

PPM appointed to undertake Tongo-Tonguma FEED study

Stellar Diamonds, the London-quoted diamond exploration and development company focused on West Africa, reports it has entered into a contract for the Front End Engineering and Design study (FEED) to be conducted for the underground mine development of the Tongo-Tonguma kimberlite dyke project in eastern Sierra Leone. Paradigm Project Management (PPM) of Johannesburg has been appointed to prepare the FEED study.

This latest development follows Stellar's announcement in April this year that it had signed a Tribute Mining Agreement with Octea Mining Limited in respect of the project. Commenting on the tribute agreement, Stellar's Chief Executive, Karl Smithson, said it would allow Stellar to build a single mine for the simultaneous commercial production from the contiguous Tongo (owned by Stellar) and Tonguma (owned by Octea) kimberlite deposits. "The combined project has an initial 4.5 million carat resource which, due to the high grade (100 cpht to 260 cpht at +1,18 mm) and high quality diamonds (US\$209/ct to US\$310/ct),

is considered to be one of the highest value kimberlite ore bodies in Africa on a dollar per tonne basis," he stated. "The 21-year mine plan with a consistent output of over 200 000 carats per year at full production would quantify this development as the second largest kimberlite diamond mine in West Africa.

"The project also has a very modest two-year capital requirement of just under US\$32 million to get into full scale commercial production. Stellar has the strong support of all main stakeholder groups in Sierra Leone for this mine development, which would have a very positive impact in terms of employment, local infrastructure development and future taxation revenue for the country."

Stellar announced in August last year that it had agreed a proposed transaction with Octea that would result in Tongo and Tonguma being developed as a single project under the same production infrastructure, with operational management invested in Stellar. The Tongo and Tonguma licences cover the entire historical Tongo alluvial diamond field, the sources of which have been identified as high-grade kimberlite dykes.

A Preliminary Economic Assessment (PEA)

on the combined project was published in October last year. It was prepared by PPM and SRK, both previously involved not only at Tongo but also Tonguma. As detailed in the PEA, Tongo-Tonguma will be developed by underground mining methods with access provided by a series of declines from surface at Kundu, Lando and Tongo Dyke-1. The declines will be 4 m x 4 m in cross section and will be developed at an angle of 8 deg.

Mining levels will be interspaced at 35 m depth with the first levels being developed at 40 m below surface. Based on the current resource models, Tongo will have a planned 11 levels, Lando 10 levels and Kundu five levels during the life of mine. The ore bodies will be accessed by 2 m x 2 m drives and cross-cuts into stopes that are mined by traditional overhand shrinkage stoping mining methods, with the ore being drawn from access points and transported on underground locos and tipped into bins on an ore pass system. These ore bins will feed haulage trucks that will transport the ore to surface and on to the processing plant.

The existing 50 t/h processing plant at Octea's Koidu mine is to be relocated to Tonguma and be further upgraded to serve as the processing plant for the new mine. This will save considerable time in getting the project to production.

The mine will treat a total of 6,06 Mt over its life of mine (LOM) to recover approximately 3,9 million carats. The starting operating cost is US\$74 per tonne with the escalated average operating cost over the LOM estimated at approximately US\$140 per tonne treated. Although the capex to production is only US\$31,8 million, the escalated capital expenditure over the LOM will be approximately US\$90,2 million. The full equity pre-tax NPV₁₀ for the project is approximately US\$172 million while the project pre-tax IRR is calculated to be 49 %.

Smithson describes the FEED as a very important first step in the mine development process. "PPM are highly experienced in the delivery of diamond mine projects and together with SRK Consulting they will refine all elements of the mine plan as determined in the PEA to higher levels of confidence in order to reduce the project delivery risk. With over 66 000 m of drilling completed at the project to date, we will undertake mine plan related drilling for the first two



Top: The Kundu West dyke – seen here – is one of the dykes in the resource.

Above: Exploration at Tongo has included extensive bulk sampling. Tongo Dyke-1 was exposed by excavating a trench through the weathered kimberlite and eventually into fresh, competent kimberlite that had to be drilled and blasted to unearth it from the trench. Note the competent granite side walls (which should translate into low dilution once mining starts).

Drilling at the Tongo property. Around 66 000 m of drilling have been carried out for the combined project.

