

## Chairman's review



**Desmond Sacco** Chairman

**"The undoubted success for this year has been the group achieving record sales volumes of iron ore at a time when iron ore prices have been at their strongest."**

I am pleased to report that headline earnings for the financial year to 30 June 2012 have increased by 15,2% as compared with the previous year to an all-time record of R3,7 billion, due mainly to the significant increase in the earnings of Assmang Limited (Assmang). The increase in Assmang's earnings was primarily due to higher sales volumes of iron ore and a weaker average rand/US dollar exchange rate across the year.

This year has been characterised by significant uncertainty in world financial markets. Sovereign debt issues, particularly in Europe and to a lesser extent in the United States, have persisted. Despite this, world steel production, which is the primary driver for the markets for the group's products, has remained remarkably strong. Global production of steel in calendar 2011 was at a record level of just over 1,5 billion tons, with this level of production being maintained for the first half of 2012. However, signs of a long overdue cutback in Chinese production have become evident, together with significant slowdowns in other major steel producing regions. Despite the strong steel production, prices for the group's products were generally weaker in US dollar terms than in 2011, as supply caught up with demand and negative economic sentiment became prevalent. These price reductions were partly compensated

for by the weaker rand/US dollar exchange rate, particularly in the second half of the year when US dollar prices were generally lower than in the first half.

### The year under review

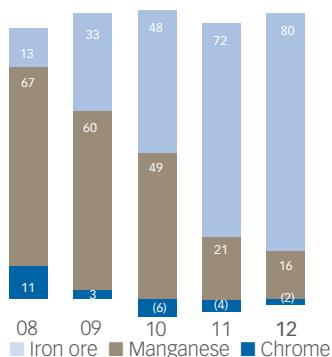
The undoubted success for this year has been the group achieving record sales volumes of iron ore at a time when iron ore prices have been at their strongest. These sales volumes were 47% higher than the previous year, at nearly 14,8 million tons between the two iron ore mines, and were largely attributable to Assmang's Khumani Expansion Project (KEP) being brought in on time and within budget. Khumani Iron Ore Mine now has the capacity to produce 14 million tons of iron ore per year for the export market, in line with Assmang's rail allocation.

The group's prime focus remains its 50% shareholding in Assmang and the commissions and other income derived from marketing the group's products and providing technical and management services to group companies. The impact of the increased sales volumes of iron ore, together with the similar rand prices for the group's products and the mix of sales volumes for the remainder of the group's commodities, is shown in the bar chart on the next page, which indicates the contribution to the group's headline earnings over the past five years by commodity and the group's relative exposure to these markets. The change in the mix of the contribution by the respective commodities over the past two years is mainly due to the increased volumes and high prices of iron ore. Prices for iron ore have since declined, which will result in a more balanced contribution, particularly from manganese.

## Chairman's review continued

### Percentage of headline earnings

(%)



### Capital expenditure

The bulk of the capital expenditure occurs in Assmang, in which the group has a 50% interest and amounted to R4,5 billion (2011: R4,1 billion) for the year under review. R3 billion was spent at the Khumani Iron Ore Mine, which included R1,3 billion on the Khumani Expansion Project, and R1,2 billion on mine development, largely on waste-stripping.

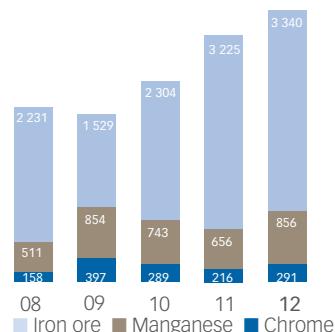
Assmang's manganese ore mines spent R450 million, most of which was on replacement capital items and additional mobile mining equipment. Transnet's growth strategy includes a target of increasing manganese ore export capacity to 12 million tons per annum for all manganese producers on the rail corridor from the Northern Cape to a new manganese terminal at Coega port near Port Elizabeth, which is due to be completed by 2017/18. R86 million was spent during the year on feasibility studies to enable the mines to sustainably produce four million tons per annum, and thereafter to expand to five million tons per annum, which includes a replacement shaft at the Gloria Mine and expenditure to address increased tramming distances. In total, it is estimated that this project may cost in the region of R5,6 billion. However, the decision on the expansion will depend on the availability of adequate rail capacity and on the market.

The conversion of two ferrochrome furnaces to ferromanganese furnaces at Machadodorp Works continues and it is expected that the furnaces will be commissioned in the third calendar quarter of 2012. The total cost to complete the conversion and associated upgrade of the infrastructure is estimated at R600 million.

Assmang has spent approximately R17,6 billion in capital over the past five years, and capital expenditure is summarised by division for the past five years as follows:

### Assmang's capital expenditure

(R million)



### Black economic empowerment

During the year, the group restructured its HDSA control and ownership, and is pleased to be in the position in which all of its BEE shareholding, as required by the Mining Charter, is broad-based, resulting in benefits flowing to the communities in the areas in which our mines operate. It provided the group with a further opportunity to implement a scheme for our non-managerial staff to participate in the company's dividends and capital appreciation through the Assore Employee Trust (refer "Black economic empowerment status report", pages 64 to 67).

## Dividends

As mentioned, the group's earnings for the year were at record levels, and the board increased the interim dividend to 250 cents (2011: 200 cents) per share, and increased the final dividend to 300 cents (2011: 250 cents) per share. The total dividend for the year therefore amounts to 550 cents (2011: 450 cents) per share, an increase of 22%, part of which was in recognition of the introduction of dividends tax.

## Outlook

Further to the results announcement in August, European sovereign debt issues are still prevalent in the global markets in which the group operates and are negatively impacting steel production in Europe, and to a lesser extent in the United States. Lower demand in China more recently has placed additional pressure on prices of the group's products in that region. In addition, significant global and local political events are due to take place before the end of the calendar year, the uncertainty of which is impacting global economic growth negatively and is creating further downward pressure on prices for the group's products.

The group is mindful of recent cost increases for labour in South Africa, and is closely monitoring developments in this respect. Continued above-inflation increases in electricity costs have, in part, also necessitated realignment of alloy production.

These factors, together with volatility in exchange rates, make it difficult to comment with any confidence on the performance of the group in the short and longer term.

## Directors

Following his indicated intention to resign from the board in September 2011, Dr Johannes van der Horst resigned with effect from 31 December 2011. We are grateful for the invaluable contribution he made over the combined 17 years that he served on the Assore board.

On 1 November 2011, Ms Zodwa Manaze resigned from the board, due to a potential conflict of interest, while on 3 May 2012, Mr Don Ncube resigned as a director.

After the year-end, Mr Phil Crous indicated his intention to resign from the board with effect from 31 August 2012. Phil served on the board as Group Technical and Operations Director for 19 years, during which he made a significant contribution to the group. Headline earnings rose from R38,5 million to R3,7 billion over this time.

On 1 September 2012, Mr Alastair Stalker was appointed to the board as Group Marketing Director, and Mr Tiaan van Aswegen was appointed as Group Technical and Operations Director. Both Alastair and Tiaan were previously appointed as alternate directors, and have served the group for 18 and nine years respectively in various senior positions. The board welcomes them both, and looks forward to their contributions in the future.

We welcome Mr Sydey Mhlarhi to the board who has agreed to join the board with effect from 15 October 2012 as an independent non-executive director and as a member of the Audit and Risk Committee. Sydney, who is a chartered accountant, is a founder and director of Tamela Holdings Proprietary Limited, and has extensive banking and financial experience.

## Appreciation

The achievement of record profits for the year has been made possible by the significant contribution by management and members of staff, in very challenging market conditions. I am grateful for the efforts of all within the group who have contributed to these results, as well as for the continued support received from our partners, customers, suppliers, shareholders and bankers.

**Desmond Sacco**

Chairman

19 October 2012

## Board of directors

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### Executive directors

#### Desmond Sacco

Chairman

*BSc (Hons) (Geology)*

Des qualified as a geologist and joined the Assore group in 1968. He was appointed to the Assore board in 1974 and, on retirement of his father in 1992, was appointed Chairman and Managing Director. In that year, he was also appointed Deputy Chairman of Assmang Limited and in 1999, he became Chairman of Assmang. He is a fellow of the Institute of Directors (IOD) and of the Geological Society of South Africa (GSSA).

#### Christopher J Cory

Chief Executive Officer

*BA, CA(SA), MBA (Wits)*

Chris completed articles with Alex. Aiken & Carter (now KPMG) and qualified as a chartered accountant in 1982. In 1989, he joined the Assore group as Group Accountant. In 1992, he was appointed Group Financial Director and made Chief Executive Officer in June 2004 when the roles of Chairman and Managing Director were split. He was appointed to the Assmang board as a non-executive director in 1993 and currently chairs the Assmang Audit Committee. He is a member of the South African Institute of Chartered Accountants (SAICA).

#### Alastair D Stalker

Group Marketing Director

*BSc Hons (Geology) (Aberdeen), GDE*

Alastair, after working as an exploration geologist, and later in strategic planning and marketing for various companies, joined Ore & Metal Company Limited in 1994 and was appointed as Managing Director in 2011. He was appointed as a director of Assmang in 2011 and has been on the board of The International Manganese Institute (IMnI) for many years and was Chairman from 2007 to 2010 and is a Fellow of the Geological Society of South Africa. He was appointed as Group Marketing Director in September 2012.

#### Bastiaan H van Aswegen

Group Technical and Operations Director

*BEng (Metallurgy), BCom, MEng*

Tiaan obtained a BEng (Metallurgical) degree from the University of Pretoria (UP) in 1982 and later obtained BCom (Unisa) and MEng (UP) degrees. After working for Iscor and Samancor in production and on projects, he was appointed by Samancor as General Manager of the Palmiet Ferrochrome Operation (Mogale) in 1999. He joined Assore in 2003 as Consulting Metallurgist and is a member of the Assmang Operations Committee. In September 2012 he was appointed Group Technical and Operations Director of Assore and a director of Assmang.

#### Philip C Crouse

Group Technical and Operations Director

*BSc (Eng), BCom, MBA*

Phil obtained a BSC (Eng) degree at Pretoria University in 1975. He joined Iscor, and in 1977 took up a position with Assmang, advancing to Mine Manager. In 1982, he joined Sasol as General Mine Manager and was promoted to Operations Manager at Secunda Collieries. In 1988 he joined manufacturing company Sandock-Austral as Managing Director. He joined Assore in 1991 in his current position as Group Technical Director and was appointed to the Assmang board in 1992. Following his indication to take early retirement, Phil resigned from the board and from the group on 31 August 2012.

### Non-executive directors

#### Edward M Southee

Deputy Chairman and lead independent non-executive director

*BA, LLB*

Ed was admitted as an attorney, notary and conveyancer in 1967 and practised as a partner of Webber Wentzel until his retirement as senior partner of that firm in 2006. He remains an executive consultant to the firm. He is a former president of the Law Society of the Northern Provinces and of the Law Society of South Africa. He is a director of a number of companies. He joined the Assore board as a non-executive director in January 2009, and was appointed as Deputy Chairman and lead independent director in November 2010. He is the chairman of the group's Audit and Risk, and Remuneration committees.

#### Sydney Mhlarhi

Independent non-executive director

*CA(SA)*

Sydney qualified as a chartered accountant in 1998 following the completion of his articles at Ernst & Young in 1997. He co-founded Tamela Holdings Proprietary Limited (Tamela) in 2008, which holds investments in various industries. Sydney has held various senior positions in the investment banking sector, including those of divisional director at Standard Bank and chief investment officer of Makalani Holdings Limited, a mezzanine financier which listed on the JSE in 2005. Sydney was appointed to the board on 15 October 2012 and serves on the group's Audit and Risk Committee.

#### William F Urmon

Independent non-executive director

*CA(SA)*

Bill was appointed as an independent non-executive director of Assore in October 2010 and serves on the group's Audit and Risk and Remuneration committees, and chairs the group's Social and Ethics Committee. He is a former Deputy Chairman of Ernst & Young and has served the accounting profession as Chairman of the Accounting Practices and Ethics committees of the South African Institute of Chartered Accountants. He is a former Director: Surveillance of the JSE and remains as a part-time consultant to the exchange with responsibility for internal audit.

### Alternate director

#### Patrick E Sacco

Deputy managing director, Ore & Metal

*BA (Industrial Psychology), MA (Marketing)*

Pat joined the Assore group in 2003 after completing a masters' degree at the University of Colorado (USA). He was appointed a director of Ore & Metal, the selling and marketing agent for all the group's products, in 2007, and is currently its Deputy Managing Director. Pat was appointed as a director of Assmang in 2008, and is on the board of Oresteel Investments Proprietary Limited, the ultimate holding company of Assore. With effect from 1 July 2007, he was appointed as alternate to Mr Desmond Sacco on the Assore board. He is also an alternate director to Alastair Stalker of the IMnI.

#### Robert J Carpenter

Non-executive director

*BA, ACIS*

Bob joined the Ore & Metal Company Limited in 1964 and was appointed as its Managing Director in 1991. Ore & Metal is a wholly owned subsidiary of the Assore group and acts as selling and shipping agent for products produced by all the Assmang and Assore group companies. He was appointed to the Assore board in 1987 and to the Assmang board in 1989. He served as Deputy Chairman of Assore from 1993 until November 2010, when he stood down in this capacity, in anticipation of his retirement as executive director on 28 February 2011, on which date he accepted an appointment as a non-executive director.



**Desmond Sacco**

Chairman

**Christopher J Cory**

Chief Executive Officer

**Alastair D Stalker**

Group Marketing Director



**Bastiaan H van Aswegen**

Group Technical and Operations  
Director

**Philip C Crouse**

Group Technical and Operations  
Director (until 31 August 2012)



**Edward M Southey**

Deputy Chairman and lead  
independent non-executive director

**Sydney Mhlarhi**

Independent non-executive  
director

**William F Urmsom**

Independent non-executive  
director



**Robert J Carpenter**

Non-executive director

**Patrick E Sacco**

Alternate

## Mineral Resources and Reserves

### Assmang (jointly held)

	Measured and Indicated			Proved and Probable		
	Mineral Resources		Mt	Fe %	Mineral Reserves	
	Mt	Fe %			Mt	Fe %
<b>Iron ore mines</b>						
<b>BEESHOEK</b>			117,45	63,73	54,00	64,05
Dumps					12,50	55,44
<b>KHUMANI</b>						
Bruce			227,79	64,53	168,73	64,15
King			481,18	64,13	344,13	64,61
Dumps					1,76	56,22

	Measured and Indicated			Proved and Probable				
	Mineral Resources		Mt	Mn %	Fe %	Mineral Reserves		
	Mt	Mn %				Mt	Mn %	Fe %
<b>Manganese ore mines</b>								
<b>NCHWANING</b>								
Seam 1	142,38	43,9	9,0			110,34	43,9	9,0
Seam 2	180,80	42,4	15,5					
<b>GLORIA</b>								
Seam 1	126,79	37,6	4,7			93,82	37,6	4,7
Seam 2	29,40	29,9	10,1					
<b>BLACK ROCK</b>								
Seam 1	43,60	40,6	18,1					
Seam 2	26,81	38,6	19,8					

	Measured and Indicated			Proved and Probable		
	Mineral Resources		Mt	Cr <sub>2</sub> O <sub>3</sub> %	Mineral Reserves	
	Mt	Cr <sub>2</sub> O <sub>3</sub> %			Mt	Cr <sub>2</sub> O <sub>3</sub> %
<b>Chromite mine</b>						
<b>DWARSRIVIER</b>						
	55,03	38,11			39,15	34,01

### Subsidiary companies

	Mineral Resources				Mineral Reserves		
	Measured	Indicated	Inferred	Total	Proved	Probable	Total
	Mt	Mt	Mt	Resource	Mt	Mt	Reserve
<b>Chromite mines</b>							
<b>RUSTENBURG MINERALS</b>	3,5	1,9	7,0	12,4	2,2	1,1	3,3
<b>ZEERUST CHROME</b>	1,8	1,5	8,8	12,1	2,2	0,3	2,5
<b>Pyrophyllite mine</b>							
<b>WONDERSTONE</b>	4,8	0,0	104,8	109,6	4,6		4,6



Blast drilling at Khumani Iron Ore Mine

## Mineral Resources and Reserves continued

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### Salient features for the year ended 30 June 2012

#### Beeshoek

A total of 12,50 million tons on the contaminated ore dumps has been included in the Mine's Reserve inventory.

#### Khumani

Significant increase in King Measured and Indicated Resources from 376,46 to 481,18 million tons after drilling additional boreholes and remodelling.

#### Nchwaning

Mineral Reserves increased by 4% to 110,34 million tons due to the increase in the mining cut from 3,5 to 4,5 metres for Nchwaning 3.

#### Gloria

The drilling of 27 new boreholes and remodelling of Seam 1 resulted in an increase of 37% in Mineral Reserves to 93,82 million tons.

#### Dwarsrivier

17% increase in Mineral Reserves to 39,15 million tons due to inclusion of 47 new boreholes in the Mineral Resources and Reserves update.

### 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.

### General statement

Assmang's method of reporting Mineral Resources and Mineral Reserves conforms to the South African Code for Reporting Mineral Resources and Mineral Reserves (SAMREC Code) and the Australian Institute of Mining and Metallurgy Joint Ore Reserves Committee Code (JORC 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 2012. External consulting firms audit the resources and reserves of the Assmang operations on a three-to four-year cycle basis.

Underground resources are in-situ tonnages at the postulated mining width, after deductions for geological losses. Underground Mineral Reserves reflect milled tonnages while surface Mineral Reserves (dumps) are in-situ tonnages without dilution. 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 utilising the Datamine software package.

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 and the dynamic search volume to inform a block. The spacing of boreholes as well as the geological structures are also considered in the classification.

The Mineral Resources and Mineral Reserves are reported on a total basis regardless of the attributable beneficial interest that Assmang has on the individual projects or mines. When the attributable beneficial interests on a mine or project are 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.

In order to satisfy the requirements of the Minerals and Petroleum Resources Development Act, Assmang's operations will have to obtain new mining rights for all properties required to support the planned operations over the next 30 years. The Act was effective from 1 May 2004 and the new rights must be obtained within five years from then. Certain operations have already had their conversions approved while some are still in various stages of application.

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

### Definitions

The definitions of Mineral Resources and Reserves, quoted from the SAMREC Code, 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.

