

THE ROAD MUCH TRAVELLED

The Broke Road Realignment is a critical aspect of the Bulga Optimisation Project which incorporates the construction and realignment of the existing Broke Road and associated works to accommodate the expanding complex.

CLIENT : Glencore
MAIN CONSTRUCTION COMPANY : Daracon Group
CONSTRUCTION VALUE : \$35 million

The Bulga Optimisation Project (BOP) was initiated to optimise and consolidate open cut and underground mining operations at Glencore’s Bulga Mine Complex, securing current production levels until 2038. Daracon Group were awarded the \$35M Broke Road Realignment project, a critical facet of the BOP, that required the construction and realignment of the existing Broke Road and numerous ancillary works to accommodate the expanding complex.

“There are five or six components to the project,” explains Bob Murphy, Group HSEQ Manager of Daracon. In addition to shifting and reconstructing Broke Road itself, the project necessitated the relocation of power infrastructure and construction of new water management systems. Adding to the complexity of the project were the stringent environmental standards applicable to the mining industry.

The realignment of Broke Road was, as Bob reports, “from a construction point of view, a straight forward road construction project.” It did, however, present situations particular to its location. “Around 40% of the road was built over piles of over burden put there for the purpose of the mine,” explains Daracon’s Justin Foot,

Project Manager of the Broke Road Realignment. Heavy impact rollers were required to work the dirt and develop a surface appropriate for construction. The new 9km stretch of road was attacked, as Justin describes, “on multiple fronts” with a large plant of up to 50 items of heavy earth moving equipment from Daracon’s own fleet. With access to over 230 items of up-to-date, fully maintained plant owned by the company, Daracon’s ability to supply its own earth moving equipment offers a valuable time- and budget-saving advantage compared to companies relying on equipment hire.

In addition to leveling mine overburden, Daracon’s quarry division, Daracon Quarries, was required to undertake a major crushing operation to reuse the material throughout the reconstruction of Broke Road.

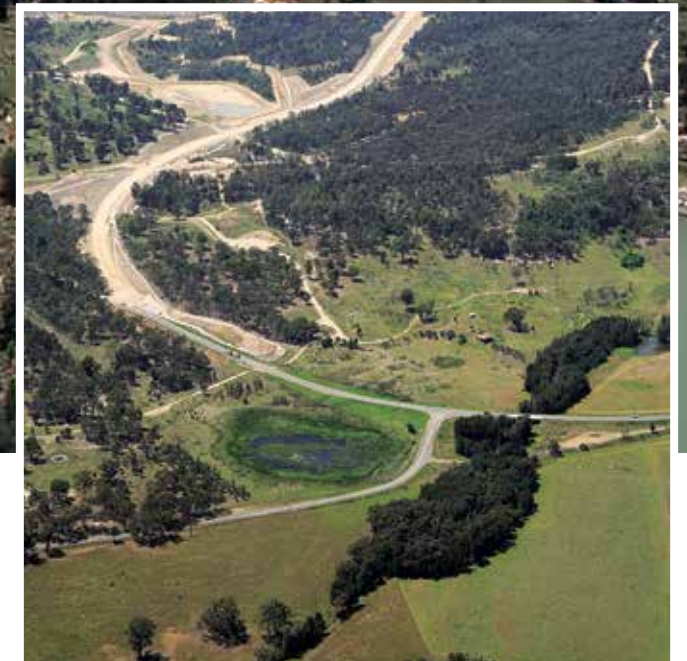
“Significant quantities of mine overburden was to be processed and used in the road formation,” explains Justin. “And for other contractors – i.e., the construction of arch structures, overland high voltage lines and various other civil works packages, the material comes from this source.” Daracon’s extensive crushing facilities processed 400,000 tonnes of crushed product that was repurposed in these various facets of the project.

