2016 Mineral Resources and Reserves report

ASSORE

Contents

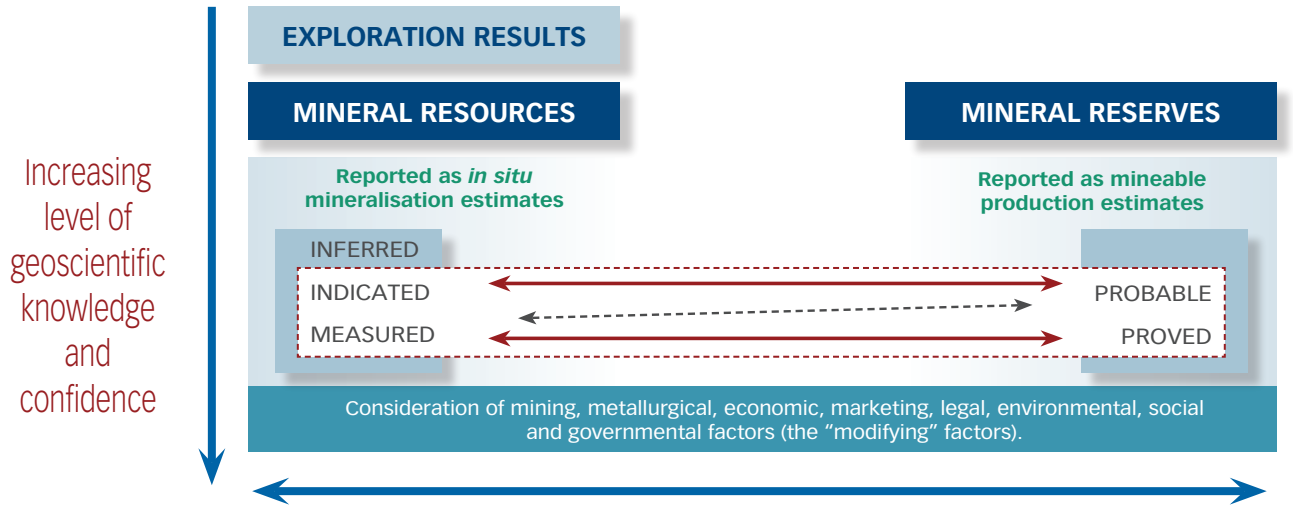
Mineral Resources and Reserves report

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



Mineral Resources and Reserves report continued
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 Proprietary Limited (Assmang). Assmang is controlled jointly by African Rainbow Minerals Limited (ARM) and Assore Limited, which each hold 50% of the issued share capital.

Salient features for 2016	
Khumani Mine	Production increased by 11% to 21,38 million tonnes run-of-mine (ROM) iron ore compared to 2015.
Beeshoek Mine	Measured and Indicated Mineral Resources for Village ore body remained unchanged at 51,53 million tonnes at a grade of 64,42% Fe. However, Measured and Indicated Resources for BN/BNN Pit decreased from 16,09 million tonnes at 63,17% Fe to 12,20 million tonnes at 63,11% Fe due to sterilisation of certain sections of the ore body after the discovery of an underground cave as well as mining depletion.
Black Rock Mine	Mineral Reserves for Gloria Seam 1 increased from 92,62 million tonnes at 36,8% Mn to 122,20 million tonnes at 36,1% Mn mainly due to the change in the mining cut applied on the seam which increased from 3,5 to 4,0 metres after completion of appropriate assessments.

Mineral Resources and Mineral Reserves summary
The summaries below reflect the Measured and Indicated Resources and the corresponding Proved and Probable Reserves for each mine or project. The detail is within the relevant mine's section, later in this report. The Mineral Resources are inclusive of those modified to produce Mineral Reserves.

	Mineral Resources						Mineral Reserves					
	Measured		Indicated		Measured and Indicated		Proved		Probable		Proved and Probable	
Iron Ore	Mt	Fe%	Mt	Fe%	Mt	Fe%	Mt	Fe%	Mt	Fe%	Mt	Fe%
Beeshoek Mine												
All Pits	98,08	64,09	9,63	63,81	107,71	64,06	42,94	64,74	3,85	63,95	46,79	64,67
Stockpiles									6,06	55,15	6,06	55,15
Khumani Mine												
Bruce	110,74	64,47	81,97	64,42	192,71	64,45	83,94	64,44	73,96	64,47	157,90	64,46
King	284,04	64,24	94,39	64,16	378,43	64,22	259,02	64,32	9,09	65,19	268,11	64,35
Stockpiles									4,45	60,00	4,45	60,00

	Mineral Resources						Mineral Reserves					
	Measured		Indicated		Measured and Indicated		Proved		Probable		Proved and Probable	
Manganese	Mt	Mn%	Mt	Mn%	Mt	Mn%	Mt	Mn%	Mt	Mn%	Mt	Mn%
Nchwaning Mine												
Seam 1	57,78	45,2	72,11	41,7	129,89	43,3	44,10	45,2	52,90	41,8	97,00	43,3
Seam 2	65,01	42,6	114,77	42,2	179,78	42,3	47,80	41,6	76,20	41,5	124,00	41,5
Black Rock (Koppie area)												
Seam 1	9,03	40,3	34,57	40,7	43,60	40,6						
Seam 2	8,23	37,4	18,58	39,2	26,81	38,6						
Gloria Mine												
Seam 1	51,40	37,5	97,85	37,3	149,25	37,4	42,60	36,3	79,60	36,0	122,20	36,1
Seam 2			32,04	28,3	32,04	28,3						

	Mineral Resources						Mineral Reserves					
	Measured		Indicated		Measured and Indicated		Proved		Probable		Proved and Probable	
Chromite	Mt	Cr_2O_3%	Mt	Cr_2O_3%	Mt	Cr_2O_3%	Mt	Cr_2O_3%	Mt	Cr_2O_3%	Mt	Cr_2O_3%
Dwarsrivier Mine												
LG6 Chromitite Seam	28,38	37,56	40,66	38,41	69,04	38,06	18,01	32,81	30,33	33,23	48,34	33,07

General statement

Assmang's method of reporting Mineral Resources and Mineral Reserves complies with the South African Code for Reporting Exploration Results, Mineral Resources and Mineral Reserves (SAMREC Code), of 2007 as amended in 2009.

The Code sets out minimum standards, recommendations and guidelines for Public Reporting of Exploration Results, Mineral Resources and Mineral Reserves in South Africa. The new SAMREC Code 2016 was launched and adopted by the Johannesburg Stock Exchange (JSE) in May 2016. The 2017 Mineral Resource and Reserve report will be based on the new SAMREC Code.

The convention adopted in this report is that the Measured and Indicated Mineral Resources are reported inclusive of that portion converted to a Mineral Reserve. Inferred Mineral Resources have not been included in feasibility studies or Life-of-Mine Plans. Mineral Resources and Reserves are quoted as at 30 June 2016.

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 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 classification into Measured, Indicated and Inferred Mineral Resources is done by consideration of geostatistical parameters, spacing of boreholes, geological structures and continuity of the mineralisation.

The Mineral Resources and Reserves are reported on a 100% basis and the attributable interest is noted in the tabulations. 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, executed and registered.

Rounding of figures may result in computational discrepancies on the Mineral Resources and Reserves tabulations.

Competence

The Competent Person with overall responsibility for the compilation of the 2016 Mineral Resources and Reserves report is Shepherd Kadzviti, Pr.Sci.Nat, an ARM employee. He confirms that the information in this report complies with the SAMREC Code and that it may be published in the form and context in which it was intended.

Shepherd Kadzviti graduated with a BSc (Geology and Mathematics) and MSc in Exploration 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 at Union Mine as an Evaluation Geologist with responsibilities for geological database management and Mineral Resource estimation. After two years at the 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 Resources 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 (SACNASP) as a Professional Natural Scientist (Pr.Sci.Nat) in the field of practice of geological science, registration number 400164/05, and as such is considered to be a Competent Person. SACNASP is based in the Council for Geosciences Buildings, 3rd Floor, 280 Pretoria Road, Silverton, 0127, South Africa.

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 Assmang's Competent Persons are available from the Company Secretary on written request.

The following Competent Persons were involved in the estimation of Mineral Resources and Reserves.

MA Burger	Pr.Sci.Nat	Iron
S van Niekerk	Pr.Sci.Nat	Iron
B Ruzive	Pr.Sci.Nat	Manganese
A Pretorius*	Pr.Sci.Nat	Chrome
MAJ Burger	Pr.Sci.Nat	Iron
S Zitha	ECSA	Manganese
M Lukhele	Pr.Sci.Nat	Iron

** External consultant.*

Shepherd Kadzviti Pr.Sci.Nat
Group Mineral Resources Manager
African Rainbow Minerals
24 Impala Road, Chislehurston, Sandton, South Africa

16 September 2016

Assmang Proprietary Limited (Assmang) operations

ARM's attributable beneficial interest in Assmang operations is 50%. The other 50% is held by Assore Limited. Assmang operations comprise the Khumani and Beeshoek Iron Ore Mines, Black Rock Manganese Mines, and Dwarsrivier Chrome Mine.

