



Alluvial mining at Lulo in Angola. Mining at the site is currently running at a rate of 20 000 bank cubic metres per month.

Lucapa on a growth path

ASX-listed Lucapa Diamond Company is fast emerging as one of the most exciting diamond mining companies in the world. Its Lulo alluvial mining operation in Angola is now delivering large, high quality stones on a regular basis and the company is ramping up its search for the kimberlite source of these alluvials. Lucapa has also recently acquired the advanced Mothae kimberlite project in Lesotho, which it expects to bring into production within 12 months. **Modern Mining's** Arthur Tassell recently spoke to MD and CEO Stephen Wetherall and COO Nick Selby at the Mining Indaba in Cape Town.



Lucapa's COO Nick Selby (left) and CEO Stephen Wetherall (photo: Arthur Tassell).

According to Wetherall, Lulo delivered the highest per carat sale price of any run-of-mine diamond production in the world in 2016 – an astonishing US\$2 983 per carat. To put this in perspective, the Letšeng mine in Lesotho of Gem Diamonds, renowned for its high value per carat production, achieved US\$1 899/ct in the first half of 2016. Among the stones recovered at Lulo in 2016 was a 404-carat diamond which ranks as the largest ever recorded in Angola. Named the '4th February Stone' (commemorating the date on which it was recovered), it was sold within three weeks for US\$16 million.

Lulo's form has continued into this year. On 13 February, Lucapa announced that a 227-carat Type IIA D-colour gem had been recovered and followed up on 23 February with the announcement that Lulo had produced yet another large stone, in this case a premium 62-carat diamond. The 227-carat stone ranks as the second biggest

ever to have been recovered in Angola – eclipsing the 217-carat 'Angola Star' produced in 2007 by the Luarica mine – and is the seventh plus 100-carat diamond to have been recovered at Lulo to date.

The Lulo concession covers an area of 3 000 km² in Lunda Norte province and is located 150 km west of Alrosa's Catoca mine, the world's fourth biggest kimberlite mine, and on the same favourable geological trend, the Lucapa Graben. The alluvial mining and exploration activities at Lulo are focused on an approximately 50 km stretch of the Caculo River which runs through the concession.

Lucapa (known originally as Nare Diamonds and later as Lonrho Mining) has been active at Lulo since 2007 but formal, commercial-scale mining activities only started in January 2015 after the award of a 35-year mining licence to what eventually became Sociedade Mineira Do Lulo (SML). Lucapa owns 40 % of SML and is the operator of the project. Its partners in SML are Endiama, the Angolan state diamond company, and Rosas & Petalas.

Wetherall, a chartered accountant, and Selby, an extraction metallurgist, both joined Lucapa in October 2014. Both have many years of experience in the diamond industry, including senior roles with De Beers and Gem Diamonds. Wetherall replaced the previous MD, Miles Kennedy, who is now Lucapa's Non-Executive Chairman.

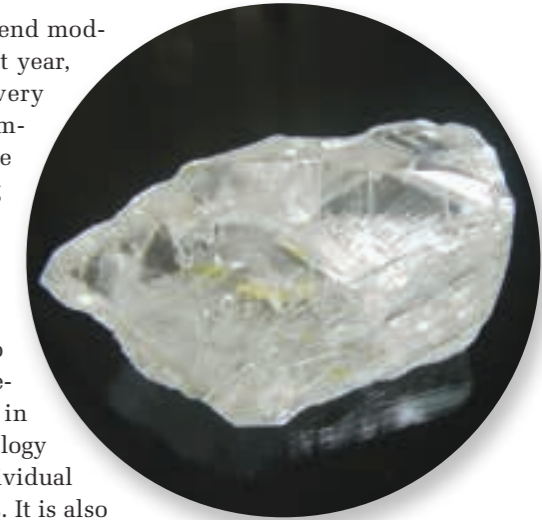
Says Wetherall: "When Nick and I joined Lucapa, the Lulo operation was already running strongly but we've taken it even further. The original plant on site was a 50 t/h DMS plant from Bond Industries of Johannesburg, which was commissioned in late 2013 and was mainly designed for bulk sampling. Since then it has been progressively upgraded and expanded – to 150 t/h – with the latest improvements being

the installation of a wet front-end module, commissioned in July last year, an XRT large diamond recovery circuit, which achieved commercial operation towards the end of 2016, and a deep boiling facility to clean the diamonds, which was also commissioned in the December 2016 quarter."

He adds that the XRT circuit, which is designed to process diamond-bearing material between 18 and 55 mm in size, makes use of Tomra technology and allows the recovery of individual diamonds of up to 1 100 carats. It is also expected to prove more effective for the recovery of low-luminescing Type IIA diamonds.

The 227-carat stone produced by the Lulo operation in February this year was the largest to date to be recovered from the XRT circuit and it is anticipated that it will – by itself – more than pay for the investment in the XRT technology. Interestingly, the 404-carat diamond unearthed early last year was recovered well before the XRT circuit was installed. The fact that it was recovered was a matter of chance – it happened to hit the screen at just the right orientation – and it could just as easily have been lost. Subsequent to this 'near miss', Lucapa started stockpiling all over-size material in preparation for the arrival of the XRT.

Apart from the plant upgrades, Lucapa has also increased its mining capacity. To this end, it took delivery of a new fleet of Caterpillar equipment – including a 374F LR excavator and three 740B articulated trucks – in the second half of 2015. Mining at the site is currently running at a rate of 20 000 bank cubic metres per month. Plans to double this figure have been considered. Mining takes place in



The 227-carat stone recovered at Lulo in February this year. It is the seventh plus 100-carat diamond to have been recovered at Lulo to date.



