KUMBA IRON ORE LIMITED

Ore Reserves and Mineral Resources Report 2016

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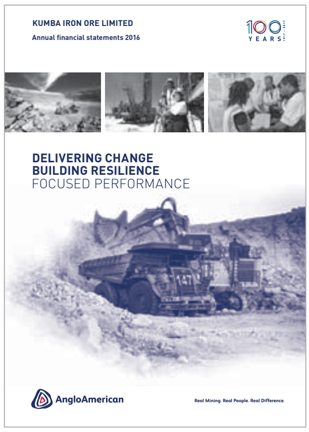
ORE RESERVES AND MINERAL RESOURCES REPORT (ORMR)
Reported in accordance with the South African Code for the Reporting of Exploration Results, Mineral Resources and Mineral Reserves (SAMREC 2007; July 2009 amended).

INTEGRATED REPORT (IR)
A succinct review of our strategy and business model, operating context, governance and operational performance, targeted primarily at current and prospective investors.

SUSTAINABILITY REPORT (SR)
Reviews our approach to managing our significant economic, social and environmental impacts, and to addressing those sustainability issues of interest to a broad range of stakeholders.



ANNUAL FINANCIAL STATEMENTS (AFS)
Detailed analysis of our financial results, with audited financial statements and remuneration report, prepared in accordance with the International Financial Reporting Standards (IFRS).

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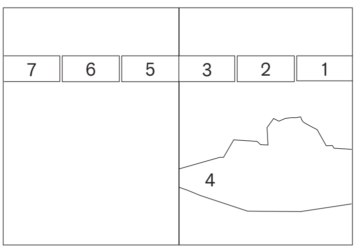


Front cover

1. Load and haul operations at Kolomela mine.
2. Andre Witbooi and Carlos Motsoeneng, both plant maintenance operators doing repairs on one of the belts on the stacker reclaimer at Kolomela mine.
3. Patrick Steenkamp, a quality controller working on one of the stacker reclaimers at the stockyard at Sishen mine.
4. Kolomela mine, which began commercial production in 2011, produced 12.7 Mt of direct-shipping ore for the export market in 2016.

Back cover

5. A general view of the plant at Kolomela mine in the Northern Cape.
6. Plant maintenance operators repairing one of the belts on the stacker reclaimer at the Kolomela mine plant.
7. Gerald van der Westhuizen, a drill rig operator and Charles Binang, drill rig assistant in the cab of a CAT C313 drill rig at Kolomela mine.

INTRODUCTION AND SCOPE

As deliberated in the Ore Reserve and Mineral Resource section of the 2015 Kumba Iron Ore Integrated Report; the focus in 2016, as in 2015, remained on ensuring that Kumba could be competitive in both the near and long term through reducing costs and converting to a value-over-volume strategy. Despite the rally in the iron ore price in 2016, it is still widely acknowledged that the fundamental trend for iron ore prices in the long term remain under pressure[1], as such the long-term forward-looking iron ore price used to derive Ore Reserves and Mineral Resources decreased by 7% from 2015, while the ZAR to US$ exchange rate decreased by 10% year-on-year.

These were the major contributing factors that resulted in the year-on-year reduction of the Sishen Mine Ore Reserve by 18% due to the selection of a significantly smaller but more cost efficient pit layout. Accordingly, the exclusive Mineral Resource decreased by 19% from 2015 to 2016 due to a substantial decrease in size of the Resource shell. It would be expected that the impact on the Mineral Resource would have been more pronounced than 19% but the impact was mitigated by the addition of 213.4 Mt of low-grade Mineral Resources inside the pit layout after the relevant Kumba and AA plc committees approved the Sishen low-grade project concept and pre-feasibility A study.

Kolomela Mine's Ore Reserves decreased by 10% year-on-year, primarily due to production. The Kolomela Mineral Resources increased by 8%, predominantly due to the re-allocation of Ore Reserves to Mineral Resources associated with a decrease in the Kapstevel South pit layout size.

As indicated in 2015, Thabazimbi mine's production ceased in 2016, and Kumba is in the process of compiling a closure application for the Thabazimbi mining rights. No Ore Reserves therefore remain and the Mineral Resources have been removed from the Kumba Mineral Resource portfolio as Kumba can no longer demonstrate reasonable prospects for eventual economic extraction.

The average annual Saleable Product from Sishen mine reduced from 36.5 Mtpa to 26.0 Mtpa as a result of the transition to a lower cost pit shell and a focus on value over volume. As a result the reserve life has increased from 15 to 17 years.