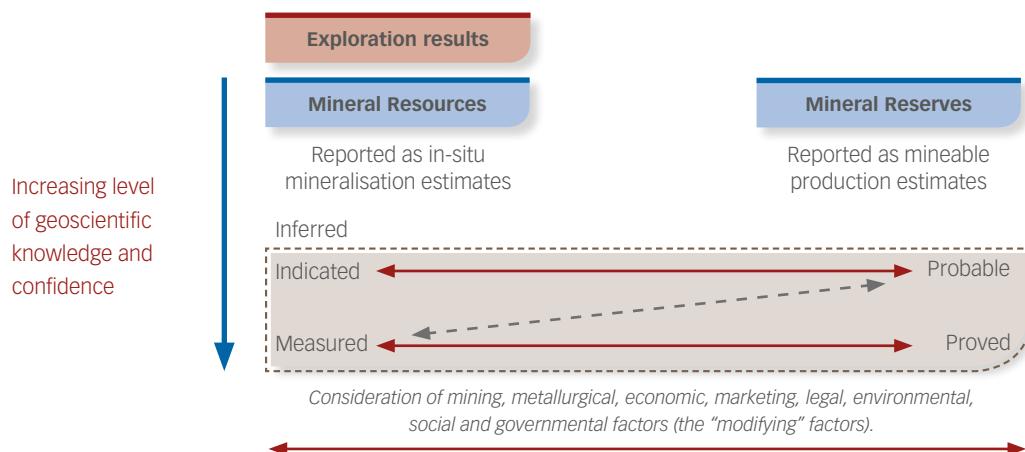
A "Mineral Reserve" is the economically mineable material derived from a Measured or Indicated Mineral Resource or both. It includes diluting and contaminating materials and allows for losses that are expected to occur when the material is mined. Appropriate assessments to a minimum of a pre-feasibility 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





Waste loading operations at Khumani Iron Ore Mine



## Mineral Resources and Reserves continued

### Iron ore mines

#### Locality

The iron ore division is made up of the Beeshoek Mine located on the farms Beeshoek 448 and Olyfontein 475, and the Khumani Mine situated on the farms Bruce 544, King 561 and Mokaneng 560. All properties are in the Northern Cape approximately 200 kilometres west of Kimberley. The Beeshoek open-pit operations are situated seven kilometres west of Postmasburg and the Khumani open pits are adjacent to, and south-east of, the Sishen Mine, which is operated by Kumba Resources. 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 ore 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 and production increased to seven million tons over the years. The Khumani Iron Ore Mine was commissioned in 2007 and in 2012 produced nearly 12 million tons with expansion plans to 16 million tons per annum.

#### Mining authorisation

The Beeshoek mining lease (ML3/93) comprises an area of 5 686 hectares and is located on the farms Beeshoek (448) and Olyfontein (475). The converted mining right was executed on 16 March 2012. Registration of the right is in process.

The Khumani mining right comprises an area of 7 388 hectares and is located on the farms Bruce (544), King (561) and Mokaneng (560). The mining right was executed on 25 January 2007 and was registered on 5 March 2007.

#### Geology

The iron ore deposits are contained 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 haematite 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 haematite bodies. The boundaries of high-grade haematite orebodies crosscut primary sedimentary bedding, indicating that secondary haematisation 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 and is lenticular and not persistently 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 haematite ore pebbles and granules and form the main orebodies. 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 that in the southern Beeshoek area. The result is that Khumani is 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 extensions occur into the basins due to karst development. A prominent north-south strike of the ore is visible. The southern Beeshoek orebodies were exposed to more erosion and 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 orebodies is also in a north-south direction, but less continuous.

Haematite 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 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 chemical is 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 were applied to these resources and financially optimised. The financial outline is used to define the optimal pit by means of the Lersch-Grossman algorithm. The resources within this mining constraint are defined as reserves. These are categorised into different product types, destined for the different plant processes and scheduled for planning.

The methodology followed to identify targets is initiated with geological mapping, followed by geophysics (ground magnetics and gravity). Percussion drilling is used to pilot holes through overlying waste rock down to the iron orebodies. Diamond drilling is the next phase, which is usually on a 200 x 200 metre grid. Further infill 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. Numerous exploration programmes have been

completed in the last 40 years. A total of 2 832 holes (1 315 holes on Khumani and 1 517 holes on Beeshoek) have been drilled. Core samples are logged and split by means of a diamond saw and the half-core is sampled every 0,5 metres. Before submission for assaying, the half-cores are crushed, split and pulverised. Samples with values larger than 60 per cent are included in the definition of the orebodies. Any lower-grade samples inside the orebody 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 within Datamine is used to estimate the grade of each 10 x 10 x 10 metre block generated within the geological model. Density in the resource model is calculated using a fourth degree polynomial fit applied to the estimated Fe grade. Densities range from 4,38 t/m<sup>3</sup> (60 percent Fe) to 5,01 t/m<sup>3</sup> (68 percent Fe). A default density of 3,2 t/m<sup>3</sup> is used for waste.

At the iron ore mines all blast holes are sampled per metre, but composited per hole. All holes are analysed for density and blast holes in ore are sampled and analysed for Fe, potassium oxide (K<sub>2</sub>O), sodium oxide (Na<sub>2</sub>O), silica (SiO<sub>2</sub>), aluminium oxide (Al<sub>2</sub>O<sub>3</sub>), phosphorus (P), sulphur (S), CaO, MgO, Mn and barium oxide (BaO). Every fifth blast hole is geologically logged per metre, which is used to update the geological model. The chemical results of these holes are used to update the ore block model. The major 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 calibration of the XRF spectrometer. The Khumani laboratory participates in a round robin group that includes 11 laboratories for verification of assay results.

## Beeshoek Iron Ore Mine: Resources and Reserves

Pit/Area	Total Resources															
	Measured Resources		Indicated Resources		Inferred Resources		Measured and Indicated Reserves		Proved Reserves		Probable Reserves		Total Reserves			
	Mt	Fe %	Mt	Fe %	Mt	Fe %	Mt	Fe %	Mt	Fe %	Mt	Fe %	Mt	Fe %	Mt	Fe %
BN	22,44	63,30					22,44	63,30	12,79	63,53			12,79	63,53		
HF/HB	16,00	64,10					16,00	64,10	6,87	64,27			6,87	64,27		
BF	8,45	63,51	0,23	63,54	0,001	65,24	8,68	63,51	1,02	61,59			1,02	61,59		
East Pit	8,91	64,63	0,04	64,23			8,95	64,63	6,16	64,43	0,01	63,64	6,17	64,43		
Village	42,71	63,72	2,98	63,57	0,002	63,71	45,69	63,71	27,15	64,24			27,15	64,24		
GF	3,13	63,81	0,09	61,80			3,22	63,75								
HH Ext	0,28	62,63					0,28	62,63								
HL	2,69	64,93	0,05	65,03			2,74	64,93								
West Pit	9,45	63,19			0,050	61,88	9,45	63,19								
Detrital*					2,500	60,00										
<b>Total 2012</b>	<b>114,06</b>	<b>63,73</b>	<b>3,39</b>	<b>63,55</b>	<b>2,553</b>	<b>60,04</b>	<b>117,45</b>	<b>63,73</b>	<b>53,99</b>	<b>64,05</b>	<b>0,01</b>	<b>63,64</b>	<b>54,00</b>	<b>64,05</b>		
Total 2011	115,58	63,76	3,39	63,55	2,553	60,04	118,97	63,75	55,12	64,04	0,01	63,64	55,13	64,04		

Mineral Resources are inclusive of Mineral Reserves.

Totals are rounded off.

Modifying factors: Economic pit design, customer product specifications.

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

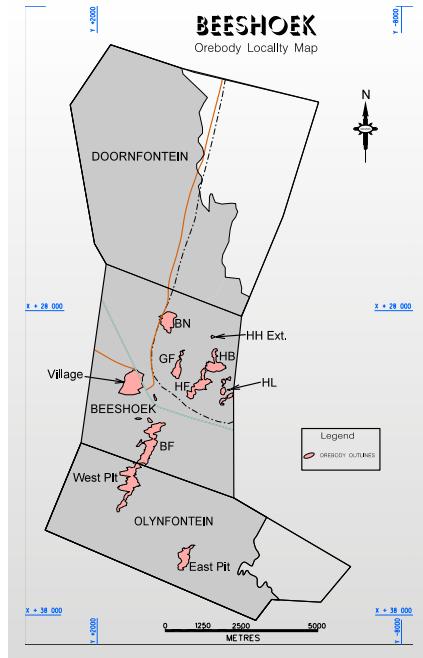
## Mineral Resources and Reserves continued

### Beeshoek ROM Dumps

Area	Proved		Probable		Total	
	Reserves		Reserves		Reserves	
	Mt	Fe %	Mt	Fe %	Mt	Fe %
North Mine (B Dump)	–	–	0,60	60,00	0,60	60,00
North Mine (C Dump)	–	–	2,10	55,00	2,10	55,00
South Mine (B Dump)	–	–	0,50	60,00	0,50	60,00
South Mine (C Dump)	–	–	9,30	55,00	9,30	55,00
<b>*Total 2012 Dumps</b>	<b>–</b>	<b>–</b>	<b>12,50</b>	<b>55,44</b>	<b>12,50</b>	<b>55,44</b>

Totals are rounded off.

\*Dumps are beneficiated to produce a saleable product.



### Beeshoek year-on-year change

Measured and Indicated resources for Beeshoek Mine decreased to 117,45 from 118,97 million tons, mainly due to mining depletion. Mineral Reserves also decreased from 55,13 to 54,00 million tons. A total of 12,50 million tons at 55,44% Fe of contaminated ore dumps have been declared as Probable Reserves. Beneficiation of these dumps results in a saleable product. A feasibility study for Village pit is still in progress.

### Khumani Iron Ore Mine: Resources and Reserves

Pit/Area	Total Resources													
	Measured		Indicated		Inferred		Measured		Proved		Probable		Total	
	Resources	Mt	Resources	Mt	Resources	Mt	and Indicated	Mt	Fe %	Reserves	Mt	Fe %	Reserves	Mt
Bruce A	79,79	64,63	36,72	64,36	0,07	64,11	116,51	64,54	64,83	64,36	26,95	63,76	91,78	64,18
Bruce B	74,73	64,50	20,60	63,90	7,79	64,95	95,33	64,37	59,08	64,17	9,38	63,15	68,46	64,03
Bruce C	11,35	65,40	4,60	65,54	0,30	62,88	15,95	65,44	7,66	64,78	0,83	64,95	8,49	64,80
King/Mokaning	311,03	64,40	170,15	63,65	11,70	62,18	481,18	64,13	202,93	64,72	141,20	64,44	344,13	64,61
Detrital*					4,00	60,00								
<b>Total 2012</b>	<b>476,90</b>	<b>64,48</b>	<b>232,07</b>	<b>63,82</b>	<b>23,86</b>	<b>62,73</b>	<b>708,97</b>	<b>64,26</b>	<b>334,50</b>	<b>64,55</b>	<b>178,36</b>	<b>64,27</b>	<b>512,86</b>	<b>64,46</b>
Total 2011	414,14	64,53	189,29	64,40	9,42	61,80	603,43	64,49	387,63	64,60	157,73	64,41	545,36	64,54

Mineral Resources are inclusive of Mineral Reserves.

Totals are rounded off.

Modifying factors: Economic pit design, customer product specifications.

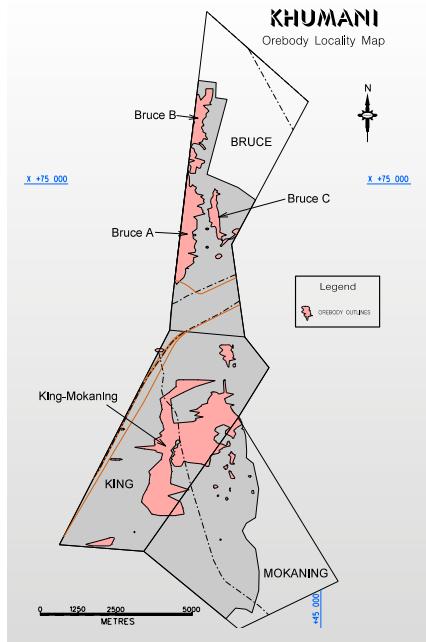
\*Detrital is loose fragmented material occurring in various areas at Khumani.

## Khumani ROM Dumps

Area	Proved Reserves		Probable Reserves		Total Reserves	
	Mt	Fe %	Mt	Fe %	Mt	Fe %
Bruce (Off-grade)	–	–	1,33	55,00	1,33	55,00
King (Detrital)	–	–	0,43	60,00	0,43	60,00
<b>*Total 2012 Dumps</b>	<b>–</b>	<b>–</b>	<b>1,76</b>	<b>56,22</b>	<b>1,76</b>	<b>56,22</b>

Totals are rounded off.

\*Dumps are beneficiated to produce a saleable product.



## Khumani year-on-year change

At Khumani Mine Measured and Indicated resources significantly increased from 603,43 to 708,97 million tons mainly due to remodelling of King which incorporated new borehole information. Conversion of these Mineral Resources to Reserves is in process. Total reserves decreased to 512,86 from 545,36 million tons in 2011 due to mining depletion. A total of 1,76 million tons of contaminated ore dumps at 56,22% Fe have been reported as Probable Reserves.

## Historical production at Beeshoek and Khumani Mines

### (saleable product)

Financial year	Beeshoek	Khumani
	Mt	Mt
2007/2008	5,30	2,00
2008/2009	2,66	6,65
2009/2010	0,52	8,77
2010/2011	0,96	8,73
<b>2011/2012</b>	<b>2,10</b>	<b>11,60</b>



Underground crusher load-out facility at Black Rock Manganese Mine



## Mineral Resources and Reserves continued

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### 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 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 the largest and richest manganese deposit in the world. Manganese ore operations were extended and today include the Gloria and Nchwaning underground mines. Manganese ore is supplied locally to Assmang-owned smelters, but is mainly exported through Port Elizabeth as well as Durban and Richards Bay.

#### Mining authorisation

The Nchwaning mining lease (ML10/76) comprises an area of 1 986 hectares and is located on the farms Nchwaning (267), Santoy (230) and Belgravia (264). The Gloria mining lease (ML11/83) comprises an area of 1 713 hectares and is located on portion 1 of the farm Gloria (266). The new mining right was executed on 13 July 2011. Registration of the 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 to date. The hydrothermal upgrading has resulted in a zoning of the orebody with regard to fault positions. Distal areas exhibit more original and low-grade kutnohorite + braunite assemblages, while areas immediately adjacent to faults exhibit a very high-grade hausmannite ore. The intermediate areas exhibit a very complex mineralogy, which includes bixbyite, braunite and jacobsite amongst a host of other manganese-bearing minerals. A similar type of zoning 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 centre 3,5 to 4,5 metre-high portion of the seam is being mined. At the Gloria Mine the intensity of faulting is much less, which also explains the lower grade.

Two manganese seams are present. The No 1 seam is up to 6 metres in thickness, 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 on Gloria Seam 2.

#### Nchwaning Mineral Resources and Reserves

Mineral Resource classification at Nchwaning Mine is based on consideration of a number of parameters: kriging

variance, kriging efficiency, regression slope, geological structures and quality of assay data. Each of these parameters contributes to the overall classification depending on weighting assigned to each of the parameters. Measured and Indicated Resources have been defined for Nchwaning. Geological losses are built into the grade models.

The 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 were used to calibrate XRF equipment, and results are compared with other laboratories on a regular basis.

At Nchwaning a total of 316 boreholes and 22 648 underground sample sections were considered in the grade estimation for Nchwaning Seam 1. The data was optimised over a thickness of 4,5 metres (Nchwaning 3) and 3,5 metres for the rest of Nchwaning, and exported into data files for computerised statistical and geostatistical manipulation to determine the grades of Mn, Fe, silica ( $\text{SiO}_2$ ), calcium (CaO) and magnesium (MgO).

Ordinary kriging interpolation within Datamine was used to estimate the grade of each 50 x 50 x (3,5/4,5) metre block generated within the geological model.

Sub-cell splitting of the 50 x 50 metre blocks was allowed to follow the geological boundaries accurately. The relative density of Nchwaning manganese ore was taken as 4,3 t/m<sup>3</sup>.

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 can be found 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 forwarded to 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 demand.

### Nchwaning year-on-year change

Mineral Reserves for Nchwaning lower seam (Seam 1) increased by 4% to 110,34 million tons mainly due to an increase in the optimised evaluation cut from 3,5 to 4,5 metres for Nchwaning 3. The Mineral Resources for Seam 1 increased from 126,69 to 142,38 million tons. Nchwaning Seam 2 Mineral Resources remained at 180,8 million tons.

#### Nchwaning Mine: Seam 1 Manganese Resources and Reserves

	Mineral Resources			Mineral Reserves			
	Mt	Mn %	Fe %	Mt	Mn %	Fe %	
Measured	42,89	45,8	9,4	Proved	33,24	45,8	9,4
Indicated	99,49	43,1	8,8	Probable	77,10	43,1	8,8
<b>Total Resources (Seam 1) 2012</b>	<b>142,38</b>	<b>43,9</b>	<b>9,0</b>	<b>Total Reserves (Seam 1) 2012</b>	<b>110,34</b>	<b>43,9</b>	<b>9,0</b>
Total Resources (Seam 1) 2011	126,69	44,9	8,6	Total Reserves (Seam 1) 2011	106,28	44,9	8,6

Mineral Resources are inclusive of Mineral Reserves.

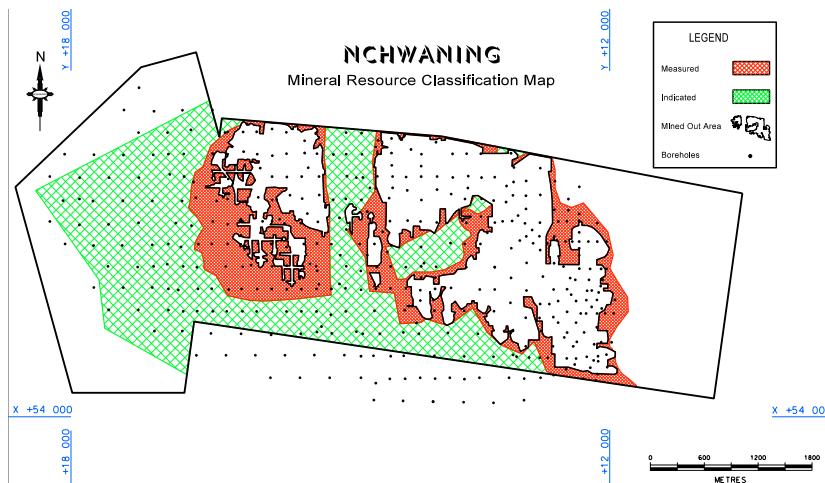
Totals are rounded off.