The processing plant at Lulo, which has progressively been upgraded and expanded.

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several mining blocks, with the most productive so far having been Blocks 6 and 8 (although the recently recovered 227-carat stone was from the newest mining area, Block 28, located 4 km south of Block 8).

Lucapa's latest quarterly report (for the three months ended 31 December 2016) gives some idea of just how well Lulo is functioning. During the quarter, 5 313 carats were produced (up 147 % on the equivalent period in 2015) from 50 349 bank cubic metres treated with the recovered diamond grade being 10,6 carats per hundred cubic metres (cphm³). The average diamond size was a phenomenal 1,9 carats and 79 'specials' – individual diamonds weighing more than 10,8 carats – were recovered, including four plus 70-carat stones.

While the alluvial mining activities are keeping Lucapa very busy at Lulo, the company last year launched a new – and aggressive – kimberlite exploration programme on the concession following the approval of a new five-year kimberlite exploration licence. A new Hanjin D&B35 all-terrain, high-capability rig able to drill up to 2 000 m is scheduled to be operational in March, bringing to three the number of rigs involved in the kimberlite drilling programme.

"We remain convinced that the kimberlite source – and there could be more than one – of the alluvials is in our concession area," remarks Wetherall. "The stones we are recovering are generally large, irregular in shape and have jagged edges, so they clearly haven't travelled very far from source. In 2015, we picked up a 133-carat boart stone, made up of thousands of crystals with the bond between these crystals being quite weak. This stone would definitely not have remained intact if it were far from its parent kimberlite."

One of the challenges facing Lucapa is that there are so many targets in its concession area. "In the years we've been on site, we've identified two distinct kimberlite provinces within the concession. We've found around 300 anomalies, converted 100 of these to kimberlites and bulk sampled 13, of which four have been confirmed as being diamondiferous," says Wetherall. "We're concentrating on targets close to our mining areas, particularly Blocks 8 and 6. We're also about to undertake a helicopter-borne Time-Domain EM survey over the Caculo River and valley which will help us identify additional non-magnetic kimberlite targets and improve the definition of known targets."

Irrespective of whether Lulo eventually yields the kimberlite source of the alluvials, it is now certain – given the acquisition of Mothae – that



Lucapa is going to evolve into being a kimberlite as well as an alluvial miner. "Mothae gives us diversification both in terms of the mining we're doing – kimberlite as opposed to alluvial – and geographically and we're delighted that we've been able to add this outstanding project to our portfolio," observes Wetherall.

"As you know we've been awarded the project by the Government of Lesotho following an international bidding process which was keenly contested. We believe our success was in part due to our track record at Lulo, which indicates that we have what it takes to be a successful miner." He also notes that both he and Selby are familiar with the Lesotho kimberlites from their days with Gem Diamonds (which owns the Letšeng mine near Mothae).

Lucapa is paying US\$9 million for its 70 % interest in Mothae (the Government of Lesotho has the balance), a very competitive price given that historical development spending at the project by previous operators (Motapa and Lucara) has amounted to approximately US\$36 million and that the project has an indicated and inferred resource of 1 million carats. Infrastructure on site includes accommodation and site offices, a processing plant, workshops, fresh water dams and a tailings facility.

While previous development plans for Mothae have predominantly been focused on larger scale mining and processing scenarios, Lucapa will be implementing a staged approach similar to that employed at Lulo. As currently envisaged, Phase 1 will involve the open-pit mining and processing of approximately 2 Mt of weathered kimberlite (including some previously stockpiled material) over a minimum period of three years. Mining costs during this phase are expected to be low because the weathered material can be mined as 'free dig', which does not require conventional drilling and blasting. In addition, only minimal waste stripping will be needed.

Phase 2 will be an altogether bigger

View of the Mothae kimberlite project in Lesotho. The Government of Lesotho has issued a new 10-year mining licence to Mothae Diamonds.

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operation with a projected processing rate of approximately 2 Mt/a. It will be a conventional drill-and-blast operation with the pit going down to a depth of around 255 m. The exact details, however, will depend on extensive studies to be undertaken during Phase 1.

The capex for Phase 1 is estimated at approximately US\$12 million, with much of this being allocated to expanding and improving the plant. "The current plant can do 75 t/h and our intention is to increase this to 100 t/h," says Selby. "We'll be making extensive changes to the front end and we'll upgrade the scrubber, screens and pumps. We'll also install XRT technology so that we can efficiently recover large Type IIa diamonds. Our focus will be on the larger material so we'll have a bottom cut-off screen size of 3 mm – that way we won't clog up the plant." Selby adds that with the Mothae area being water stressed in winter, Lucapa will also be adding water recovery circuits.

Summing up, Wetherall says that Mothae is an exceptional asset. "The Mothae pipe, which has a surface area of 8,8 ha, is second in Lesotho only to Letšeng, which, incidentally, is just 5 km away," he states. "Like Letšeng,



View of the existing processing plant at Mothae.

the grade is low but the value per carat is very high. The bulk sampling by the previous operators delivered over 23 000 carats at a grade of 3,88 cpht. The production included 96 stones weighing more than 10 carats. The average price per carat achieved was close to US\$1 000 per carat with one stone going for US\$41 500 per carat. So we are aiming for a Letšeng-style operation. In short, we regard Mothae as a compelling opportunity which will perfectly complement our Lulo operation in Angola." ■

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