Iron Ore mines

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 Mines 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

Mining operation	Legal entitlement	Minerals covered by Mining Right	Comment	Period of Mining Right (years)
Beeshoek Mine	Mining Right NC 223 MRC	Iron ore	The Beeshoek Mine Converted Mining Right was executed on 16 March 2012 and registered on 29 May 2013.	30
Khumani Mine	Mining Right NC 50/5/1/2/5/2/70 MR	Iron ore	The Khumani New Order Mining Right was executed on 25 January 2007 and was registered on 5 March 2007.	30

Geology

The iron ore deposits are formed within in 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. Hematite is the predominant ore mineral, but limonite and specularite also occur.

The erosion of the northern Khumani deposit is less than in the southern Beeshoek area. This results 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 dipping to the west is notable. The southern Beeshoek ore bodies were exposed to more erosion and hence are 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 dipping to the west, but less continuous.

Mineral Resources

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. All holes 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). 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.

Samples with values larger than 60% Fe cut-off 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 wireframed 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. Estimation is also undertaken outside the 60% Fe envelope within the limits of the ore body stratigraphy. 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).

Mineral 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.

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 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.

Beeshoek Mine: Iron Ore Mineral Resources and Reserves

Attributable interest: ARM 50%; Assore 50%	Measured Resources		Indicated Resources		Total Measured and Indicated Resources		Inferred Resources		Proved Reserves		Probable Reserves		Total Reserves	
Pit/area	Mt	Fe%	Mt	Fe%	Mt	Fe%	Mt	Fe%	Mt	Fe%	Mt	Fe%	Mt	Fe%
BN Pit	12,20	63,11			12,20	63,11			7,07	63,41			7,07	63,41
HF/HB Pit	16,00	64,10			16,00	64,10			6,87	64,27			6,87	64,27
BF Pit	7,50	63,51	0,23	63,54	7,73	63,51	0,001	65,24	0,60	61,59			0,60	61,59
East Pit	5,27	65,03	0,03	64,50	5,30	65,03			2,72	65,10			2,72	65,10
Village area	42,27	64,55	9,26	63,83	51,53	64,42			25,68	65,26	3,85	63,95	29,53	65,09
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	1,98	64,82	0,02	65,21	2,00	64,82								
West Pit	9,45	63,19			9,45	63,19	0,050	61,88						
Detrital*							2,500	60,00						
Total 2016	**98,08**	**64,09**	**9,63**	**63,81**	**107,71**	**64,06**	**2,551**	**60,04**	**42,94**	**64,74**	**3,85**	**63,95**	**46,79**	**64,67**
Total 2015	104,10	64,07	9,63	63,81	113,73	64,05	2,551	60,04	47,64	64,63	3,86	63,95	51,50	64,58

The Measured and Indicated Mineral Resources are inclusive of those modified to produce Mineral Reserves.

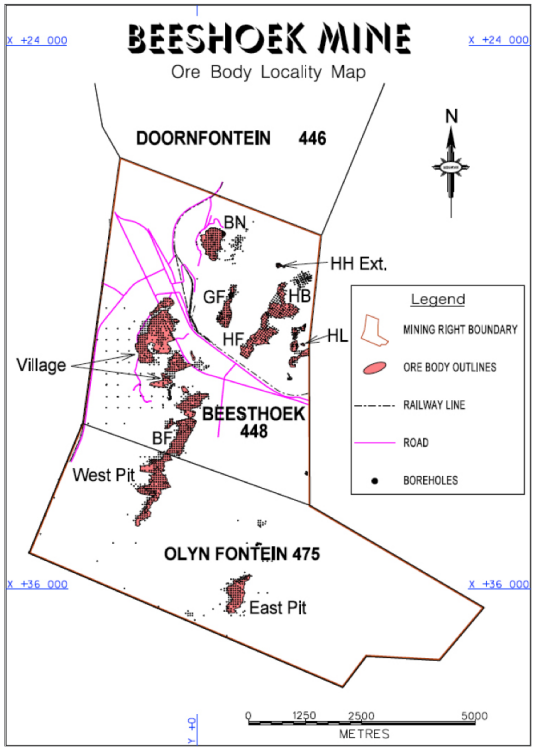
Totals are rounded off.

** Detrital is loose fragmented material occurring in various areas at Beeshoek.*

Key assumption for Mineral Resources:
- *Grade cut-off: 60% Fe*

Modifying factors for the conversion of Mineral Resources to Reserves include (applicable to Village Pit):
- *Mining loss factor: 2%*
- *Grade cut-off: 60% Fe*
- *Stripping ratio: 3,77*
- *Plant yield: 55% to 85% (depending on material type)*
- *Mining dilution: 3%*
- *Price used for iron ore: Based on market-related long-term view and customer contracts*
- *Exchange rate used: Market related*

Beeshoek ore body locality map



Beeshoek Mine stockpiles

Attributable interest: ARM 50%; Assore 50%	Proved Reserves		Probable Reserves		Total Reserves	
	Mt	Fe%	Mt	Fe%	Mt	Fe%
Total 2016 stockpiles			**6,06**	**55,15**	**6,06**	**55,15**
Total 2015 stockpiles			7,42	55,38	7,42	55,38

Beeshoek year-on-year change

Measured and Indicated Resources for Beeshoek Mine decreased from 113,73 to 107,71 million tonnes mainly due mining depletion and sterilisation of certain sections of the BN ore body (BNN) after the discovery of an underground cave.

Historical production at Beeshoek Mine

Financial year	ROM Mt	Saleable Mt
2011/2012	1,98	2,10
2012/2013	2,88	2,94
2013/2014	2,06	3,12
2014/2015	3,34	3,43
2015/2016	3,05	3,11

Khumani Iron Ore Mine: Mineral Resources and Reserves

Attributable interest: ARM 50%; Assore 50%	Measured Resources		Indicated Resources		Total Measured and Indicated Resources		Inferred Resources		Proved Reserves		Probable Reserves		Total Reserves	
Pit/area	Mt	Fe%	Mt	Fe%	Mt	Fe%	Mt	Fe%	Mt	Fe%	Mt	Fe%	Mt	Fe%
Bruce A	37,57	64,37	63,40	64,66	100,97	64,55			34,64	64,35	58,90	64,72	93,54	64,58
Bruce B	61,74	64,54	18,57	63,59	80,31	64,32	1,73	61,19	45,77	64,47	15,06	63,51	60,83	64,23
Bruce C	11,43	64,41			11,43	64,41			3,53	65,03			3,53	65,03
Total for Bruce Pits	110,74	64,47	81,97	64,42	192,71	64,45	1,73	61,19	83,94	64,44	73,96	64,47	157,90	64,46
King/Mokaning	284,04	64,24	94,39	64,16	378,43	64,22	11,67	62,96	259,02	64,32	9,09	65,19	268,11	64,35
Total 2016	**394,78**	**64,30**	**176,36**	**64,28**	**571,14**	**64,30**	**13,40**	**62,73**	**342,96**	**64,35**	**83,05**	**64,55**	**426,01**	**64,39**
Total 2015	420,62	64,30	179,63	64,26	600,25	64,29	14,39	62,74	365,07	64,32	82,88	64,45	447,95	64,34

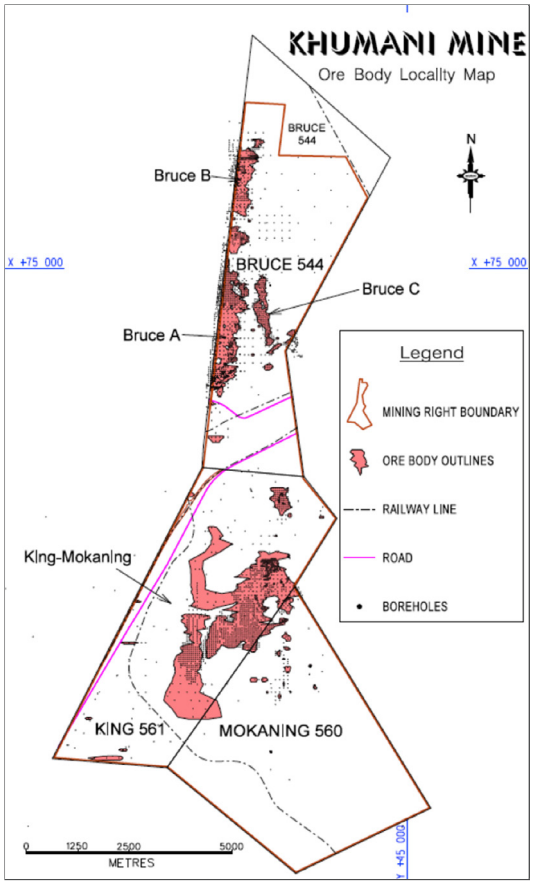
The Measured and Indicated Mineral Resources are inclusive of those modified to produce Mineral Reserves.

Totals are rounded off.

Key assumption for Mineral Resources:
- *Grade cut-off: 60% Fe*

Modifying factors for the conversion of Mineral Resources to Reserves include:
- *Mining loss factor: 2%*
- *Plant yield: 60% to 85% (depending on material type)*
- *Mining dilution: 3%*
- *Grade cut-off: 60% Fe*
- *Stripping ratio: 2,41*
- *Price used for iron ore (US$/t): Based on market-related long-term view and customer contracts related*
- *Exchange rate used: Market related*

Khumani ore body locality map



Khumani Mine stockpiles

Attributable interest: ARM 50%; Assore 50%	Proved Reserves		Probable Reserves		Total Reserves	
Area	Mt	Fe%	Mt	Fe%	Mt	Fe%
Bruce			2,10	60,00	2,10	60,00
King			2,35	60,00	2,35	60,00
Total 2016 stockpiles*			**4,45**	**60,00**	**4,45**	**60,00**
Total 2015 stockpiles			4,76	55,79	4,76	55,79

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

Khumani year-on-year change

Measured and Indicated Resources decreased by 29,11 million tonnes while Proved and Probable Reserves decreased by 21,94 million tonnes mainly due to mining depletion and minor pit designs' adjustments.

