



INFRASTRUCTURE



About DRA

DRA is a multi-disciplinary engineering group that delivers mining, minerals processing and infrastructure services from concept to commissioning, as well as comprehensive operations and maintenance services.

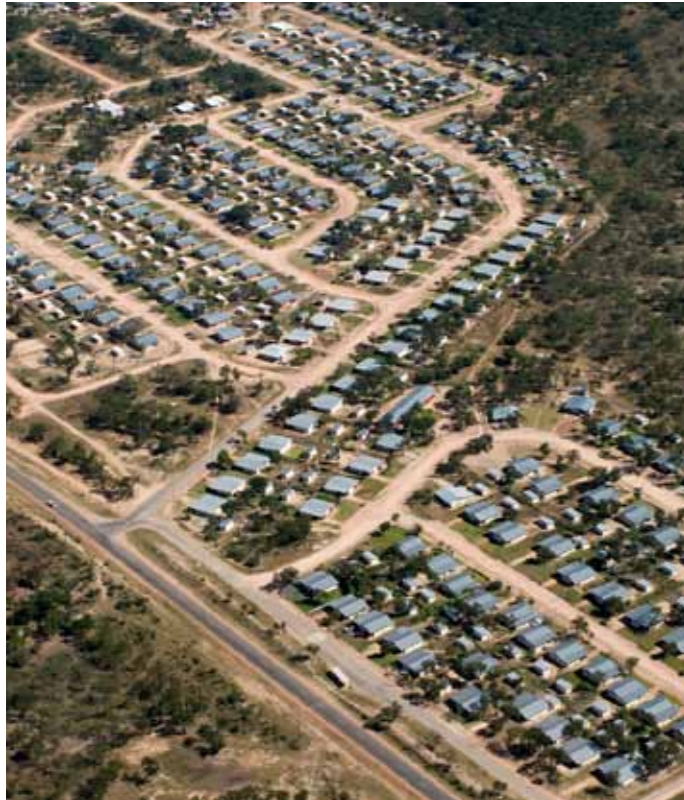
In 1984, we started design and construction management of minerals processing plants in South Africa. This soon expanded to include projects across Africa and the rest of the world.

We have established ourselves as leaders in these areas in Africa and are rapidly expanding our business in other parts of the world. Our expertise covers a wide range of commodities including gold, platinum, coal, ferrous metals, diamonds, uranium, base metals, potash and rare earths.

DRA is a private company owned by our employees. We employ over 3,300 people globally. Our workforce includes 1,480 engineers and project managers from various disciplines, draughtspeople, operators and support staff. Our people are our most valued resource and many are recognised as leaders in their fields.

As part of our offering, we provide a comprehensive list of engineering services required to advance a mineral project from concept to commissioning. Our contract operations division operates and maintains numerous minerals processing plants around the world on behalf of our clients. In addition, DRA undertakes the design and construction management of surface and underground mining projects through its expertise in both hard and soft rock design and the use of specialised software. We also offer the design and implementation of associated infrastructure projects, such as ports, roads, bridges and accommodation.

Our headquarters in Johannesburg, South Africa, provides engineering support to our offices and operations in nine African countries. DRA TAGGART has an office in Pittsburgh, USA and Toronto, Canada, which employs approximately 350 people, to support our operations in South America. Additionally, DRA has offices in Australia (Perth and Brisbane), India and China, which support regional and global projects.



About DRA Infrastructure

DRA Infrastructure, (formerly Holley and Associates), has provided consulting civil engineering and structural design work for a wide range of sectors including mining, the commercial industry and government, for more than 20 years.

Our vision has been to deliver a complete service to clients anywhere in the world, building on our reputation for quality and safety and the ability to deliver on time and under budget.

Originally established in 1992 as a civil and structural design consultancy, we rapidly established ourselves as the service provider of choice for a number of companies. In 1994, we were appointed by DRA Mineral Projects (Pty) Ltd — a leading mine engineering, design and construction group — to provide our services to all DRA projects in the mineral processing sector.

In 2009, we were acquired by DRA Mineral Projects, becoming a wholly-owned subsidiary

of the group, not only providing services to its various divisions but also to other clients in the market. DRA Mineral Projects has been a successful player in the local and international mining industry for more than thirty years, designing and engineering numerous mines and processing plants of various sizes and complexities in Southern Africa, Indonesia, Russia, China, Australia and West Africa to name only a few.