Modifying factors: pillar losses.

#### Nchwaning Mine: Seam 2 Manganese Resources

Mineral Resources	Mt	Mn %	Fe %
Measured	53,37	42,0	16,3
Indicated	127,43	42,6	15,2
<b>Total Resources (Seam 2) 2012</b>	<b>180,80</b>	<b>42,4</b>	<b>15,5</b>
Total Resources (Seam 2) 2011	180,80	42,4	15,5

Totals are rounded off.



## Mineral Resources and Reserves continued

### 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 infill boreholes. A 38% manganese cut-off was used in the modelling. Seam 1 and 2 were modelled at variable thicknesses.

#### Black Rock: Seam 1 Manganese Resources

Mineral Resources	Mt	Mn %	Fe %
Measured	9,03	40,3	18,1
Indicated	34,57	40,7	18,1
<b>Total Resources (Seam 1) 2012</b>	<b>43,60</b>	<b>40,6</b>	<b>18,1</b>
Total Resources (Seam 1) 2011	43,60	40,6	18,1

Totals are rounded off.

#### Black Rock: Seam 2 Manganese Resources

Mineral Resources	Mt	Mn %	Fe %
Measured	8,23	37,4	19,8
Indicated	18,58	39,2	19,8
<b>Total Resources (Seam 2) 2012</b>	<b>26,81</b>	<b>38,6</b>	<b>19,8</b>
Total Resources (Seam 2) 2011	26,81	38,6	19,8

Totals are rounded off.

### Gloria Mineral Resources and Reserves

Procedures for drilling and assaying at Gloria Mine are the same as at Nchwaning. A total of 165 boreholes and 6 480 underground samples were considered in the evaluation of the Gloria Seam 1. The underground sampling values were used in evaluating areas close to current mining. The boreholes were optimised over an evaluation width of 3,5 metres and the relative density was taken as 3,8 t/m<sup>3</sup>. The seams were evaluated by means of statistical and geostatistical methods to determine the grades of Mn, Fe, SiO<sub>2</sub>, CaO and MgO. Ordinary kriging interpolation within

Datamine was used to estimate the grade of each 50 x 50 x 3,5 metre block generated within the geological model. Sub-cell splitting of the 50 x 50 metre blocks was allowed to follow the geological boundaries. Mineral resource classification techniques are the same as for Nchwaning.

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 in a similar way as at Nchwaning.

### Gloria year-on-year change

Remodelling of Gloria Seam 1 after drilling of 27 new boreholes resulted in a 7,8% increase in Measured Mineral Resources to 33,92 million tons and a 52,8% increase in Indicated Mineral Resources to 92,87 million tons. Inferred Resources decreased from 84,00 to 48,49 million tons due to upgrade to Indicated Mineral Resources. Mineral Reserves increased from 68,25 to 93,82 million tons. The Mineral Resources for Gloria Seam 2 remained the same. No markets exist for Gloria Seam 2 ore at this time.

### Gloria Mine: Seam 1 Manganese Resources and Reserves

	Mineral Resources			Mineral Reserves			
	Mt	Mn %	Fe %	Mt	Mn %	Fe %	
Measured	33,92	37,7	4,9	Proved	25,10	37,7	4,9
Indicated	92,87	37,6	4,6	Probable	68,72	37,6	4,6
<b>Total Resources (Seam 1) 2012</b>	<b>126,79</b>	<b>37,6</b>	<b>4,7</b>	<b>Total Reserves (Seam 1) 2012</b>	<b>93,82</b>	<b>37,6</b>	<b>4,7</b>
Total Resources (Seam 1) 2011	92,23	37,8	4,9	Total Reserves (Seam 1) 2011	68,25	37,8	4,9
Inferred 2012	48,49	36,7	5,0				

Mineral Resources are inclusive of Mineral Reserves.

Totals are rounded off.

Modifying factors: pillar losses.

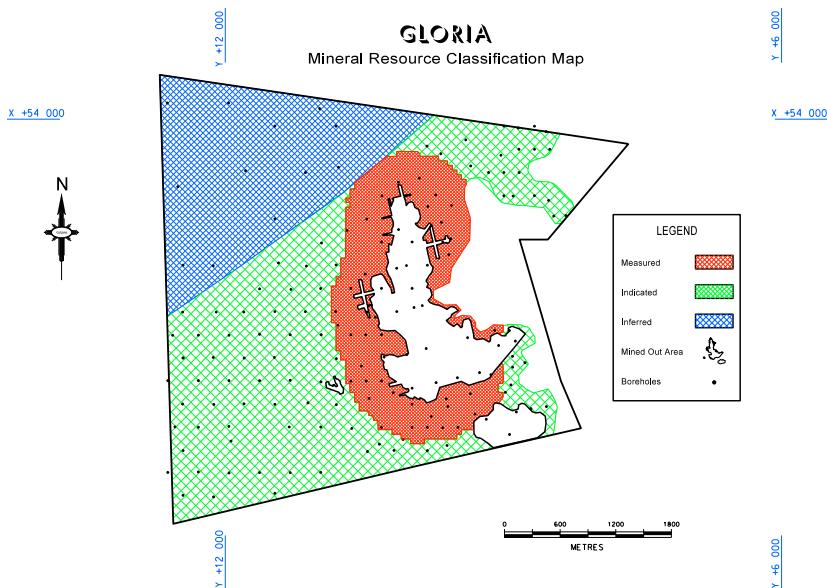
### Gloria Mine: Seam 2 Manganese Resources

Mineral Resources	Mt	Mn %	Fe %
Measured	—	—	—
Indicated	29,40	29,9	10,1
<b>Total Resources (Seam 2) 2012</b>	<b>29,40</b>	<b>29,9</b>	<b>10,1</b>
Total Resources (Seam 2) 2011	29,40	29,9	10,1
Inferred 2012	128,24		

Totals are rounded off.

### Historical manganese production at Nchwaning and Gloria Mines (saleable product)

Year	Nchwaning	Gloria
	Mt	Mt
2007/2008	2,71	0,41
2008/2009	2,63	0,51
2009/2010	1,30	0,67
2010/2011	2,35	0,70
<b>2011/2012</b>	<b>2,46</b>	<b>0,84</b>





Shaft reef and waste surface bins at Groenfontein shaft at Rustenburg Minerals



## Mineral Resources and Reserves continued

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### Chromite mine

#### Locality

Chromite operations at Dwarsrivier Mine form part of the Chrome division of Assmang Limited. The mine is situated on the farm Dwarsrivier 372KT, approximately 30 kilometres from Steelpoort and 60 kilometres from Lydenburg, in Mpumalanga province in 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 is specifically geared to deliver high quality metallurgical grade chromite to the Machadodorp smelter. In addition, the plant has been designed to produce chemical grade products for export.

#### Mining authorisation

An old order Mining Licence 21/99 was granted in October 1999. An application for the conversion to a new order mining right submitted in October 2007 is still pending.

#### 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 eight 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 is the orebody 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 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 northeast-southwest. No significant grade variation is evident, especially not vertically in the ore seam in the Dwarsrivier resource.

#### Mineral Resources and Reserves

Mineral Resources were estimated from boreholes on 150 to 3 000 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, except where information is needed to clarify large-scale fault planes. The Mineral Resources at Dwarsrivier Mine are based on a total of 284 diamond boreholes, inclusive of 47 new boreholes, that have been used for grade estimation and orebody modelling purposes. The drill core is NQ size and is geologically and geotechnically logged. The collar position of the drill holes is 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. 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 in the core sheds. 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 ( $\text{Cr}_2\text{O}_3$ ),  $\text{SiO}_2$ , FeO,  $\text{Al}_2\text{O}_3$ , 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  $\text{Cr}_2\text{O}_3$ , FeO,  $\text{Al}_2\text{O}_3$ , MnO and MgO contents of the LG6 seam and densities were determined, using block sizes of 50 x 50 x 4 metres.

During mining, a slightly diluted run of mine 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 percent  $\text{Cr}_2\text{O}_3$ , with a yield of 80 percent. In the spiral section of the plant the finer fraction is upgraded to 44 percent  $\text{Cr}_2\text{O}_3$ , and 46 percent  $\text{Cr}_2\text{O}_3$  respectively, for metallurgical grade fines and chemical grade fines. A 67 percent yield is achieved in the spiral circuit.

### Dwarsrivier Chrome Mine: Chrome Resources and Reserves

	Mineral Resources			Mineral Reserves			
	Mt	$\text{Cr}_2\text{O}_3$ %	FeO %	Mt	$\text{Cr}_2\text{O}_3$ %	FeO %	
Measured	20,43	38,45	22,62	Proved	12,99	33,79	21,15
Indicated	34,60	37,91	22,50	Probable	26,16	34,12	21,33
<b>Total Measured and Indicated 2012</b>	<b>55,03</b>	<b>38,11</b>	<b>22,54</b>	<b>Total Reserves 2012</b>	<b>39,15</b>	<b>34,01</b>	<b>21,27</b>
Total Measured and Indicated 2011	48,77	39,05	23,03	Total reserves 2011	33,44	35,69	22,03
Inferred	48,17	38,35	22,96				

Mineral Resources are inclusive of Mineral Reserves.

Totals are rounded off.

Modifying factors: pillar losses and mining losses.

### Year-on-year change

Significant increases have been reported in Measured and Indicated Resources mainly due to the new borehole data which increased resource confidence. An increase from 17,25 million tons at 39,20%  $\text{Cr}_2\text{O}_3$  to 20,43 million tons at 38,45%  $\text{Cr}_2\text{O}_3$  was realised for Measured Resources while Indicated Resources increased from 31,52 million tons at 38,97%  $\text{Cr}_2\text{O}_3$  to 34,60 million tons at 37,91%  $\text{Cr}_2\text{O}_3$ . Mineral Reserves increased to 39,15 million tons at 34,01%  $\text{Cr}_2\text{O}_3$  from 33,44 million tons at 35,69%  $\text{Cr}_2\text{O}_3$ .

### Historical production at Dwarsrivier Chrome Mine (ROM)

Financial year	Mt
2007/2008	1,24
2008/2009	1,03
2009/2010	0,78
2010/2011	1,25
<b>2011/2012</b>	<b>1,50</b>

### Competence

The competent person with overall responsibility for the compilation of the Mineral Reserves and Resources report is

Paul van der Merwe, PrSciNat, an ARM employee. He consents to the inclusion in this report of the matters based on this information in the form and context in which it appears.

Paul van der Merwe graduated with a BSc (Hons) in Geology from Free State University. He spent four years as an exploration geologist for FOSKOR. He then joined the Uranium Resource Evaluation Group of the then Atomic Energy Corporation of South Africa for 12 years. While employed there he studied

## Mineral Resources and Reserves continued

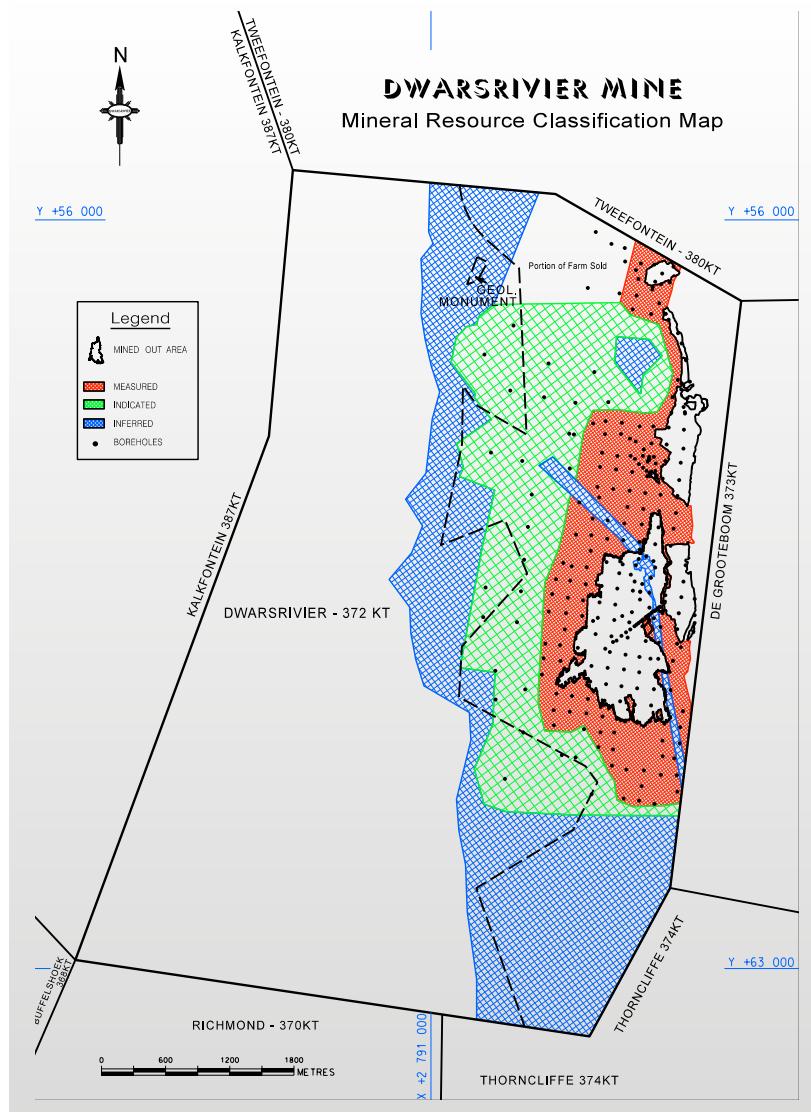
geostatistics and spent some time at the University of Montreal, Canada. In 1991 he joined Anglovaal Mining (now ARM) in the Geostatistics Department and evaluated numerous mineral deposit types for this group in Africa. In 2001, he was appointed as Mineral Resources Manager for the group. He is registered with the South African Council for Natural Scientific Professions as a Professional Natural Scientist in the field of practice of Geological Science, Registration Number 400498/83, 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, <i>PrSciNat</i>	Iron
S v Niekerk, <i>PrSciNat</i>	Iron
B Ruzive, <i>PrSciNat</i>	Manganese
A Pretorius*, <i>PrSciNat</i>	Chrome
S Kadzviti, <i>PrSciNat</i>	Chrome/Manganese

\*External consultant.



PJ van der Merwe  
24 Impala Road, Chislehurston, Sandton  
16 October 2012



Ore feed to conveyor plant at Black Rock Manganese Mine



Stacker/reclaimer facilities in the final product yard at Khumani Iron Ore Mine



**The Assore board (the board) is of the opinion that strong corporate governance and risk management not only enhance sustainability of an organisation, but are essential to preserving organisational reputation, investor confidence, access to capital, when required, and sustainable employee motivation.**

The group subscribes in all its activities to principles of best practice in business management and corporate governance for South African companies, as set out in the King III Report, and which it implements in accordance with the following framework:

- Installing a risk and control environment within its business entities where management, in conjunction with the necessary support from the Audit and Risk Committee, is responsible for identifying, quantifying and managing risks related to the achievement of the organisation's objectives on a sustainable basis. The process of quantification takes into account qualitative aspects in addition to their potential financial impact;
- Creating a process which provides the board, through the Audit and Risk Committee, with assurance over the adequacy of internal control within the organisation, ie that the risk and control environment in place is appropriate for

the business concerned and is operated in a manner to provide the board with reasonable assurance that appropriate safeguarding of the group's assets is achieved; and

- Establishing a formalised review process to identify the effectiveness of both the risk management environment and the assurance processes. This is generally the role of the internal audit function and other independent technical assurance specialists used on a consultancy basis.

The company's shares are listed on the JSE, which requires all listed companies to comply with the Code of Corporate Practices as set out in the King Report on Corporate Governance (King III).

Management reviews business practice across the group on an ongoing basis and has determined that the group is substantially compliant with all the material requirements of King III. Where it is not practical for the group to adopt these requirements, relevant comment is provided and reference is made in this report to the alternative procedures which the board has adopted in each instance.

### **Board of directors**

The directors are committed to the principles of corporate discipline, transparency, independence, accountability, responsibility, fairness and social responsibility.

### **Composition**

The Assore board has a unitary structure, comprising eight directors, four of whom are executive and four non-executive.

Of the four non-executive directors, Mr Bobby Carpenter was appointed to the board in a non-executive capacity, following his retirement as executive director and deputy chairman in February 2011 after 47 years of service with the group. The other three non-executive directors are independent and hold directorships in other listed and unlisted companies registered in South Africa.

The board evaluates annually the independence of the independent non-executive directors, who are appointed in terms of three-year contracts. In addition to this process, the executive directors review the degree of independence of the independent non-executive directors at each renewal date of their contracts, while the Chief Executive Officer (CEO) also conducts regular discussions with the non-executive directors concerned regarding their continuing independence. As recommended in terms of King III, non-executive directors are not permitted to serve for periods longer than nine years in the aggregate and non-executive directors do not receive any benefits from the company other than their fees for services as directors.

### **Remuneration**

The approach to the remuneration of executive directors is described on page 25 of this report, while details of emoluments paid to directors and directors' interests in shares of the company are disclosed in the "Directors' report" (refer pages 94 and 95 respectively). None of the executive directors has signed a service agreement with the company which specifies either a

paid notice period or an additional compensation obligation on the group in the event of termination. Bonuses are determined based on the results and performance of the group for the year and are reviewed and approved by the Remuneration Committee (refer below). The impact on earnings per share for the year of the bonuses paid to executive directors of Assore was 36 cents (2011: 23 cents), amounting to 0,94% (2011: 0,84%) of earnings per share. Remuneration of directors depends on the size and complexity of operations and level of professional input required by the business environment concerned and has due regard to the calibre of the person required for the position. The level of remuneration is benchmarked against remuneration paid to executives of other listed companies in the resources sector, making use of independent remuneration consultants when considered necessary.