Historical production at Khumani Mine

Financial year	ROM Mt	Saleable Mt
2011/2012	14,89	11,60
2012/2013	19,33	13,17
2013/2014	19,12	12,93
2014/2015	19,06	12,65
2015/2016	21,38	13,62

Manganese mines

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 Ferrous 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 Cato Ridge Smelter, and is exported through Port Elizabeth as well as Durban and Richards Bay.

Mining authorisation

Legal entitlement	Minerals covered by Mining Right	Comment	Period of Mining Right (years)
Mining Right NC 30/5/1/2/2/203 MRC	Manganese ore	The Converted Mining Right for the Black Rock Mine Operations was executed on 13 July 2011. Registration of this right took place on 22 September 2015.	30

Geology

The manganese ores of the Kalahari Manganese field are contained within sediments of the Hotazel Formation of the Griqualand West Sequence, a sub-division of the Proterozoic Transvaal Supergroup. At Black Rock, Belgravia and Nchwaning farms, 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 ore bodies exhibit a complex mineralogy and more than 200 mineral species have been identified. 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 Gloria Mine, the intensity of faulting is much less, which may explain the lower Mn grade.

Two manganese seams are present. The lowermost (Seam 1) at Nchawining 3 is up to 6 metres thick, of which up to 4,5 metres is mined. 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. Gloria Seam 1 is approximately 14 metres thick, but only an optimum cut of 3,5 to 4,0 metres is mined.

Nchwaning Mine Mineral Resources

Nchwaning Mine was diamond drilled from surface at 330 metre grid centres and the data is captured in a Geological Database Management System (GDMS) developed by Datamine. The core is logged and 0,5 metre-long, half-core, diamond-saw cut samples are submitted to Assmang's laboratory at Black Rock for X-ray fluorescence (XRF) analyses. Mn and Fe values are 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, boreholes and underground sample sections were considered in the geological modelling and grade estimation for Nchwaning Seam 1 and Seam 2 resource modelling. 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 modelling the seams at a composite width of 0,5 metres. The geological modelling was undertaken using Datamine Strat3D software and Studio 3 for the grade estimation. The resource models were built on 50 x 50 x 0,5 metre blocks allowing for sub-splitting in the X and Y directions for the model to accurately follow the geological boundaries.

The full vertical extent of both Seam 1 and Seam 2 were modelled. Statistical and geostatistical analysis was done on the following variables: Mn, Fe, Al_2O_3, BaO, CaO, K_2O, MgO, Na_2O, P, S and SiO_2. Ordinary Kriging interpolation within Datamine Studio 3 was used to estimate the grade of each 50 x 50 x 0,5 metre blocks each identifiable by the layer number of the seam. 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. Seam 1 and Seam 2 were modelled separately. The resource model for use in the evaluation was selected over a thickness of 4,5 metres (Nchwaning 3, Seam 1), 4,0 metres (Nchwaning, Graben) and 3,5 metres for the rest of Nchwaning (Seams 1 and 2), based on the best Mn values and/or Mn/Fe ratios.

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.

Nchwaning Mine Mineral Reserves

Trackless mechanised equipment is used in the Bord 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: Manganese Seam 1 Mineral Resources and Reserves

Attributable interest: ARM 50%; Assore 50%	Mineral Resources Mt	Mn%	Fe%		Mineral Reserves Mt	Mn%	Fe%
Measured	57,78	45,2	8,7	Proved	44,10	45,2	8,7
Indicated	72,11	41,7	8,3	Probable	52,90	41,8	8,4
Total Resources (Seam 1) 2016	**129,89**	**43,3**	**8,5**	**Total Reserves (Seam 1) 2016**	**97,00**	**43,3**	**8,5**
Total Resources (Seam 1) 2015	133,02	43,0	9,2	Total Reserves (Seam 1) 2015	104,21	42,7	9,6

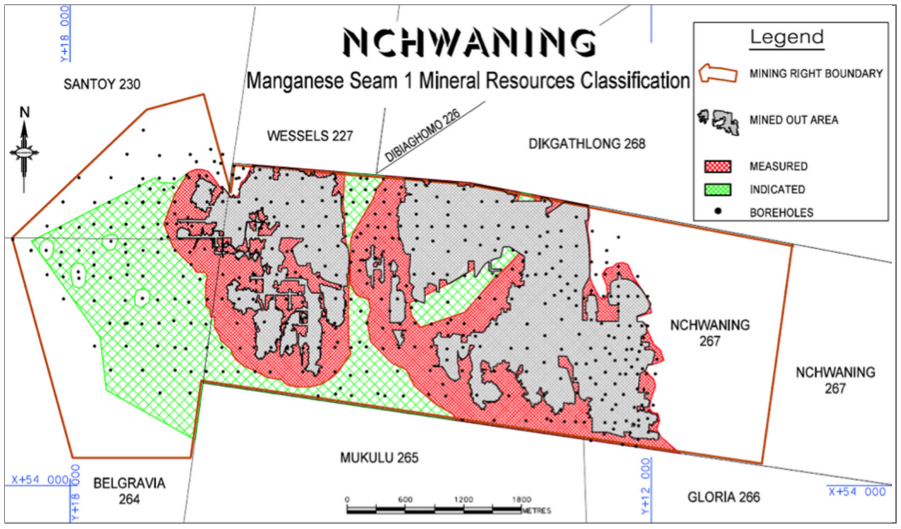
The Measured and Indicated Mineral Resources are inclusive of those modified to produce Mineral Reserves

Totals are rounded off.

Key assumptions for Mineral Resources:
- *True thickness cut-off: 3,5 m to 4,5 m*
- *Density: 4,3 t/m³*

Modifying factors for the conversion of Mineral Resources to Reserves include:
- *Geological loss: 2%*
- *Mining loss factor: 2%*
- *Mining dilution is minimal.*
- *Plant recovery: 85% to 90%*
- *Mine extraction factor: 78%*
- *Price used: Based on market-related long-term view and customer contracts*
- *Exchange rate used: Market related*
- *Grade cut-off: 38% Mn*

Nchwaning Mine: Manganese Seam 1 Mineral Resources classification



Nchwaning Mine: Manganese Seam 2 Mineral Resources and Reserves

Attributable interest: ARM 50%; Assore 50%	Mineral Resources				Mineral Reserves		
	Mt	Mn%	Fe%		Mt	Mn%	Fe%
Measured	65,01	42,6	16,3	Proved	47,80	41,6	15,9
Indicated	114,77	42,2	15,8	Probable	76,20	41,5	16,2
Total Resources (Seam 2) 2016	**179,78**	**42,3**	**16,0**	**Total Reserves (Seam 2) 2016**	**124,00**	**41,5**	**16,1**
Total Resources (Seam 2) 2015	184,16	40,8	17,0	Total Reserves (Seam 2) 2015	118,53	40,9	16,8

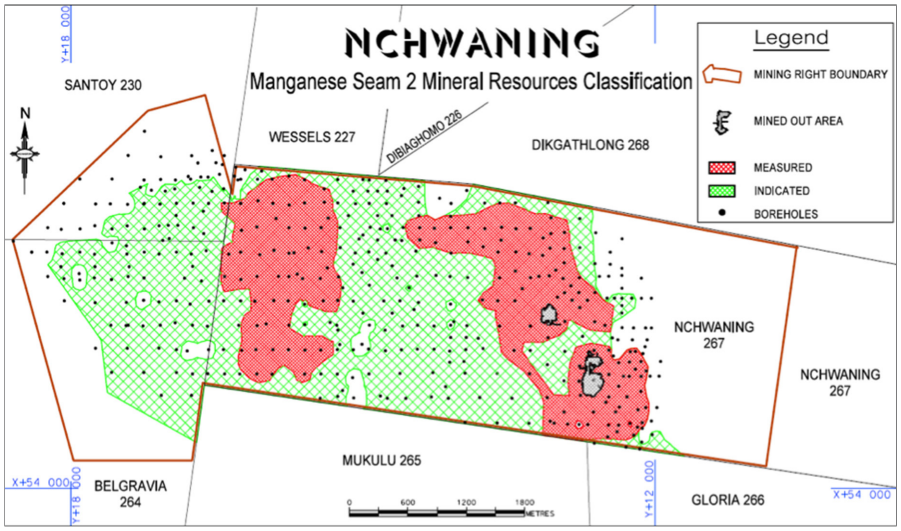
The Measured and Indicated Mineral Resources are inclusive of those modified to produce Mineral Reserves

Totals are rounded off.

