Mineral Resources and Reserves report

Joint venture – Assmang

Competent person's report on Mineral Resources and Mineral Reserves

The report is issued as the annual update of the Mineral Resources and Reserves to inform shareholders and potential investors of the mineral assets held by Assmang.

Salient features 2014	
Beeshoek Mine	The Measured and Indicated Mineral Resources for Village ore body increased by 9% to 44,09 million tons at a grade of 64,36% Fe as a result of recent drilling and update of the resource model.
Khumani Mine	The Mineral Reserve tonnage for King Pit increased from 315,68 at 64,64% Fe to 380,62 million tons at 64,47% Fe mainly due to re-optimisation of the Pit.
Nchwaning Mine	A total Mineral Reserve of 118,98 million tons at 40,9% Mn has been declared for Seam 2 after completion of appropriate mine planning studies.

General statement

Assmang's method of reporting Mineral Resources and Mineral Reserves conforms to the South African Code for Reporting Exploration Results, Mineral Resources and Mineral Reserves (SAMREC Code) of 2007, as amended in 2009. It sets out minimum standards, recommendations and guidelines for Public Reporting of Exploration Results, Mineral Resources and Mineral Reserves in South Africa.

The convention adopted in this report is that Mineral Resources are reported inclusive of that portion of the total Mineral Resource converted to a Mineral Reserve. Resources and reserves are quoted as at 30 June 2014.

External consulting firms audit the resources and reserves of the Assmang operations on a three- to four-year cycle basis or when substantial geological borehole data has been added to the database. Underground resources are *in situ* tonnages at the postulated mining width, after deductions for geological losses. Underground Mineral Reserves reflect tonnages that will be mined and processed while surface Mineral Reserves consist of dumps/stockpiles already mined and ready for processing. Both are quoted at the grade fed to the plant. Open-pit Mineral Resources are quoted as *in situ* tonnages and Mineral Reserves are tonnages falling within an economic pit-shell.

The evaluation method is generally Ordinary Kriging with mining block sizes ranging from 10 x 10 metres to 100 x 100 metres to 250 x 250 metres in the plan view. The blocks vary in thickness from 2,5 to 10 metres. The evaluation process is fully computerised, generally using the CAE Studio 3 and Strat3D software packages.

The classification into Measured, Indicated and Inferred Mineral Resources is done by means of geostatistical parameters such as kriging efficiency, kriging variance, slope of regression and a combination of the number of samples used in estimation and the dynamic search volume. The spacing of boreholes, geological structures and continuity of the mineralisation are also considered in the classification.

The Mineral Resources and Mineral Reserves are reported on a total basis (ie 100%). When the attributable beneficial interest of Assmang on a mine or project is less than 100%, the actual percentage of the attributable interest is specified. Maps, plans and reports supporting resources and reserves are available for inspection at Assmang's registered office and at the relevant mines.

Assmang operations have already had their conversions from old-order mining licences to new-order mining rights approved, with only a few in the process of registration.

Rounding of figures may result in computational discrepancies on the Mineral Resource and Reserve tabulations.

Competence

The Competent Person with overall responsibility for the compilation of the Mineral Resources and Reserves report is Shepherd Kadzviti, Pr.Sci.Nat, an ARM employee.

Shepherd Kadzviti graduated with a BSc and MSc in Geology from the University of Zimbabwe. He later completed a Graduate Diploma in Mining Engineering (GDE) at the University of the Witwatersrand. He worked at RioZim's Renco Gold Mine for 14 years in various capacities of Geologist, Technical Services Superintendent and Mine Manager. In 2005, he joined Anglo American Platinum as an Evaluation Geologist with responsibilities for geological database management and mineral resource estimation. After two years at Union Mine, he was transferred to Anglo American Platinum corporate office where he was appointed Resource Geologist. He then joined African Rainbow Minerals (ARM) as Mineral Resource Specialist in 2008 where he was involved in the evaluation of the various mineral deposits for the group. In 2012, he was appointed Group Mineral Resources Manager for ARM. He is registered with the South African Council for Natural Scientific Professions as a Professional Natural Scientist in the field of practice of geological science, registration number 400164/05, and as such is considered to be a Competent Person.

All Competent Persons at the operations have sufficient relevant experience in the type of deposit and in the activity for which they have taken responsibility. Details of the Competent Persons are available from the Company Secretary on written request.

The following Competent Persons were involved in the calculation of Mineral Resources and Reserves:

M Burger
Pr.Sci.Nat
(SACNASP) Iron

S van Niekerk
Pr.Sci.Nat
(SACNASP) Iron

B Ruzive
Pr.Sci.Nat
(SACNASP) Manganese

A Pretorius*
Pr.Sci.Nat
(SACNASP) Chrome

PJ van der Merwe
Pr.Sci.Nat
(SACNASP) Iron/Manganese/Chrome

M Hlangwane
Pr.Sci.Nat
(SACNASP) Iron

**External consultant*

S Kadzviti
Pr.Sci.Nat
24 Impala Road, Chislehurston, Sandton

15 September 2014

Subsidiary companies

General statement

The method employed by Assore's subsidiary companies to report Minerals Resources and Reserves, conforms to the South African Code for Reporting Mineral Resources and Mineral Reserves (SAMREC Code).

The convention adopted in this report is that Mineral Resources are reported inclusive of that portion of the total Mineral Resource converted to a Mineral Reserve. Resources and reserves are quoted as at 30 June 2014.

The consistent thickness and grade of the chromitite seams at Rustenburg Minerals and Zeerust Chrome translates into fairly predictable Mineral Resources and Reserves at these operations, with geological features such as faults and dykes being the main variables. The classification into Measured, Indicated and Inferred Mineral Resources relates to borehole spacing, underground and open-cast development. Open-cast and underground resources are *in situ* tonnages at the postulated mining width, after deductions for geological and mining losses.

The pyrophyllite deposit at Wonderstone is relatively consistent and mined via an open-cast operation. The utilisation of the pyrophyllite in the processing plant is not based on grade but on the ore's natural characteristics ie colour, consistency of hardness, free of cracks etc. The classification into Measured, Indicated and Inferred Mineral Resources relates to borehole spacing and the open-cast development. The resources consist of stockpile and *in situ* tonnages after deductions for mining and processing losses.

Rounding of figures may result in computational discrepancies on the Mineral Resource and Reserve tabulations.

Maps, plans and reports supporting resources and reserves are available for inspection at the registered office and the relevant mines.

Competence

The Competent Person with overall responsibility for the compilation of the Mineral Resources and Reserves for the subsidiary companies report is Mr CA Magalhaes, Pr MS, an employee of African Mining and Trust Company Limited.

