Over more than 30 years, the DRA Group (DRA) has established itself globally as a first tier supplier of engineering and project management services. We work with companies and investors in sectors such as mining and minerals processing, civil and infrastructure, energy, water and agriculture.

DRA delivers on time and within budget, every time. We have a track record of success in challenging circumstances and we frequently undertake projects that require innovation in processes and technology. DRA has the capacity to deliver world class installations in all terrains from sub-zero climes to jungle environments and to maintain excellent safety standards under all conditions.

DRA’s capability includes full-service engineering solutions from concept to commissioning. We offer feasibility studies, design, construction, project management and operations and maintenance services on an EPC, EPCM, LSKT, BOOM and BOOT basis.

DRA is a private company owned by its employees. It was founded in 1984 as a service provider to the mining sector and has developed processing expertise in a wide range of commodities including gold, platinum, coal, ferrous metals, diamonds, uranium, base metals, potash and rare earths. We also offer design and construction management of both hard and soft rock surface and underground mining projects.

The DRA infrastructure offering covers a wide range of solutions from energy, water, transport and ICT to social and commercial buildings. Our total solutions approach allows us to design, build and operate infrastructure projects seamlessly for our clients. Through our contract operations division, Minopex, our service offering extends to plant operations, maintenance and production optimisation.

DRA has offices in nine African countries as well as in Australia, Canada, China, Europe, India, Oman, Saudi Arabia and the USA. We have vast experience in Africa and we offer exceptional expertise to support successful mining and infrastructure projects across the continent.

At DRA our primary focus areas are our people and our clients. Thanks to the quality of our people, our clients benefit from the services of top level engineers, draughts professionals and project managers – people who are excited about the opportunities at DRA and who give priority to understanding our clients’ business requirements, managing their risk and helping them to achieve their goals.
DRA has world-leading expertise in the design of coal processing plants and delivery of turnkey solutions for coal plants. We offer the entire spectrum of coal processing – from feasibility studies and plant design through to project implementation and the commissioning of processing plants.

50% of washed coal in South Africa is produced at DRA-designed plants and we have designed and built more than 45 coal processing plants in Southern Africa with materials handling facilities. We have worked on coal projects across the globe, from Africa to China, Australia, India and Indonesia.

In 2014 DRA acquired Taggart Global, to form DRA Taggart in North America, adding proven coal cleaning and processing technologies to our capabilities. DRA Taggart has engineered and constructed 15 refined coal facilities for several US utilities. These facilities use liquid pre-combustion chemical systems to alter the coal’s characteristics before it is burned in power plant boilers, reducing refined coal NOx emissions by up to 20% and Hg emissions by up to 90%.

A recent example of our capability is the development of three large, new-generation coal washing plants with 900-1 200 tonne per hour (tph) dense medium separation (DMS) modules and cutting-edge cyclone and screen technology, as well as two large throughput plants (2 000 tph and 4 000 tph).

Our expertise further allows us to supply varied and multiple-stage wash plants, including gravity or pump-fed DMS plants, drum plants, spiral plants, flotation plants and jig separation plants.

DRA has designed and constructed at least 70 DMS plants, which process several types of ore at a broad range of throughput capacity, from 0.5 tph to 3 000 tph. In addition to these conventional DMS circuits, we have developed a significant number of specialised DMS plants, which have been combined with gravity separation or milling and flotation plants for other commodities, such as iron ore, spodumene, platinum, nickel, copper and even gold waste rock dumps.

Our team has proven itself in making brownfield modifications and additions to existing coal plants. We thrive on the challenge of maintaining production while constructing a new or upgraded plant.

**COAL PROJECTS EXPERIENCE**

**Project: Tweefontein Coal, South Africa**

Client: Glencore

Glencore’s Tweefontein coal processing plant in Mpumalanga South Africa, is one of DRA’s largest EPC projects to date. It involves the replacement of three existing 9 Million tonne per annum coal preparation plants (CPP) with a single plant. CPP has been designed for a raw coal feed capacity of 12.5 Mtpa and features two 1 000 tph modules, a two stage, primary and secondary dense medium cyclone facility for coarse coal and a spiral-based unit for fines coal processing. A primary export and secondary local product is produced. Construction started in August 2012.