In October 2016, the Department of Mineral Resources (DMR) notified Kumba that it had, after taking all the relevant considerations into account, granted the residual 21.4% undivided share of the mining right for the Sishen mine to Kumba's subsidiary, Sishen Iron Ore Company Proprietary Limited (SIOC) following the completion of an internal appeal process, as prescribed by section 96 of the Minerals and Petroleum Resources Development Act. As a result of the grant of the residual 21.4% undivided share, SIOC became the sole and exclusive holder of the right to mine iron ore and quartzite at the Sishen mine.

The 2016 Kumba Iron Ore (Kumba) online Ore Reserve and Mineral Resource Statement is a condensed version of the full 2016 in-house *Kumba Ore Reserve and Mineral Resource Statement and Audit Committee Report*, derived from a comprehensive amount of information compiled in the form of site-specific Reserve and Resource Statements; the latter structured to address all aspects listed in the Checklist and Guideline of Reporting and Assessment Criteria Table of the SAMREC Code.

This Reserve and Resource Statement is therefore considered to be reported in accordance with 'The South African Code for the Reporting of Exploration Results, Mineral Resources and Mineral Reserves (SAMREC Code – 2007 edition; July 2009 amended version)', incorporated in the company's business processes via a Reserve and Resource Reporting policy (website: http://www.angloamericankumba.com/sd_policies.php).

The policy is supported by reporting procedures and templates, which channel the reporting requirements down to a site specific level, to ensure that Kumba meets the necessary Johannesburg Stock Exchange listings requirements.

Kumba will in 2017 adapt to the reporting requirements as listed in the 2016 Edition of the SAMREC Code.

The Ore Reserve (and Saleable Product) and Mineral Resource figures are stated on a 100% basis, irrespective of attributable shareholding. Kumba's attributable ownership in operations and projects is, however, separately indicated per site in the Ore Reserve (and Saleable Product) and Mineral Resource tables.

It is not an inventory of all mineral occurrences identified, but is an estimate of those, which under assumed and justifiable technical, environmental, legal and social conditions, may be economically extractable at current (Ore Reserves) and has reasonable prospects for eventual economic extraction (Mineral Resources).

1 "…iron ore demand could decline by more than 25% over the next 20 years as a result of the weakening demand for steel and increased recycling…" **(McKinsey Quarterly; October 2016)**

INTRODUCTION AND SCOPE CONTINUED

The term 'Ore Reserves' in the context of this report has the same meaning as 'Mineral Reserves', as defined by the SAMREC Code. In the case of Kumba, the term 'Ore Reserves' is preferred because it emphasises the difference between these and Mineral Resources.

An independent long-term price line (Platts 62% index) and exchange rate adjusted with Kumba based forecasts of lump and Fe premiums, deleterious element specifications and freight tariffs was agreed and forms the basis of Ore Reserves and Mineral Resources presented in this document. The latter is applied to site-specific mining block models, in combination with a forward extrapolation of current site-specific budgeted cost figures, to derive a set of pit shells for each site during the annual pit optimisation process. A so-called optimal (revenue factor ~1) shell is chosen for each site and engineered into a pit design or layout, which spatially constrains the currently economically mineable Ore Reserves.

The Ore Reserves are furthermore derived from the *in situ* Measured and Indicated Mineral Resource portion within the pit layout only, through the modification thereof into run-of-mine, to account for site-specific mining efficiencies and other design, technical, environmental, legal and social aspects.

The resultant Proved and Probable Ore Reserves are further modified into Saleable Product, considering site-specific beneficiation efficiencies. Cut-off grades are also assigned to ensure site-specific run-of-mine or Ore Reserve schedules that ensure the sustainable delivery of Saleable Product that complies with client product specifications.

Mineral Resources are declared exclusive of (in addition to) Ore Reserves.

Apart from cut-off grades, which consider the current and at least concept approved foreseen beneficiation processes, Kumba spatially distinguishes Mineral Resources from other Mineral occurrences by applying a resource shell (site-specific 2 x revenue factor shell derived during annual pit optimisation process) to the latest site-specific three-dimensional geological models[2], with the Mineral Resource portion considered to have reasonable prospects for eventual economic extraction.

Inferred Mineral Resources considered in life-of-mine plans are separately indicated in the Exclusive Mineral Resource Statement, with the extrapolated portion of the Inferred Mineral Resources outside the life-of-mine plans quoted in the footnotes of the Exclusive Mineral Resource Statement.