Mr Magalhaes graduated from Technikon Witwatersrand with a National Diploma – Mine Survey and a National Higher Diploma – Mineral Resource Management. He later completed a Graduate Diploma in Mining Engineering (GDE) at the University of Witwatersrand as well as the Government Certificate of Competency – Mine Survey. He worked at Impala Platinum and Anglo Platinum in various capacities over a 13-year period. In 2006 he joined African Mining and Trust Company Limited as the Chief Surveyor and later was promoted to Group Surveyor. After four years at African Mining and Trust Company Limited he was appointed as the Technical Manager for the subsidiary companies and was later appointed as the Group Manager – Chrome Division in 2012. He is registered with the South African Council for Technical and Professional Surveyors (PLATO) as a professional mine surveyor in the field of Mine Surveying and Mineral Resource Management, registration number PMS0201. Mr Magalhaes is also a member of the South African Institute of Mining and Metallurgy (SAIMM) and the Institute of Mine Surveyors of South Africa (IMSSA) and as such is considered to be a Competent Person under section 4.3 of the SAMREC Code.

All Competent Persons at the operations have sufficient relevant experience in the type of deposit and in the activity for which they have taken responsibility.

The following Competent Persons were involved in the calculation of Mineral Resources and Reserves:
Ms C van der Merwe, Geologist (BSc (Hons): Geology), is an African Mining and Trust Company Limited employee. She has been the mine geologist for the subsidiary companies since July 2013. Her hands-on involvement aided in the resources-reserve calculation. Ms van der Merwe is member of the Geological Society of South Africa (GSSA).

Definitions

The definitions of Mineral Resources and Reserves, quoted from the SAMREC Code (2007, as amended in July 2009), are as follows:

A **"Mineral Resource"** is a concentration or occurrence of material of economic interest in or on the earth's crust in such form, quality and quantity that there are reasonable and realistic prospects for eventual economic extraction. The location, quantity, grade, continuity and other geological characteristics of a Mineral Resource are known, or estimated from specific geological evidence, sampling and knowledge interpreted from an appropriately constrained and portrayed geological model. Mineral Resources are subdivided, and must be so reported, in order of increasing confidence in respect of geoscientific evidence, into Inferred, Indicated or Measured categories.

An **"Inferred Mineral Resource"** is that part of a Mineral Resource for which volume or tonnage, grade and mineral content can be estimated with only a low level of confidence. It is inferred from geological evidence and sampling and assumed but not verified geologically or through analysis of grade continuity. It is based on information gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings and drill holes that may be limited in scope or of uncertain quality and reliability.

An **"Indicated Mineral Resource"** is that part of a Mineral Resource for which tonnage, densities, shape, physical characteristics, grade and mineral content can be estimated with a reasonable level of confidence. It is based on information from exploration, sampling and testing of material gathered from locations such as outcrops, trenches, pits, workings and drill holes. The locations are too widely or inappropriately spaced to confirm geological or grade continuity but are spaced closely enough for continuity to be assumed.

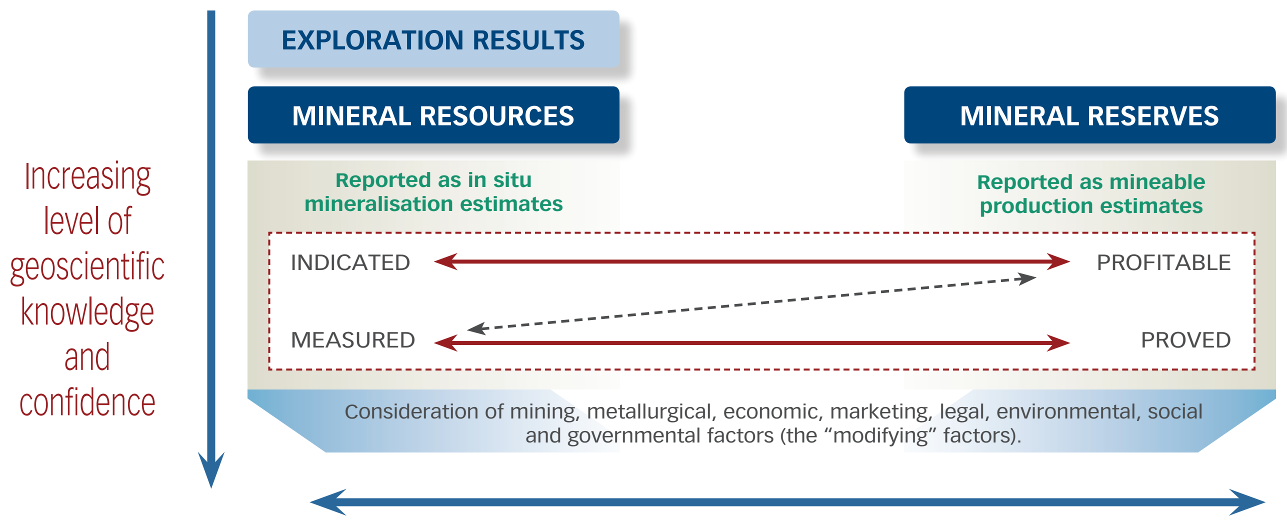
A **"Measured Mineral Resource"** is that part of a Mineral Resource for which tonnage, densities, shape, physical characteristics, grade and mineral content can be estimated with a high level of confidence. It is based on detailed and reliable information from exploration, sampling and testing of material from locations such as outcrops, trenches, pits, workings and drill holes. The locations are spaced closely enough to confirm geological and grade continuity.

A **"Mineral Reserve"** is the economically mineable material derived from a Measured or Indicated Mineral Resource or both. It includes diluting and contaminating materials and allows for losses that are expected to occur when the material is mined. Appropriate assessments to a minimum of a Pre-feasibility Study for a project and a Life-of-Mine Plan for an operation must have been completed, including consideration of, and modification by, realistically assumed mining, metallurgical, economic, marketing, legal, environmental, social and governmental factors (the modifying factors). Such modifying factors must be disclosed.

A **"Probable Mineral Reserve"** is the economically mineable material derived from a Measured or Indicated Mineral Resource or both. It is estimated with a lower level of confidence than a Proved Mineral Reserve. It includes diluting and contaminating materials and allows for losses that are expected to occur when the material is mined. Appropriate assessments to a minimum of a Pre-feasibility Study for a project or a Life-of-Mine Plan for an operation must have been carried out, including consideration of, and modification by, realistically assumed mining, metallurgical, economic, marketing, legal, environmental, social and governmental factors. Such modifying factors must be disclosed.

A **"Proved Mineral Reserve"** is the economically mineable material derived from a Measured Mineral Resource. It is estimated with a high level of confidence. It includes diluting and contaminating materials and allows for losses that are expected to occur when the material is mined. Appropriate assessments to a minimum of a Pre-feasibility Study for a project or a Life-of-Mine Plan for an operation must have been carried out, including consideration of, and modification by, realistically assumed mining, metallurgical, economic, marketing, legal, environmental, social and governmental factors. Such modifying factors must be disclosed.

