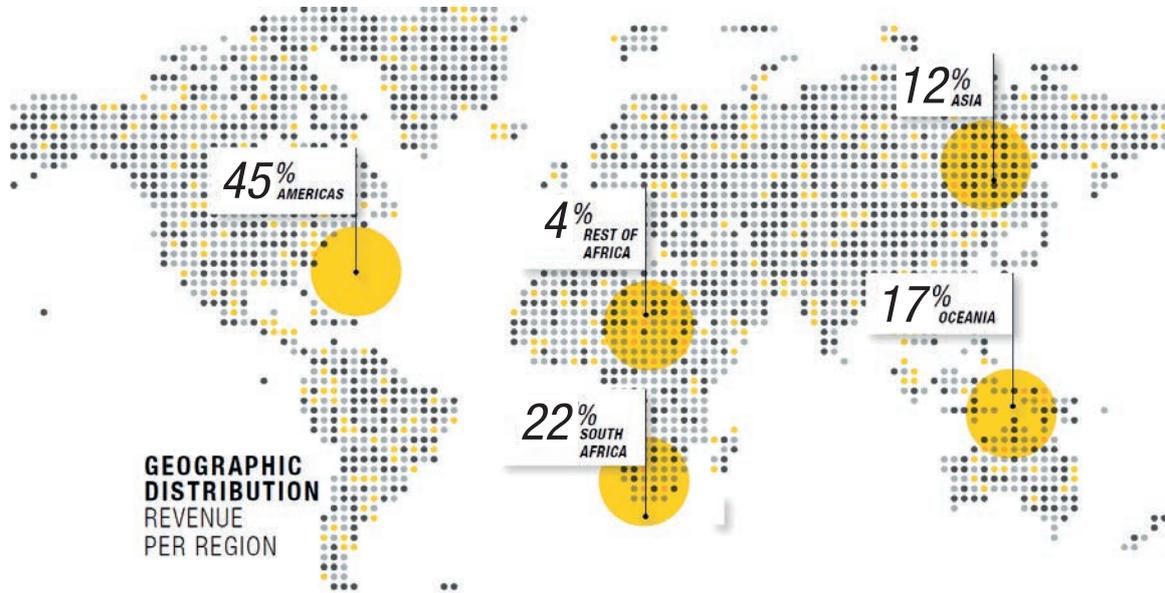
The Mining platform adopts a proactive environmental management policy and implements industry best practice to minimise the impact of our business activities on the environment.

QUALITY AND TRAINING

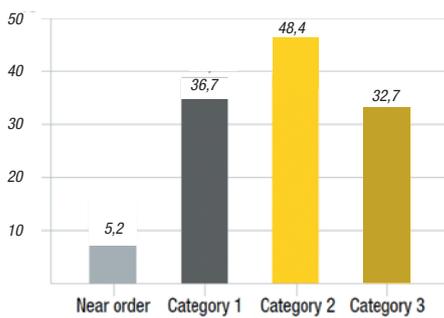
The principle of *Engineered Excellence* informs all our decision-making. It means we engineer or plan everything we do, in such a way that we achieve an outcome of excellence.

Murray & Roberts offers industry best practice in technical and supervisory training across a wide field of disciplines. The training methodology includes e-learning, simulation, visual-based training and integrated assessment-based training in a customised solution. The training academies also offer a service to our clients and are an integral part of our commitment to train and upskill local employees.

These training programmes are critical to the platform's project delivery success and provide skills training and livelihood to the local and indigenous communities on our projects across remote locations including recent programmes in Mongolia, Papua, Africa, remote locations in Latin America, and multiple projects in the northern Arctic region.



NEAR ORDERS AND PIPELINE
(R billion)



Near orders: Tenders where the Group is the preferred bidder and final award is subject to financial/commercial close – there is more than a 95% chance that these orders will be secured.

Category 1: Tenders submitted or tenders the Group is currently working on (excluding near orders) – projects developed by clients to the stage where firm bids are being obtained – chance of being secured as firm a function of final client approval as well as bid win probability.

Category 2: Budgets, feasibilities and prequalification the Group is currently working on – project planning underway, not at a stage yet where projects are ready for tender.

Category 3: Opportunities which are being tracked and are expected to come to the market in the next 36 months – identified opportunities that are likely to be implemented, but still in pre-feasibility stage.



