

No mountain is too high for Chemc Environmental with Bell B30Es

Chemc Environmental, an award-winning civil engineering and rehabilitation company that specialises in mine rehabilitation, is using four Bell B30E Articulated Dump Trucks on a unique project to rehabilitate the Alpha Anthracite Mine outside Vryheid in the KwaZulu-Natal interior. Conditions vary from extremely dry and dusty winter conditions to extremely wet and slippery after rains.

Operating a mine within strict health and safety legislation is challenging, but the responsible and complete rehabilitation of the mine when it has run its economical life is in many respects even more onerous. Only once the mine area and its surrounds have been returned to their natural state, to the satisfaction of the Department of Mineral and Resources, can the mine be closed from a legal view point, says Conrad Herbst, the owner of Pretoria-based Chemc Environmental.

The Alpha Anthracite project started about four years ago after Chemc Environmental conducted an environmental impact assessment and compiled a rehabilitation plan for the mine, which was originally owned by the Duiker Mining Group but is now the responsibility of Glencore Mining. "The Department of Water Affairs had a serious

problem with coal discard against the mountainside because every time it rained acidic water came down the mountain. There was also an additional 600 000m³ of discard dumped in the area that eventually caused pollution into the Mfolozi River," recalls Conrad.

Due to Chemc Environmental's experience and knowledge of the project, they were subsequently appointed to implement the rehabilitation plan. Initially road tippers were used to move 600 000m³ of discard into one of two demarcated areas that previously had been badly eroded so that it could be shaped and sealed.

"The biggest problem is the discard up on the side of the mountain of 50 000m³ that needs to come down and this is the final phase that we are now busy with. Earlier in the project we tried old converted 4x4 SAMIL Trucks but these were old tippers and, although they could do the job, they were extremely slow and had absolutely no safeguarding of any sort. We realised that we needed something that could safely operate on its own.

"We decided on Bells and have been very, very happy. We worked with two trucks for the first month and they've worked so well that we have put another two into operation," says Conrad, who has hired all four Bell B30E Articulated Dump Trucks on dry rates from Civil Tech Construction in Pretoria.

The B30Es are tasked with moving 50 000m³ of discard material from the loading site, situated 284m up on a mountainside, and off-loading the material into specially prepared pits. A roundtrip is just over 6km and includes a challenging stretch of road (of about 1,4km) that has been specially cut into the mountainside with a dozer and an excavator. The road is hardly visible from below as per the condition set by the Department of Environmental Affairs.

The road is rough and rocky, coated in a thick layer of fine dust that would be treacherous in the wet. The gradients are not for the faint-hearted, particularly two sections that Conrad estimates to be over 30 degree inclines, and with a few tight turns for good measure.

As a result the B30Es each carry a lower than rated payload, which is loaded with a 20t excavator. Due to the narrowness of the mountain pass, the trucks travel in



Conrad Herbst of Chemc Environmental with Casper Lourens of Bell Vryheid and Chemc Environmental's Site Manager, Leon du Toit.

single file with each truck completing 11 trips in a nine hour shift. "We know the trucks can load more but purely from a safety aspect we don't want to overload," says Conrad.

The ascent and descent control, the ease of turning and fuel consumption are all features of the B30E that have impressed Chemc Environmental. "We thought fuel would kill us on this contract but the trucks have pleasantly surprised us with fuel burn of around 8,9 litres per hour."

Continues Conrad: "We've been impressed with the ease with which these Bells work. They've given no hassles in all the time we've been running them. The only downtime we've had is due to a flat tyre caused by a very sharp piece of old reinforcing steel that was picked up in the rubbish at the top of the mountain and the servicing of one of the trucks, which had come straight from a site in Namibia."

While the Bell machines are making a positive mark, what makes the project unique is the way in which the area is being rehabilitated using the environmentally friendly 'hessian and sausage' method of immediate dust control and vegetation establishment. Chemc Environmental has used this method on two previous rehabilitation projects, which won the company the first and runner-up prizes at the 2008 Nedbank Green Awards.

Explained simply, the discard material is packaged and compacted between carefully constructed layers of

bentonite and topsoil to make a fully enclosed 'discard pie'. According to Conrad compaction is critical because the lack of oxygen prevents the combustion of the discard. Likewise bentonite expands to 16 times its dry mass with moisture and is so dense that nothing can penetrate it to reach the discard.

Two metres of growing material is spread on top of the final layer of bentonite, which is then criss-crossed with lengths of biodegradable hessian socks, stuffed to resemble sausages with a mixture of topsoil, dung, compost and a variety of indigenous grass seeds harvested from the area at the start of the project. Also included in the mix is a small amount of Chemc hydrogel, an inert material that absorbs water and retains moisture for 29 days - long enough for the seeds to start growing.

The project is ticking all the boxes from both the environmental and social responsibility aspects. "The project employs 11 operators and 20 channel operators. The only people who are not local are the Bell drivers because that is a specialised job," says Conrad. In addition, three gravesites have been identified and preserved, and to ascertain the future impact of the project, the water quality of 12 sets of double boreholes is being monitored.

Alpha Anthracite has been entered into this year's Nedbank Green Awards, which will be adjudicated later this year, and has already won the Mine Safety and Environmental Award, which is the second largest award by the Chamber of Mines.