Key assumptions for Mineral Resources:
- *True thickness cut-off: 3,5 m*
- *Density: 4,3 t/m³*

Modifying factors for the conversion of Mineral Resources to Reserves include:
- *Geological loss: 2%*
- *Mining loss factor: 2%*
- *Mining dilution is minimal*
- *Plant recovery: 85% to 90%*
- *Mine extraction factor: 78%*
- *Price used: Based on market-related long-term view and customer contracts*
- *Exchange rate used: Market related*
- *Grade cut-off: 38% Mn*

Nchwaning Mine: Manganese Seam 2 Mineral Resources classification



Nchwaning year-on-year change

The Mineral Resources for Seam 1 reduced by 2% from 133,02 to 129,89 million tonnes at 43,3% Mn mainly due to mining depletion. Nchwaning Seam 2 Mineral Resources decreased from 184,16 to 179,78 million tonnes at slightly higher grade of 42,3% Mn due to remodelling of the seam.

Mineral Reserves tonnage for Nchwaning Seam 1 decreased from 104,21 to 97,00 million tonnes at 43,3% Mn. Mineral Reserves for Nchwaning Seam 2 increased by 5% due to re-estimation and updating of the Reserves to 124,0 million tonnes at 41,5% Mn.

Historical manganese production at Nchwaning Mine

	ROM	Saleable
Financial year	Mt	Mt
2011/2012	2,94	2,46
2012/2013	2,79	2,40
2013/2014	3,15	2,69
2014/2015	3,05	2,48
2015/2016	2,91	2,39

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. Seams 1 and 2 were modelled at variable thicknesses. No mining is currently being done at Black Rock Koppie.

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

Attributable interest: ARM 50%; Assore 50%	Mt	Mn%	Fe%
Measured	9,03	40,3	18,1
Indicated	34,57	40,7	18,1
Total Resources (Seam 1) 2016	**43,60**	**40,6**	**18,1**
Total Resources (Seam 1) 2015	43,60	40,6	18,1

Totals are rounded off.

Key Resources assumptions:
- *Density: 4,0 t/m³*
- *Grade cut-off: 38% Mn*

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

Attributable interest: ARM 50%; Assore 50%	Mt	Mn%	Fe%
Measured	8,23	37,4	19,8
Indicated	18,58	39,2	19,8
Total Resources (Seam 2) 2016	**26,81**	**38,6**	**19,8**
Total Resources (Seam 2) 2015	26,81	38,6	19,8

Totals are rounded off.

Key Resources assumptions:
- *Density: 4,0 t/m³*
- *Grade cut-off: 38% Mn*

Gloria Mine Mineral Resources

Procedures for drilling and assaying at Gloria Mine are the same as at Nchwaning. Both boreholes and 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 Datamine Strat3D 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 Datamine Strat3D. Block sizes in the X and Y directions were 50 x 50 metres allowing for sub-splitting. The evaluation width of 4,0 metres was used and the relative density was determined as 3,8 t/m³. The full vertical extent of both Seam 1 and Seam 2 were modelled respectively.

Statistical and geostatistical analysis for the following variables: Mn, Fe, Al_2O_3, BaO, CaO, K_2O, MgO, Na_2O, P, S and SiO_2 was undertaken. Ordinary Kriging interpolation within Studio 3 was used to estimate the grade in the 50 x 50 x 0,5 metre blocks each identified by a layer number of the seam, using borehole and/or underground sample data of the corresponding layer. Mineral Resource classification methods were similar to those applied at Nchwaning Mine.

Gloria Mine Mineral Reserves

Bord and Pillar mining method is also used at Gloria Mine. Manganese is extracted at depths that vary between 180 to 250 metres. Ore is crushed underground before being conveyed to a 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 ROM ore.

Gloria Mine: Manganese Seam 1 Mineral Resources and Reserves

Attributable interest: ARM 50%; Assore 50%	Mineral Resources Mt	Mn%	Fe%		Mineral Reserves Mt	Mn%	Fe%
Measured	51,40	37,5	5,1	Proved	42,60	36,3	4,9
Indicated	97,85	37,3	4,9	Probable	79,60	36,0	5,2
Total Measured and Indicated (Seam 1) 2016	**149,25**	**37,4**	**5,0**	**Total Reserves (Seam 1) 2016**	**122,20**	**36,1**	**5,1**
Total Measured and Indicated (Seam 1) 2015	126,45	36,9	5,1	Total Reserves (Seam 1) 2015	92,62	36,8	5,3
Inferred 2016	**29,02**	**36,2**	**6,1**				
Inferred 2015	42,81	35,7	5,3				

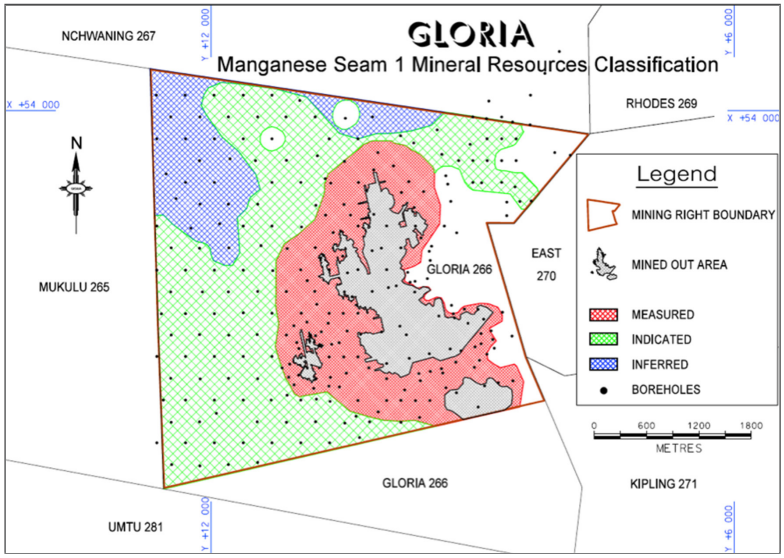
The Measured and Indicated Mineral Resources are inclusive of those modified to produce Mineral Reserves

Totals are rounded off.

Key assumptions for Mineral Resources:
- *True thickness cut-off: 4,0 m*
- *Density: 3,8 t/m³*

Modifying factors for the conversion of Mineral Resources to Reserves include:
- *Geological loss: 2%*
- *Mining loss factor: 2%*
- *Mining dilution is minimal*
- *Plant recovery: 88% to 90%*
- *Mine extraction factor: 84%*
- *Price used: Based on market-related long-term view and customer contracts*
- *Exchange rate used: Market related*
- *Grade cut-off: 36% Mn*

Gloria Mine: Manganese Seam 1 Mineral Resources classification



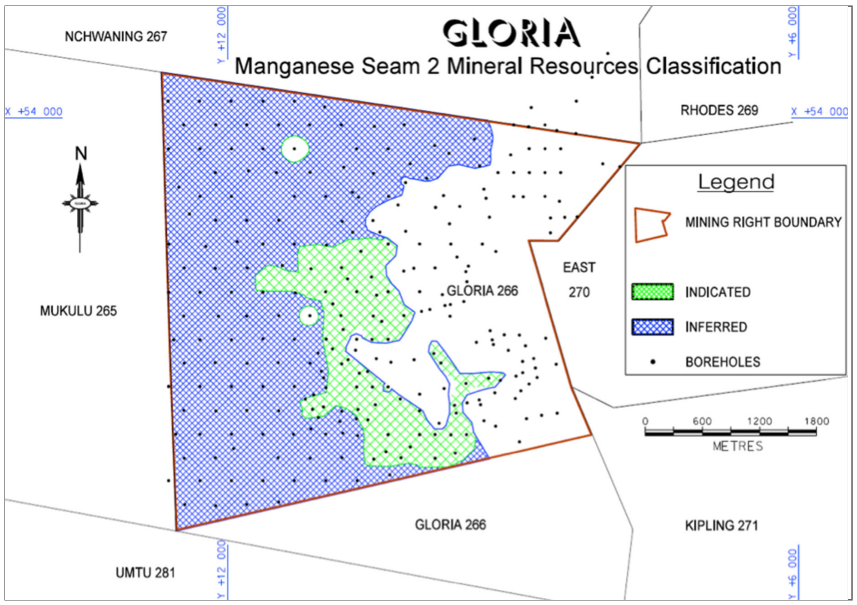
Gloria Mine: Manganese Seam 2 Mineral Resources

Attributable interest: ARM 50%; Assore 50%	Mt	Mn%	Fe%
Measured			
Indicated	32,04	28,3	9,4
Total Measured and Indicated (Seam 2) 2016	**32,04**	**28,3**	**9,4**
Total Measured and Indicated (Seam 2) 2015	30,73	28,0	9,7
Inferred 2016	**122,60**	**30,0**	**9,6**
Inferred 2015	130,08	28,2	11,3

Totals are rounded off.

Key assumptions for Mineral Resources:
- *True thickness cut-off: 4,0 m*
- *Density: 3,8 t/m³*

Gloria Mine: Manganese Seam 2 Mineral Resources classification



Gloria year-on-year change

New boreholes and assay data provided information that was sufficient for the upgrade of some Indicated to Measured Resources as well as potions of Inferred to Indicated Resources for Gloria Seam 1. The upgrades resulted in Measured Resources increasing by 5% to 51,40 million tonnes at 37,5% Mn and Indicated Resources increasing by 26% from 77,44 to 97,85 million tonnes at 37,3% Mn. Inferred Resources decreased from 42,81 to 29,02 million tonnes. Seam 2 Indicated Resources increased slightly due to remodelling.