Fees for non-executive directors are reviewed on a regular basis, and are adjusted where necessary taking into account amounts paid to non-executive directors of companies with similar complexity profiles in the South African mining sector, and the degree of skill, time and experience required to discharge their duties. The payment of fees to non-executive directors is not dependent on attendance at meetings.

The board acknowledges the requirements of King III for shareholders to pass a non-binding advisory vote on the company's remuneration policy annually. Directors' fees are approved by means of special resolution as required by section

66(8) of the Companies Act 2008 (the Companies Act). Details of these procedures and relevant information are set out in the notice to members, which was sent to shareholders registered at the record date, as at 29 October 2012 by separate registered mail.

### **Election and succession**

In accordance with the company's Memorandum of Incorporation, all directors are subject to retirement by rotation and re-election by shareholders at least once every three years. In addition, all directors are subject to re-election by shareholders at the first Annual General Meeting following their initial appointment. A brief *curriculum vitae* of each director is set out on pages 30 and 31. The appointment to the board and the assessment of continued eligibility on the board of directors are made by the executive directors with the oversight of the non-executive directors and in consultation with the board as a whole. Therefore a formal policy appointing board members and a Nomination Committee are unnecessary. This process is deemed most appropriate to the group's circumstances as described above and to the industry in which it operates, and therefore it is not group policy to ensure that a third of the non-executive directors rotate annually as required by King III.

Appointments to the board in an executive directorship capacity are based on the nominees holding the appropriate professional qualifications and having had substantial exposure to business as a whole, and in particular in the mining industry, in senior managerial roles and/or

related professional practice, which includes the necessary exposure to applicable laws, rules, codes and standards. In the event that a director does not possess the necessary knowledge, the group provides the necessary formal and on-the-job training as required. Incoming non-executive directors are fully appraised of the group's activities and relevant issues. Assore believes that these requirements and processes obviate the necessity for a formalised orientation and mentorship programme for its directors.

Each executive director is understudied by appropriately qualified and experienced alternate directors or senior staff, ensuring sufficient depth in areas that are critical to the continuation of the group's business activities. Therefore, taking the managerial structure and the current make-up of the board into account, a detailed succession plan is not warranted. The CEO assumes ultimate responsibility for all executive issues, and ensures that issues raised within the group's various committees and sub-committees (certain of which are set out on pages 14 and 15 of this report and throughout) are addressed by the responsible staff, and further, that these are elevated to the appropriate level when it is apparent that more senior management involvement is necessary. Based on the submission by the Audit and Risk Committee, dispensation was granted by the JSE for the roles of CEO and Financial Director to be combined on condition that the appropriateness of the situation is reviewed and confirmed by the Audit and Risk Committee on an annual basis.

### Meetings

The board meets at least four times per annum on predetermined dates, with meetings convened on an ad hoc basis when considered necessary. The board met four times in the year under review and attendance at these meetings is tabled below:

	Possible attendance	Attended
Desmond Sacco	4	4
EM Southey	4	4
CJ Cory	4	4
PC Crous	4	4
RJ Carpenter	4	4
DJ Ncube*	3	3
WF Urmsom	4	4
Dr JC van der Horst#	2	2

\* Resigned on 3 May 2011.

# Resigned on 31 December 2011.

business experience at a senior level. The composition of the board as described above has an equal number of executive and non-executive directors, and ensures regular formal and informal interaction to ensure appropriate application of authority in the decision-making process. Since a key aspect of the group's activities includes marketing and distribution, its reputation and relationships with its customers, together with all other stakeholders, is assessed in all of the board's actions and not in isolation. The chairman is appointed by the controlling shareholder in Assore and in order to compensate for the resulting lack of formal appraisal of his performance, further insight into the group's activities is provided to the chairman at regularly convened Excom meetings, which are attended by the executive directors and other senior members of management. The skill set required of directors by the group is determined by the executive. Attendance by external advisers at meetings of the board and its various committees is arranged when considered necessary.

### Board and committee performance evaluation

Ongoing evaluation of the board and its various committees does not occur on a formal basis. However, on the back of the involvement of the controlling shareholder, and due to the size of the business, regular interaction occurs between all levels of management to ensure that the various bodies in the Assore group act within their terms of reference. As stated under "Remuneration" (refer above), executive directors are not appointed in terms of contracts, and their services may be terminated in accordance with legal requirements without financial obligations to the group. Documented terms of reference for the board are not required, since all of the directors have substantial

### Group boards

The subsidiary and joint-venture companies of the group have properly constituted boards, whose directors operate independently in respect of the affairs of these companies. The board of the holding company respects the fiduciary duties of the directors of these companies, and policies and procedures adopted by these companies are considered by the respective boards prior to their adoption, necessary alteration or rejection.

## Audit and Risk Committee

	Qualifications	Years of service on the committee
EM Southey (Chair)	BA LLB	3
S Mhlarhi*	CA(SA)	—
WF Urmsom	CA(SA)	2
Dr JC van der Horst#	BA LLD	9

\* Appointed on 15 October 2012.

# Resigned on 31 December 2011.

The chairman of the committee reports to the board on its activities at each board meeting. Representatives of the internal and external auditors are also invited to attend all meetings of the committee and, if necessary, have direct access to the chairman of the committee throughout the year. The CEO and Group Accountant, and representatives of the company secretaries attend all meetings by invitation. Internal and external auditors meet with members of the committee at least once annually without members of management being present in order to discuss and evaluate the quality of their relationship and level of cooperation which they were afforded during the conduct of their activities in the year under review. The committee recommended the acceptance of the integrated annual report 2012 to the board on 19 October 2012.

The terms of reference of the Audit and Risk Committee are documented, have been approved by the board, and are reviewed on an annual basis to ensure they remain appropriate to the activities of the group. The prime objectives of the committee that emanate from its terms of reference, which were applied during the year under review, are to:

- provide a forum for the management of the external and internal audit functions and the resolution of issues which arise from all external and internal audit activities;
- make recommendations to the shareholders regarding the appointment of the external auditors;
- review the activities, services and performance of the external auditors, evaluating their independence and reviewing their overall role and appropriateness of fees charged;
- review and approve the annual financial statements, interim reports and related disclosures and other significant announcements made by the group, making the necessary recommendations to the board;
- consider the appropriateness of the group's accounting policies;
- monitor and supervise the effective functioning of the internal audit function (refer "Internal audit and internal control"), to ensure that the roles of both internal and external audit are clear to provide an objective overview of the operational effectiveness of the group's systems of internal control and reporting;
- monitor the risk profile as determined by management, and make recommendations on the composition and classification of the risk profile for the group (refer "Risk management" below);
- obtain representations from management, and make the necessary enquiries from external and internal audit and of management, on any matters under litigation, ensure compliance with material aspects of legislation and create awareness of pending changes to legislation (refer "Legal compliance"); and
- monitor the ethical tone of the group through its executives and senior staff (refer "Ethics").

All of the members of the committee, including the chairman (who will make himself available to take questions at the Annual General Meeting), are independent non-executive directors, who collectively possess the appropriate level of knowledge and professional experience pertaining to legislative requirements, financial risks, financial and sustainability reporting and internal controls, applicable to the group. The committee meets at least three times per annum on predetermined

## Corporate governance and risk management report continued

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dates, with ad hoc meetings convened where necessary, and holds ongoing informal meetings to keep abreast of business developments. During the year under review, the committee met on three occasions with attendance as detailed below:

	Possible attendance	Attended
EM Southey	3	3
WF Urmson	3	3
Dr JC van der Horst	1	1

Internal audit has adopted its terms of reference from the board, and all internal audit work is undertaken based on the ongoing risk assessment process which is presented annually by internal audit to the Audit and Risk Committee, to ensure that the focus of the internal audit effort is optimised (refer "Risk management" and "Internal audit and internal control" below). The internal audit function of Assore is outsourced, and the responsible senior executive on the engagement has direct access to the chairman of the committee and meets with external audit independently in order to exchange views on issues pertaining to internal audit and evaluation of internal controls, as well as issues that may have a bearing on the external audit process and objectives. Internal audit certifies to the board and committee on an annual basis that the internal controls and financial controls respectively have not revealed any significant breakdown in internal controls or any issues that require their attention. The committee, having due regard to materiality and the inherent nature of the business, is satisfied that the internal controls were effective, and operated as designed for the period under review. In addition, the committee, having reviewed

the reports of internal and external audit tabled at the meetings of the committee, and having conducted enquiries of the attendees at its meetings, is not aware of any weaknesses in internal controls that have given rise or may give rise to material financial losses, fraud or material errors during the year under review.

The committee does not consider a formal audit review of the interim results necessary, as the interim results of Assmang, which comprise the majority of the group's results, are reviewed and reported on by the external auditors prior to the publication of the group's interim results. The committee, after due enquiry with external and internal audit, has satisfied itself on the appropriateness of the expertise and adequacy of the finance function and experience of the senior members of management responsible for the financial function to render this process unnecessary.

legislation, other legal requirements or prevailing codes of best practice with regard to matters relating to:

- social and economic development;
- good corporate citizenship;
- the environment, health and public safety, including the impact of the group's activities and of its products or services;
- consumer relationships, including the group's advertising, public relations and compliance with consumer protection laws; and
- labour and employment.

### Company secretary

The company has appointed a wholly owned subsidiary, African Mining and Trust Company Limited, as company secretary. The board and senior staff, who are all appropriately qualified, ensure that all applicable provisions of the Companies Act and other regulatory aspects are applied in the affairs and management of the group.

### Remuneration Committee

EM Southey (Chair)

Desmond Sacco

WF Urmson

Social and Ethics Committee	
	Qualifications
WF Urmson (Chair)	CA(SA)
RA Davies	CA(SA)
CL Reichardt	BSc (Hons), MSc

Section 72(4) of the Companies Act requires that, *inter alia*, listed companies establish a Social and Ethics Committee (SEC) and the SEC was appointed on 17 October 2012. The functions of the required SEC in terms of the Companies Act have, until its formation and appointment of its membership, been adequately performed by the Audit and Risk Committee. The SEC reports to the board, and the key aspects of its terms of reference include the monitoring of the group's activities relating to any relevant

This committee is chaired by the lead independent director and consists of a majority of independent non-executive directors. Desmond Sacco is appointed as a member of this committee, based on his interest in the company, which the board believes adds to the overall appropriateness of the decisions and policies of the committee. Its terms of reference have been approved by the board and are reviewed annually by the board. Since salaries and bonuses are reviewed on an annual basis, the committee meets formally at least once a year, in addition to ad hoc meetings that

may be necessary from time to time. The Chief Executive Officer (CEO) attends meetings of the committee by invitation but is not entitled to vote.

Recommendations on the broad framework and cost of executive remuneration are made annually to the committee for approval. To do so, the committee is required to determine:

- the group's general policy on executive remuneration;
- specific remuneration packages for executive directors;
- where necessary, criteria to assess the required performance of executive directors; and
- the necessity to take independent professional advice where necessary.

The remuneration of non-executive directors is determined by the Assore executive, using, *inter alia*, industry benchmarks, and the remuneration for the year is determined at the Annual General Meeting (AGM) in the previous year.

Remuneration of other employees in the group is determined annually by the executive directors in conjunction with the human resources department and departmental heads, and where necessary, benchmarks remuneration levels with the industry using independent advisers. Due to the sensitivity of remuneration levels, the remuneration of individuals who are not directors is not individually disclosed; however, the total cost of the remuneration of senior employees is disclosed (on page 137), and directors' remuneration for the current and previous financial year is disclosed on page 94.

### **Insider trading and closed periods**

The group operates a closed period prior to the publication of its interim and final results. During these periods directors, officers and designated persons who may have access to price-sensitive information are precluded from dealing in the shares of the company. The closed period extends from the first day of the month following the end of a financial reporting period and expires on the day on which the interim or final results are published. Where appropriate, dealing is also restricted during sensitive periods where major transactions are being negotiated and a public announcement is imminent. All employees are required to obtain the written approval of the CEO prior to dealing in the company's shares at any time during the year.

### **Risk management**

The board has delegated the assessment and management of the group's risk profile to the Audit and Risk Committee, which advises the board of unresolved risk management issues. Risk is an inherent feature of business in general, and in the mining industry it is characterised specifically by the remoteness of location of the operations, the physical danger inherent in the day-to-day activities of mining and smelting operations and the volume and complexity of legislative requirements, in particular with regard to environmental management with which this industry has to comply. These risks are compounded by the volatility of exchange rates and commodity prices applicable to the resources sector.

Group risk management is therefore critical to the sustainability of the group and is achieved through the identification and

control of all significant business risks by various risk management committees, including operational risks, which could adversely affect the achievements of the group's business objectives. Risk assessments are ongoing, and risk registers for all significant operations in the joint-venture entity, Assmang, are prepared and updated quarterly by a dedicated risk management department, with assistance from specialised external consultants.

For larger business entities, independent risk engineering consultants grade each operation against international risk standards for fire, security, engineering, commercial crime, contingency planning and mining, as well as environmental risk to monitor whether current practices meet the set criteria and are being maintained. Input is obtained from various risk management committees comprising representatives from senior management. On completion and review of these processes, insurance cover is acquired where significant uncontrollable exposures remain.

In addition to these processes, other risks deemed relevant to the Assore group are presented to the Audit and Risk Committee, which is given the opportunity to comment and provide input on the assessments which are tabled. The assets of subsidiary companies in the Assore group are included in a comprehensive insurance programme, with an independent valuation of fixed assets occurring every three years.

The board is aware of the inherent risks contained in establishing the size and remaining life of the ore reserves exploited by the group in its current and intended

mining operations. All orebodies and mineral reserves are measured and updated annually in accordance with the methodologies described in the "Mineral Resources and Reserves report", and mining is planned to ensure that optimal utilisation of the mineral resource is effected, taking into account market conditions and customer specifications.

The most prominent financial risks to which the group is exposed, namely fluctuations in exchange rates and international commodity prices in the ferrous metals sector (usually US dollar denominated), are to a large extent outside the board's direct control and can only be indirectly controlled by timely response to market fluctuations and setting of appropriate business strategies. Refer note 26 to the consolidated financial statements for more detail on financial risks.

The respective risk management committees are also responsible for ensuring that appropriate financial and insurance mechanisms are integrated into the risk plan and that the group is protected against catastrophic risk, including failure of information technology systems. Therefore, the group risk management process includes an ongoing review of compliance with relevant legislation and standards in the following areas (refer "Sustainability report"):

- environmental rehabilitation management;
- health and safety management;
- human resource management; and
- quality of products and management systems.

The board believes that the risk management processes described above are effective in managing the risks to which the group is exposed, and that they are sufficiently flexible to meet the changing needs of the operations and the group's stakeholders. Further, due to the relatively low staff complement of Assore, employees are informed of the risks relevant to their particular activities within the business, and risk assessments performed indicate that these business risks are managed effectively and mitigated wherever possible.

Details of the risks to which the group is exposed is included on pages 16 and 17 of this report.

### Information technology

The management of information technology (IT) falls within the remit of the CEO who convenes regular meetings with responsible IT staff to address the appropriateness and relevance of the IT infrastructure, information security, the design and maintenance of disaster recovery procedures and related staffing and administrative issues, and engages necessary external advice and consultation when required. Documented terms of reference for IT and information security management systems are not considered necessary at this stage, given the degree of involvement by the CEO and senior management on an ongoing basis in these issues. In addition, the IT systems are subjected to a detailed annual external audit, which is reported on to the CEO for attention and action where necessary. The

group is currently in the process of adopting an enterprise-wide resource planning system (ERP), which will be used as a partial departure point to develop a charter for IT in the near future. Where appropriate, other members of senior management also attend these meetings to provide the necessary input. External audit conducts an annual review of the application by management of the controls pertaining to the group's hardware and software, related physical and access controls, and licensing. Where major IT projects are undertaken, eg the ERP referred to above, a steering committee is formed, which ensures that the various aspects and deliverables of the project are scheduled and achieved. Matters of relevance to the business are communicated by the CEO to the Excom or the board where appropriate. Disaster recovery is catered for by means of daily back-ups of electronic information and media, which are physically housed in a building separate from where the IT hardware is located.

### Legal compliance

The board has delegated the responsibility for oversight of legal compliance to the Audit and Risk, and Social and Ethics committees. Suitably qualified consultants have been appointed to ensure that legal compliance is maintained in the areas in which the group operates. Therefore, the CEO has not appointed an individual person responsible for the management of compliance. Since the group's main activity is the marketing and distribution of the products of the joint venture, Assmang, a

competition law compliance programme is in place. The Audit and Risk Committee ensures matters material to the group receive the appropriate attention, and that adequate provision and appropriate disclosure are made for known and determinable exposures. Legal issues specific to the Assore group are also discussed at Audit and Risk Committee meetings, where management is provided with additional guidance where necessary.

Safety, health and environmental (SHE) legal compliance audits are conducted on an ongoing basis for all operations. In addition, high-level compliance reviews are conducted every second year for Assore's subsidiary operations and reports submitted to the Audit and Risk Committee. In future, these reports will be issued to the Social and Ethics Committee.

The size of the group, as well as the experience of the executive directors and senior management, affords it the opportunity to resolve all disputes, whether of a legal or non-legal nature, based on their respective characteristics. External legal counsel is consulted when considered necessary to ensure the appropriateness of the resolution methods adopted.

### **Internal audit and internal control**

The board, through its appointed Audit and Risk Committee, is accountable for ensuring the implementation of appropriate internal controls, which are reviewed regularly for efficiency and effectiveness, taking into account the risk

profile of the group (refer pages 16 and 17). These controls are designed to manage the risk of failure, and provide reasonable assurance that there is an adequate system of internal control in place. As with all management systems, the assurance provided is not absolute and the risk of failure cannot be eliminated entirely. The internal audit functions at the various operations in the group have been outsourced to the respective special services divisions of recognised professional auditing firms. Internal auditors monitor the operation of the internal control systems and governance processes and, after discussion with management, report findings and recommendations to the Audit and Risk Committee. Corrective action is taken to address control deficiencies as and when they are identified. Since material issues of compliance are amongst standard items on the agenda of the Excom, and minutes of these meetings are made available to internal audit, the group does not extend an invitation to the head of internal audit to attend Excom meetings; however, access to the chairman of the Audit and Risk Committee is available throughout the year. Nothing has come to the attention of the Audit and Risk Committee or board to indicate that any material breakdown in the effective functioning of controls, procedures and systems has occurred during the year under review.