Relationship between exploration results, Mineral Resources and Mineral Reserves



Assmang – Iron ore mines

Historical production at Beeshoek and Khumani mines (saleable product)

	Beeshoek	Khumani
	Mt	Mt
FINANCIAL YEAR		
2009/2010	0,52	8,77
2010/2011	0,96	8,73
2011/2012	2,10	11,60
2012/2013	2,94	13,17
2013/2014	3,12	12,93

BEESHOEK MINE
KHUMANI MINE

Locality

The Iron Ore division is made up of the Beeshoek Mine located on the farms Beeshoek 448 and Olynfontein 475, and the Khumani Mine situated on the farms Bruce 544, King 561 and Mokaning 560. All properties are in the Northern Cape, approximately 200 kilometres west of Kimberley. The Beeshoek open-pit operations are situated 7 kilometres west of Postmasburg and the Khumani open pits are adjacent to, and south-east of, the Sishen Mine, which is operated and owned by Kumba Iron Ore Limited. Beeshoek and Khumani are located at latitude 28°30'00"S/ longitude 23°01'00"E, and latitude 27°45'00"S/longitude 23°00'00"E respectively. Khumani Mine supplies iron ore to the export markets. Exports are railed to the iron ore terminal at Saldanha Bay. Beeshoek ore is mainly supplied to local customers, with some exported via Khumani.

History

Mining of iron ore (mainly specularite) was undertaken as early as 40 000 BC on the farm Doornfontein which is due north of Beeshoek. The potential of iron ore in this region was discovered in 1909, but due to lack of demand and limited infrastructure, this commodity was given little attention. In 1929, the railway line was extended from Koopmansfontein (near Kimberley) to service a manganese mine at Beeshoek. In 1935 The Associated Manganese Mines of South Africa Limited (Assmang) was formed, and in 1964, the Beeshoek Iron Ore Mine was established, with a basic hand sorting operation. In 1975 a full washing and screening plant was installed at Beeshoek Mine. The Khumani Iron Ore Mine was commissioned in 2007.

Mining authorisation

The Beeshoek Mine converted mining right was executed on 16 March 2012 and registered on 29 May 2013.

The Khumani mining right was executed on 25 January 2007 and was registered on 5 March 2007.

Geology

The iron ore deposits are formed within a sequence of early Proterozoic sediments of the Transvaal Supergroup deposited between 2 500 and 2 200 million years ago. In general, two ore types are present, namely laminated hematite ore forming part of the Manganore Iron Formation and conglomerate ore belonging to the Doornfontein Conglomerate Member at the base of the Gamagara Formation. The older laminated ore types occur in the upper portion of the Manganore Iron Formation as enriched high-grade hematite bodies. The boundaries of high-grade hematite ore bodies crosscut primary sedimentary bedding, indicating that secondary hematitisation of the iron formation took place. In all of these, some of the stratigraphic and sedimentological features of the original iron formation are preserved. The conglomeratic ore is found in the Doornfontein Conglomerate Member of the Gamagara Formation, is lenticular but not consistently developed along strike. It consists of stacked, upward fining conglomerate-gritstone-shale sedimentary cycles. The lowest conglomerates and gritstones tend to be rich in sub-rounded to rounded hematite ore pebbles and granules and form the main ore bodies. The amount of iron ore pebbles decreases upwards in the sequence so that upper conglomerates normally consist of poorly sorted, angular to rounded chert and banded iron formation pebbles.

The erosion of the northern Khumani deposit is less than in the southern Beeshoek area. This resulted in Khumani being characterised by larger stratiform bodies and prominent hangingwall outcrops. The down-dip portions are well preserved and developed, but in outcrop the deposits are thin and isolated. Numerous deeper iron ore extensions occur into the basins due to karst development. A prominent north-south strike of the ore bodies is notable. The southern Beeshoek ore bodies were exposed to more erosion and are hence more localised and smaller. Outcrops are limited to the higher topography on the eastern side of the properties. Down dip to the west, the ore is thin and deep. The strike of the ore bodies is also in a north-south direction, but less continuous.

Hematite is the predominant ore mineral, but limonite and specularite also occur. Mining operations are all open pit, based on the conventional drill-and-blast, truck-and-shovel operations. Run-of-mine ore is crushed and stored as 'on-' or 'off-grade' on blending stockpiles. Ore from the stockpiles is either sent to the wash-and-screen plants or, if 'off-grade', to the beneficiation plants. The

Assmang – Iron ore mines continued

washing and screening plants consist primarily of tertiary crushing, washing, screening, conveying and stacking equipment. The beneficiation plants consist of tertiary crushers; scrubbers; coarse and fine jigs; lumpy and fines product stockpiles; and a rapid load-out facility. No chemicals are being used in any of the treatment plants.

Mineral Resources and Reserves

Only Measured and Indicated Resources are converted to Proved and Probable Reserves respectively. Modifying factors are applied to these resources and financially optimised. The optimised financial parameters are used to define the optimal pit. The resources within this mining constraint (optimised pit-shell) are defined as reserves. These are categorised into different product types, destined for the different plant processes and then scheduled for mining.

The methodology followed to identify exploration targets is initiated with geological mapping, followed by geophysics (ground magnetics and gravity). Numerous exploration programmes have been completed in the last 40 years. Percussion drilling is used to pilot holes through overlying waste rock down to the iron ore bodies. Diamond drilling is the next phase, which is usually on a 200 x 200 metre grid. Further in-fill drilling is carried out at spacing ranging from 100 x 100 metres to 25 x 25 metres, depending on the complexity of the geological structures. Core samples are logged and split by means of a diamond saw and the half-core is sampled at 0,5 metre intervals. The half-cores are crushed, split and pulverised and submitted to the owner-managed laboratory for assaying. Samples with values larger than 60% Fe are included in the definition of the ore bodies. Any lower-grade samples inside the ore body are defined as internal waste and modelled separately. Each zone is modelled per section, and then wire-framed to get a three-dimensional (3D) model. Ordinary Kriging interpolation is used to estimate the grade of each 25 x 25 x 10 metre block generated within the geological model. Densities in the resource model are calculated using a fourth degree polynomial fit applied to the estimated Fe grade. Densities range from 4,38 t/m^3 (60% Fe) to 5,01 t/m^3 (68% Fe).

All blast holes are sampled on a metre basis, but composited per hole. All holes are analysed for density and blast holes in ore are sampled and analysed for Fe, potassium oxide (K_2O), sodium oxide (Na_2O), silica (SiO_2), aluminium oxide (Al_2O_3), phosphorus (P), sulphur (S), CaO, MgO, Mn and barium oxide (BaO). Every fifth blast hole is geologically logged on a metre-by-metre basis, and is used to update the geological model. The analytical technique for elemental analyses is XRF spectroscopy. Volumetric titration is used as verification method for the determination of total iron in the ore. International standards (eg SARM11) and in-house iron standards are used for the calibration of the XRF spectrometer. The Khumani laboratory undertakes stringent quality control and assurance methods including 'round robin' analysis with 11 laboratories for verification of assay results.