Gloria Seam 1 Reserves are 32% higher than in 2015 at 122,20 million tonnes at a grade of 36,1% Mn. The increase can be attributed to the Resource upgrade mentioned above and the increase of optimum mining cut from 3,5 to 4 metres.

Historical manganese production at Gloria Mine

	ROM	Saleable
Financial year	Mt	Mt
2011/2012	0,92	0,84
2012/2013	0,82	0,75
2013/2014	0,79	0,67
2014/2015	0,74	0,61
2015/2016	0,56	0,55

Dwarsrivier Chromite Mine

Locality

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°059000E/latitude 24°599000S, 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. A feasibility study of the plant, tailings dam and designs for the open-pit and underground mines was undertaken. After the completion of the feasibility study, approval to proceed with the final design and construction work was given in July 1999. Chromite was mined from the open-pit areas at a rate of approximately 0,9 million tonnes a year and these areas were mined out within five years. Underground mining commenced in 2005 at a rate of 1,2 million tonnes ROM a year. Dwarsrivier Mine was specifically geared to deliver high-quality metallurgical grade chromite. In addition, the plant has been designed to produce chemical grade products for export.

Mining authorisation

Legal entitlement	Minerals covered by Mining Right	Comment	Period of Mining Right (years)
Mining Right L179 MRC	Chrome and platinum group metals excluding the rights to platinum, palladium, rhodium, ruthenium, osmium, iridium, silver, gold and ores thereof occurring in the Merensky and UG2 Reefs (as the rights were sold to Two Rivers Platinum Proprietary Limited), as well as excluding the rights to chromite in the LG6 reef in respect of that portion of the area covered by the mining right marked "portion of farm sold" on the Dwarsrivier plan on page 17 of this report.	Dwarsrivier Mine Converted Mining Right was executed on 15 May 2013 and registered on 2 June 2015. As of 1 August 2016 Dwarsrivier Mine is no longer an Assmang operation.	30

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 limb, 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 limb, 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 within this zone 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 that is mined at Dwarsrivier Mine. In the eastern limb, in the vicinity of Dwarsrivier, the strike is nearly north-south, with a dip of approximately 10 degrees towards the west. Average thickness of 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

Mineral Resources were estimated from boreholes on 150 to 300 metre grid spacing. All Mineral 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 are based on a total of 390 diamond boreholes, which have been

used for ore body modelling and grade estimation 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, as 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.

The LG6 layer, other chromitite layers above the LG6, ie MG1 to MG4 chromitites, as well as prominent faults were geologically modelled in Datamine Strat3D. 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 hangingwall". This unit is modelled and mined for geotechnical reasons as it creates an unstable hangingwall if left behind.

The Resource classification was done by considering geological and geostatistical parameters. Geological aspects include the continuity of the LG6 layer 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 Reserves

The LG6 Chromitite Seam is accessed via a decline shaft system. The mining method applied is fully mechanised underground Bord and Pillar method. Pillar designs range from 10 m x 10 m at the shallowest point to 12 x 12 metres at the 350 metres below surface. This results in average mine extraction factor of 70% across the mine.

The false hangingwall unit forms part of the dilution in the conversion from Resources to Reserves, increasing the Reserve tonnage and decreasing the average Reserve grade. A ROM ore inclusive of the "false hangingwall" 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.

Dwarsrivier Mine: LG6 Chromitite Mineral Resources and Reserves

Attributable interest: ARM 50%; Assore 50%	Mineral Resources Mt	Cr_2O_3%	FeO%		Mineral Reserves Mt	Cr_2O_3%	FeO%
Measured	28,38	37,56	22,40	Proved	18,01	32,81	20,84
Indicated	40,66	38,41	22,70	Probable	30,33	33,23	21,04
Total Measured and Indicated 2016	**69,04**	**38,06**	**22,58**	**Total Reserves 2016**	**48,34**	**33,07**	**20,97**
Total Measured and Indicated 2015	53,07	37,89	22,82	Total reserves 2015	37,60	34,28	21,67
Inferred 2016	**29,92**	**38,32**	**22,73**				
Inferred 2015	43,21	38,33	22,60				

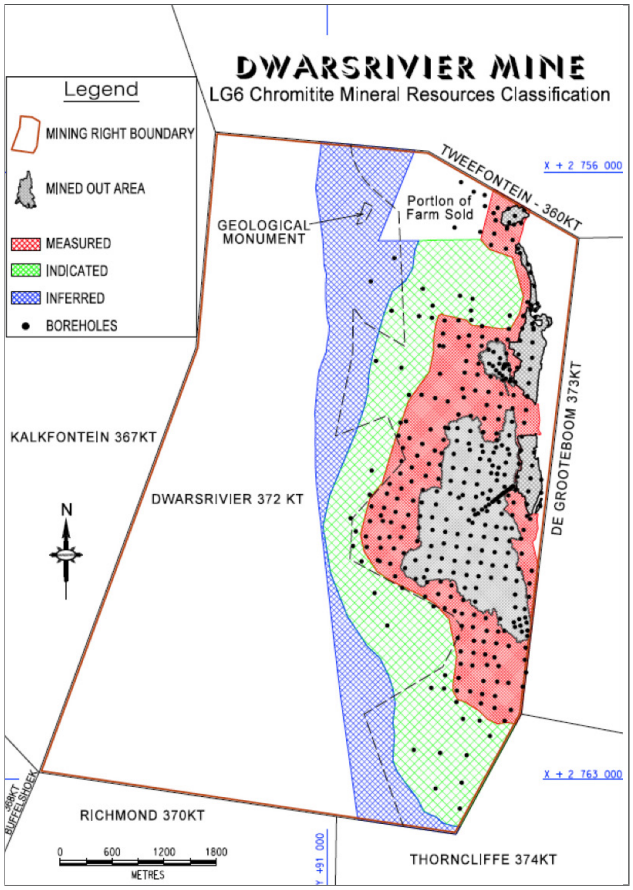
The Measured and Indicated Mineral Resources are inclusive of those modified to produce Mineral Reserves

Totals are rounded off.

Key assumption for Mineral Resources:
- *Geological loss factor applied: 15%*

Modifying factors for the conversion of Mineral Resources to Reserves include:
- *Mining loss factor: 5%*
- *Plant yield: 61%*
- *Mining dilution: 21%*
- *Mine extraction factor: 70%*
- *Price used: Based on market-related long-term view*
- *Exchange rate used: Market related*

Dwarsrivier Mine: LG6 Chromitite Mineral Resources classification



Year-on-year change

A total of 56 new boreholes were drilled in 2015 and 2016 and they provided information that was sufficient for the upgrade of some Indicated to Measured Resources as well as portions of Inferred to Indicated Resources. The upgrades resulted in Measured Resources increasing by 27% to 28,38 million tonnes at 37,56% Cr_2O_3 and Indicated Resources increasing by 32% to 40,66 million tonnes at 38,41% Cr_2O_3. The changes in the Mineral Reserves resulted in an increase of 10,74 million tonnes to 48,34 million tonnes at 33,07% Cr_2O_3.

Historical production at Dwarsrivier Chromite Mine

Financial year	ROM Mt	Saleable Mt
2011/2012	1,50	1,01
2012/2013	1,60	1,03
2013/2014	1,61	1,07
2014/2015	1,77	1,11
2015/2016	1,96	1,20

Mineral Resources and Mineral Reserves summary

The summaries below reflect the Measured and Indicated Resources and the corresponding Proved and Probable Reserves for each mine or project. The detail is within the relevant mine's section in this report. The Mineral Resources are inclusive of those modified to produce Mineral Reserves.

Subsidiary companies – 2016

	Mineral Resources				Mineral Reserves		
	Measured	Indicated	Inferred	**Total**	Proved	Probable	**Total**
	Mt	Mt	Mt	**Resource**	Mt	Mt	**Reserve**
Wonderstone	3,6	9,9	107,2	**120,8**	3,4	9,4	**12,9**
Rustenburg Minerals (LG6)	3,6	1,7	9,8	**15,1**	0,0	0,0	**0,0**
Zeerust Chrome (LG1 to LG3)	0,3	1,1	6,6	**8,0**	0,0	0,0	**0,0**

General statement

Assore's method of reporting Mineral Resources and Mineral Reserves complies with the South African Code for Reporting Exploration Results, Mineral Resources and Mineral Reserves (SAMREC Code), of 2007 as amended in 2009.

The new SAMREC Code 2016 was launched and adopted by the JSE in May 2016. The 2017 Mineral Resource and Reserve report will be based on the new SAMREC Code. The Code 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 2016. Inferred Mineral Resources has not been included into feasibility studies or the Life-of-Mine Plan.

Underground resources are *in situ* tonnages at the postulated mining width, after deductions for geological losses. Underground Mineral Reserves reflect tonnages that are planned to be mined and processed, and include deductions comprising geological, pillar and mining losses, as well as mining dilution. Surface Mineral Reserves consist of dumps/ stockpiles already mined and ready for processing and/or sale. Open-pit Mineral Resources are quoted as *in situ* tonnages and Mineral Reserves are tonnages falling within an economic pit-shell that include deductions for geological and mining losses.

The environmental sustainability funding provisions are stated on pages 42 and 68 of the integrated annual report.

The Mineral Resources and Mineral Reserves are reported on a total basis (ie 100%). Maps, plans and reports supporting Resources and Reserves are available for inspection at the company's registered offices and the relevant mines.

The operating subsidiary mining companies have already concluded their mining right conversions from old-order mining licences to new-order mining rights.