DRA’s scope further extends to include all infrastructure associated with the 18 MVA power-consuming CPP, starting from the ROM tip all the way through to the rail load-out facility. During this project DRA made use of virtual construction simulation software in order to ensure the designed connections cater for simplified assembly of workshop or ground assembled sections. This integrated software allowed DRA to greatly mitigate risks. Improve safety and optimise constructability, enabling DRA to deliver the project 6 months ahead of schedule. As a result the Tweefontein Coal project won the award for “Best Civil Engineering Project of the Year 2013”.

**Project: Phola Coal, South Africa**

Client: BHP Billiton and Anglo Coal

Phola Coal, a 50/50 joint venture between Anglo American Coal (AAC) and BHP Billiton Energy Coal South Africa (BEC-SA) called for the design and construction of a 16 Mtpa coal processing plant.

DRA was awarded the US$100 million Phola Coal project in 2007, the largest coal washing facility in South Africa. This followed our successful study of the engineering design, procurement, project management, construction management and commissioning of the project.

The plant consists of two 8 Mtpa DMS, fine coal spirals modules, and probably the largest coal slime filter press filtration section in the world, in order to meet the stringent environmental standards. It serves both BHP Billiton’s Kipsapspruit colliery and Anglo Coal’s colliery at Zondagfontein.

During construction, the Ogies area experienced some of its heaviest rainfall for two years in a row, the first coinciding with the peak of civil construction and the second with the structural steel erection. However DRA’s project management ensured that the plant was completed on schedule in June 2009.
CoAl pRoJECtS EXPERiENCE CoNtiNuED

Project: Douglas-Middelburg Optimisation, South Africa
Client: BHP Billiton

In 2008, we secured the contract to construct a new coal processing plant at the Douglas-Middelburg Optimisation (DMO) project for BHP Billiton Energy Coal South Africa (BECSA).

The DMO project consisted of the engineering and design of a raw coal handling and coal preparation plant and slimes, along with product handling facilities. The plant provides a throughput of 14 Mtpa and is one of the world's largest two-module DMS plants, using cyclones measuring 1 150 mm in diameter and 4.2 m wide vibrating screens.

A key focus of the project was to design the largest feasible DMS modules for optimum throughput. We designed a versatile plant capable of treating coal from many sources and producing prime-grade export coal as well as coal middlings used for local power generation.

Project: Bear Run Coal, USA
Client: Peabody Energy

Peabody's Bear Run mine site is the largest surface mine in the eastern United States. DRA Taggart provided the turnkey design, engineering, procurement, erection, and commissioning of the entire facility just 13 months after the contract was awarded.

The surface-mined run-of-mine (ROM) coal from Bear Run mine is delivered by offroad truck to a 270-tonne hopper. Reclaimed at 1 800 tph, the ROM coal is conveyed to a crushing and screening building for reduction to 5 inch top size and then transported to one of the two 50 000 tonne raw coal stockpiles. The raw coal is reclaimed at the rate of 1 360 tph and transported to the preparation plant.

The coal preparation plant is designed to process 1 450 tph of raw coal in two parallel circuits with future expansion to 1,800 tph allowed for in the design, equipment sizing and floor space allowance. Heavy medium cyclones wash the +1 mm coarse material. Water-only cyclones and spirals wash the -1 mm fines. Vibrating centrifuges provide final dewatering of the coarse coal, while stack sizers followed by screenbowl centrifuges dewater the fine coal. The plant employs a 145-foot diameter thickener for fine refuse recovery and water clarification. The design also incorporates a PLC control system to operate at maximum efficiency with minimum manpower requirements. Dual overhead cranes with access to all plant equipment simplify maintenance and reduce unscheduled downtime.

Upgraded with an additional belt press as well as a new thickener. The raw coal handling system was also upgraded to include a new truck dump and a screening/ sizing building with a rotary breaker. The refuse material handling system upgrades included a new 300 tonne refuse bin to allow for filter cake.

Project: Dorstfontein East, South Africa
Client: Total Coal

Appointed by Total Coal to act as the EPCM consultant, DRA was one of the main contractors in the development of the Dorstfontein East Mine - from the pre-feasibility to execution phases.

Douglas-Middelburg Optimisation, South Africa

Willow Creek Coal, USA

The Willow Creek Prep Plant was constructed in 2005 as a 450 tph partial wash facility for upgrading coarse metallurgical coal (+12.7 mm) for the PCI market. The original preparation plant included a small fine coal cleaning circuit to process misplaced fines that report to the wash plant. The 12.7 mm x 0 fine raw coal reported directly to the product stream.