Mineral Resources and Reserves report continued

Assmang – Iron ore mines continued

BEESHOEK MINE

Beeshoek year-on-year change

Measured and Indicated Resources for Beeshoek Mine remained almost the same as in 2013 at 110,33 million tons. Geological remodelling of the Village ore body resulted in the Measured and Indicated Resources increasing by 9% to 44,09 million tons. The total Mineral Reserves for Beeshoek decreased from 47,75 to 46,13 million tons mainly due to mining depletion.

A total of 7,50 million tons of ore dumps have been declared as Probable Reserves. Off-grade dumps are beneficiated to produce a saleable product. Preparations for mining of the Village Pit during 2014/2015 are in progress.

Beeshoek Iron Ore Mine: Mineral Resources and Reserves

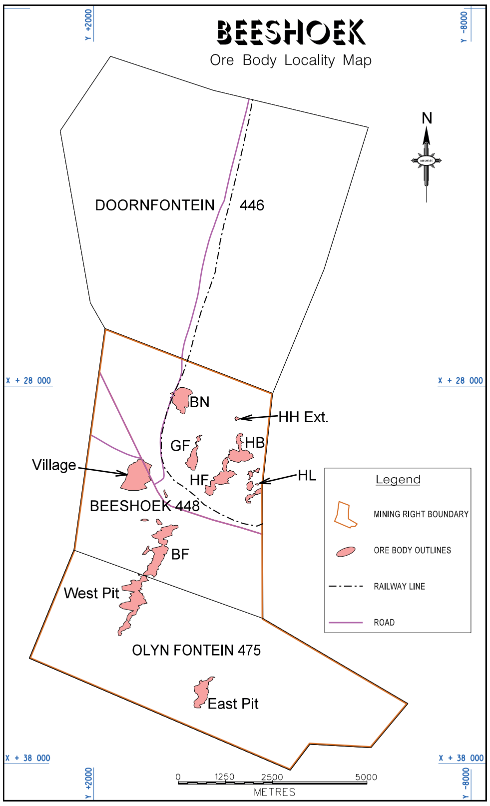
	Measured Resources		Indicated Resources		Inferred Resources		Total Measured and Indicated Resources		Proved Reserves		Probable Reserves		Total Reserves	
	Mt	Fe %	Mt	Fe %	Mt	Fe %	Mt	Fe %	Mt	Fe %	Mt	Fe %	Mt	Fe %
PIT/AREA														
BN Pit	18,71	63,42	–	–	–	–	18,71	63,42	10,30	63,59	–	–	10,30	63,59
HF/HB Pit	16,00	64,10	–	–	–	–	16,00	64,10	6,87	64,27	–	–	6,87	64,27
BF Pit	7,92	63,51	0,23	63,54	0,001	65,24	8,15	63,51	1,02	61,59	–	–	1,02	61,59
East Pit	8,33	64,85	0,04	64,23	–	–	8,37	64,85	5,49	64,81	0,01	63,64	5,50	64,81
Village Area	31,01	64,39	13,08	64,28	0,700	64,54	44,09	64,36	13,50	64,84	8,94	64,37	22,44	64,65
GF Pit	3,13	63,81	0,09	61,80	–	–	3,22	63,75	–	–	–	–	–	–
HH Ext Pit	0,28	62,63	–	–	–	–	0,28	62,63	–	–	–	–	–	–
HL Pit	2,04	64,82	0,02	65,21	–	–	2,06	64,82	–	–	–	–	–	–
West Pit	9,45	63,19	–	–	0,050	61,88	9,45	63,19	–	–	–	–	–	–
Detrital*	–	–	–	–	2,500	60,00	–	–	–	–	–	–	–	–
Total 2014	**96,87**	**63,99**	**13,46**	**64,25**	**3,251**	**61,01**	**110,33**	**64,02**	**37,18**	**64,29**	**8,95**	**64,37**	**46,13**	**64,31**
Total 2013	108,99	63,54	1,05	62,18	2,731	60,13	110,04	63,53	47,66	63,91	0,09	64,46	47,75	63,91

Mineral Resources are inclusive of Mineral Reserves.
Totals are rounded off.
Modifying factors for the conversion of Mineral Resources to Reserves include:
Economic pit design, customer product specifications and mining dilution.
** Detrital is loose fragmented material occurring in various areas at Beeshoek.*
Cut-off grade 60% Fe.

Beeshoek Dumps

	Proved Reserves		Probable Reserves		Total Reserves	
	Mt	Fe %	Mt	Fe %	Mt	Fe %
AREA						
North Mine (ROM on-grade)	–	–	0,04	64,00	0,04	64,00
North Mine (B Dump off-grade)	–	–	0,09	55,00	0,09	55,00
North Mine (C Dump)	–	–	1,69	55,00	1,69	55,00
South Mine (ROM on-grade)	–	–	0,10	64,00	0,10	64,00
South Mine (B Dump off-grade)	–	–	0,16	55,00	0,16	55,00
South Mine (C Dump)	–	–	5,42	55,00	5,42	55,00
Total 2014 Dumps*	**–**	**–**	**7,50**	**55,17**	**7,50**	**55,17**
Total 2013 Dumps*	–	–	7,04	55,08	7,04	55,08

Totals are rounded off.
** Dumps are beneficiated to produce a saleable product.*



Mineral Resources and Reserves report continued

Assmang – Iron ore mines continued

KHUMANI MINE

Khumani year-on-year change

Measured and Indicated Resources decreased by 5% to 646,40 million tons, mainly due mining depletion. Total reserves increased from 488,73 to 550,10 million tons mainly due to financial optimisation of the King Pit which increased the King Mineral Reserves to 380,62 from 315,68 million tons in 2013. Mining depletion during the year was 19,12 million tons (ROM). A total of 5,59 million tons ore dumps are reported as Probable Reserves.