Representatives of the internal audit team are invited to attend Audit and Risk Committee meetings and, where areas of new risk are identified, eg initiation of

capital projects or new systems of internal control or IT systems implementation, separate independent investigations take place on an ad hoc basis in addition to the programmed reviews referred to above.

### **Ethics**

Ethical issues are managed by way of executive involvement in day-to-day management processes of the group and senior management who interact with staff at all levels to ensure that high ethical standards commensurate with board expectations are maintained. Issues not addressed by management are addressed by way of oversight by the Social and Ethics Committee (SEC, refer above). Due to the size of the group, the establishment of a documented code of ethics and conduct is not considered necessary. The group has various channels to facilitate effective whistle-blowing procedures. The board believes that management is sufficiently experienced to ensure that the requirements of the group in respect of laws, rules, codes and standards do not expose the group to material risks in this respect. In addition, senior management is closely involved with external legal counsel in unfamiliar and complex areas.

**Assore strongly endorses the broad-based economic imperatives contained in the Minerals and Petroleum Resources Development Act (the MPRD Act) and the Broad-based Socio-economic Empowerment Charter for the South African Mining Industry issued thereunder (the Mining Charter), and since their inception has embarked on a number of initiatives aimed at meeting these requirements at its mining operations, as set out below.**

The MPRD Act has changed the previous common law and statutory position in South Africa in terms of which mineral rights could be held privately. Instead, pursuant to the MPRD Act and with effect from 1 May 2004, the state has assumed sovereignty and custodianship of all mineral rights in South Africa and will grant prospecting rights and mining rights to applicants based on the merits of their applications (which are designated as new order rights). A transitional period commencing in May 2004 and ending in May 2014 is provided for, during which holders of existing mineral and exploration rights (designated as old order rights),

upon meeting certain requirements, may convert such existing in-use old-order rights into new-order rights, or in the case of unused rights may apply for new order rights.

The Mining Charter is intended to facilitate the entry of historically disadvantaged South Africans (HDSAs) into the mining industry. The scorecard which the state has issued pursuant to the Mining Charter requires, *inter alia*, that mining companies achieve 26% HDSA ownership of mining assets within 10 years (ie by 1 May 2014). This has been maintained by the Department of Mineral Resources (DMR), following a review of the Mining Charter in September 2010, as the target required to be achieved by mining companies. The Mining Charter also requires, *inter alia*, that mining companies provide plans for achieving employment equity at management level and procuring goods and services from black empowered organisations on a preferential basis in accordance with the predetermined criteria set out in such plans. Since 2004, with a view to meeting the Charter's requirements, Assore, through its various group companies, has achieved the following empowerment milestones:

- Concluded an empowerment transaction with Mampa Investment Holdings (being the commercial arm of the Mankwe Development Foundation) (Mampa) in April 2004, pursuant to which new-order mining rights for the chrome operations in Rustenburg Minerals Development Company Proprietary Limited (RMDC or Rustenburg Minerals) on the farms Zandspruit and Groenfontein were obtained;

- Concluded empowerment transactions with the Bokamoso Trust in February 2006 and March 2010, representing control of Assore's issued ordinary shares of 3,26% and 11,02% respectively;
- Through Assmang, applied for and obtained new-order mining rights on the iron ore deposits mined at Khumani. Conversion of the old-order rights to new-order rights on the manganese deposits at Black Rock (comprising Assmang's Nchwaning and Gloria Mines) was obtained and applications for the conversion of all remaining old-order rights to new-order rights, in particular, iron ore (Beeshoek), chrome ore (Dwarsrivier), both in Assmang, and pyrophyllite (Wonderstone), which were submitted prior to 1 May 2009, and are being finalised;
- Implemented a preferential procurement policy at all its operations (refer "Preferential procurement" on page 67); and
- Developed social and labour plans (SLPs) for each of its operations, as well as local economic development (LED) projects which support the integrated development plan of the relevant local authority. The plans, which have received the approval of the relevant departments, include the construction of schools and crèches, food security projects and presentation of programmes on adult education, health and safety and environmental awareness.

The extent of compliance with the Charter is reported on and monitored on a regular basis, both at the Excom level and by the board, through the Audit and Risk Committee

and specifically on new order mining rights, which are subject to audit by the DMR. No significant issues of non-compliance have been reported by the DMR.

Following the introduction of the MPRD Act, Assore has, specifically at a holding company level, entered into the following empowerment-related transactions:

- In February 2006, the Assore group entered into empowerment transactions effecting the acquisition of 15,02% of its issued ordinary shares at that date by two BEE entities, namely:
  - Shanduka Resources, a subsidiary of Shanduka Group Proprietary Limited (Shanduka), a black-owned and managed investment holding company, which purchased 11,76% (16 464 450 shares) of Assore's ordinary shares in issue at that date. As part of Assore's strategy to ensure that the black-empowered control resulting from its empowerment transactions is broad-based, these shares were sold to a special-purpose vehicle (SPV) on 19 August 2011, as part of the first phase of its third empowerment transaction (refer below). As the group's empowerment partner for approximately six years, Shanduka realised a profit in excess of R2,3 billion upon the sale of its interest in the company; and
  - the Bokamoso Trust (refer "The Bokamoso Trust" below), which has been formed to benefit HDSAs and HDSA community groupings, residing in areas surrounding the group's mining activities, which purchased 3,26% (4 568 550 shares) of Assore's ordinary shares in issue at that date.
- In March 2010, Assore entered into its second empowerment transaction, in terms of which:
  - 13 618 265 shares, representing 9,88% of the issued ordinary shares at that date, were acquired by an entity in which the Bokamoso Trust (the Trust) and Assore have a 51% and 49% interest respectively; and
  - a specific issue of 1 748 735 treasury shares was effected, which resulted in the Trust achieving control of 14,28% (19 935 550) of the issued ordinary shares after the transaction.
- In February 2012, the second phase of the company's third empowerment transaction was completed, in terms of which the control of the shares previously held by Shanduka, and subsequently sold to the SPV (refer above), were vested as to 51% and 49% in the Fricker Road Trust and the Assore Employee Trust respectively (refer "The Fricker Road Trust and the Assore Employee Trust" below). Assore has, at its own risk, assumed funding required for the acquisition of these shares in the amount of R2,8 billion, and has guaranteed the debt in the SPV. The extent of funds available to the trusts depends on Assore's continued ability to declare dividends, which impacts the debt obligation by the SPV to Assore directly.

Upon the completion of the third empowerment transaction, the entire shareholding controlled by empowered entities is now broad-based in nature, which ensures that the benefits derived from the respective trusts flow directly to the relevant communities, as specified in the trust deeds. In addition, the interest that these trusts hold in Assore cannot be realised or disposed of unless changes to the MPRD Act are brought about that release mining companies from the requirement to have HDSA control.

The control by HDSAs of Assore's shares at 30 June 2012 is as follows:

Shareholder	% shareholding
Bokamoso Trust	14,28
Fricker Road Trust	11,79
	26,07

Assore concluded a relationship agreement with the Trust in order to regulate the respective relationships between the parties to ensure, in so far as

is possible, the continued compliance by the Trust (as the Assore group's BEE partner) with the direct ownership requirements of the Mining Charter.

To date, and pursuant to the trust deed, the Trustees have approved projects to the value of R3,7 million, details of which are as follows:

Operation	Description	
Zeerust Chrome Mines	Mmasebodule Primary School	R2 600 000
Wonderstone	Ramagopa Primary School	R800 000
Rustenburg Minerals	Imfundo Likusasalethu, primary educational intervention	R288 000

### The Bokamoso Trust

The Bokamoso Trust (the Trust) was established for the benefit of HDSAs and broad-based HDSA community groupings residing in the areas in which the Assore group's mines and beneficiation plants are located. The majority of the Board of Trustees (the Trustees) are independent and, in terms of the second empowerment transaction, the Trust is entitled to an annual flow-through payment of at least R2 million per annum to the beneficiaries irrespective of the commitments to the Assore group with regard to the funding of the transaction. The Board of Trustees of the Trust is as follows:

Dr TG Sibya (Chairman)\*

CJ Cory#

Ms K Makhaya\*

LS Matsimela#

Ms Mtshali\*

Ms TPJ Ngxulelo\*

\* Independent trustee

# Founder trustee

### The Fricker Road Trust and the Assore Employee Trust

Pursuant to the completion of the third empowerment transaction, these trusts have been established, the activities of which are summarised below:

#### The Fricker Road Trust

As part of Assore's commitment to the social and economic development and empowerment of the beneficiaries, the sole object of the Fricker Road Trust is to facilitate the group's activities pursuant to its trust deed, with specific focus on the areas of health and education. The beneficiaries of the Fricker Road Trust are the members of the communities comprising HDSA persons who are living, working or operating in and around the mining and beneficiation operations of the Assore group. At current dividend levels, and allowing for necessary expenses, the Fricker Road Trust will have approximately R10 million available for distribution per annum. As the objectives of the Fricker

Road Trust and the Bokamoso Trust are aligned, the group is in the process of merging the two trusts, and registering the merged trust as a Public Benefit Organisation (PBO). This registration will allow for the efficient combination of these trusts, both in terms of their assets as well as their respective trust deeds, and will result in optimising the awarding of benefits.

#### The Assore Employee Trust

The Assore Employee Trust was established by Assore for the purposes of economically benefiting the non-managerial employees of the Assore group by facilitating their participation in the dividend income distributed by Assore and also participating in the increase in the value of Assore's ordinary shares listed on the JSE. The beneficiaries of the Assore Employee Trust are full-time, permanent non-managerial employees of the Assore group, and exclude senior management and board members.

## Preferential procurement

Assore is committed to bringing previously disadvantaged South Africans into the mainstream of the economy and the mining industry by identifying and developing business opportunities by making them available to BBBEE suppliers at all its operations. Without compromising

on quality, Assore has adopted a policy of precluding vendors who do not have valid empowerment credentials from supplying goods and services to its operations. A summary of the percentage BBBEE procurement measured against total discretionary procurement is presented in the table below:

	Total discretionary procurement#	Aggregate	
		R million	R million
2012		% BBBEE	
Assmang	<b>11 071,5</b>	<b>10 258,5</b>	<b>92,7</b>
Rustenburg Minerals	<b>187,0</b>	<b>70,1</b>	<b>37,5</b>
Zeerust	<b>72,9</b>	<b>11,8</b>	<b>16,2</b>
Wonderstone	<b>33,6</b>	<b>24,0</b>	<b>71,4</b>
African Mining and Trust	<b>93,9</b>	<b>67,2</b>	<b>71,2</b>
<b>2011</b>			
Assmang	6 796,2	4 591,1	67,6
Rustenburg Minerals	163,6	117,8	72,0
Zeerust	88,3	74,4	84,3
Wonderstone	38,9	12,8	32,9
African Mining and Trust	41,1	18,4	44,8

# Total discretionary procurement is defined as total procurement less procurement effected through related entities (intercompany transactions). Prior to 2012, total procurement excluded procurement effected through public sector vendors, eg rates and taxes and utility service providers.

\* Aggregate BBBEE expenditure is recognised based on the respective recognition levels of the suppliers, in accordance with the codes published by the Department of Trade and Industry (DTI).

The significant increase of the proportion of BBBEE expenditure in Assmang is mainly due to the inclusion of procurement conducted from state-owned enterprises, which comprises a significant proportion of Assmang's expenditure.

While the percentages for Wonderstone and African Mining and Trust show pleasing developments, those for Rustenburg Minerals and Zeerust have declined due to the failure of the mining contractor, appointed at both operations to conduct the opencast mining activities, to

renew its empowerment credentials. As opencast activities are scheduled to reduce significantly in the short term, due mostly to Rustenburg Minerals' strategy to conduct mining operations underground into the future. It is therefore impractical to obtain the services of another BEE-accredited contractor for the remaining opencast mining activities and, accordingly, the group's procurement department has embarked on a process to assist the contractor concerned to obtain the necessary accreditation.





**Sustainable development issues are material to Assore's business beyond the level of mere legal compliance, and sustainability strategy and management systems provide the group with the ability to respond to customer requirements, address stakeholder expectations and engage with the regulatory authorities. Assore also seeks to promote the sustainability of its business by taking an active role in shaping the development and performance of its business in the sectors in which it operates, as well as allowing management to anticipate and address current and future issues that may present opportunities or threats to the group's business.**

This sustainability report covers all of the entities in which the Assore group has an interest, other than portfolio investments, and distinguishes between Assmang's operations and the AMT operations as defined in the "Scope and boundary" (refer page 1).

### **Sustainability management and reporting systems**

The group's sustainability risk management systems are based on the International Standards Organisation (ISO) suite of standards.

Certification to the internationally recognised OHSAS18001 occupational health and safety management standard has been achieved at all Assmang operations with the exception of Black Rock, which intends to seek certification in the first half of the coming financial year.

### **Measuring sustainability performance**

The group reports on sustainability performance in accordance with Global Reporting Initiative (GRI) G3 indicators. A suite of reporting indicators has been selected on the basis of their materiality to the specific risk profile of the operations, and this

report meets application level C of the GRI G3 Sustainability Reporting guidelines and the associated Metals and Minerals Sector supplement, details of which are available at [www.assore.com](http://www.assore.com).

More detail on the assurance of the sustainability data sets is included on page 3.

In previous years, the group has focused on developing sustainability management systems that have facilitated the collection and reporting of credible and relevant data sets. This information is vital for informing and monitoring the effectiveness of the group's sustainability initiatives and has also allowed the integration of non-financial risk considerations into the group's business strategy. These systems are now yielding increasingly robust data sets that allow health, safety, environmental and sustainability considerations to inform decision-making on a systemic and ongoing basis.

The group's sustainability reporting systems have now matured to a point where it is possible to establish quantifiable targets for sustainability performance. The area in which this is best advanced is in respect of energy management, where clear targets have been established for energy efficiency and emissions reduction at the smelters and have been linked to the Key Performance Indicators for operational staff and management.

### **Structure of the sustainability function**

In both the Assmang and AMT structures, site-based environment, health and safety staff as well as corporate social responsibility (CSR) practitioners report directly to mine management. The sites are supported by corporate staff who are responsible for establishing group-wide policy and performance standards, facilitating internal and external reporting and auditing operational performance.

Within the Assore structure, the Senior Manager: Safety, Health, Environment, Risk & Quality reports directly to Assore's Group Technical and Operations Director, and a similar structure exists within Assmang, with the Divisional SHEQ Manager reporting to the Chief Executive: ARM Ferrous, who carries the legal responsibilities for Assmang.

### **Legal compliance**

Legal compliance forms the foundation of the group's environmental, health and safety policies and is the basis on which

the group's environmental, health and safety management systems have been developed.

Legal compliance is a minimum performance requirement for the group's operations and is determined by a programme of ongoing internal and external reviews and audits against the requirements of the relevant legislation. As part of their ISO-based management systems, each operation maintains a site-specific legal register detailing the applicable legislation with which the operation needs to comply on an ongoing basis.

#### **External auditing of legal compliance**

All mining operations within the group have approved Environmental Management Programmes (EMPs), as required in terms of the Mineral and Petroleum Resources Development (MPRD) Act. In order to reflect the dynamic nature of the operations and changes to mining operations and infrastructure, these documents undergo periodic review and revision and are resubmitted to the Department of Mineral Resources (DMR) for authorisation.

Internal and external audits of the Assmang and the AMT operations confirm that, with one exception, all sites have been granted all permits, licences, authorisations and exemptions required to operate in compliance with the requirements of South African health, safety and environmental law. The single aspect of ongoing administrative non-conformance remains the issuing and updating of the integrated water licences for the AMT operations. All three mines have submitted applications, however, the processing of these applications, some of which were submitted as far back as 2006, has yet to be completed. Whilst they await the issuing of their new licences, these sites continue to operate under their old permit conditions and in accordance with the additional commitments made in their applications. Assore management continues to liaise with the Department of Water Affairs on a monthly basis to confirm that there are no outstanding queries or data requirements to impede the processing of these applications.

In May 2012, the biannual safety, Health and Environment (SHE) legal compliance audit of the AMT operations was conducted by Environmental Resource Management Southern Africa Proprietary Limited (ERM). In line with the integration of risk management processes across the Assore group, for the first time the ERM audit team was supplemented by an auditor appointed by Assore's internal auditors, Sizwe Ntsaluba Gobodo (SNG).

The findings recorded by ERM did not indicate any material issues of health, safety or environmental risk. In almost all cases, corrective action was implemented within six weeks to close out the audit findings. The only area of uncertainty related to technical issues around tailings management, and a specialist study will be undertaken in the coming financial year to determine whether or not any remedial action is required.

Directors' liability audits are conducted once every two years on the Assmang sites by a team of external auditors, with the most recent audits being conducted between March and May 2011, prior to the commencement of this reporting year. These audits confirmed that there has been a significant improvement in safety, health and environmental management on all Assmang sites since the previous round of audits, as illustrated by the marked reduction in material risks identified during the audits. Corrective action plans were drawn up to address each of the identified areas of risk, and in November 2011, Assmang's Divisional SHEQ Manager conducted an assessment of the status of the corrective actions, the findings of which were reported back to the Assmang OpsCom, via the Chief Executive: ARM Ferrous.

#### **Legal compliance status**

No administrative penalties, fines or prosecutions were incurred by either Assmang or the AMT operations over the current financial year, nor was the group prosecuted for any anti-competitive behaviour or anti-trust or monopolistic practices. Similarly, neither Assore nor its operating divisions received any fines for non-compliance in respect of laws and regulations concerning the provision and use of products and services.

The year saw an increase in the number of section 54 and 55 notices served on the group's operations by the Department of Mineral Resources (DMR) in terms of the Mine Health and Safety Act.

There has been an increase in the number of section 54 notices served on Assmang operations from four in 2011 to eight in 2012, resulting in 27 shifts lost in 2012 (2011: 10). The number of section 54 notices issued to the AMT operations remained stable, with one issued in each of 2012 and 2011.

The number of section 55 notices issued to Assmang operations increased over the reporting year from five in 2011 to 13 in 2012, and a corresponding increase was seen at the AMT operations, which were issued with four section 55 notices over the reporting period (2011: two).