ABOUT US

Established in 1990 as a shaft sinking and raise drilling specialist, RUC Cementation Mining operates across Australia, New Zealand, Mongolia, Indonesia and the Philippines. Attributable turnover for FY19 was ZAR 3.15 billion. We contract with many of the major mining houses in the underground mining sector including Newmont, Rio Tinto, BHP, PT Freeport and Anglo Gold Ashanti as well as major mining houses in Australia such as Newcrest and Northern Star Resources. We also provide services to a large number of mid-tier gold and nickel miners.

With our extensive fleet of modern equipment and a team of experienced mining professionals, we have a reputation for successful delivery of complex and challenging assignments.

SHAFT SINKING

RUC Cementation Mining, through our Mongolian joint venture, is contracted at the Oyu Tolgoi mine in Mongolia to sink two of the largest shafts in Asia, at 11m and 10m diameter to a depth of 1,150m. All design and engineering for the shaft sinking is being completed in Australia.

We are the only shaft sinking contractor in Australia that has been sinking shafts continuously for over 15 years.

MINE DEVELOPMENT

RUC Cementation Mining is contracted to complete full service mining contracts throughout Australia, including Dacian's Mount Morgan project, where monthly advance is in the region of 1,100m. With a fleet of nine electric hydraulic, two boom jumbos, four production drills, 10 LHDs and 10 trucks, we have strong capabilities across the sector.

RAISE DRILLING

RUC Cementation Mining has the most extensive range of raise drills in Australia with 25 rigs in the fleet. We manufacture our own range of raise drills and hold the record for the largest raise drilled shaft in Australia, 930m at a diameter of 6m.

CONSTRUCTION

RUC Cementation Mining undertakes significant construction works, in particular at Freeport where we are constructing all of the rail chutes for the Grasberg block cave mine. Through our Mongolian joint venture we are constructing the primary ore flow system for Oyu Tolgoi as well as the construction associated with the shaft sinking contract.

ENGINEERING

Our engineering capability is focused principally on in-house needs to support our shaft sinking and mine development projects.

CONTRACT MINING

Contract mining is an essential element of our mining business and includes the full range of production drilling, stope blasting, remote loading and haulage.

INNOVATION

Our recent investment in InSig Technologies, a tech start-up company, provides access to IoT platforms that enable our capability to monitor and control the underground environment in real time.

We have established full digital capacity at Dacian's Mount Morgan's project in Laverton, Western Australia. Using Remote Control Technologies' remote control systems and InSig's data acquisition and control capability, we are now able to operate our stope loaders remotely from surface. Work to operate drill jumbos from surface is at an advanced stage of development as are applications to monitor and control ancillary fixed equipment such as pumps and fans.



Cementation

ABOUT US

Cementation Americas is a ZAR 4.9 billion turnover (FY19) underground mining contracting and engineering company with operating hubs in North Bay and Salt Lake City, providing services for clients throughout North and South America and internationally. Recent key clients include Rio Tinto, Vale, Lundin Mining and Glencore PLC. With the additional capabilities of Terra Nova Technologies (TNT), Cementation Americas encompasses a larger scope of the project life cycle with the goal of improving project delivery in all phases.

TNT is a proven designer, manufacturer and constructor of material handling systems. Combining engineering excellence and hands-on operating experience, TNT responds to each client's needs and provides equipment and plants that meet both economic and operational goals. Their products include mobile stacking systems, overland conveyers, underground conveyers, crushing and screening plants, in-pit crushing and conveying systems and in-plant conveyers.

SHAFT SINKING

Cementation Americas is a premier shaft sinking contractor and is the most active contractor in North America. We have sunk the deepest shaft in the world outside of South Africa at the Kidd Mine in Canada.

MINE DEVELOPMENT

Cementation Americas is actively involved in development work throughout North America, including lateral development, ramp development, and underground caverns and bins. We deliver 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 Americas 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 and safest form of shaft development.

We introduced large diameter hard rock raiseboring to Canada in 2004 and currently hold the record for the largest diameter (5.52m) single pass bored shaft at 694m in the Canadian Shield.

CONSTRUCTION

Our underground construction work includes a full range of speciality mine construction services. We have the capabilities for underground construction and installation projects for mining and civil applications.