Khumani Iron Ore Mine: Mineral Resources and Reserves

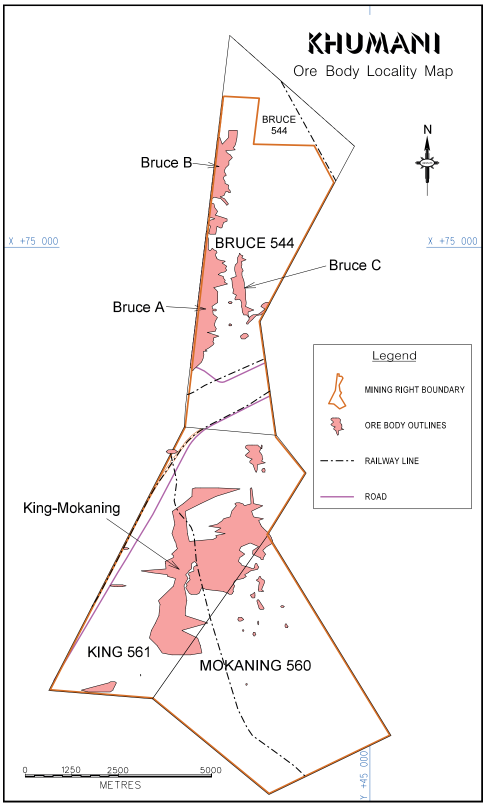
	Measured Resources		Indicated Resources		Inferred Resources		Total Measured and Indicated Resources		Proved Reserves		Probable Reserves		Total Reserves	
	Mt	Fe %	Mt	Fe %	Mt	Fe %	Mt	Fe %	Mt	Fe %	Mt	Fe %	Mt	Fe %
PIT														
Bruce A	18,95	64,51	82,26	64,38	0,31	63,79	101,21	64,40	14,70	64,52	77,43	64,41	92,13	64,43
Bruce B	56,20	64,59	24,84	63,50	11,96	64,04	81,04	64,26	45,11	64,37	26,67	63,61	71,78	64,09
Bruce C	12,62	64,10	–	–	–	–	12,62	64,10	5,57	64,46	–	–	5,57	64,46
Total Bruce	87,77	64,50	107,10	64,18	12,27	64,03	194,87	64,32	65,38	64,41	104,10	64,21	169,48	64,28
King/Mokaning	275,52	64,51	176,01	63,78	19,75	62,27	451,53	64,23	253,89	64,60	126,73	64,20	380,62	64,47
Total 2014	**363,29**	**64,51**	**283,11**	**63,93**	**32,02**	**62,95**	**646,40**	**64,25**	**319,27**	**64,56**	**230,83**	**64,20**	**550,10**	**64,41**
Total 2013	389,55	64,50	292,17	63,88	22,80	63,35	681,72	64,23	340,61	64,57	148,12	64,43	488,73	64,53

Mineral Resources are inclusive of Mineral Reserves.
Totals are rounded off.
Modifying factors for the conversion of Mineral Resources to Reserves include:
Economic pit design, customer product specifications and mining dilution.
Cut-off grade 60% Fe.

Khumani Dumps

	Proved Reserves		Probable Reserves		Total Reserves	
	Mt	Fe %	Mt	Fe %	Mt	Fe %
AREA						
Bruce (ROM on-grade)	–	–	0,10	64,00	0,10	64,00
Bruce (B Dump off-grade)	–	–	3,70	55,00	3,70	55,00
King (ROM on-grade)	–	–	0,82	64,00	0,82	64,00
King (B Dump off-grade)	–	–	0,73	55,00	0,73	55,00
King (Detrital)	–	–	0,24	60,00	0,24	60,00
Total 2014 Dumps*	–	–	5,59	56,70	5,59	56,70
Total 2013 Dumps	–	–	4,94	55,75	4,94	55,75

Totals are rounded off.
** Dumps are beneficiated to produce a saleable product.*



Assmang – Manganese mines

Historical manganese production at Nchwaning and Gloria mines (saleable product)

	Nchwaning	Gloria
	Mt	Mt
FINANCIAL YEAR		
2009/2010	1,30	0,67
2010/2011	2,35	0,70
2011/2012	2,46	0,84
2012/2013	2,40	0,75
2013/2014	2,69	0,67

NCHWANING MINE
GLORIA MINE

Locality
The manganese mines are situated in the Northern Cape province in South Africa, approximately 80 kilometres north-west of the town of Kuruman. Located at latitude 27°07'50"S and longitude 22°50'50"E, the site is accessed via the national N14 route between Johannesburg and Kuruman, and the provincial R31 road.

History
In 1940 Assmang acquired a manganese ore outcrop on a small hillock known as Black Rock. Several large properties underlain by ore were subsequently found and acquired. Today, the Black Rock area is considered to be one of the largest and richest manganese deposits in the world. Manganese mining operations were extended and today include the Gloria and Nchwaning underground mines. Manganese ore is supplied locally to Assmang-owned smelters, and is mainly exported through Port Elizabeth as well as Durban and Richards Bay.

Mining authorisation
The new-order mining right for Nchwaning and Gloria was executed on 13 July 2011. Registration of right is in process.

Geology
The manganese ores of the Kalahari Manganese field are contained within sediments of the Hotazel Formation of the Griqualand West Sequence, a subdivision of the Proterozoic Transvaal Supergroup. At Black Rock, Belgravia and Nchwaning, the Hotazel, Mapedi and Lucknow Formations have been duplicated by thrusting. The thrusted ore bodies comprising Black Rock (Koppie), Belgravia 1 and Belgravia 2 are collectively known as Black Rock ore bodies. The average thickness of the Hotazel Formation is approximately 40 metres. The manganese orebodies exhibit a complex mineralogy and more than 200 mineral species have been identified. The hydrothermal upgrading has resulted in zoning of the ore body adjacent to fault positions. Distal areas exhibit more original and low-grade kutnohorite and braunite assemblages, while areas immediately adjacent to faults exhibit high-grade hausmannite rich ore. The intermediate areas exhibit a very complex mineralogy, which includes bixbyite, braunite and jacobsite among a host of other manganese-bearing minerals. Similar zonation also exists in the vertical sense. At the top and bottom contacts it is common to have high iron (Fe) and low manganese (Mn) contents, while the reverse is true towards the centre of the seam. This vertical zoning has given rise to a mining practice where only the 3,5 to 4,5 metre-high centre portion of the seam is being mined. At the Gloria Mine, the intensity of faulting is much less, which may explain the lower grade.

Two manganese seams are present. The number 1 seam is up to 6 metres thick, of which up to 4,5 metres are mined, using a manganese marker zone for control. There is, therefore, minimum dilution. Limited mining of Nchwaning Seam 2 has been done, while no mining has been undertaken to date on Gloria Seam 2.

Assmang – Manganese mines continued

NCHWANING MINE

Nchwaning year-on-year change

The Mineral Resources for Seam 1 marginally reduced from 136,76 to 136,58 million tonnes. Nchwaning Seam 2 Mineral Resources increased slightly by 1% to 182,96 due to remodelling.

Mineral Reserves for Nchwaning Seam 1 decreased slightly to 102,76 million tonnes mainly due to mining depletion and remodelling which added some reserves partially offsetting the decrease due to mining. Mineral Reserves for Nchwaning Seam 2 increased significantly from 3,85 to 118,98 million tons. The recently completed Strat 3D modelling of Seam 1, Seam 2 and Middling provided the detail required for conversion of Seam 2 resources to reserves, hence the increase in tonnage.