SALIENT FEATURES

The focus in 2016, as in 2015, remained on ensuring that Kumba could be competitive in both the near and long term through reducing costs and converting to a value-over-volume strategy. Despite the rally in the iron ore price in 2016, it is still widely acknowledged that the fundamental trend for iron ore prices in the long term remains negative, as such the long-term forward looking iron ore price used to derive Ore Reserves and Mineral Resources decreased by 7% from 2015, while the Rand to US$ exchange rate weakened by 10% year-on-year.

These were the major contributing factors that resulted in the year-on-year reduction of the Sishen mine Ore Reserve by 18% due to the selection of a significantly smaller but more cost efficient pit layout. Accordingly, the exclusive Mineral Resource decreased by 19% from 2015 to 2016 due to a substantial decrease in size of the resource shell. It would be expected that the impact on the Mineral Resource would have been more pronounced than 19% but the impact was mitigated by the addition of 213.4 Mt (48.9 Mt measured, 123.1 Mt Indicated and 41.3 Mt Inferred) at an average 43.9% Fe of low-grade Mineral Resources inside the pit layout after the relevant Kumba and Anglo American plc committees approved the Sishen low-grade project pre-feasibility A study.

Kolomela mine's Ore Reserves decreased by 10% year-on-year, primarily due to production. The Kolomela Mineral Resources increased by 8%, predominantly due to the re-allocation of Ore Reserves to Mineral Resources associated with a decrease in the Kapstevel South pit layout size. Kapstevel South is one of four pit layouts in the Kolomela life-of-mine plan.

As indicated in 2015, Thabazimbi mine's production ceased in 2016, and Kumba is in the process of compiling a closure application[3] for the Thabazimbi mining rights. No Ore Reserves therefore remain and the Mineral Resources have been removed from the Kumba Mineral Resource portfolio as Kumba can no longer demonstrate reasonable prospects for eventual economic extraction applying its business model.

The average annual Saleable Product from Sishen mine reduced from 36.5 Mtpa to 26.0 Mtpa as a result of the transition to a lower cost pit shell and a focus on value over volume. As a result the reserve life has increased from 15 to 17 years.

2 Geological models are three-dimensional spatial unitised models that define the iron ore bodies in relation to the host rock and waste in terms of estimated volumes and associated in situ grades and relative densities.

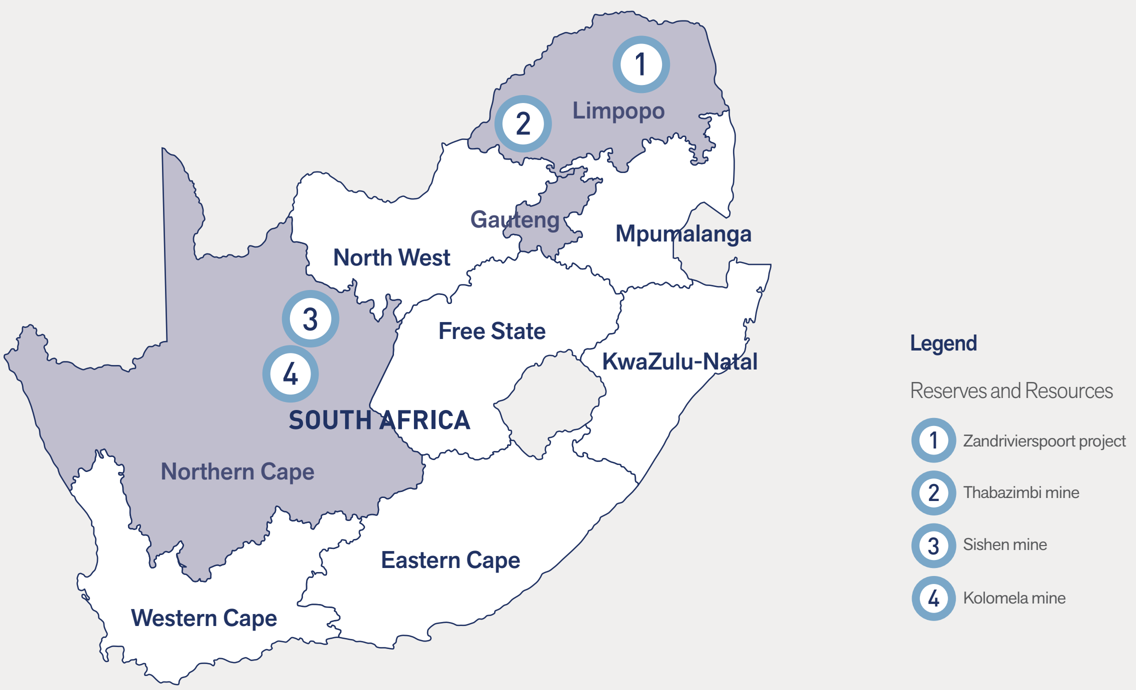
3 Kumba is also in discussions with third parties and the DMR regarding the possible transfer of the Thabazimbi mining rights.