## Sustainability report continued

The increased number of notices served reflects an increased drive towards compliance by the DMR combined with the application of higher standards in line with the tripartite commitment between the DMR, unions and mining companies in order to reduce fatalities.

No prohibition notices in terms of the Occupational Health and Safety Act (OHSA) were served at either of the two smelter operations by the Department of Labour during the financial year.

### Energy consumption and climate change

In response to growing consumer concern about climate change and pending national climate change legislation, the group has embarked on a process of understanding and responding to the risk that climate change poses to its business.

As an intensive energy user, energy consumption, and the resultant greenhouse gas emissions, are a material environmental issue for the Assmang and the AMT operations.

Energy consumption for the year under review				
Operation	Diesel use 2012 ('000ℓ)	Diesel use 2011 ('000ℓ)	Electricity used 2012 (kWh)	Electricity used 2011 (kWh)
Beeshoek	<b>7 549</b>	2 048	<b>39 974</b>	31 193
Khumani	<b>37 838</b>	27 535	<b>158 561</b>	101 078*
Black Rock	<b>4 355</b>	4 119	<b>99 063</b>	105 186
Cato Ridge Works	<b>492</b>	524	<b>747 392</b>	588 410
Dwarsrivier	<b>1 402</b>	1 429	<b>47 604</b>	40 523
Machadodorp Works	<b>1 273</b>	1 501	<b>825 131</b>	1 007 538
Rustenburg Minerals	<b>2 776</b>	2 642	<b>9 649</b>	4 092
Zeerust	<b>1 648</b>	1 993	<b>2 952</b>	1 821*
Wonderstone	<b>167</b>	212	<b>1 904</b>	2 147

\*Note that the electricity consumption for Khumani and Zeerust in 2011 has been restated from that reported in the previous year.

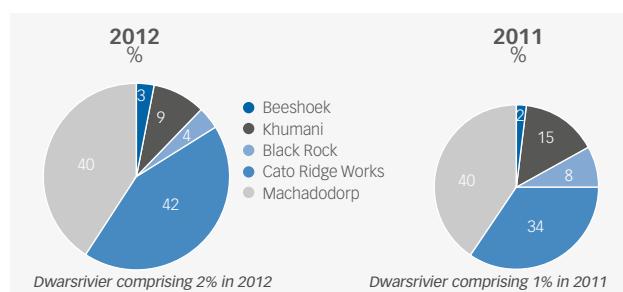
The greatest percentage change in diesel consumption took place at Beeshoek, where the resumption of mining during 2012 resulted in a 269% increase in diesel consumption year-on-year. A 37% increase in diesel consumption was also recorded at Khumani, and reflects the ramping up of mining activity as a result of the Khumani Expansion Project and a resultant upscaling of the mining fleet.

Cato Ridge electricity consumption increased by 27% year-on year, which reflects a return to normal production after the switching out of Furnaces #1 and #2 for upgrade in December 2011, which had reduced electricity consumption in 2011. By contrast, electricity consumption at the Machadodorp smelter reduced by 18,1%, as a result of the switching out of Furnace 1 between March and June 2012 due to weak market demand for ferrochrome.

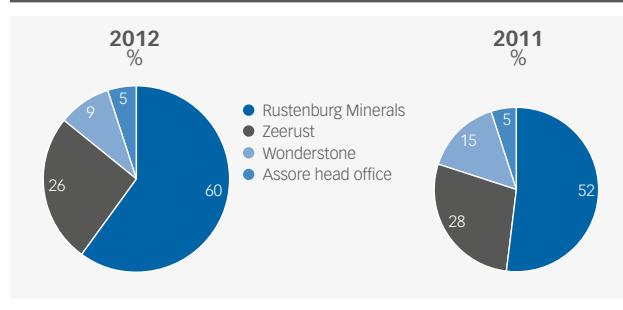
### Corporate carbon footprint

Corporate carbon footprints (CCFs) have been annually calculated for the Assmang and Assore operations since 2009 and form the foundation of the group's strategy for managing issues relating to energy efficiency and climate change.

#### Assmang carbon emissions



#### AMT carbon emissions



As in previous years, the CCFs include sites, subsidiaries, operations and activities over which the group has operational control. Thus, greenhouse gases (GHGs) generated by activities associated with the group, but over which the group has no operational control, are not taken into account.

In line with the methodology laid down in the Greenhouse Gas Protocol – Corporate Standard, as well as ISO14064, GHG emissions are reported under three categories:

- **Scope 1:** Direct GHG emissions which occur from sources that are owned or controlled by the company (eg emissions resulting from diesel consumption by mine vehicle fleets, consumption of reductants in furnaces and burning of liquid petroleum gas)
- **Scope 2:** GHG emissions from the generation of purchased electricity consumed by the company. This is purchased from Eskom, whose power is predominantly generated by coal-fired power stations
- **Scope 3:** GHG emissions that are a consequence of the company's activities but occur from sources not owned or controlled by the company (eg product transportation and business travel)

The GHG emissions from the group operations for the year under review per scope are summarised in the table below:

	Scope 1 tons CO <sub>2</sub> e*	Scope 2 tons CO <sub>2</sub> e	Total emissions CO <sub>2</sub> e
<b>2012</b>			
Assmang	858 431	1 808 549	<b>2 666 980</b>
AMT operations	12 047	14 869	<b>26 916</b>
<b>2011</b>			
Assmang	573 055	1 426 879	<b>1 999 934</b>
AMT operations	12 891	8 174	<b>21 065</b>

\*CO<sub>2</sub> equivalent.

The breakdown of emissions on a site basis illustrates that, as in previous years, the most energy-intensive operations are the smelters at Cato Ridge and Machadodorp.

The bulk of GHG emissions generated by the group fall within Scope 2, which reflect electricity consumption by the smelters at Cato Ridge Works and Machadodorp. Scope 2 emissions by Assmang operations in 2012 totalled 2 666 980 tons CO<sub>2</sub>e, a 9,8% increase on the previous year, as a result of increased electricity consumption at the Cato Ridge Works and Khumani. Scope 1 emissions also increased markedly on Assmang operations during the reporting year, primarily due to higher diesel consumption at Khumani.

The AMT operations' emissions profile has shifted fundamentally in 2012, with Scope 1 emissions now being exceeded by Scope 2 emissions. This has occurred as a result of the continued development of the Groenfontein and Zandspruit underground sections at Rustenburg Minerals, which consume proportionately more electricity than diesel.

In the financial year under review, submissions to the Carbon Disclosure Project (CDP) were made in respect of both the Assmang and the AMT operations.

### Business risks associated with climate change

The group is in the process of integrating climate change considerations into its business strategy and risk management processes. The departure point for this process has been the identification of the business risks associated with climate change, which include changes to the legislative and fiscal environment in which we operate, as well as physical risks to infrastructure posed by possible shifts in prevailing weather patterns.

### Water management

Water management remains a critical issue for the group, whose operations are mainly located in water-scarce regions of South Africa that experience marked seasonal variations in rainfall.

#### Water consumption for the year under review

Operation	2012 m <sup>3</sup>	2011 m <sup>3</sup>
Beeshoek	<b>6 190 014</b>	4 611 620
Khumani	<b>3 772 149</b>	2 611 648
Black Rock	<b>862 842</b>	857 030
Cato Ridge Works	<b>395 083</b>	374 163
Dwarsrivier	<b>129 990</b>	362 522
Machadodorp Works	<b>142 928</b>	130 620
Rustenburg Minerals	<b>247 666</b>	286 202
Zeerust	<b>233 710</b>	222 550*
Wonderstone	<b>1 267</b>	1 137

\*Restated from the figure reported in 2011 due to a transposition error.

The biggest increases in water consumption on the Assmang operations have been reported at the iron ore mines, with Khumani and Beeshoek reporting year-on-year increases of 44% and 34% respectively. These increases reflect a ramping up of production on both mines, resulting from the development of the King Pit as part of the Khumani Expansion Project and the recommencement of mining at Beeshoek.

Over the reporting year, there has been a decrease of 64% in water consumption at Dwarsrivier due to the implementation of water recycling initiatives that have allowed dewatering discharge to be substituted for borehole water in order to meet process water requirements.

The group's operations obtain their water from a combination of boreholes located on mine property and water purchased from water supply utilities such as Umgeni Water (which supplies the Cato Ridge Works) and Sedibeng Water, which supplies water from the Vaal-Gamagara Water Scheme to Khumani and Black Rock. Integrated Water Use Licences have been applied for by all sites (see legal section for more clarification on the status of these applications) and the amount of water abstracted by each site remains within the volumes stipulated by the Department of Water Affairs based on their resource allocation. No water is drawn from a source whose sustainability or dependent ecosystems are adversely affected by the extraction.

Ongoing monitoring of groundwater levels and water quality in accordance with water use licence conditions confirms that in no case is a water source significantly affected by withdrawal of water by any of the group's mines or smelters.

## Sustainability report continued

During 2012, a major upgrade of the stormwater management system at the Cato Ridge Works was completed. This system has been designed to increase the recycling of stormwater – thus reducing the requirement for water purchase – and will also minimise pollution potential as a result of zero discharge to the surrounding environment. Substantial improvements in process water management were also achieved at Dwarsrivier during the year, where several existing process water dams have been relined and where the new tailings dam has been constructed with a plastic (HDPE) liner to minimise water seepage to the underlying aquifer.

### Waste generation

Mining and smelting operations produce a range of waste streams that require specialist management and disposal. As a result, financial provision for the rehabilitation of mine waste facilities such as tailings dams, waste rocks and slag dumps constitute a large proportion of the group's closure provision (refer Mine closure and financial provisions).

No waste that is deemed hazardous in terms of the Basel Convention is imported, exported or transported over an international boundary by the group's mines or smelters.

The most significant increases in mine waste generation over the reporting year resulted from substantially increased rates of waste rock generation at Dwarsrivier and Khumani (305% and 252% respectively).

The substantially increased rate of waste rock generation at Dwarsrivier reflects overburden removal required to prestrip the North Pit. Over the same period, tailings generation increased by 63%, reflecting increased volumes of ore through the plant. During the year, Dwarsrivier also completed the construction of a new, lined tailings disposal facility, which will be used to dispose of tailings arising from future production, as well as historical tailings reprocessed through the plant.

The increase in waste rock generation on the iron ore mines reflects the development of the King Pit as part of the Khumani Expansion Project, and the recommencement of mining at Beeshoek (whose production was restricted to stockpile reprocessing during the previous financial year). The increases in waste rock production have been mirrored by an increase in tailings generation resulting from increased throughput through the plants.

In line with the DMR's stated objective of maximising the value realised from South Africa's mineral endowment, the group continues actively to seek economic opportunities relating to the reprocessing of historic mine wastes and the sale of waste products. Thus, both Dwarsrivier and Zeerust have continued to reclaim and reprocess historic tailings during the past year.

Over the past year, Cato Ridge Works has made significant improvements in the way that slag from the smelter is managed. In May 2011, the first cell of the new lined slag facility was commissioned, which is used to dispose of processed slag that is deemed "unsellable" as aggregate. Now that the new facility is operational, no new slag will be placed on the old slag dump, allowing the old dump to be decommissioned and rehabilitated.

### Waste generated by operations

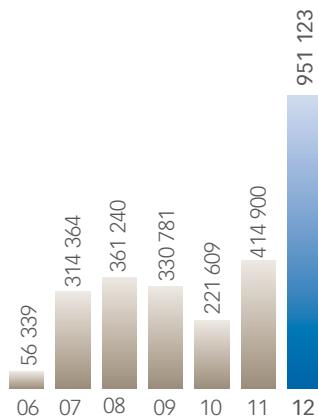
Operation	Waste rock 2012 m <sup>3</sup>	Slag/tailings 2012 tons	Waste rock 2011 m <sup>3</sup>	Slag/tailings 2011 tons
Beeshoek	848 328	956 436	–	1 025 030
Khumani	41 444 833	1 994 369	11 776 314	1 262 318
Black Rock	46 359	199 347	97 265	158 550
Cato Ridge Works	Not applicable	175 648	Not applicable	163 483
Dwarsrivier	1 414 000	603 306	348 893	369 483
Machadodorp Works	Not applicable	268 603	Not applicable	539 185
Rustenburg Minerals	1 809 868	37 008	1 587 966	36 005
Zeerust	1 809 868	37 008	1 587 966*	36 005*
Wonderstone	104 319	Not applicable	149 470	Not applicable

\*Values restated from those reported in the 2011 annual report.

In parallel, Cato Ridge Works has continued substantially to reduce the volume of slag disposed of on site by reclaiming slag from the old slag dump which is sold as aggregate for infrastructure projects. In 2012, Cato Ridge Works sold a total of 951 123 tons of slag, more than double that sold in the previous year (2011: 414 900 tons). This is equivalent to about six years of slag production from the smelter, based on the total of 169 438 tons of new slag generated at the Cato Ridge Works in 2012. The progression of sales of slag is depicted as follows:

### Cato Ridge slag sales

(tons per year)



### Land management and mine closure

#### Land management

As a requirement of the National Environmental Management: Biodiversity Act, operations are required to develop and implement a Biodiversity Action Plan (BAP) to manage their impacts on site ecosystems. BAPs focus on identifying and implementing sustainable land management practices including the protection of vulnerable ecosystems and species, the control and eradication of alien and invasive species and veld fire management. These plans are also used to inform decisions on site rehabilitation and revegetation by identifying rehabilitation techniques and species that are compatible with both the natural ecosystem and sustainable post-closure land uses.

BAPs have been developed for all the group's operations and confirm that no Red List species are present on the sites. The actions recommended in the BAPs have been integrated into the sites' land use management procedures and include measures to conserve protected ecosystems and species present on the sites.

The table below summarises the areas of land disturbance at each operation at the end of the reporting year:

Operation	Area currently disturbed 2012 ha	Area currently disturbed 2011 ha
Beeshoek	<b>970</b>	865
Khumani	<b>1 680</b>	658
Black Rock	<b>1 441</b>	1 441
Cato Ridge Works	<b>80</b>	50
Dwarsrivier	<b>164</b>	143
Machadodorp Works	<b>142</b>	19
Rustenburg Minerals	<b>140</b>	115
Zeerust	<b>86</b>	63
Wonderstone	<b>34</b>	30

The past year has seen relatively small increases in the area of land disturbance at the mining operations. The major exception has been at Khumani, where an additional 1 022 ha of land was disturbed during 2012, primarily as a result of the development of the King Pit. This development has more than doubled the disturbed footprint of the mine in the past year.

During the year, a contaminated land survey was undertaken at Machadodorp which identified the scale and extent of land impacted by the works. Thus, although no additional land was disturbed over the reporting year, the area of land disturbance reported for 2012 has been revised sharply upwards due to the identification of additional areas of contaminated land that will require remediation, as reflected by a doubling of the closure provision for the site.

The Cato Ridge Works also saw a significant increase in land disturbance during 2012. This was due to the completion of a number of major projects, including:

- The completion of the stormwater management system to ensure that no discharge of water takes place from the site to the surrounding environment
- The construction of a new, lined facility for slag disposal to safeguard the quality of water in the underlying aquifer
- The construction of a new entrance to the site to ease traffic congestion.

## Sustainability report continued

### Mine closure and financial provisions

Financial provision for mine closure and rehabilitation constitutes the single largest environmental liability for the group's mines, with a total liability of R724 million (2011: R569 million) for Assmang operations and R16 million (2011: R17 million) for the AMT operations.

<b>Financial provision for closure as at 30 June</b>							
<b>Operation</b>	Total liability (R'000) 2012	Environmental fund (R'000) 2012	Current guarantees in place (R'000) 2012	Total liabilities (R'000) 2011	Environmental fund (R'000) 2011	Current guarantees in place (R'000) 2011	
<b>Mines</b>							
Beeshoek	84 700	63 836	38 389	89 441	60 443	38 389	
Khumani	211 856	28 542	187 032	235 764	19 779	95 833	
Black Rock	199 338	34 506	122 668	114 502	26 150	46 536	
Dwarsrivier	41 472	11 536	33 673	38 759	9 735	33 673	
<b>Sub total</b>	<b>537 366</b>	<b>138 420</b>	<b>381 762</b>	410 470	116 107	214 431	
<b>Alloy operations</b>							
Cato Ridge Works	120 900	102 807	–	120 000	76 237	–	
Machadodorp	87 427	–	–	38 075	–	–	
<b>Total</b>	<b>745 693</b>	<b>241 227</b>	<b>381 762</b>	568 545	192 344	214 431	
Rustenburg Minerals	9 550	–	13 000	9 321	–	13 000	
Zeerust	3 008	–	3 500	3 436	–	3 500	
Wonderstone	3 763	–	4 500	3 768	–	4 500	
<b>Total</b>	<b>16 321</b>	–	<b>21 000</b>	16 525	–	21 000	

\*Figures restated from the previous report.

While mines are required to provide for the funding of environmental liabilities, either by cash deposited in environmental funds, or the issue of environmental guarantees, as set out above, provision for environmental obligations for the alloy operations are recognised in the financial statements.

Closure plans developed for the group mines inform the financial provision made for rehabilitation and closure, which is funded through a combination of contributions to environmental trust funds and bank guarantees. These closure provisions are reviewed, and, if needs be, revised, on an annual basis. Where possible, concurrent rehabilitation is undertaken in areas where mining and minerals processing has been completed. This allows the operations to test rehabilitation and revegetation techniques, the long-term sustainability of which can then be monitored, and also allows the operations to contain their "footprint" of disturbed land (and the associated financial provision for closure) to a minimum.

Despite there being no increase in land disturbance at Black Rock during 2012, the mine's closure provision has increased by 69% year-on-year. This substantial increase in financial provision is a

condition of the environmental authorisation issued for the Black Rock Expansion Project.

For a similar reason, Khumani's closure provision increased only 2,5% year-on-year, although the area of land disturbance more than doubled over the same period. This is accounted for by the fact that closure provisioning has been calculated on the basis of the approved life of-mine plan, which saw a substantial increase in provisioning in the 2011 year (120%).

The Cato Ridge Works and Machadodorp smelters are classified as industrial (rather than mining) facilities, which are currently not required in terms of South African law to make financial provision for site closure or rehabilitation. Nonetheless, in line with its commitment to responsible environmental management across its sites, Assmang has decided that the smelters will calculate their closure liability and make financial provision for rehabilitation.

