PRESS RELEASE

Whittle Consulting (Africa) reports successful completion of Enterprise Optimisation study for Anglo Platinum’s Mogalakwena operation

Steve Burks, Managing Director of Whittle Consulting (Africa) is pleased to announce the completion of an extensive Enterprise Optimisation study of Anglo Platinum’s Mogalakwena platinum group metal (PGM) producing operation in the Limpopo province of South Africa, with a positive outcome.

Anglo Platinum accounts for about 40% of the world’s newly mined platinum. Its Mogalakwena mine opened in 1991 and can potentially mine ore from 5 to 7 open pits for at least the next 35 years and possibly longer. The Platreef, richer in base metals by comparison with the other PGM reefs in South Africa, outcrops along the entire length of the lease. There are two separate processing plants with combined milling capacity of about 11.4 million tonnes per year.

Output from Mogalakwena of equivalent refined platinum in 2010 was 260,300 ounces, an increase of 10% from the previous year according to the 2010 Annual Report. Ore tonnage milled increased by 7% to 10.4 million tonnes while head grade declined as planned by 4% to about 2.6g/t (3PGM+Au). Mogalakwena generated net sales revenue of R6 187 million (17.6% of the total for the Group) and operating contribution of R1 927 million (22.0% of the total for the Group) in 2010.

Whittle Consulting was appointed to implement the Enterprise Optimisation study in August 2010. The major objectives identified were:

- to facilitate deferral or minimisation of capital expenditure for the next 3 to 5 years
to evaluate the merits of several alternative operating strategies. These included variable versus capped mining rate, strategic stockpiling of low grade ore, deferral of waste stripping where possible but with smaller short term pit phases to access higher grade ore earlier, consideration of several concentrator upgrade or expansion strategies.

- to determine the optimal mining rate matching the current concentrator capacity
- to establish the optimum dynamic mining and concentrator processing rates matching current smelter and refinery capacity constraints
- to establish the optimal production rate for Mogalakwena taking into account the latest ore resource data and applying current cost estimates for possible mine, concentrator and downstream process plant expansions.

This work was carried out in three sequential phases between September 2010 and February 2011 with interim reports and presentations being produced at the end of each phase enabling further work to be redirected if appropriate.

Typically Whittle Consulting defines 10 value levers driving Enterprise Optimisation as illustrated below: Pit shells, pit phases, mining schedule, dynamic cut-off grade, strategic stockpiling, plant calibration, dynamic product specifications, logistics, capital expenditure and simultaneous optimisation of all these mechanisms over the entire life of mine. In the case of Mogalakwena, it was possible to apply almost all of these mechanisms.

The objective of any Enterprise Optimisation exercise is to increase and optimise net present value (the sum of the discounted annual cashflows over the whole period) of the overall operation. This measurement of performance reflects the time value of money and maximises the opportunity to generate free cash for re-investment in the early years of operation, providing more flexibility to management and reducing risk. Frequently improvements in net present value in the range 5 to 35% have been demonstrated to be possible at other operations studied.

In this case, the exercise commenced with a half day training seminar and kick-off meeting on site, after which data collection commenced immediately. The existing resource block model was utilised, supplemented by operational data from every section of the operation including geological, mining, processing, operating cost, capital cost and general commercial information. This was collated in a single Business Model for the whole enterprise which was used with the block model data and the mine’s current pit shell and phase designs to prepare a base case Optimisation Run using Whittle Consulting’s proprietary Prober software. This base case was compared closely with the operation’s current Business Plan to ensure that all costs, revenues and operating parameters (particularly capacity limits at each
stage of the value chain) had been captured correctly. Potential net present value improvements were then measured against the base case.

In order to determine the potential benefits of each of the 3 mining mechanisms (scheduling, dynamic cut-off grade and strategic stockpiling) they were tested sequentially. The extensive experience of Whittle Consulting’s specialists was applied using Gemcom Whittle Four X software to prepare revised pit shells and phases with low initial stripping ratios, finer early phases and quicker access to high grade ore pockets. The 3 mining mechanisms were then applied again based on the revised pit designs. After this, simultaneous optimisation was applied with all of the mining mechanisms switched on. Dynamic mining rate was tested by specifying the purchase cost, operational life and capacity of additional mining equipment and using the Optimiser to determine how much additional mining capacity would be optimal. This concluded Phase 1 of the exercise.

Phases 2 and 3 incorporated updated commercial data, modelled the various modified concentrator operating practices being considered, utilised a modified resource block model provided by the operation, investigated the likely impact of possible expansion of concentrator, smelter and refinery processing facilities on the mining operation and ensured that production was maintained between defined limits each year to prevent major in-process inventory swings from year to year.

The output of each Prober Optimisation Run consisted of over 50 Tables and about 70 Charts in the case of Mogalakwena. The main results had to be analysed after each Run and were used to update the input file for each subsequent Run. This is a key element of any Enterprise Optimisation study demanding familiarity with the optimisation philosophy and mechanisms as well as the software which explains why Whittle offers a consulting service rather than selling the software to end users. In the three phases of work carried out for Anglo Platinum, over 70 individual Optimisation Runs were completed, enabling all of the scenarios initially contemplated to be studied and providing a consolidated set of guidelines for future business plans as well as the current operation.

Several of the optimisation mechanisms showed potential to add value to the Mogalakwena operation. A cumulative annual cash flow chart from one of the interim reports is produced with Anglo Platinum’s permission, with the monetary scale intentionally omitted. This illustrates the typical profile of Enterprise Optimisation study results with cash flow improvements in the first years and a much flatter profile later. However, it is important to note that Enterprise Optimisation is an analytical process providing the Client’s management team with
information intended to help them improve operational results. The results can only ever be as accurate as the input data provided by the Client team relating to operational practice, historical results and future constraints and limits. In this specific case, the limits and constraints for downstream smelting and refining also take account of other Anglo Platinum operations which may in some cases take priority over Mogalakwena’s concentrate production. Even if all constraints have been applied accurately in the Optimisation analysis, the output of an Enterprise Optimisation exercise is initially only a report demonstrating theoretical potential for future improvements. The full commitment of the mine’s operational team is needed to set and deliver against departmental key performance indicators which match the financial targets and are consistent with the conclusions of the Optimisation work. If this commitment is applied, a significant percentage of the potential benefits identified can often be realised.

This work was carried out under the guidance of the Mineral Resource Management team at Anglo Platinum Head Office and with the assistance of a team of key individuals based at the Mogalakwena operation whose help is gratefully acknowledged. For more information contact Steve Burks in Johannesburg, South Africa on +27 82 377 9608 or by email at steve@whittleconsulting.com.au.