Nchwaning Mineral Resources and Reserves

Mineral Resource classification at Nchwaning Mine is based on a number of parameters: kriging variance, kriging efficiency, regression slope, geological continuity of the manganese seams, geological structures and quality of assay data. Each of these parameters contributes to the overall classification depending on a weighting assigned to each of the parameters. Measured and Indicated Resources have been defined for Nchwaning. Geological losses are incorporated into the grade models.

Nchwaning Mine was diamond drilled from surface at 330 metre centres and the data is captured in a Geological Database Management System (GDMS) developed by CAE Mining. The core was logged and 0,5-metre-long, half-core, diamond-saw cut samples were submitted to Assmang's laboratory at Black Rock for X-ray fluorescence (XRF) analyses. Mn and Fe values were checked by Wet Chemical analyses. Several standards are used to calibrate the XRF equipment, and results are compared with other laboratories on a regular basis.

At Nchwaning, a total of 401 boreholes and 10 298 underground sample sections were considered in the geological modelling and grade estimation for Nchwaning Seam 1, while Seam 2 resource modelling was based on the 401 boreholes only. The underground sample sections that were used were sampled at intervals of 0,3 metres rather than one composite value for the whole section, providing data that could be used in the modelling the seams at a composite width of 0,5 metres. The geological resource modelling was undertaken using CAE Strat 3D software and Studio 3 for the grade estimation. The resource models were built on 50 x 50 x 0,5 metre thick blocks allowing for sub-splitting in the X and Y directions for the model to accurately follow the geological boundaries. The 0,5 metre blocks extend to the limits of both Seam 1 and 2. The middling between Seam 1 and 2 was also modelled to determine the separation between the seams. Borehole and underground sampling data for the optimum mining cuts of 4,5 metres (Nchwaning 3, Seam 1) or 3,5 metres for the rest of Nchwaning (Seam 1 and 2), was composited and exported into data files for statistical and geostatistical analysis for all grade variables ie Mn, Fe, Al_2O_3, BaO, CaO, K_2O, MgO, Na_2O, P, S and SiO2. Ordinary Kriging interpolation within CAE Studio 3 was used to estimate the grade of each 50 x 50 x 0,5 metre blocks, each identifiable by the layer number within the seam using variograms based on the optimum cuts. Borehole and/or underground sample data with corresponding layer numbers was used in the estimation of grades. The relative density of the Nchwaning manganese Seams 1 and 2 was determined as 4,3 t/m^3. All the 0,5 metre thick models for Seam 1 and Seam 2 were combined with the middling model to create the final model. The resource model for use in the evaluation was selected over a thickness of 4,5 metres (Nchwaning 3, Seam 1) and 3,5 metres for the rest of Nchwaning (Seam 1 and 2), based on the best Mn values and/or Mn/Fe ratios.

Trackless mechanised equipment is used in the board and pillar mining method. Mining in the eastern extremity of Nchwaning occurs at a depth of 200 metres, while the deepest (current) excavations are at a depth of 519 metres below surface. Ore from Nchwaning No 2 Mine is crushed underground before being hoisted to a surface stockpile via a vertical shaft. Similarly, ore from the Nchwaning No 3 Mine is crushed underground before being conveyed to a surface stockpile via a declined conveyor system. Ore is withdrawn from the surface stockpile and undergoes two stages of crushing, dry screening and wet screening to yield lumpy and fine products.

At the plant, the finer fractions are stockpiled while the coarser fractions are extracted from the respective product boxes into road haulers, sampled, weighed and stored on stacks ahead of despatch. Samples from each stack are analysed for chemical content and size distribution. This ensures good quality control and enables the Ore Control department to blend various stacks according to customer requirements.

Nchwaning Mine: Seam 1 Manganese Mineral Resources and Reserves

	Mineral Resources				Mineral Reserves		
	Mt	Mn %	Fe %		Mt	Mn %	Fe %
Measured	47,16	44,6	9,8	Proved	35,42	44,7	9,6
Indicated	89,42	42,3	9,2	Probable	67,34	42,4	9,1
Total Resources (Seam 1) 2014	**136,58**	**43,1**	**9,4**	**Total Reserves (Seam 1) 2014**	**102,76**	**43,2**	**9,3**
Total Resources (Seam 1) 2013	136,76	43,7	9,1	Total Reserves (Seam 1) 2013	104,10	43,7	9,1

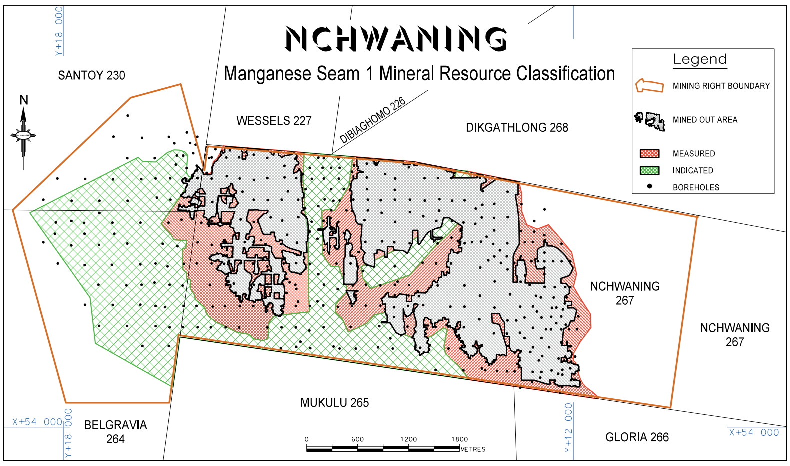
Mineral Resources are inclusive of Mineral Reserves.
Totals are rounded off.
Modifying factors for the conversion of Mineral Resources to Reserves include: pillar losses and mining losses.
Mineral Resources and Reserves based on 4,5 metres optimum evaluation cut for Seam 1 Nchwaning 3 and 3,5 metre cut for rest of Nchwaning.

Assmang – Manganese mines continued

Nchwaning Mine: Seam 2 Manganese Mineral Resources and Reserves

	Mineral Resources				Mineral Reserves		
	Mt	Mn %	Fe %		Mt	Mn %	Fe %
Measured	63,98	41,2	17,1	Proved	39,87	41,4	16,9
Indicated	118,98	40,5	16,9	Probable	79,11	40,6	16,6
Total Resources (Seam 2) 2014	**182,96**	**40,7**	**17,0**	**Total Reserves (Seam 2) 2014***	**118,98**	**40,9**	**16,7**
Total Resources (Seam 2) 2013	180,71	42,4	15,5	Total Reserves (Seam 2) 2013	3,85	44,5	15,6

Mineral Resources are inclusive of Mineral Reserves.
Totals are rounded off.
Modifying factors for the conversion of Mineral Resources to Reserves include: pillar losses and mining losses.
** Seam 2 Reserves increased considerably after completion of mine planning studies in 2014.*
Mineral Resources and Reserves based on 3,5 metres optimum evaluation cut.



