WHITTLE CONSULTING

STRATEGIC MINE PLANNING SPECIALISTS

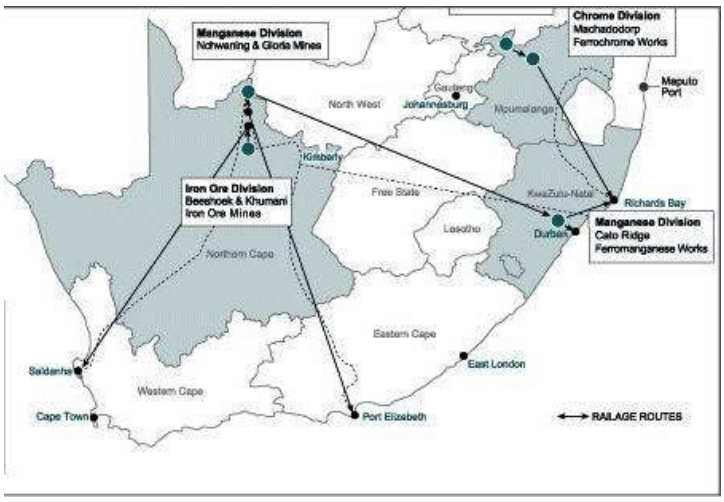
29th June 2011

PRESS RELEASE:

Whittle Consulting (Africa) announces successful completion of Enterprise Optimisation Study for Assmang Managanese Division

"Steve Burks, Managing Director of Whittle Consulting (Africa) has reported the completion of an Enterprise Optimisation study of Assmang's Managanese Division. Assmang Limited is a company incorporated in the Republic of South Africa for the purpose of supplying raw material to the world's steel mills and alloy plants. It is jointly and equally owned by African Rainbow Minerals Limited and Assore Limited. Assmang mines manganese ore at the Nchwaning and Gloria mines operated by Black Rock Mining near Postmasburg and Hotazel about 700km south-west of Johannesburg. Most of the Group's production is exported to the Far East, Europe and the United States of America. The balance of the manganese ore is used at Assmang's Cato Ridge smelter in KwaZulu-Natal for the production of ferro-manganese (FeMn) alloy most of which is also exported. The manganese operations are grouped together as an operating division operating independently of the Chrome and Iron Ore Divisions of Assmang.

The location map illustrates the location of Assmang's operations in South Africa as well as some of the export port options for its products.



After record sales in financial year (FY) 2007/08, production at the Nchwaning mine was reduced in 2009 due to the financial crisis and the cutback in steel production by mills throughout the world. The market situation was monitored constantly during 2009, and the

WHITTLE CONSULTING PTY LTD ABN 71 086 470 457
SUITE 13, 333 CANTERBURY ROAD, CANTERBURY, VICTORIA 3126, AUSTRALIA TELEPHONE: +61 3 9836 9644 FACSIMILE: +61 3 9836 9552
EMAIL: info@whittleconsulting.com.au WEB: www.whittleconsulting.com.au

opportunity was used to proceed with projects to increase capacity at Nchwaning Phases II and III from 3.6 to 4.2 million tonnes per year (Mtpy) of ore by 2011 and at Gloria from 0.48 to 0.96 Mtpy by the beginning of 2010.

Senior Assmang staff attended a Whittle Consulting Enterprise Optimisation course in November 2009 and expressed interest in having a study of the manganese operations done. Work commenced in April 2010. The Assmang Manganese Division includes several underground mining operations with different Mn grades and Fe/Mn ratios, multiple export and smelting options necessitating stockpiling and blending, complex logistics and transport issues over great distances, and a mix of short and long term product contracts all with different prices and product grade and size requirements. Optimisation of the entire value chain is a complex problem beyond the capability of most mining houses or manufacturing companies to solve without the assistance of a consulting group such as Whittle. In this case, the main items identified by Assmang which were investigated during the exercise were:

- Mining sequence of each ore area subject to development and stoping constraints at any time
- Potential for dynamic mining width which would affect tonnage, grade and yield from each ore body
- Cut-off grade, stockpiling and product blending strategy
- Product strategy, including viability of the smelter with and without sintering, and comparison of value added by producing FeMn instead of exporting ore
- Possibility and potential timing of mine, crushing/screening plant, smelter and logistics capacity increases
- Configuration of the above to maximise project value since all of them are interdependent.

Phase 1 of the work focused on the mining operations and the first six steps of Whittle Consulting's typical suite of optimisation mechanisms (for underground mines these are mine phasing, scheduling within phases, cut-off grade, blending by grade band, stockpiling and simultaneous application of the preceding steps) and was completed between April and August 2010. After an extensive phase of data collection, a Data Input Model for the entire Assmang Managanese Division was developed and consolidated into a single document. This typically represents as much as half of the total effort of these studies since few companies operating in multiple locations with several profit and cost centres capture all of the operating and financial data required to optimise the enterprise in a central location. In Phase 1, a mathematical model of the mining operation was developed which selected and

determined the net value of ore blocks, grouped them into phases or areas, applied sequencing rules for the development and stoping of these phases enabling Whittle's proprietary Prober optimisation software to prioritise them, then applied scheduling optimisation for specific ore blocks within each phase. A Base Case was generated which was carefully compared with the current operational business plan. Assmang is a complex organisation with many internal stakeholders whose assistance to verify and approve the input data from each department and the output of the base case Prober Runs is gratefully acknowledged. The verification process was a lengthy exercise which had to be completed before subsequent work could proceed.

Working from the Base Case, Phase 1 also investigated dynamic cut-off grade, blending of ore to achieve product minimum Mn grade and also minimum Mn:Fe ratio, transport and smelting costs for various alternative strategies already being followed, and optimisation of the different ore products currently exported each of which has a different sales price. The capacity limits of each step in the value chain were also taken into account. Approximately 40 Optimisation Runs were completed in this phase of work, each of which generated about 30 Tables and 40 charts containing annual operational and financial information over the entire planned life of the operation. The major output tables were analysed after each Run in order to set the input parameters for the future work.

After Phase 1 was presented to senior Assmang management in a half day workshop, a second phase of work was commissioned. Phase 2 was completed between November 2010 and March 2011. Additional ore resource block model information was incorporated and an assessment was made of optimisation of possible mine, logistics and smelting expansion plans in parallel with engineering and costs studies being done by others. In addition, seven major alternative smelting strategies were considered each of which had several subordinate categories. Variable and dynamic mining width was considered for each of the ore bodies; the implication being that increased mining width would result in a considerable increase in recoverable ore resource provided that product Mn grades and Mn:Fe ratios could be maintained. Approximately 40 additional Optimisation Runs were completed during Phase 2 and the interim and final results were presented to senior Assmang management on several occasions.

The work was sponsored by Henk Bouwer (Executive Technology: ARM Ferrous) and led by Christo Kuhl, Manager Mining: ARM Ferrous. Henk was able to provide the customer's assessment of the work done by Whittle Consulting and concluded as follows:

- The exercise has been of great value in aiding decision-making,
- The whole process enabled the team to better understand the Assmang manganese business,

- The Business Enterprise Optimisation Model will be used again in future to aid in long term decision making,
- Whittle can add considerable value if a company has a complex ore body and complexity regarding logistics and processing options.

For more information contact Steve Burks +27 82 377 9608 steve@whittleconsulting.com.au MD Whittle Consulting (Africa) (Pty) Ltd, Johannesburg South Africa or consult the corporate website www.whittleconsulting.com.au .