Rounding off of figures may result in minor computational discrepancies on the Mineral Resources and Reserve tabulation.

Pyrophyllite: The pyrophyllite deposit at Wonderstone is relatively consistent and mined by 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 in hardness, absence of cracks, etc. The classification into Measured, Indicated and Inferred Mineral Resources relates to the borehole spacing and the open-cast development. The Reserves consist of stockpiles and *in situ* tonnages after deductions for mining and processing losses.

The mining and exploration activities of the subsidiary companies will continue in the coming year as per the respective

Life-of-Mine Plans. At the time of the compilation of this report, the directors of the subsidiary companies are not aware of any legal proceedings or material conditions that will inhibit of the subsidiary companies planned mining or exploration activities.

Chromitite: The evaluation method is mainly based on grade and seam thickness intersections obtained via the open-cast and underground mining, exploration trenches and surface boreholes. The individual Lower Group chromitite seams at Rustenburg Minerals Development Company Proprietary Limited (RMDC) and Zeerust Chrome Mines Limited (ZCM) show consistent thickness and grade, with geological features such as faults and dykes being the main variables for discounting the Resources and Reserves. The classification into Measured, Indicated and Inferred Mineral Resources relates to geological structures, continuity of the mineralisation as well as chrome intersections at intervals, in plan view, not exceeding 100 metres for Measured Resources, between 100 metres and 150 metres for Indicated Resources and between 150 metres and 400 metres for Inferred Resources.

Competence

The Competent Person with overall responsibility for the compilation of the Mineral Resources and Reserves for the subsidiary companies report is Mr CAAP Magalhaes (Pr.MS.), an employee of African Mining and Trust Company Limited. He confirms in writing that the information in this report complies with the SAMREC Code and that it may be published in the form and context in which it was intended.

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 and the Government Certificate of Competency – Mine Survey, as well as an MBA from Henley Business School. He worked at Impala Platinum and Anglo Platinum in various capacities over a 15-year period. In 2006, he joined African Mining and Trust Company Limited as the Chief Surveyor and was later promoted to Group Surveyor. After four years at African Mining and Trust Company Limited, he was appointed as the Technical Services Manager for the subsidiary companies and was later appointed as the Group Manager – Chrome Division in 2012, and the Group Technical Manager in 2015.

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. PLATO is based in Unit 4, Heritage Park, Lower Germiston Road, Yellow Route, Area 26, Rosherville, 2094, South Africa.
Mr Magalhaes is also a member of the South African Institute 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.

Ms C van der Merwe, Geologist (BSc Hons Geology), was involved and assisted in the estimation of the Mineral Resources and Reserves. She is an African Mining and Trust Company Limited employee and has been the mine geologist since July 2013. Ms van der Merwe is a member of SACNASP and the GSSA.

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

Carlos Magalhaes Pr.MS.
Group Technical Manager
Assore Limited
15 Fricker Road
Illovo Boulevard
Illovo, 2195
South Africa

30 June 2016 (as per the letter supplied in writing)

Assore – Pyrophyllite (Wonderstone) mine

Wonderstone Limited (Wonderstone)

Locality

The Wonderstone pyrophyllite outcrop extends from the main deposit on Portion 44 of the farm Gestoptefontein 349 IO, south-east (as the twin layered deposit) for a distance of 5,5 km to the main Hartbeesfontein/Ottosdal road. To the north-west it extends another 400 m beyond the current mining area to the boundary of Portion 15 of the farm Gestoptefontein 349 IO (north-west boundary of the prospecting area).

Wonderstone is in the North West province and situated approximately 12 km north of Ottosdal at latitude 26°44'7"S/longitude 25°59'49".

History

Wonderstone mines a type of pyrophyllite which, for trade purposes, has been referred to as Wonderstone.

Mining commenced at the Wonderstone Mine in 1935. The open-cast operation mainly comprises hydraulic hammering and excavator loading with no drilling and blasting being necessary. The bulk of the material mined is beneficiated to produce high-precision components and powders manufactured to customers' specification which are exported to the United States of America, the United Kingdom and the Far East. A range of customised wear and acid-resistant tiles and ceramic products are produced that are mainly used for chute wear liners in the local mining industry. Wonderstone is also used in the manufacture of industrial filtration solutions.

Mining authorisation

Farm	Legal entitlement	Mineral covered by Mining Right	Comment	Period of Mining Right (years)
Portion 44 of Gestoptefontein 349 IO	ML: ML1-97 to Converted MR: NW 30/1/2/2/398 MR	Pyrophyllite	The Converted Mining Right was executed on 24 April 2013.	30

At the time of the compilation of this report, the directors of the subsidiary companies are not aware of any legal proceedings or material conditions that will inhibit of the subsidiary companies planned mining or exploration activities.

Geology

Wonderstone is a non-fibrous type of pyrophyllite, an aluminium silicate of the phyllosilicate family, with the chemical formula $Al_2 Si_4 O_{10} (OH)_2$. It is a very fine grained compact rock of uniform texture and composition, and comprises a greenschist metamorphic product derived from the alteration of felsic volcanics, with a melting temperature of approximately 1 630° C.

The pyrophyllite forms part of the Syferfontein Formation of the Dominion Group and occurs as bands within a thick mass of inclined felsic volcanics. The thickness of the main band is approximately 190 metres with thinner lava bands up to 20 metres thick. The whole formation has a north-westerly to south-easterly strike and dips in a south-westerly direction at angles of between 25° and 48° from the horizontal.

Wonderstone occurs in two shades of grey, dark and light. The product is mined and grouped on the basis of colour and on the customer colour demand, and grade is therefore not important. The lighter grey wonderstone is typically found towards the surface, while the darker grey wonderstone occurs beneath it in the less weathered regions. Flaws such as cracks and felsic inclusions are avoided through the selective surface open-cast mining method.

Resistance to the destructive influences of weathering and corrosive agents, superior workability, strength and other useful qualities, are distinct in the commercial exploitation of this mineral.

Mineral Resources and Reserves

Assore owns 100% of Wonderstone Limited.

The selection of wonderstone in the processing plant is not based on grade but on the ore's natural characteristics, ie colour, consistency in hardness, free of natural fractures, etc. The classification into Measured, Indicated and Inferred Mineral Resources relates to the borehole spacing and the open-cast development. The resources consist of stockpiles and *in situ* tonnages after deductions for mining and processing losses.

The boreholes were drilled at about 200 m spacing perpendicular to the dip angle, along the south-western contact boundary between the overlying felsic volcanic layer and the ore body. The collar positions of the drill holes were surveyed, but down-hole surveys were not done, and the holes were assumed to have minimal vertical deflection.

The Wonderstone Measured Resources are estimated above and below the current survey surface profile and include both sold tonnes and tonnes added to the stockpiles during the financial year. The Indicated Resources are estimated to 30 metres below the open-pit's extend and current survey surface profile (after the Measured Resource portion was deducted), whereas the Inferred Resources are estimated over the remaining lease area to a depth of 30 m below natural ground level. Inferred Mineral Resources has not been included into feasibility studies or the Life-of-Mine Plan.

The specific gravity (SG) of the *in situ* pyrophyllite is 2,64 t/m^3 whereas the SG of the stockpiles has been determined as being 1,96 t/m^3.

The Resource classification was done by considering various geological parameters, which include the continuity and overall behaviour of the wonderstone obtained through borehole information.

Mineral Resources and Reserves report continued
ASSORE SUBSIDIARY COMPANIES continued
Assore – Pyrophyllite (Wonderstone) mine continued

Wonderstone year-on-year change

Measured and Indicated Resources decreased by 11,95% to 13,6 million tonnes due to mining depletion. Similarly, Mineral Reserves also decreased from 14,6 to 12,9 million tonnes.

Wonderstone Mine: Mineral Resources and Reserves

	Mineral Resources			Mineral Reserves	
	Measured	Indicated	Inferred	Proved	Probable
Assore attributable interest: 100%	Mt	Mt	Mt	Mt	Mt
Above and below survey surface profile	2,0	0,0	0,0	1,9	0,0
Ore dumps	1,6	0,0	0,0	1,5	0,0
Below survey surface profile to 30 m	0,0	9,9	0,0	0,0	9,4
NGL – 30 m	0,0	0,0	107,2	0,0	0,0
Total Wonderstone 2016	**3,6**	**9,9**	**107,2**	**3,4**	**9,4**
Total Wonderstone 2015	3,6	11,8	107,2	3,4	11,2
Summary total 2016	**13,6**			**12,9**	
Summary total 2015	15,4			14,6	

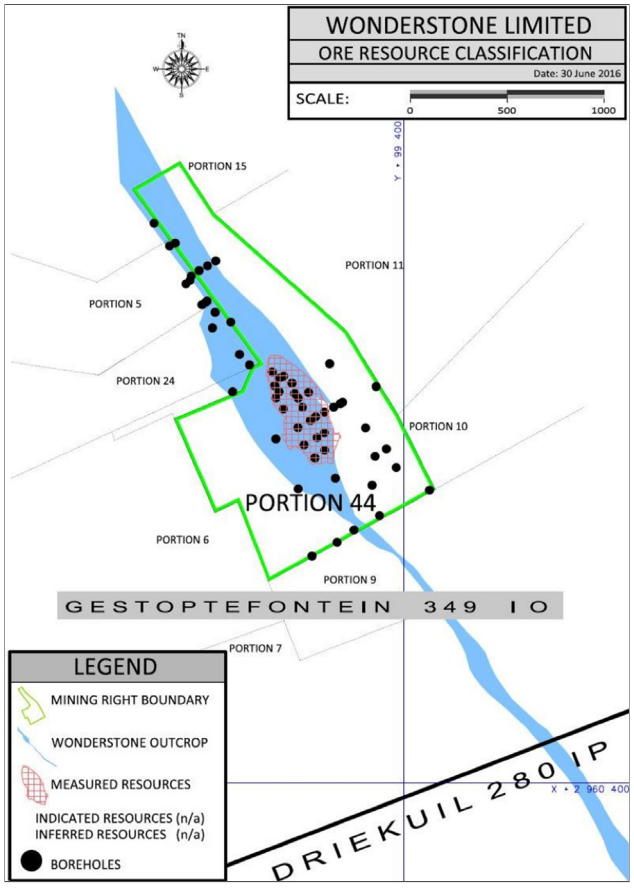
Mineral Resources are inclusive of Mineral Reserves.