A significant aspect of the Broke Road Realignment involved securing and upgrading the water supply for the Private Irrigation District (PID) landowners and the town of Broke itself. A consortium of landowners drawing water from the Hunter River for private use, the PID’s supply system was relocated.

“When we moved Broke Road, we had to supply the PID with new pipeline for 9-10kms on the new alignment,” explains Bob. Daracon also upgraded the Broke town water supply, constructing a new water main supply and a new reservoir tank.

Subject to the most stringent environmental standards as applied to the mining industry, Daracon’s best-practice approach ensured they were the best company to undertake the Broke Road Realignment project. With the scope of environmental regulations lost on some contractors, as Bob explains, “Daracon recognized the constraints and degree of control we had to make and factored the cost accordingly.”

A significant portion of the project’s budget was allocated to sediment and erosion control, this higher order spending was



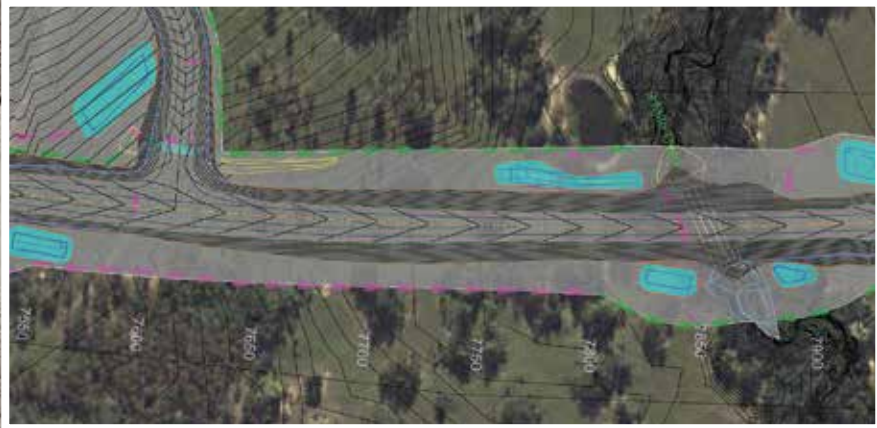
required to comply with mandated environmental standards. Taking its social contract seriously, Daracon strives to meet the highest degree of environmental obligations throughout its operations.

Leaders in civil construction, Daracon Group is also winning highly specialized and technically challenging infrastructure construction work through its fully-owned subsidiary Arenco. As one example, Arenco is currently completing the Museum Station Easy Access Upgrade, incorporating the installation of three elevators into the working train station, to improve customer accessibility.

For more information contact Daracon Group (Head Office), 17 James Street, Wallsend NSW 2287, phone 02 4903 7000, fax 02 4951 1070, website www.daracon.com.au

Below Quintec Survey Solutions provided erosion and sediment control plans for the realignment.

Below Rocla provided extensive drainage pipes and culverts for the Broke Road Realignment project.



The Broke Road realignment was particularly environmental sensitive and required the surveyors from Quintec Survey Solutions plan ahead for potentially damaging sediment erosion. To assist in the construction of Broke Road and eliminate any rain water runoff from the construction running into natural water courses.

“This assessment is generally completed in the office utilising 3d software and a preliminary water control design is then created and submitted for approval,” explains Andrew Quinn, Director of Quintec Survey Solutions. “Surveyors these days have to not only complete standard survey practices but also think about how the project will be constructed – assisting supervisors, assisting leading hands by basically ‘painting a picture’ of what we see on our computer to the field staff.”

“We had to design erosion and sediment control plans to capture all water run-off during construction using the existing surface terrain contours along with the future road contours and shape,” Andrew says.

“During rain the sediment has to be contained in a temporary dam that has been designed to strict catchment and runoff calculations, before it goes towards a creek or offsite.”

After investigations of the natural terrain, solutions are devised to capture the water with the use of diversion bunds and drains. However, as the landscape was reconstructed to incorporate the new road design, the catchment area changed, requiring the temporary dams to be designed to accommodate rain fall at the start of the project and after the new road is completed.