With access to DRA's international footprint, expertise and resources, we were able to expand our service offering to include infrastructure design, project management, project engineering and construction supervision, while at the same time expanding our team of professionals, allowing us to undertake larger and more complex projects.

Meeting the Challenges

The challenges facing industry both locally and globally are well known, particularly in the construction, mining and minerals sectors. This is aggravated by skills shortages, rising production costs and fragile economic conditions. Consolidation has accelerated among the medium-sized and larger players. The junior mining sector is growing fast and includes companies based in South Africa and elsewhere.

It is in this economic climate that both DRA Infrastructure and its parent company, DRA Mineral Projects, are well positioned to consolidate and expand into new markets by leveraging a sustainable, competitive advantage in engineering standards, cost leadership and project execution.

Capabilities

We maintain the capability to complete infrastructure, structural and civil engineering designs as well as manage related projects through the procurement and implementation phases and have developed a reputation in the contracting industry for consistently delivering successful projects.

Our track record includes the development of large-scale surface infrastructure to support mining operations, concentrator plants and government projects. This has been rendered on projects where DRA has been appointed the EPCM contractor, on projects where third parties fulfil the project management role, and as a direct service provider to the developer.

We have established an extensive portfolio of experience across industries. Our steady growth and new opportunities both within South Africa as well as beyond its borders have enabled us to expand our service offerings considerably to include:

- Structural steel design and draughting
- Reinforced concrete design and draughting
- Infrastructure design and draughting
- Infrastructure project management and project engineering
- Cost engineering, quantity surveying, estimating and feasibility studies (Conceptual, PFS, BFS, FEL1-4, NI 43-101)



STRUCTURAL STEEL DESIGN AND DRAUGHTING

We utilise the latest computer-based systems, e.g. Strand 7, STAAD, MasterSeries and PROKON, including AutoCAD for structural analysis, steel component design and draughting to deliver:

- Conventional structural steel structures
- Seismic and vibration analysis and design
- Finite element analysis for platemwork such as bins, tanks and chutes
- Vertical and decline shaft steelwork analysis and design including conveyances

REINFORCED CONCRETE DESIGN AND DRAUGHTING

We offer comprehensive structural analysis and design of reinforced concrete components including:

- Unreinforced concrete
- Conventional reinforced concrete
- Pre-stressed and post-tensioned concrete
- Piling and caissons
- Seismic and vibration analysis and design



INFRASTRUCTURE DESIGN AND DRAUGHTING

We offer a complete service for the design and draughting of infrastructure, covering every requirement from township development, administration offices, access control and laboratories to workshops, winder buildings and stores. In addition, we are able to undertake the design and draughting of all electrical infrastructure such as substations, transformer bays and generator rooms as well as all earthworks, dams, roads, rail systems and water storage, supply and reticulation.

Using sophisticated systems such as design and CAD draughting (AutoCAD and MicroStation), we are able to provide a complete service to meet any project requirements. Additionally, our expertise can ensure that projects meet all safety, environmental and community development requirements.

Our capabilities include:

- Bulk infrastructure (off-site infrastructure)
- Bulk water storage and supply
- Bulk sewage disposal and treatment
- Roads, railways and bridges
- Township developments
- Shaft and plant infrastructure
- Shaft/plant layouts including surveying
- Earthworks, terracing and landscaping
- Roads
- Railways
- Dams, earth reservoirs and silt traps

- Stormwater hydrology, drainage, pollution containment and return-water systems
- Potable water reticulation
- Fire protection services reticulation
- Sewerage reticulation and sewage disposal
- Tailings delivery pipelines and return-water systems
- Fencing and access control
- Temporary civil services for construction sites
- Explosives offloading facilities, magazines and detonator areas
- Offices and amenity facilities, such as:
 - Administration offices
 - Plant change houses and first aid rooms
 - Lamp and crush buildings
 - Control rooms and PLC rooms
 - Electrical substation buildings and transformer bays
 - Plant office blocks
 - Gatehouses
 - Ablution facilities/toilet blocks
 - Laboratories
 - Workshops
 - Stores and sub-stores
- Pump station buildings and pump station internal pipework

HYDROELECTRIC POWER PLANTS

We also have extensive experience in the civil and infrastructure design of hydroelectric power plants generating power for mines and process plants.