A contaminated land survey was completed at Machadodorp in 2012, and the sharp upward revision in the area of land disturbance that will need to be rehabilitated prior to closure has led to a 130% increase in the closure provision for the site.

## Employee safety, occupational health and wellness

Assore is committed to achieving zero harm to its employees, either as a result of unsafe working conditions or occupational disease, and is working towards compliance with the 2013 milestones jointly established by the South African mining industry, the DMR and organised labour.

### Safety

This year again has seen a significant reduction in Lost Time Injuries (LTIs), with a total of 38 (2011: 56) being reported for the Assmang operations and a total of eight (2011: 10) LTIs were reported on the AMT operations. The Lost Time Injury Frequency Rate (LTIFR) has also continued to drop year-on-year with a rate of 0,29 (2011: 0,47) for Assmang operations and 0,9 (2011: 1,26) for the AMT operations.

#### Safety statistics

Operation	LTI	LTI	LTIFR	LTIFR
	2012	2011	2012	2011
Beeshoek	–	1	–	0,17
Khumanzi	5	13	0,11	0,27
Black Rock	5	9	0,19	0,4
Cato Ridge Works	6	3	0,52	0,23
Dwarsrivier	20	22	0,76	1,26
Machadodorp Works	2	8	0,16	0,68
Assmang	38	56	0,29	0,47
Rustenburg Minerals	5	4	0,81	0,84
Zeerust	1	–	0,62	–
Wonderstone	2	6	1,75	4,86
AMT	8	10	0,9	1,26

LTIFR calculated on the basis of 200 000 hours.

During the year, Beeshoek passed the 2 000 000 fatality-free shifts milestone, and by the end of 2012, had gone 13 months without an LTI. Cato Ridge Works achieved 1 000 000 fatality-free shifts during the first quarter of the financial year and Dwarsrivier passed the same milestone in the second quarter.

#### Notices served by regulatory authorities and shifts lost

	Section 54 notices		Shifts lost due to Section 54 notices		Section 55 notices		Shifts lost due to Section 55 notices	
	2012	2011	2012	2011	2012	2011	2012	2011
Assmang	16	15*	50	37*	13	5	13	–
AMT operations	1	1	–	4	4	2	–	–

\* Restated from the previous reporting period.

On an equally positive note, Black Rock and Machadodorp Works ended the year with the lowest LTIFRs ever recorded for these operations (0,19 and 0,16 respectively).

During the reporting year, Black Rock's safety achievement was recognised by the Northern Cape Mine Managers' Association with awards for the safest underground mine and the most improved underground mine.

Whilst the overall improvement in safety performance across the group's operations is encouraging and reflects the continued priority that management places on ensuring the safety of its employees, we continue to seek opportunities to further reduce the number of accidents and incidents. In particular, Dwarsrivier's safety performance continues to remain disappointing, and improving safety on this mine has been identified as a priority area that will continue to be the focus of corporate and site management attention for the coming year.

In order to allow benchmarking of safety performance across the chrome sector, Dwarsrivier, Rustenburg Minerals and Zeerust submit annual safety statistics to the International Chrome Development Association's (ICDA) Safety First initiative (refer "Product stewardship and advocacy").

#### Fatalities

There were no fatalities on either the Assmang or the pit operations during the reporting year.

The findings of the inquiry convened by the Department of Labour into the fatal explosion that took place at the Cato Ridge Works on 24 February 2008, and which has been reported on in previous reporting periods, have still not been made available to the company. Thus, the final outcome in this matter is still awaited. The trust fund established to provide *ex gratia* assistance to the affected families has completed its work.

## Sustainability report continued

### Occupational health and wellbeing

Assore is committed to promoting the wellbeing of its employees, both through the minimisation and management of occupational health risks in the workplace and the support of programmes which encourage employee wellness and wellbeing.

Occupational health screening						
Operation	Number of audiometric surveillance tests performed 2012	Number of cases referred for audiometric diagnostic testing 2012	Number of cases submitted for compensation 2012	Number of audiometric surveillance tests performed 2011	Number of cases referred for audiometric diagnostic testing 2011	Number of cases submitted for compensation 2011
Beeshoek	2 996	5	1	1 534*	2*	5*
Khumanzi	8 884	9	11	9 061*	2*	—
Black Rock	4 566	3	2	3 678	3	—
Cato Ridge Works	2 550	5	—	3 622*	107*	—
Dwarsrivier	3 107	7	—	2 092	2	2
Machadodorp Works	957	4	1	1 070	—	—
Rustenburg Minerals	528	6	6	311	4	3
Zeerust	145	1	—	131	—	—
Wonderstone	108	1	—	128	1	—

\* Restated from 2011 report.

### Occupational health surveillance

In order to ensure that the specific occupational health risks associated with each of the operations are effectively monitored and managed, specialist occupational healthcare service providers are retained by each site to implement medical surveillance programmes in accordance with the requirements laid down in the Mine Health and Safety Act (MHSA) and the Occupational Health and Safety Act (OHSA).

The operations routinely conduct entry and exit medicals for all employees and contractors, as well as periodic medicals to comply with the occupational health surveillance requirements of the legislation.

In response to the changing risk profile of the Machadodorp Works resulting from the conversion of Furnace #5 from ferrochrome to ferromanganese production, a health baseline assessment of the entire workforce was undertaken prior to the introduction of manganese to the site. Assmang has also taken this opportunity to align the medical surveillance protocols between the two smelters in order to achieve consistency of approach, and the medical surveillance protocol at Black Rock Mine was also revised during the reporting year.

### Noise induced hearing loss

As in previous years, noise induced hearing loss (NIHL) remains a major occupational health challenge for the Assmang and the AMT operations and existing hearing conservation programmes have been reviewed and revised with the intent of achieving the target of eliminating NIHL. A two-pronged approach has been developed to promote hearing conservation that includes both noise reduction strategies and improvement in occupational health surveillance and case management of individuals who have been referred for audiometric diagnostic testing.

In 2012, a total of 31 (2011: 116) cases were referred by Assmang for audiometric diagnostic testing and a total of eight (2011: five) cases were referred for follow up by the AMT operations. Of the cases referred for follow-up, 15 (2011: seven) cases from Assmang and six (2011: three) cases from AMT were submitted for compensation.

### Employee wellness initiatives

Over the past year, the group has partnered with a range of organisations, including occupational health practitioners, medical aids and organised labour, to proactively manage employee wellness.

Proactive management of fatigue has been identified as a significant contributing factor to continued employee wellness and workplace safety, particularly for workers in underground operations. During the past year, Assmang has completed a fatigue management study at Black Rock in partnership with the University of the Witwatersrand and the CSIR, with the intention of developing a fatigue management protocol that can be implemented across the group.

In April 2012, AMT organised a Wellness Day at Rustenburg Minerals, which was open to employees from both the Rustenburg Minerals and Zeerust operations. This is the first event of this kind that has been organised on the AMT operations and attracted a staff turnout in excess of 75%. The encouragingly high turnout at the event is attributable to the involvement of NUM in planning this event, who demonstrated their commitment to proactive wellness management by encouraging their membership to attend this event. A similar Wellness Day will take place at Wonderstone early in the coming financial year.

A Wellness Conference was also held at Khumani in May 2012, and was the precursor of a TB Integration meeting that was held the following month and included involvement from the Department of Health.

#### **HIV/Aids management**

The management of HIV/Aids remains one of the greatest challenges to managing the wellness of any workforce in South Africa. In order to address this challenge, the Group HIV and Aids Coordinator has developed an HIV and Aids management guideline which informs corporate strategy, guides resourcing for disease management and outlines performance indicators to monitor the effectiveness of the programme. HIV and Aids coordinators have been appointed at all Assmang sites to implement the HIV and Aids management strategic plans, which are managed in conjunction with TB infection control programmes. On-site medical staff also partner with external agencies such as government and NGOs to extend HIV and Aids testing and disease management programmes into our host communities.

AMT's first site-based Voluntary Counselling and Testing (VCT) campaign took place at Rustenburg Minerals in April 2012, with over 60% of those who participated in the Wellness Day electing to undergo VCT. A similar VCT programme is planned for Wonderstone early in the coming financial year.

#### **Housing**

Assmang actively promotes home ownership as a means of providing its employees with quality accommodation and contributing to their long-term financial security through the purchase of property. The group believes that home ownership promotes the health and wellbeing of our employees and their families and also contributes to the building of sustainable communities whose economic diversification will allow them to endure past the end of the life of the mine.

Housing strategies employed by mining companies in the past – such as the provision of accommodation in mine villages for the duration of employment and the payment of "living out" allowances – are ultimately unsustainable and have been linked to a range of undesirable social and industrial relations outcomes.

Assmang's housing philosophy is based on the promotion of home ownership amongst all levels of employees in selected sustainable towns within a commutable distance of its mines.

#### **Summary of progress against the Mining Charter housing requirements**

The Mining Charter requires that mines must implement measures to improve the standard of housing and living conditions for mineworkers as follows:

- Convert or upgrade hostels into family units by 2014;
- Attain the occupancy rate of one person per room by 2014; or
- Facilitate home ownership options for all mine employees in consultation with organised labour by 2014.

In response to the Mining Charter requirements and the shortfall of housing in the Northern Cape, Assmang created the Khumani Housing Development Company (KHDC) to develop additional residential property that is affordable for employees in all income bands. By the end of 2012, a total of 349 Assmang employees have become home owners as part of the housing scheme.

Where possible, these properties have been constructed with the input of local service providers and materials suppliers, thus creating jobs in the construction sector and making a significant additional contribution to the local economy. Efforts have also been made to incorporate environmental considerations into house design, such as the installation of solar water heaters to improve energy efficiency.

## Sustainability report continued

Many of the group's employees are first-time home owners and would not necessarily qualify for mortgages if they were to apply to conventional financial institutions. To address this challenge, the mines provide employee housing subsidies to the individuals that become part of the housing model and also offer a discounted interest rate to fund the housing loan whilst employed by Assmang.

### Housing developments to date

Due to the success of the initial phases of the Khumani housing project, it was decided to use the Kathu pilot project as the template for housing projects for the remainder of Assmang's mines, and by the end of 2012, the following projects were currently under way:

#### • Extension 3 – Kathu

The Extension 3 development consists of 328 stands in the western part of Kathu. As at the end of 2012, 324 (2011: 244) houses have been constructed specifically for Khumani employees in this suburb of which 259 (2011: 191) were purchased by the employees and 65 are utilised as transit rental units.

#### • Uitkoms – Kathu

Uitkoms is a new housing development specifically for Assmang Khumani employees, which comprises 113 stands. As at end of 2012, 57 (2011: 39) houses had been built in this suburb specifically for Khumani employees of which 50 (2011: 32) were purchased by the employees and six are utilised as transit rental units.

#### • Rooisand – Kathu

KHC owns a further 822 residential stands and two undeveloped stands suitable for an additional 192 residential units in the Rooisand development to the eastern part of Kathu, adjacent to the N14. At the end of 2012, 25 (2011: nil) houses were completed in this suburb and in excess of 150 employees have expressed interest in buying houses in this suburb. As at end of June 2012, 348 houses were under construction and at various stages of completion in this suburb.

#### • Kuruman

KHC is in the process of providing services to land for Black Rock employees in Wrenchville, Kuruman, that is suitable for 260 residential stands and two smaller portions of land suitable for the development of an extra 31 residential stands. At the end of June 2012, 24 (2011: two) houses were completed, of which 15 had been purchased by Black Rock employees.

#### • Mashishing (formerly Lydenburg)

Khumani Housing Company is currently building 29 (2011: nil) houses in Mashishing (formerly Lydenburg), Mpumalanga for Dwarsrivier and owns serviced land suitable for another 47 units in Extension 70.

To entrench the skills and values required to foster sustainable and fully integrated communities, a comprehensive home owners' education programme was designed for the project, and Assmang is committed to supporting continued communication and education in this regard.

### Human resources and training

#### Employment equity

Operation	HDSA management 2012 (%)	HDSA management 2011 (%)	Women in mining 2012 (%)	Women in mining 2011 (%)
Beeshoek	<b>57</b>	50	<b>12</b>	21
Khumani	<b>92</b>	60	<b>4</b>	3
Black Rock	<b>57</b>	47	<b>4</b>	5
Cato Ridge Works	<b>28</b>	70	<b>8</b>	9
Dwarsrivier	<b>43</b>	73	<b>12</b>	12
Machadodorp Works	<b>50</b>	63	<b>12</b>	17
Rustenburg Minerals	<b>57</b>	50	<b>12*</b>	21*
Zeerust	<b>92</b>	60	<b>4*</b>	3*
Wonderstone	<b>57</b>	47	<b>4*</b>	5*

Figures for the AMT operations reflect women employed in core mining functions.

Target for HDSA management is 40% by 2014.

Target for women in mining is 10% by 2014.

### Employee training and development

Employee training and skills development is crucial to the group's strategy of staff development, talent management and employee retention.

## Payroll spend on training

During the year, both the Assmang and AMT sites achieved an increase in expenditure on training and exceeded the Mining Charter target for training expenditure which is specified as 5% of payroll by 2014.

	Proportion of payroll spent on training (%)	Proportion of payroll spent on training (%)
	2012	2011
Assmang	<b>9,3</b>	8,0
AMT operations	<b>5,3</b>	4,9

## Learnerships and bursaries

Assmang has shown a substantial increase in the number of learnerships and bursaries year-on-year in line with Mining Charter and Department of Trade and Industry scorecard commitments, with a 114% increase in the number of bursaries extended. The AMT operations also reported a 15% increase in the number of bursaries awarded over the same period.

Learner- ships	Learner- ships Bursaries			
	2012		2011	
	Bursaries	ships	Bursaries	ships
Assmang	<b>107</b>	<b>219</b>	98	99
AMT operations	<b>4</b>	<b>38</b>	4	33

The learnerships awarded by the group focus on the development of artisanal skills in disciplines such as diesel mechanics, fitters, electricians, boilermakers and instrument technicians which are in short supply. Bursaries are also extended to candidates studying engineering, surveying, metallurgy and geosciences.

The group supports capacity building at a tertiary level through its ongoing support of the Minerals Education Trust Fund (METF). The METF is a multilateral organisation that pools resources to support continued excellence in tertiary education and research, most notable through the provision of salary supplementation for academics in the fields of mining engineering, metallurgical engineering and geosciences.

## Employee literacy

Ensuring functional literacy is a fundamental component of employee development, which not only enhances the skills and developmental potential of the group's staff, but also their quality of life. Both Beeshoek and Khumani have recently achieved the corporate target of 100% literacy in the workforce.

Operation	% of workforce literate	% of workforce literate
	2012	2011
Beeshoek	<b>100</b>	89
Khumani	<b>98</b>	95
Black Rock	<b>88</b>	84
Cato Ridge Works	<b>90</b>	95
Dwarsrivier	<b>93</b>	92
Machadodorp Works	<b>100</b>	82
Rustenburg Minerals	<b>67</b>	64
Zeerust	<b>74</b>	74
Wonderstone	<b>81</b>	79

Literacy levels improved during the year at all Assmang and AMT operations with the exception of Cato Ridge Works. All sites offer nationally accredited ABET courses, and uptake has been encouraging, particularly at Cato Ridge Works, in response to a literacy drive that took place during the year.

## Labour relations

Recognition agreements have been concluded with three trade unions on the Assmang sites: the National Union of Mineworkers (NUM), National Union of Metal Workers of South Africa (NUMSA) and Solidarity. Of these unions, only NUMSA is represented on the smelters.

The only union present on the AMT operations is the NUM, which is represented in the permanent workforce at Rustenburg Minerals and Wonderstone and in the contractor workforce at Zeerust.

Union	% membership	% membership
	2012	2011
NUM: Assmang	<b>45</b>	38
NUMSA: Assmang	<b>20</b>	22
Solidarity: Assmang	<b>13</b>	9
NUM: AMT operations	<b>27</b>	27

Union membership has increased significantly on the Assmang mines, with an 18% increase in NUM membership and a 44% increase in Solidarity membership. By contrast, union membership at the smelters declined slightly over the same period, whilst union membership at the AMT operations remained virtually unchanged over the period.

No strikes or lockouts took place on any of the AMT or Assmang operations during the reporting year.

## Sustainability report continued

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### Stakeholders

Assore is aware that its ability to conduct its day-to-day business is influenced by its capacity to develop and maintain long-standing relationships with its stakeholders. Assore's stakeholder engagement therefore aims to build new, and improve existing, relationships to establish mutually beneficial partnerships and to obtain support for the company's activities.

A stakeholder engagement table, included below, details the stakeholders with whom we engaged over the past year, the mode of engagement and summarising the material issues pertinent to each stakeholder group.