Since commencing operations nine years ago technology has rapidly evolved and the onsite role of surveyors needed to evolve with it. With the common use GPS machine controls systems Quintec is now required to complete more computer modelling and less “pegs in the ground.” The decreased use of physical markers has led Andrew to a more holistic approach.

“At Quintec, we look at ourselves as not just surveyors but try to assist our clients with practical solutions during the construction of the whole project to achieve a more productive and efficient outcome,” Andrew says.

For more information contact Quintec Survey Solutions (NSW), 22 Pine Ridge, Denham NSW 2328, mobile 0438 215 393, email aquintec@bigpond.net.au

Purchasing products for major infrastructure projects can be a complicated process. Dealing with multiple suppliers can require significant contact hours and increases the opportunity for things to go wrong. Rocla is one company looking to make this process a little more manageable by increasing the range of products they can supply to customers.

For the recent Broke Road Realignment project, Rocla demonstrated their commitment and ability to fulfill this goal by not just supplying their regular ‘bread and butter’ products. “In addition to the supply of concrete pipes, headwalls and box culverts, we also agreed to supply Hel-Cor corrugated steel pipes where required,” mentions sales engineer, Nino Devitis. On the surface, corrugated steel pipes may not seem like much of a deviation from their core product range, but from a manufacturing perspective, the difference is like chalk and cheese.

Daniel McMillan, Sales and Marketing Manager, provides commentary on this fresh approach. “Right now we are reassessing our product range to identify where we can add value for our customers. For instance, we are in the process of expanding our range of custom stormwater pits, which will dramatically increase the sizes we can offer customers. In addition we will supply these pits with entry and exit

holes pre-drilled to the specification requested by our customers, to save them time onsite”.

Rocla’s expansion of their custom pit range came as a result of recent talks with customers, which identified the need for larger diameter precast pits that offered time or cost savings in comparison to in-situ installations. Their desire to involve customers in the innovation process coupled with substantial investment in the design and manufacture of new products should see Rocla become even more relevant in the years to come.

As well as additional contracts within the Bulga Optimisation Project, Rocla are currently supplying numerous civil engineering projects across Australia. Two big NSW road projects recently in the works for Rocla are the Fredrickton to Eungai Pacific Highway Upgrade and the Berry Bypass.

For more information contact Rocla Pty Ltd, Old Bathurst Road, Emu Plains NSW 2750, phone 02 4702 0800, fax 02 4702 0898, website www.rocla.com.au

Below Greenaway Sediment Control provided silt fencing and delineation flagging for the Broke Road Realignment.

Below OzArk EHM completed Aboriginal site salvage on the natural areas surrounding Broke Road.



Erosion control specialists Greenaway Sediment Control provided 18,000m of delineation flagging and 8,000m of silt fencing to the Broke Road Realignment project. As the largest providers of erosion control services in NSW, Greenaway Sediment Control are the undisputed experts in the field. “No one can beat us for service, price and capabilities, Paul explains. “We have the machinery in place to rapidly respond to client’s needs and the capability to install 3,000m of silt fencing per day.”

With over a decade’s experience working on mining projects, including the Ravensworth North upgrade, Greenaway Sediment Control possesses the capabilities for overcoming the challenges of a mining environment. Greenaway Sediment Control is particularly focused on upholding a safe workplace that Paul Greenaway, the company’s Managing Director/Owner, describes as one of mining’s ‘daily challenges’. “Greenaway Sediment Control have had zero incidents, zero serious safety matters, in 15 years,” Paul says. “We have a culture of safety in the company.”

For more information contact Greenaway Sediment Control, U2/46d Mileham Street, Windsor NSW 2756, phone 02 4577 8858, mobile 0414 691 276, email info@greenaway.net.au, website www.greenaway.net.au



OzArk EHM undertook Aboriginal archaeological salvage excavation to locate and conserve artefacts from potential destruction. Over the area of the Bulga Optimisation Project there are, as Dr Jodie Benton, Director of OzArk Environmental & Heritage Management, describes, “100s of Aboriginal sites to collect artefacts and data from.”