Black Rock Mineral Resources

The Black Rock ore bodies occur in the Black Rock (Koppie), Belgravia 1 and Belgravia 2 areas. They are all part of a large thrust complex. Modelling of these ore bodies was undertaken using 151 Nchwaning boreholes that intersected the thrust complex and 174 Black Rock in-fill boreholes. A 38% manganese cut-off was used in the modelling. Seam 1 and 2 were modelled at variable thicknesses. No mining is currently being done at Black Rock Koppie.

Black Rock (Koppie area): Seam 1 Manganese Mineral Resources

Mineral Resources	Mt	Mn %	Fe %
Measured	9,03	40,3	18,1
Indicated	34,57	40,7	18,1
Total Resources (Seam 1) 2014	**43,60**	**40,6**	**18,1**
Total Resources (Seam 1) 2013	43,60	40,6	18,1

Totals are rounded off.
Resource defined on a 38% Mn cut-off.

Black Rock (Koppie area): Seam 2 Manganese Mineral Resources

Mineral Resources	Mt	Mn %	Fe %
Measured	8,23	37,4	19,8
Indicated	18,58	39,2	19,8
Total Resources (Seam 2) 2014	**26,81**	**38,6**	**19,8**
Total Resources (Seam 2) 2013	26,81	38,6	19,8

Totals are rounded off.

Assmang – Manganese mines continued

Gloria year-on-year change

Measured and Indicated Mineral Resources for Seam 1 decreased by 2% to 125,68 million tons mainly due to mining depletion, and remodelling of Seam 1. Inferred Resources decreased from 46,99 to 41,36 million tons mainly due to remodelling of the ore body. Mineral Reserves decreased from 102,64 to 100,52 million tons mainly due to mining depletion of 0,79 million tons (ROM) and remodelling. The Indicated Mineral Resources for Gloria Seam 2 marginally increased to 31,55 from 29,40 million tons due to the remodelling of the Seam 2 ore body, while the Inferred Resource decreased by 3% to 123,86 million tons. There are no markets for Gloria Seam 2 ore at this time.

Gloria Mine Mineral Resources and Reserves

Procedures for drilling and assaying at Gloria Mine are the same as at Nchwaning. A total of 225 boreholes and 1 071 underground sample sections were considered in the evaluation of Gloria Seam 1. The underground sampling values represent sampling at 0,3 metre intervals. Gloria was modelled similarly to Nchwaning using CAE Strat 3D software for the geological modelling and Studio 3 for the grade estimation. The geological block model was created for every 0,5 metre layer for the entire Seam 1 and Seam 2 using CAE Strat 3D. The middling between the two seams was also modelled. Block sizes in the X and Y directions were 50 metres by 50 metres allowing for sub-splitting. The evaluation width of 3,5 metres was used and the relative density was determined as 3,8 t/m^3. The 3,5 metre data was analysed using statistical and geostatistical methods for the following variables; Mn, Fe, Al_2O_3, BaO, CaO, K_2O, MgO, Na_2O, P, S and SiO_2. Ordinary Kriging interpolation within CAE Studio 3 was used to estimate the grade in the 50 x 50 x 0,5 metre block, each identified by a layer number within the seam, using borehole and/or underground sample data of the corresponding layer. All the 0,5 metre thick models for Seam 1 and Seam 2 were combined with the middling model to create the final model. Mineral Resource classification methods are similar to those applied at Nchwaning Mine.

Gloria Mine is extracting manganese at depths that vary between 180 to 250 metres. Ore is crushed underground before being conveyed to surface stockpile via a decline shaft. Ore is withdrawn from the surface stockpile and forwarded to two stages of crushing, dry screening and wet screening to yield lumpy and fine products. At the plant, the ore is processed similarly to Nchwaning run-of-mine ore.

Gloria Mine: Seam 1 Manganese Mineral Resources and Reserves

	Mineral Resources				Mineral Reserves		
	Mt	Mn %	Fe %		Mt	Mn %	Fe %
Measured	41,87	37,4	5,0	Proved	33,46	37,4	5,0
Indicated	83,81	37,4	4,6	Probable	67,06	37,5	4,6
Total Measured and Indicated (Seam 1) 2014	**125,68**	**37,4**	**4,7**	**Total Reserves (Seam 1) 2014**	**100,52**	**37,5**	**4,7**
Total Measured and/Indicated (Seam 1) 2013	128,35	37,8	4,7	Total Reserves (Seam 1) 2013	102,64	37,7	4,7
Inferred 2014	**41,36**	**35,9**	**5,1**				
Inferred 2013	46,99	36,8	5,0				

Mineral Resources are inclusive of Mineral Reserves.
Totals are rounded off.
Modifying factors for the conversion of Mineral Resources to Reserves include: pillar losses and mining losses.
Mineral Resources and Reserves based on 3,5 metres optimum evaluation cut.

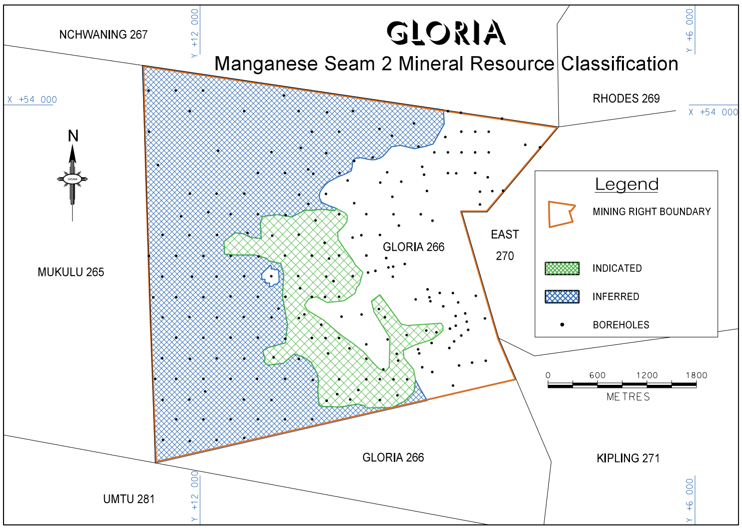
Mineral Resources and Reserves report continued

Assmang – Manganese mines continued

Gloria Mine: Seam 2 Manganese Mineral Resources

	Mt	Mn %	Fe %
Measured	–	–	–
Indicated	31,55	28,3	9,8
Total Measured and Indicated (Seam 2) 2014	**31,55**	**28,3**	**9,8**
Total Measured and Indicated (Seam 2) 2013	29,40	29,9	10,1
Inferred 2014	**123,86**	**29,2**	**10,6**
Inferred 2013	128,24	*	*

Totals are rounded off.
** Grades not stated in the past; assumed to have been similar to Indicated Resource grades.*
Mineral Resources based on 3,5 metres optimum evaluation cut.