Stakeholder	Material issues	Method of engagement
<b>Shareholders and the investment community</b>	<ul style="list-style-type: none"> <li>• Profitability</li> <li>• Regulatory compliance</li> <li>• Financial and non-financial risk management</li> <li>• Outlook for the base metals/alloys market</li> <li>• Performance against targets</li> <li>• Long-term sustainability of the business</li> </ul>	Annual and six-monthly reports, SENS announcements, press statements
<b>Industry associations</b> • Chamber of Mines • Ferroalloy Producer Association • International Council on Metals & Mining • International Manganese Institute • International Chrome Development Agency • Energy Intensive Users Group	<ul style="list-style-type: none"> <li>• Worker safety</li> <li>• Occupational health</li> <li>• Environmental issues</li> <li>• Carbon-related issues (including carbon taxation)</li> <li>• Trends in national and international legislation</li> <li>• Logistics</li> <li>• Risks associated with land tenure and nationalisation</li> </ul>	Representation on the executive bodies of these associations, as well as task groups established in terms of their strategic work
<b>Employees and organised labour</b> • National Union of Mineworkers • National Union of Metalworkers of South Africa • Solidarity	<ul style="list-style-type: none"> <li>• Remuneration and benefits</li> <li>• Conditions of service</li> <li>• Job security</li> <li>• Career development (including training )</li> <li>• Accommodation</li> <li>• Worker safety</li> <li>• Occupational health</li> <li>• Transformation and employment equity</li> </ul>	Staff meetings at all levels, "toolbox talks", inductions, health and safety meetings, internal publications, notice boards, union negotiations, career path planning
<b>Host communities</b>	<ul style="list-style-type: none"> <li>• Employment</li> <li>• Safety and health considerations</li> <li>• Preferential procurement</li> <li>• Small and medium enterprise development</li> <li>• Social upliftment</li> <li>• Land management</li> <li>• Mine closure and rehabilitation</li> </ul>	Public meetings, public participation process for environmental impact assessments, participation in local economic development initiatives, funding of corporate social responsibility initiatives

<b>Stakeholder</b>	<b>Material issues</b>	<b>Method of engagement</b>
<b>Customers</b>	<ul style="list-style-type: none"> <li>• Product quality</li> <li>• Product pricing</li> <li>• Development of new products</li> <li>• Adherence to delivery schedules</li> <li>• GHG-related issues</li> <li>• Product stewardship</li> <li>• Compliance with REACH/GHS requirements for registration and product labelling</li> </ul>	Customer site visits, contract negotiations, quality management system, conference attendance. Use of customer feedback to influence annual report content
<b>Joint-venture partners</b> <ul style="list-style-type: none"> <li>• African Rainbow Minerals</li> <li>• Sumitomo</li> <li>• Mampa Investment Holdings</li> <li>• Exxaro</li> </ul>	<ul style="list-style-type: none"> <li>• Profitability</li> <li>• Regulatory compliance</li> <li>• Financial and non-financial risk management</li> <li>• Outlook for the base metals/alloys market</li> <li>• Performance against targets</li> <li>• Long-term sustainability of the business</li> <li>• Roles and responsibilities within the respective joint ventures</li> </ul>	Representation on the Assmang board and Excom, board meetings for individual Assore operations and active participation in industry associations
<b>National, provincial and municipal government</b> <ul style="list-style-type: none"> <li>• Department of Mineral Resources</li> <li>• Department of Water Affairs</li> <li>• Department of Environmental Affairs</li> <li>• Department of Labour</li> <li>• Department of Trade and Industry</li> <li>• Receiver of Revenue</li> </ul>	<ul style="list-style-type: none"> <li>• Regulatory compliance</li> <li>• Fulfilment of statutory reporting requirements</li> <li>• GHG-related issues</li> <li>• Land management</li> <li>• Mine closure (including adequate financial provision for rehabilitation)</li> <li>• Pollution prevention</li> <li>• Conservation of surface and groundwater resources</li> <li>• Employee health and safety</li> <li>• Workforce transformation and employment equity</li> <li>• Preferential procurement</li> <li>• Tax payment</li> </ul>	Statutory reporting, inspections by government representatives, permit applications, legal compliance audits, public participation process for environmental impact assessments, engagement on targeted issues
<b>Parastatal service providers</b> <ul style="list-style-type: none"> <li>• Eskom</li> <li>• Transnet</li> </ul>	<ul style="list-style-type: none"> <li>• Continuity of electricity supply</li> <li>• Power and freight tariffs</li> <li>• Availability of rail berths</li> <li>• Upgrade of port facilities</li> <li>• Negotiation of mutually beneficial contracts and service agreements</li> </ul>	Regular meetings held through established committees
<b>Contractors and other service providers</b> <ul style="list-style-type: none"> <li>• Mining contractors</li> <li>• Transport companies</li> <li>• Construction contractors</li> <li>• Consultants</li> <li>• Healthcare providers</li> <li>• Shipping companies</li> <li>• Insurance companies</li> </ul>	<ul style="list-style-type: none"> <li>• Procurement practices (including preferential procurement)</li> <li>• Terms and conditions of contracts (including penalties)</li> <li>• Regulatory compliance</li> <li>• Occupational health and safety</li> <li>• Environmental management</li> </ul>	Contract negotiations, tender processes, safety inductions, health and safety meetings, site inspections and audits, performance reviews, ISO certification
<b>Non-governmental organisations</b> <ul style="list-style-type: none"> <li>• Groundwork</li> <li>• BenchMarks Foundation</li> </ul>	<ul style="list-style-type: none"> <li>• Pollution prevention</li> <li>• Conservation of surface and groundwater resources</li> <li>• Employee health and safety</li> </ul>	Engagement through established open forums created for general engagement with host communities

### **Product stewardship and advocacy**

As the company responsible for marketing the products produced by the Assmang and the AMT operations, Assore wholly-owned subsidiary, Ore & Metal, recognises its responsibility in promoting the sustainability of the business by taking an active role in shaping the development and performance of the sectors in which it operates. The group therefore encourages its employees to take an active role in industry associations that aim to promote the use and development of commodities which it produces, and to foster cooperation between companies in these industry sectors to address issues of common concern.

### **Involvement in industry associations**

An Ore & Metal representative currently serves on the Occupational Health, Environment and Safety (OHES) Committee of the International Manganese Institute (IMnI). Ore & Metal also chairs the IMnI's Regulatory Committee, on which it represents both the interests of the group and also of the South African manganese sector.

During the past financial year, IMnI has initiated a major Manganese Life Cycle Assessment (LCA) project which will consider the production of three manganese alloys: high carbon ferromanganese, refined ferromanganese and silicon manganese (which Assmang does not produce). This study will collate data from 17 sites located in seven countries and will provide participating companies with the ability to benchmark their environmental performance against industry peers, as well as identifying environmental "best practices" that can be shared across the sector.

The IMnI's Occupational Health, Environment and Safety (OHES) workshop was held in South Africa in February 2012 and was co-funded by Assmang and BHP Billiton. This event focused on safeguarding worker health in the manganese sector and was attended by 39 delegates from five continents representing over a dozen manganese producers and service providers.

Ore & Metal also continues to serve on the Executive Committee of the ICDA and participates in ICDA's Safety First reporting initiative, which provides member companies with the ability to benchmark its safety performance against its peers.

Ore & Metal is also an active member of the Iron Platform, which is a forum of iron ore producers who engage on issues of common interest. On a national level, Assmang is active within the Ferroalloys Producers Association (FAPA) where it holds the deputy as chairmanship and is also represented on the Environmental Technical and Logistics committees. Assmang is also active within the Ferroalloys Producers Association (FAPA) where it holds the deputy chairmanship and is represented on the Environmental Technical and Logistics committees.

### **Product registration and stewardship**

Over the reporting year, the Material Safety Data Sheets for all products have been reviewed and revised to ensure compliance with the requirements of the Global Harmonised System of Classification and Labelling of Chemical (GHS), which has been implemented through South African National Standard SANS 10234:2008.

Materials characterisation, in terms of both chemical and mineralogical composition, is an essential component of both REACH (per Regulation EC1907/2006 of the European Parliament) and GHS hazard classification. In order to be able to provide accurate information on which product classification can be based, Ore & Metal is participating in a programme of manganese ore characterisation which is being coordinated by IMnI, and is also taking part in a study into respirable crystalline silica in iron ores that is being organised by the Iron Platform.

### **Corporate social responsibility initiatives**

Assore recognises that it has a commitment to social upliftment in the communities within which it operates, and seeks to respond to the challenges of livelihood support and diversification of economic opportunity in a manner that is appropriate for the different socio-economic and geographical settings of our operations.

In terms of the MPRD Act, each of the group mines is required to have an approved Social and Labour Plan (SLP). The SLP outlines a range of social and economic development initiatives that the mine commits to funding and implementing in order to achieve upliftment of host communities. The requirement for companies to contribute towards CSR initiatives in the broader community is also stipulated in the Department of Trade and Industry Codes of Good Practice guidelines, which apply irrespective of sector, and are thus relevant to the smelter operations.

In order to align government and private sector development socio-economic development initiatives, an SLP must be consistent with the Integrated Development Plan that has been developed by local government so that the mine's initiatives can be effectively coordinated with those of local, regional and district municipalities. Adherence to the SLP is a condition of the Mining Licence and progress in implementing these projects is reported to the Department of Mineral Resources on an annual basis and audited regularly by the department.

Although the smelters do not fall under the MPRDA – and are therefore not required to have an SLP – Assmang has adopted a groupwide CSR strategy that equally applies to the Cato Ridge and Machadodorp Works.

### **Funding of CSR**

In order to prevent confusion in terminology, the group has drawn the distinction between Local Economic Development (LED) projects that are committed to by the mines in the respective SLPs, and Corporate Social Investment (CSI) projects, which are undertaken by the group above and beyond the SLP commitments.

## CSR expenditure

	LED spend	CSI spend	Total CSR spend	LED spend	CSI spend	Total CSR spend
	2012	2012	2012	2011	2011	2011
	(R million)	(R million)	(R million)	(R million)	(R million)	(R million)
Assmang	<b>66</b>	<b>17</b>	<b>83</b>	38	14	52
AMT operations	<b>0,4</b>	<b>0,8</b>	<b>1,2</b>	0,8	0,6	1,4

In the reporting year, Assmang operations spent a total of R83 million (2011: R52 million) on CSR initiatives, a year-on-year increase of 60%.

## CSR project selection

The CSI strategy distinguishes between CSI, which is focused on livelihood support, and enterprise development, which is intended to bring about economic growth and diversification.

A critical element of the CSI strategy has been the development of a robust set of project selection criteria, which guide transparent and consistent decision-making across the group's operations. Projects which are considered for funding are assessed in terms of their:

- alignment with the strategic focus areas (education and health, enterprise development and infrastructure);
- operational feasibility, including the presence of a market for the goods/services produced, availability of inputs and labour, regulation, and favourable environmental and infrastructure conditions to enable project delivery; and
- social impact and enterprise value, as determined by their long-term sustainability and likely return on investment.

## Flagship project: TEACH South Africa

Assmang has recognised education as a strategic focus area for CSR initiatives because of the importance of education in growing and developing both the South African economy and broader society. In support of this educational focus, Assmang has adopted TEACH South Africa as its flagship CSI project.

There is strong evidence that learners from disadvantaged backgrounds can achieve at a comparable level to learners from wealthier backgrounds, given access to quality education. TEACH South Africa was founded by the South African business community as a means of improving both the quality and impact of education by deploying highly skilled and motivated recent university graduates as additional teaching resources in the classroom. The organisation seeks to place new graduates from technical, business and language disciplines in some of South Africa's most disadvantaged schools for a period of two years to provide teaching assistance to the existing staff and also to serve as role models and mentors to learners.

Assmang has partnered with TEACH South Africa to place 26 TEACH ambassadors at 13 schools in KwaZulu-Natal, Mpumalanga, Limpopo and the Northern Cape for an initial period of two years. The schools selected for this initial programme are ones with which Assmang has previously been involved, usually through the

funding of infrastructure upgrade and expansion programmes. The ambassadors will focus primarily on Grade 10 to 12 learners, with particular emphasis on developing English, Maths and Science competencies which are critical for learners' future employability.

## CSR initiatives in the AMT operations

AMT's approach to CSI is shaped by the needs of the projects already committed to as part of its operations' SLPs, which focus on education and the support of a range of small business development initiatives, including brickmaking, poultry farming and vegetable gardens.

Stakeholder feedback supports the view that the focus on uplifting educational infrastructure in the host communities of the AMT operations remains the most meaningful intervention that can be made. In particular, emphasis is placed on early learning, which is an aspect of education that is particularly weak in the group's host communities.

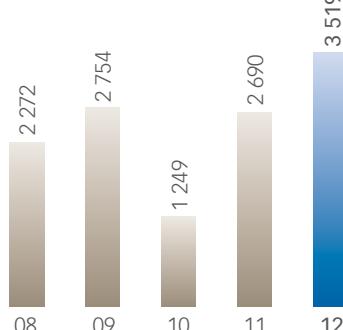
The support of crèches in disadvantaged communities is key to the group's strategy of promoting the school readiness of children which will allow them to capitalise on the educational opportunities offered by the schools that we support. In this regard, the support for the Cami Makgophe Crèche at Rustenburg Minerals and the Rainbow Crèche at Wonderstone has been continued and strengthened.

At the same time we recognise that there is a pressing need to assist those who have already passed through the educational system but are poorly equipped to seek employment outside of their immediate social setting. Rustenburg Minerals has therefore initiated a programme whereby young adults from the host community are assisted in compiling professional *curriculum vitae*, mentored in ways in which to identify and engage prospective employers, as well as receive training in respect of general economic literacy.

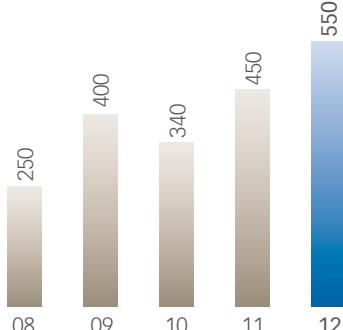
## Five-year summary of the consolidated financial statements

	2008 R'000	2009 R'000	2010 R'000	2011 R'000	2012 R'000
<b>Income statements</b>					
<b>Turnover</b>	9 158 937	8 818 655	7 085 669	10 547 806	<b>12 947 766</b>
Profit before profit on disposal of available-for-sale investments	4 665 106	5 229 794	2 334 460	4 816 210	<b>5 112 526</b>
Profit on disposal of available-for-sale investments	22 350	19 086	–	–	<b>472 200</b>
Taxation	(1 509 091)	(1 981 493)	(822 963)	(1 566 524)	<b>(1 537 692)</b>
<b>Profit for the year</b>	<b>3 178 365</b>	<b>3 267 387</b>	<b>1 511 497</b>	<b>3 249 686</b>	<b>4 047 034</b>
Attributable to:					
– Shareholders of the holding company	3 069 522	3 241 452	1 479 524	3 219 754	<b>4 033 013</b>
– Non-controlling interest	108 843	25 935	31 973	29 932	<b>14 021</b>
As above	<b>3 178 365</b>	<b>3 267 387</b>	<b>1 511 497</b>	<b>3 249 686</b>	<b>4 047 034</b>
<b>Other information</b>					
Attributable earnings as above	3 069 522	3 241 452	1 479 524	3 219 755	<b>4 033 013</b>
Headline earnings (R'000)	3 057 708	3 265 793	1 494 205	3 219 348	<b>3 707 763</b>
Attributable earnings per share (cents)	2 281	2 734	1 236	2 691	<b>3 827</b>
Headline earnings per share (cents)	2 272	2 754	1 249	2 690	<b>3 519</b>
Dividends declared during the year	126 000	555 717	415 324	614 271	<b>698 036</b>
Less: Dividends attributable to treasury shares	(4 392)	(76 311)	(56 309)	(87 716)	<b>(182 000)</b>
	<b>121 608</b>	<b>479 406</b>	<b>359 015</b>	<b>526 555</b>	<b>516 036</b>
Dividends per share relating to the activities of the group for the year under review (cents)					
– Interim declared and paid	50	200	100	200	<b>250</b>
– Final (declared subsequent to year-end)	200	200	240	250	<b>300</b>
	<b>250</b>	<b>400</b>	<b>340</b>	<b>450</b>	<b>550</b>
Weighted average number of shares for purposes of calculating earnings per share (000):					
Ordinary shares in issue	140 000	138 290	138 430	139 607	<b>139 607</b>
Treasury shares	(5 440)	(19 720)	(18 750)	(19 936)	<b>(34 240)</b>
Weighted average	<b>134 560</b>	<b>118 570</b>	<b>119 680</b>	<b>119 671</b>	<b>105 367</b>
Average exchange rates for the year:					
SA rand to US dollar	7,27	8,80	7,60	7,00	<b>7,73</b>
SA rand to euro	10,72	12,08	10,53	9,54	<b>10,39</b>

**Headline earnings per share**  
(cents)

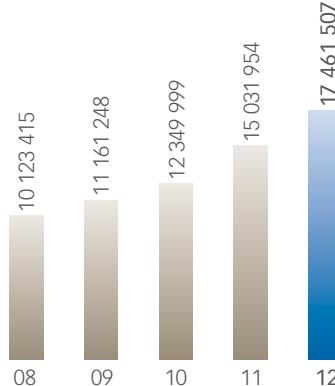


**Total dividend relating to the activities of the group for the year**  
(cents)



<b>Statements of financial position</b>	2008 R'000	2009 R'000	2010 R'000	2011 R'000	2012 R'000
<b>ASSETS</b>					
<b>Non-current assets</b>					
Property, plant and equipment, investment properties and intangibles	4 196 018	5 183 450	6 409 471	8 027 352	<b>9 529 499</b>
Available-for-sale investments	590 066	415 066	602 851	918 038	<b>274 058</b>
Other non-current financial assets	125	42 259	105 173	53 051	<b>106 665</b>
Deferred taxation	61 977	74 309	71 572	–	–
	4 848 186	5 715 084	7 189 067	8 998 441	<b>9 910 222</b>
<b>Current assets</b>					
Other current assets	3 286 272	2 397 097	3 253 023	3 637 847	<b>4 226 848</b>
Cash resources	1 988 957	3 049 067	1 907 909	2 334 734	<b>3 324 437</b>
<b>Total assets</b>	<b>10 123 415</b>	<b>11 161 248</b>	<b>12 349 999</b>	<b>14 971 022</b>	<b>17 461 507</b>
<b>EQUITY AND LIABILITIES</b>					
<b>Share capital and reserves</b>					
Ordinary shareholders' interest	4 110 872	6 603 229	7 867 443	10 765 524	<b>11 200 402</b>
Non-controlling shareholders' interest	111 528	71 819	102 035	114 287	<b>126 858</b>
<b>Total equity</b>	<b>4 222 400</b>	<b>6 675 048</b>	<b>7 969 478</b>	<b>10 879 811</b>	<b>11 327 260</b>
<b>Non-current liabilities</b>					
Deferred taxation	961 678	1 416 145	1 785 301	2 173 621	<b>2 357 001</b>
Long-term liabilities	223 320	257 513	216 826	222 888	<b>1 938 844</b>
	5 407 398	8 348 706	9 971 605	13 276 320	<b>15 623 105</b>
<b>Current liabilities</b>					
Non-interest-bearing	2 094 528	1 188 699	1 346 749	1 540 555	<b>1 646 383</b>
Interest-bearing	2 621 489	1 623 843	1 031 645	154 147	<b>192 019</b>
<b>Total equity and liabilities</b>	<b>10 123 415</b>	<b>11 161 248</b>	<b>12 349 999</b>	<b>14 971 022</b>	<b>17 461 507</b>
Exchange rates at year-end					
SA rand to US dollar	7,84	7,72	7,66	6,78	<b>8,31</b>
SA rand to euro	12,37	10,79	9,39	9,82	<b>10,45</b>

**Total assets**  
(R'000)



**Market capitalisation**  
(Rbillion)