ENGINEERING

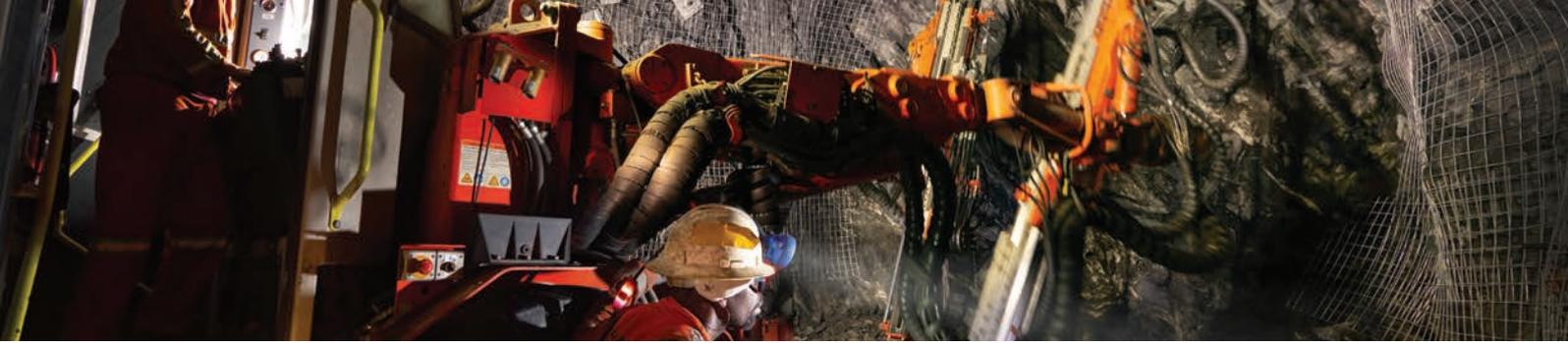
Cementation Americas employs an in-house team of engineers and designers with expertise in mining, mechanical, electrical, civil, structural and geotechnical disciplines. We are a leading provider for design-build mine access projects, delivering engineering services from concept through to detailed engineering for mine access and material handling infrastructures.

CONTRACT MINING

From complete operation of underground mines to speciality stopes and pillar mining, our experienced contract mining team continues to deliver a range of successfully completed projects for clients.

INNOVATION

We continue to develop and implement virtual reality (VR) technology, with a focus on taking VR into all phases of a mine's life-cycle. Planned advancements include simulation, real-time monitoring and inspection, and ready access to digitised information using augmented reality.



Murray & Roberts Cementation

ABOUT US

Murray & Roberts Cementation is a ZAR 2.9 billion turnover (FY19), mining contracting company headquartered in Johannesburg, South Africa. We have served the mining industry for more than a century, providing services to many of the mining companies operating across Africa, including De Beers, Impala Platinum, South 32, Kalagadi Manganese, Mopani, Palabora and Ivanplats.

We offer global expertise in shaft sinking, tunnelling, raise drilling, engineering, design and contract mining. Murray & Roberts Cementation provides a comprehensive range of services across all phases of mine project delivery from concept to commissioning and operations. 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 as well as equipment installation and shaft refurbishment.

CONTRACT MINING

We introduced the concept of contract mining and are 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 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 as well as directional drilling
- Drop raising
- High pressure underground water management including cementation, water doors, cover drilling and grouting as well as shaft dewatering
- Underground dam and high pressure bulkhead construction
- Grout plant design, construction and operation and grout pack installation
- Silo and settler construction as well as large tip and boxfront construction
- Orepass and shaft rehabilitation.

MINE ENGINEERING

We 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 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 complementing our operational services.

INNOVATION

Rock cutting and mechanised shaft sinking (vertical and decline shafts) is a key focus for Murray & Roberts Cementation and we have relationships with several original equipment manufacturers in this field. We are also pursuing innovation in shaft borer enlargements and remote shotcreting of raisebore holes.

Murray & Roberts Cementation includes the following businesses:

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



Mike da Costa
Platform CEO

Underground Mining Platform CEO

☎ +27 11 456 1000
✉ mike.dacosta@murrob.com
🌐 www.murrob.com



Trevor Naidoo
Platform CFO

Underground Mining Platform CFO

☎ +27 11 456 1000
✉ trevor.naidoo@murrob.com
🌐 www.murrob.com



Barry Upton
Managing Director

RUC Cementation Mining

☎ +61 8 9021 7777
✉ raisebore@ruc.com.au
🌐 www.ruc.com.au



Justin Oleson
President

Cementation Americas

☎ +1 705 472 3381
✉ info@cementation.ca
🌐 www.cementation.com



Mike Wells
Managing Director

Murray & Roberts Cementation

☎ +27 11 201 5000
✉ info.cementation@murrob.com
🌐 www.cementation.murrob.com