Due to decreasing fine raw coal quality within the existing mineable seams, in 2010 DRA Taggart was contracted to upgrade the facility to process 660 tph of 50 mm x 0 metallurgical coal. The upgrade included additional heavy media cyclone circuit capacity to wash the 50 x 1.4 mm fraction, as well as an expanded water-only cyclone/spiral circuit to wash the 1.4 x 0.15 mm fraction. A new flotation cell circuit was added to process the 0.15 mm x 0 size class. Screen bowl centrifuges were added to the facility to dewater the 1.4 mm x 0 product without the need for a thermal dryer. The existing fine refuse dewatering circuit was

Willow Creek Coal, USA

Dorstfontein East, South Africa
DRA provides a full range of engineering and project services for the coal sector. 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
- Detailed mine design
- Customised design of processing plants
- Large-scale integrated infrastructure design
- Specialised winding systems and shaft headgear design
- Procurement from our international network of suppliers
- Facilitate export credit finance in Africa

Minopex is DRA’s contract operations division that operates and maintains coal 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.
DRA has become exceptionally experienced in the design and construction of coal mines and process plants. DRA and DRA Taggart now have a combined project experience on over 300 coal projects worldwide. A handful of our feature projects are shown below:

<table>
<thead>
<tr>
<th>CLIENT</th>
<th>PROJECT</th>
<th>DESCRIPTION</th>
<th>COUNTRY</th>
<th>DATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kumba</td>
<td>Leeuwaan Jig Plant</td>
<td>550 tph batac jig plant</td>
<td>RSA</td>
<td>2005</td>
</tr>
<tr>
<td>Xinwen Mining</td>
<td>Li Sing</td>
<td>300 tph 2 stage DMC &amp; fine coal plant for coking coal and middling</td>
<td>China</td>
<td>2005</td>
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<tr>
<td>Xinwen Mining</td>
<td>Xiew Zhuang Plant</td>
<td>400 tph 2 stage DMC &amp; fine coal plant for coking coal and middlings</td>
<td>China</td>
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<tr>
<td>Total Coal</td>
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<td>360 tph DM cyclone and spiral plant (second module)</td>
<td>RSA</td>
<td>2007</td>
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<td>Ingwe</td>
<td>Middleburg middlings Plant</td>
<td>600 tph DM cyclone &amp; spiral plant</td>
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<tr>
<td>Kumba</td>
<td>Leeuwaan Fine Coal Plant</td>
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<td>Goede hoop Flotation</td>
<td>1000 tph flotation &amp; product filtration plant</td>
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<td>2007</td>
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<tr>
<td>Exxaro</td>
<td>Inyanda</td>
<td>360 tph DM cyclone &amp; spirals plant</td>
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<td>Debswana</td>
<td>Morupule</td>
<td>350 tph DM drum 2 stage plant</td>
<td>Botswana</td>
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<td>Matube</td>
<td>840 tph DM cyclone, spirals and filter plant (6 Mtpa, one module)</td>
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<td>Straits Resources</td>
<td>Sebuku 2</td>
<td>380 tph DM cyclone &amp; spirals plant</td>
<td>Indonesia</td>
<td>2008</td>
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<tr>
<td>Anglo CoalbHBP</td>
<td>Phola</td>
<td>2,360 tph DM cyclone, spirals and filter plant (16 Mtpa, 2 modules)</td>
<td>RSA</td>
<td>2009</td>
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<tr>
<td>Zibo Group</td>
<td>Xuchang</td>
<td>400 tph two stage cyclone plant in existing building</td>
<td>China</td>
<td>2010</td>
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<td>Zibo Group</td>
<td>Tangkou</td>
<td>700 tph two stage cyclone plant in existing building</td>
<td>China</td>
<td>2010</td>
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<td>BHP Billiton</td>
<td>Douglas-Middelburg Optimisation</td>
<td>2, 200 tph crushing, DM cyclone and spiral plant (14 Mtpa, two modules)</td>
<td>RSA</td>
<td>2010</td>
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<tr>
<td>Total Coal</td>
<td>Dorstfontein</td>
<td>550 tph cyclone &amp; spirals plant</td>
<td>RSA</td>
<td>2011</td>
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<td>United Tractors</td>
<td>Orbit Prima</td>
<td>400 tph DM cyclone &amp; spirals plant</td>
<td>Indonesia</td>
<td>2011</td>
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**WHAT WE DO CONTINUED**