Totals are rounded off.

Key assumptions for Resources:
- *In situ default density: 2,64 t/m³*
- *Stockpile default density: 1,96 t/m³*

Modifying factors for the conversion of Mineral Resources to Reserves include:
- *Geological loss: ~5%*
- *Grade is not important as the market demand is based on colour, not grade*

Wonderstone Resources



Source: WS Microstation base plans

Assore – Chromite mines

Rustenburg Minerals Development Company Proprietary Limited (RMDC)

Zeerust Chromite Mines Limited (ZCM)

Locality

The Assore Chromite division is made up of the RMDC and Zeerust operations. RMDC is located in the Mankwe district on the following farms; Portions 1 and 2 of Groenfontein 138 JP, which makes up the extent of MR51, the remaining extent (RE) of Zandspruit 168 JP, which makes up the extent of MR11, and Portion 3 of Vogelstruisnek 173 JP, which makes up the extent of MR50. Zeerust is located in the district of Zeerust on the following farms; Portions 2, 3, 4, 5, 8 and the Remaining Extent of Turfbult alias Kanaan 10 JP, which makes up the extent of MR314.

All properties are in the North West province. The RMDC open-cast and underground operations are situated approximately 70 km north-west of Rustenburg at latitude 25°7'6"S/longitude 26°54'46"; and the Zeerust open-cast is situated approximately 70 km north of Zeerust at latitude 25°0'20"S/longitude 26°12'48"E.

History

The operations at RMDC and Zeerust commenced in 1968 and 1962 respectively, and historically comprised a combination of underground and open-cast operations. The Zeerust chromite operations (located on the MR 314) however, were later limited to open-cast operations only as that proved to be the only means of economically extracting the three bottom Lower Group chromitite seams found in the area.

After the completion of the feasibility studies, a crushing, washing, screening and spiral plant was erected at each of the chromite mines where chemical and metallurgical grade chromite has since been produced for predominantly the export market, with a smaller proportion being sold to local customers.

RMDC has established two underground projects which are currently in capital development phase. The two projects are located on the MR51 (Portions 1 and 2 of Groenfontein 138 JP) and the MR11 (Remaining Extent of Zandspruit 168 JP) mining lease areas. During the previous financial year (2014/2015), the economic extraction of reef from RMDC's underground operations has become a challenge due to various factors comprising mainly falling commodity prices, increasing operational costs and unplanned strikes. As a result, the underground Reserves were reclassified as Resources in this financial year after a feasibility study had been done.

Mining authorisation

Farm	Legal entitlement	Mineral covered by Mining Right	Comment	Period of Mining Right (years)
Portion 1 and 2 of Groenfontein 138 JP	ML: NW 30/5/1/2/2/51 MR	Chrome	The Converted Mining Right was executed on 24 April 2008.	30
RE of Zandspruit 168 JP	MR: NW 30/5/1/1/2/11 MR	Chrome	The Converted Mining Right was executed on 14 October 2005.	30
Portion 3 of Vogelstruisnek 173 JP	MR: NW 30/5/1/2/2/50 MR	Chrome	The Converted Mining Right was executed on 24 April 2008.	30
Portions 2, 3, 4, 5, 8 and the RD of Turfbult alias Kanaan 10 JP	MR: NW 30/5/1/2/2/314 MR	Chrome	The Converted Mining Right was granted on 29 May 2012.	30

Geology

RMDC – Geology

RMDC is situated in the western limb of the Bushveld Layered Igneous Complex.

All the seams of the three groups of the Critical Zone are exposed at RMDC. However, the Lower Group (LG) seams (LG1 through to LG7), which occur within pyroxenite or bronzitite, make up the vast majority of the potential Resources at RMDC in relation to the other seams of the Critical Zone. Only small faulted segments of the Middle Group (MG) and Upper Group (UG) outcrop on the eastern side of the MR11 portion of RMDC. The LG1 to LG6 seams have been historically mined at RMDC, with the LG7 having proved to be uneconomical to mine. There is no significant grade variation in the respective LG seams.

The LG6, being the thickest and thus the most economical chromitite seam to mine, has been the main source of chromite ore at the RMDC operation. The LG6 seam is fairly constant in thickness, averaging approximately 80 centimetres. The seam dips at an average of 10 degrees towards the east, with a north-south strike. Local variation in the dip and thickness occur mostly in the vicinity of geological structures such as faults, dykes, potholes and reef rolls. Pipe-like dunite intrusions are evident in the area, especially on the Zandspruit Farm, MR11, as well as dolerite dykes. In addition, concordant, sub-concordant pegmatoid intrusions also exist throughout the farm associated with the dyke intrusions and major faulting. The close proximity of the Pilanesberg Alkaline Intrusion further to the east has fractured the surrounding area, resulting in ground conditions which require a relatively high support density for the underground operations on the said farms.

ZCM – Geology

ZCM is situated in the far western limb of the Bushveld Layered Igneous Complex.

Only the LG1, LG2 and LG3 of the Critical Zone, occurring within pyroxenite or bronzitite, are present and were mined at Zeerust.

The seams are fairly constant in thickness, with LG1, LG2 and LG3 seams averaging 30, 27 and 12 centimetres respectively. The seam dips at an average of 10 degrees towards the east, with a north-south strike. Local variation in the dip and thickness occur mostly in the vicinity of geological structures such as faults, dykes, potholes and reef rolls. Dolerite dykes are present and sometimes associated with major faulting.

Mineral Resources and Reserves

The individual LG chromitite seams at RMDC and Zeerust show relatively consistent thickness and grade, with geological features such as faults and dykes being the main variables.

The evaluation method is mainly based on grade and seam thickness intersections determined via open-cast and underground mining, trenches and boreholes.

Mineral Resources are estimated from vertical boreholes and related to chrome intersections at intervals, in plan view, not exceeding 100 metres for Measured Resources, between 100 metres and 150 metres for Indicated Resources and between 150 metres and 400 metres for Inferred Resources. The Resource classification was done by considering a number of geological parameters, which include the continuity of the seams and the influence of geological structures such as dykes and faults.

The drill core comprises BQ and NQ size which are both geologically and geotechnically logged. The collar positions of the drill holes are surveyed, but down-hole surveys are not done, and the holes are assumed to have minimal vertical deflection. The LG chromitite seams are bounded above and below by pyroxenites, and as such, the ore horizon is clearly defined. The core is sampled from the reef top contact downwards to the reef bottom contact. 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 the XRF analysis technique to obtain the bulk analysis, with focus on the Cr_2O_3, SiO_2 and FeO. Three laboratories are contracted to undertake the analysis, all of which are ISO 17025 accredited for these analytical techniques. The SG of the chromite has been established by means of a gas pycnometer.

RMDC – Mineral Resources and Reserves

Assore owns 56% of RMDC through African Mining and Trust Company Limited and 44% is owned by Mampa Investment Holdings Proprietary Limited.

At the Zandspruit underground operation, the borehole spacing is insufficient for Underground Indicated Resources, therefore, only Inferred and Measured Underground Resources are provided here.

Inferred Mineral Resources have not been included into feasibility studies or the Life-of-Mine Plan.

RMDC has been placed on care and maintenance at the end of this past financial year after the LG6, with an average 80 centimetre seam thickness, were mined out via open cast extraction to an economic high wall.

ZCM – Mineral Resources and Reserves

Assore owns 100% of Zeerust Chrome Mines Limited.

Zeerust was placed on care and maintenance during the previous financial year (2014/2015). Therefore, no mining occurred during the past financial year.

Rustenburg Minerals Development Company Proprietary Limited (RMDC)

RMDC year-on-year change

Measured and Indicated Resources decreased by 5% from 5,6 to 5,3 million tonnes due to mining depletion. The Mineral Reserves decreased from 3,5 million tonnes to 0 year on year as a result of infeasible mining conditions and the consequent decision to place the mine on care and maintenance.