This includes the building of weirs at strategically-located positions in rivers to suit head requirements; intake structures to channel water into canals; canal designs to deliver water to forebays, penstocks and gravity intake chambers; powerhouses including overhead crane structures, discharge channels and water energy dissipaters; and control rooms at powerhouses.

INFRASTRUCTURE PROJECT MANAGEMENT AND PROJECT ENGINEERING

Working closely with our clients is paramount to ensuring that our solutions meet their exact requirements. Our project management and project engineering capabilities ensure that all projects meet our approved specifications, from feasibility studies and initial ground breaking, to final sign off.

Our expertise, attention to detail and full support from the DRA Group enable us to manage every step of the project, assuring clients that their projects offer the highest value and return on investment. Our skills in this area include:

- Project management of infrastructure projects
- Project engineering in infrastructure, civil and structural sub-disciplines
- Management and administration of infrastructure/civil/structural construction contracts including site supervision and surveying
- Feasibility studies, CBEs, value engineering studies and cost estimates
- Liaison with governmental, quasi-governmental and other legal authorities
- Management of large-scope civil engineering functions through external consultants/bodies in areas such as geotechnical investigations, surveying, quantity surveying, fire protection, railways, architecture, water resources and hydrogeology, water and sewage treatment, environmental management and tailings dams.

We provide a comprehensive range of services in the areas of quantity surveying, estimating and feasibility studies, including Conceptual, PFS, BFS, FEL1-4, and NI 43-101 requirements.

We also offer a range of additional services including structural audits, structural masonry and timber structures.



Our Staff

We pride ourselves on our professionalism and expertise. Headed up by a strong team of qualified engineers with a diversity of experience, we ensure that standards are maintained throughout the organisation. In addition, we emphasise upskilling when necessary, ensuring that our team members are trained in the latest international technologies and best practices. Our current staff complement at our Johannesburg office and on site is detailed below:

Senior Management	9
Project Managers	5
Project Engineers	55
Civil, Structural and Infrastructure Design Engineers	31
Designers and Draughts people	68
Architects	3
Town Planner	1
Projects Support, Cost Engineers, Quantity Surveyors and Estimators	8
Office Administration and Services	14
Site Staff	22
TOTAL	216

Current Projects

A few of the projects in which we are currently involved include:

- The execution of a 60 km access road from Likuju to Mkuju to the Mkuju River Uranium Mine Project for Mantra (Uranium One), Tanzania.
- The entire surface infrastructure for the Eland Platinum Mine Project near Brits in the North West Province for Xstrata, South Africa.
- A 700-house township development for the Ngezi Platinum Mine Project in Zimbabwe.
- Infrastructure design and development of the multi-billion dollar Moatize Expansion Project, Tete Province, Mozambique.
- The design and construction of two multi-million dollar hydropower plant including forebays, inlet canals, intake works, penstocks and discharge canals in DRC.

We pride ourselves in possessing the capability, resources and enthusiasm to tackle both large and small projects. Our flexible approach, adapted to meet specific client requirements, has allowed us to successfully complete projects on an EPCM, EPC, LSTK and target cost-type.

The DRA Group provides the full range of engineering and project services. We tailor our services to meet the needs of our clients, offering both total engineering solutions and customised project solutions.

Our services include:

- conceptual design and feasibility studies
- detailed design and engineering
- customised design of processing plants
- large-scale mining infrastructure design
- specialised winding system and shaft headgear design
- project and construction management
- commissioning
- contract operations of mineral processing plants

DRA has a contract operations division that operates and maintains mineral processing plants on behalf of clients. These integrated services provide a feedback loop to our design engineers regarding what works well and where improvements can be made.

EXPERTISE	STUDIES	IMPLEMENTATION	OPERATIONS
MINING	■	■	
MINERAL PROJECTS	■	■	
MINOPEX		■	■
INFRASTRUCTURE	■	■	
WINDERS	■	■	

Lower Cost • Same Value • Quicker Returns



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