“Since 2010/11, we have been undertaking survey to identify every Aboriginal site,” explains principal archaeologist Jodie. “We then had to work out which sites will be impacted by the project. We had three years to do initial assessments before the project was approved and we are now in the salvage operation phase.”

Retrieving artefacts through a rigorous methodology of digging 50cm x 50cm squares in 5cm layers, Jodie and the team sieve each layer to retrieve Aboriginal artefacts so as to build up a picture of Aboriginal prehistory prior to European settlement.

During the realignment of Broke Road, OzArk EHM was required to work in the midst of the action. “We often do our work just ahead of other construction crews,” Jodie explains. “We are usually finished and gone by the time construction begins, but on this project we had to

make sure we interacted carefully with the construction teams. There was stuff happening everywhere but we were impressed by the level of coordination.”

OzArk EHM worked in partnership and with the full involvement of the Wonnarua people who are the traditional custodians of the area. OzArk EHM provides a full range of archaeological and heritage services including site survey and recording of Aboriginal sites, liaison with Aboriginal communities, Land Councils and legislative/ planning authorities as well as broad-based regional planning studies. Environmental management services include full ecological assessments of flora and fauna.

A regional NSW small business, OzArk EHM adopts a grass roots approach to heritage and environmental management. “In rural NSW you have to find practical solutions that work in the landscape,” Jodie says. “We provide a flexible, tailor-made approach.”

For the more information contact OzArk EHM, 145 Wingewarra Street, Dubbo NSW 2830, phone 02 6882 0118, fax 02 6882 0630, website www.ozarkehm.com.au

Below Guardian Traffic Services provided tailored traffic management plans for the Broke Road project.



Broke Road Realignment, NSW



Guardian Traffic Services provided traffic control and traffic control signs to the Broke Road Realignment project. With 20 years experience in the traffic management industry, it is not surprising that Kelly Groen, Co-Owner/Director of Guardian Traffic Services, reported that the project presented “no challenges.”

A family owned and operated business, Guardian Traffic Services was established in 2011 and now boasts a team of over 60 traffic professionals. Servicing Newcastle, the Hunter Valley and Central Coast regions, Guardian Traffic Services are equipped to provide tailored traffic management plans for any scale of construction work. No matter how major the project, Guardian Traffic Services will deliver the highest standard of traffic control at competitive rates.

Guardian Traffic Services specialise in supplying traffic control crews with signs and equipment for any type of situation including daily crews for construction, event management and emergency work.

Experienced in all facets of the traffic industry, Guardian Traffic Services are the experts in supplying traffic management needs such as computer generated traffic plans, traffic control audits and site inspections.

Guardian’s Traffic Services’ personal and reliable service is available 24 hours, 7 days a week. The team of experienced and dedicated traffic personnel, including supervisors and traffic controllers, are all RMS accredited and operate with standard RMS approved signs and equipment.

To ensure the highest possible levels of onsite safety, Guardian Traffic Services implements a comprehensive Occupational Health and Safety management system. All of Guardian Traffic Services’ traffic professionals are trained in risk management processes and safety procedures to comply with the traffic management industry’s legislative requirements.

As well as the Broke Road Realignment project, Guardian Traffic Services have been involved in further work at Bulga for Downer EDI. Farther a field, Guardian Traffic Services is currently completing work for the Sancro Interchange Pacific Highway Upgrade, and recently completed work for the Nelson’s Bay Road Upgrade.

For more information contact Guardian Traffic Services, U2/4 Friesian Close, Sandgate NSW 2304, phone 02 4967 5033, email admin@guardiantrafficservices.com.au, website www.guardiantraffic.com.au