RMDC: Mineral Resources and Reserves

Assore (AMT) attributable interest: 56% Mampa Investment Holding Proprietary attributable interest: 44%		Mineral Resources			Mineral Reserves	
		Measured	Indicated	Inferred	Proved	Probable
		Mt	Mt	Mt	Mt	Mt
Groenfontein	LG6 open-cast to 45 m high wall	0,0	0,0	0,0	0,0	0,0
	LG6 underground	1,4	1,2	2,4	0,0	0,0
	Groenfontein total	1,4	1,2	2,4	0,0	0,0
Zandspruit	LG6 open-cast to 45 m high wall	0,0	0,0	0,0	0,0	0,0
	LG6 underground	2,2	0,0	7,4	0,0	0,0
	Zandspruit total	2,2	0,0	7,4	0,0	0,0
Vogelstruisnek	LG6 open-cast to 45 m high wall	0,0	0,0	0,0	0,0	0,0
	LG6 underground	0,0	0,5	0,0	0,0	0,0
	Vogelstruisnek Total	0,0	0,5	0,0	0,0	0,0
	RMDC total 2016	**3,6**	**1,7**	**9,8**	**0,0**	**0,0**
	RMDC total 2015	3,9	1,7	9,8	2,4	1,0
	Summary total 2016	**5,3**			**0,0**	
	Summary total 2015	5,6			3,4	

Mineral Resources are inclusive of Mineral Reserves.

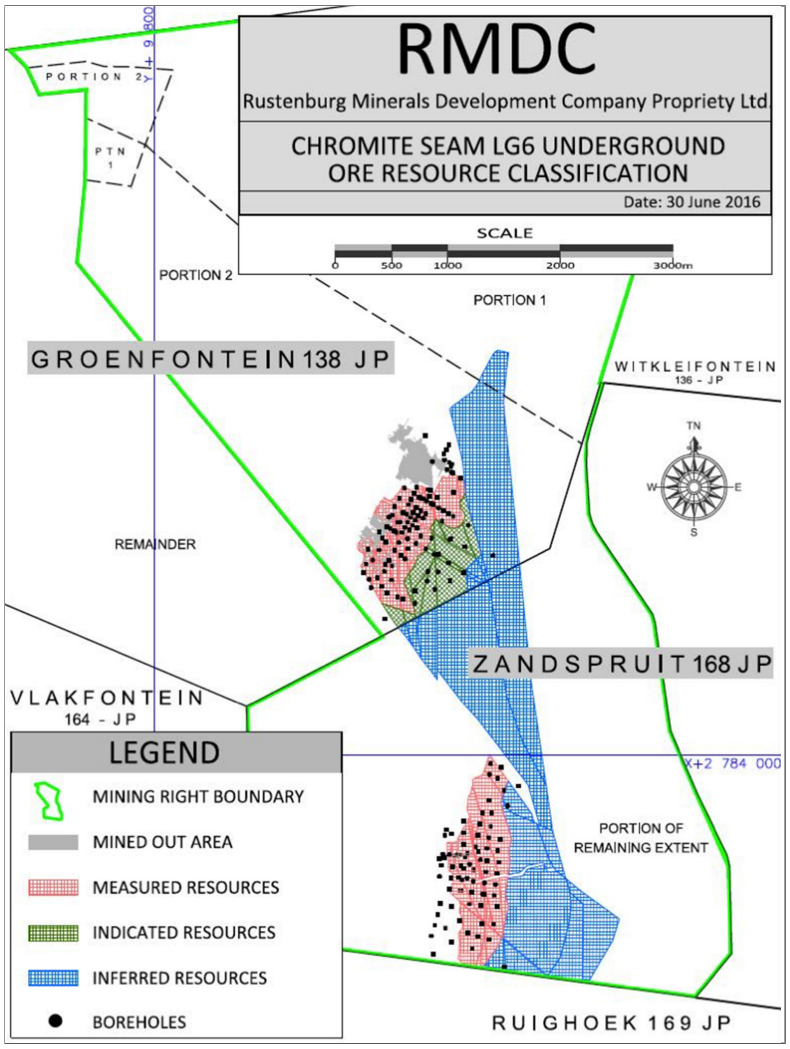
Totals are rounded off.

Key assumptions for Resources:
- *True thickness of LG6: 80 cm*
- *Default density: 4 t/m³*
- *LG6 in situ grade: 44% Cr_2O_3*

Modifying factors for the conversion of Underground Mineral Resources to Reserves include (prior to care and maintenance):
- *Geological loss: ~10%*
- *Mining loss factor: 10%*
- *Mining extraction factor: ~75%*

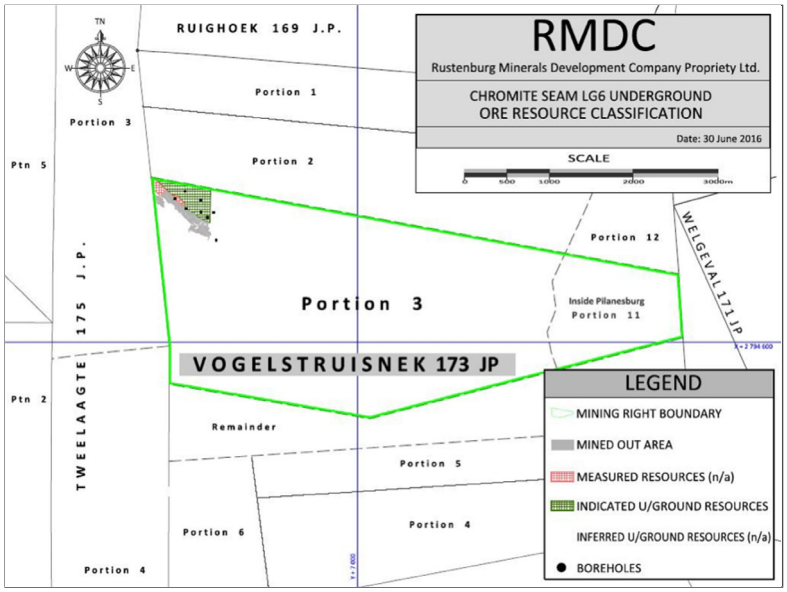
Modifying factors for the conversion of open-cast Mineral Resources to Reserves include (prior to care and maintenance):
- *Geological loss: ~10%*
- *Mining loss factor: 5%*

Zandspruit and Groenfontein Underground Resources



Source: RMDC Microstation base plans

Vogelstruisnek Opencast and Underground Resources



Source: RMDC Microstation base plans

Mineral Resources and Reserves report continued
ASSORE SUBSIDIARY COMPANIES continued
Assore – Chromite mines continued

Zeerust Chrome Mines Limited (ZCM)

Zeerust year-on-year change

The Mineral Resources remain unchanged as the mine had been on care and maintenance since the previous financial year (2014/2015). The Mineral Reserves still have a nil tonne value while mining remains uneconomic here.

Zeerust: Mineral Resources and Reserves

	Mineral Resources			Mineral Reserves	
	Measured	Indicated	Inferred	Proved	Probable
Assore (AMT) attributable interest: 100%	(Mt)	(Mt)	(Mt)	(Mt)	(Mt)
LG1 and LG2 open-cast to 18 m high wall	0,3	0,0	0,0	0,0	0,0
LG1, LG2 and LG3 open-cast to 25 m high wall	0,0	0,2	1,7	0,0	0,0
LG1 and LG2 from 25 m to 80 m below surface	0,0	0,9	4,9	0,0	0,0
ZCM total 2016	**0,3**	**1,1**	**6,6**	**0,0**	**0,0**
ZCM total 2015	0,3	1,1	6,6	0,0	0,0
Summary total 2016	**1,4**			**0,0**	
Summary total 2015	1,4			0,0	

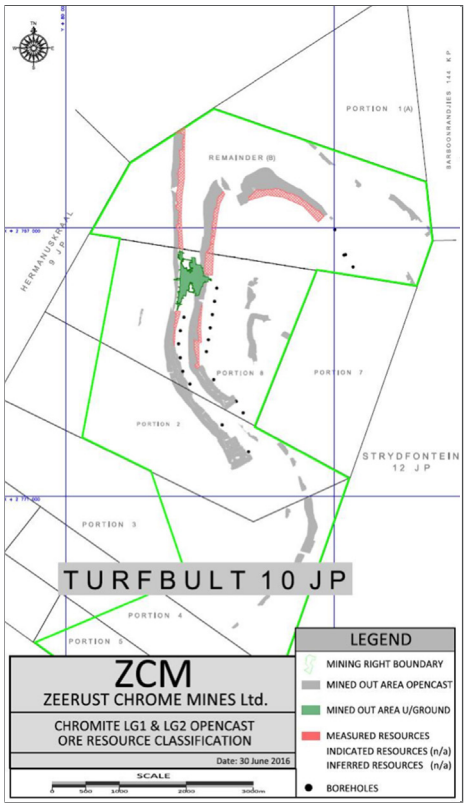
Mineral Resources are inclusive of Mineral Reserves (prior to care and maintenance).

Totals are rounded off.

Key assumptions for Resources:
- *Average thickness of LG1 and LG2: 27 cm*
- *Default density: 3,5 t/m^3*
- *LG1 in situ grade: 46% Cr_2O_3*
- *LG2 in situ grade: 45% Cr_2O_3*
- *LG3 in situ grade: 46% Cr_2O_3*

Modifying factors for the conversion of Mineral Resources to Reserves include (prior to care and maintenance):
- *Geological loss: ~10%*
- *Mining loss factor: 5%*

ZCM Open-cast Measured Resources



Note: The Indicated and Inferred Resources are not shown at this scale to avoid confusion. The detail can be seen at the Assore office.

Source: WS Microstation base plans