Assmang – Chromite mine

DWARSRIVIER CHROMITE MINE

Dwarsrivier Mine year-on-year change

Measured and Indicated Resources decreased by 4% to 51 million tonnes due to mining depletion. Similarly, Mineral Reserves also decreased from 37,31 to 35,02 million tones. A total of 1,61 million (ROM) tones were mined.

Locality

The Dwarsrivier Chromite Mine is situated on the farm Dwarsrivier 372KT, approximately 30 kilometres from Steelpoort and 60 kilometres from Lydenburg, Mpumalanga province, South Africa. Located at longitude 30°05'00"E/latitude 24°59'00"S, Assmang purchased the farm from Gold Fields Limited, together with all surface and mineral rights in October 1998.

History

Neighbouring properties to the north and south of Dwarsrivier had existing chrome mining operations at the time of purchase. The feasibility study of the plant, tailings dam and designs for the open-pit and underground mines then commenced. After the completion of the feasibility study, approval to proceed with the final design and construction work was given in July 1999. Chromite was obtained from the open-pit mining areas at a rate of approximately 0,9 million tons a year and these areas were mined out within five years. Underground mining commenced in 2005 at a rate of 1,2 million tons ROM a year. Dwarsrivier Mine was specifically geared to deliver high-quality metallurgical grade chromite to the Assmang's Machadodorp smelter. In addition, the plant has been designed to produce chemical grade products for export

Mining authorisation

The Dwarsrivier converted mining right was executed on 15 May 2013. Registration of the mining right is in process.

Geology

Dwarsrivier Mine is situated in the eastern limb of the Bushveld Complex, which comprises persistent layers of mafic and ultramafic rocks, containing the world's largest known resources of platinum group metals, chromium and vanadium. The mafic rocks termed the Rustenburg Layered Suite, are approximately 8 kilometres thick in the eastern lobe, and are divided formally into five zones. The rocks of the Marginal Zone at the base of the succession consist mainly of pyroxenites with some dunites and harzburgites. Above the Marginal Zone, the Lower Zone comprises mainly pyroxenites, harzburgites and dunite, and is present only in the northern part of the Eastern Lobe, and only as far south as Steelpoort.

The appearance of chromitite layers marks the start of the Critical Zone, economically the most important zone. The layers are grouped into three sets termed the Lower, Middle and Upper Groups. The sixth chromitite seam in the Lower Group (LG6) is an important source of chromite ore and defines the ore body which is being mined at Dwarsrivier Mine. In the Eastern Lobe, in the vicinity of Dwarsrivier, the strike is nearly north-south, with a dip of approximately 10 degrees towards the west. Average thickness the LG6 seam is about 1,86 metres in the Dwarsrivier area. Pipe-like dunite intrusions are evident in the area, as well as dolerite dykes that normally strike north-east, south-west. No significant vertical grade variation is evident in the ore seam in the Dwarsrivier resource.

Mineral Resources and Reserves

Mineral Resources were estimated from boreholes on 150 to 300 metre grid spacing. All possible resources down to a mineable depth of 350 metres below surface have been considered. Vertical diamond drill holes are used for geological and grade modelling. The Mineral Resources at Dwarsrivier Mine are based on a total of 284 diamond boreholes, which have been used for grade estimation and ore body modelling purposes. The drill core is NQ size and is geologically and geotechnically logged. The collar position of the drill holes are surveyed, but no down-hole surveys are done, and the holes are assumed to have minimal deflection. The chromitite seam is bounded above and below by pyroxenites, and as such, the ore horizon is clearly defined. The core is sampled from the top contact downwards at 0,5 metre intervals. The core is split and half is retained as reference material. The other half is crushed and split into representative samples, which are crushed and pulverised for chemical analysis. The samples are analysed using fusion/ICP-OES for chrome oxide (Cr_2O_3), SiO_2, FeO, Al_2O_3, MgO and CaO. Three laboratories, all ISO 17025 accredited for this method, are used. Every tenth sample is analysed in duplicate. The density for each sample is measured using a gas pycnometer.

Mineral Resources have been estimated using Ordinary Kriging, where Cr_2O_3, FeO, Al_2O_3, MnO and MgO contents of the LG6 seam and densities were determined, using parent block size of 50 x 50 x 4 metres. Immediately above the LG6, there is a 30 to 50 centimetre thick pyroxenite that is capped by a thin chromitite layer, locally known as the "false hanging wall". This unit is mined for geotechnical reasons as it creates an unstable hanging wall if left behind. This unit forms part of the dilution in the conversion from Resources to Reserves.

A run-of-mine ore inclusive of the "false hanging wall" is fed to the beneficiation plant. In the dense media separation part of the plant, the coarse fraction is upgraded to 40% Cr_2O_3, with a yield of 80%. In the spiral section of the plant the finer fraction is upgraded to metallurgical and chemical grade fines of 44 % Cr_2O_3, and 46% Cr_2O_3 respectively. A 67% yield is achieved in the spiral circuit.

The resource classification was done by considering geological and geostatistical parameters. Geological aspects include the continuity of the LG6 reef and the influence of geological structures such as dykes and faults. Geostatistical parameters such as kriging efficiency, kriging variance, number of samples used in estimation, search volume and regression slope were also considered in the resource classification.

Mineral Resources and Reserves report continued

Assmang – Chromite mine continued

Dwarsrivier Chrome Mine: Mineral Resources and Reserves

	Mineral Resources				Mineral Reserves		
	Mt	Cr^2O^3	FeO %		Mt	$Cr2O^3$	FeO %
Measured	16,42	38,63	22,67	Proved	8,94	34,11	21,22
Indicated	34,58	37,90	22,50	Probable	26,08	34,12	21,33
Total Measured and Indicated 2014	**51,00**	**38,14**	**22,55**	**Total Reserves 2014**	**35,02**	**34,12**	**21,30**
Total Measured and Indicated 2013	53,14	38,10	22,54	Total Reserves 2013	37,31	34,04	21,27
Inferred 2014	**48,01**	**38,35**	**22,96**				
Inferred 2013	48,07	38,35	22,96				

Mineral Resources are inclusive of Mineral Reserves.
Totals are rounded off.
Modifying factors for the conversion of Mineral Resources to Reserves include: pillar losses, mining losses and mining dilution.

Historical production at Dwarsrivier Chrome Mine (ROM)

	Mt
FINANCIAL YEAR	
2009/2010	0,78
2010/2011	1,25
2011/2012	1,50
2012/2013	1,60
2013/2014	1,61