LOCATION

All the Kumba sites for which Ore Reserves and/or Mineral Resources are declared in 2016 are located within the Republic of South Africa. As is the case with all mineral companies, the location of operations and explorations projects are dictated by geology.

The Kumba operations (Kolomela mine and Sishen mine) are located in the Northern Cape province with Thabazimbi mine located in the Limpopo province (production at Thabazimbi mine ceased in 2016). The Zandrivierspoort Exploration Project is also located in the Limpopo province. The geographical footprint of the relevant Kumba Iron Ore operations and projects are shown in **Figure 1**.

FIGURE 1: **GEOGRAPHIC LOCATIONS OF KUMBA OPERATIONS AND PROJECTS FOR WHICH ORE RESERVES AND MINERAL RESOURCES HAVE BEEN DECLARED**



The WGS84 latitude/longitude geographical coordinate map references of the Kumba entities for which Ore Reserves and/or Mineral Resources have been declared in 2016 (and/or 2015), are listed below:

- Kolomela mine in the Northern Cape province near the town of Postmasburg (28°23'30.05" S and 22°58'46.88" E);
- Sishen mine in the Northern Cape near the town of Kathu, which accounts for the bulk of Kumba's production (27°44'02.29" S and 23°00'39.95" E);
- Thabazimbi mine in Limpopo province near the town of Thabazimbi (24°35'51.43" S and 27°24'19.77" E); and
- Zandrivierspoort project, approximately 25 km northeast of Polokwane in Limpopo province (23°40'17.65" S and 29°35'41.08" E).

ATTRIBUTABLE REPORTING

For this statement, all Ore Reserve, Saleable Product and exclusive Mineral Resource tonnage and associated average Fe-grade estimates, whether Kumba's attributable economic interest in the specific mineral asset is less than 100% or not, are reported as 100% in **Table 5, Table 6 and Table 7** respectively; with the percentage economic interest attributable to Kumba indicated separately in the relevant tables per site. The overall economic interest attributable to Sishen Iron Ore Company (SIOC), Kumba and Anglo American plc is also summarised in **Table 1**.

TABLE 1: **KUMBA IRON ORE AND ANGLO AMERICAN PLC ATTRIBUTABLE ECONOMIC INTEREST PERCENTAGES FOR MINERAL ASSETS HELD BY SISHEN IRON ORE COMPANY**

	% owned by SIOC		% owned by Kumba		% owned by other		% owned by AAplc via Kumba[1]	
Mineral asset	**2016**	2015	**2016**	2015	**2016**	2015	**2016**	2015
Kolomela mine	**100.0**	100.0	**76.3**	73.9	**23.7**	26.1	**53.2**	51.5
Sishen mine[2]	**100.0**	100.0	**76.3**	73.9	**23.7**	26.1	**53.2**	51.5
Thabazimbi mine[3]	**100.0**	100.0	**76.3**	73.9	**23.7**	26.1	**53.2**	51.5
Zandrivierspoort project[4]	**50.0**	50.0	**38.2**	37.0	**61.8**	63.0	**26.6**	25.8

1 The holding company Sishen Iron Ore Company (SIOC) is 76.3% owned by Kumba, and in turn Kumba is 69.7% owned by Anglo American plc (as at 31 December 2016 – time of reporting). The year-on-year increase in shareholding is a result of the unwinding of SIOC's Envision participation share scheme in November 2016.

2 In 2016, the DMR notified Kumba that it had granted the residual 21.4% undivided share of the mining right to SIOC's Sishen mine. This residual mining right will be incorporated into the 78.6% Sishen mining right that SIOC successfully converted in 2009. SIOC is currently attending to the necessary requirements to lodge this granted right for registration.

3 SIOC and ArcelorMittal SA announced that they have entered into an agreement to transfer Thabazimbi mine to ArcelorMittal SA. The transfer is dependent on certain conditions being met, for more detail please refer to page 68 of the IR.

4 Zandrivierspoort is a 50:50 joint venture between ArcelorMittal South Africa and SIOC in a company called Polokwane Iron Ore Company.

Image: A view of Sishen mine's beneficiation facilities. The Jig plant at Sishen mine is the largest of its type in the world.

COMPETENCE

The information on Ore Reserves and Mineral Resources was prepared by or under the supervision of Competent Persons as defined in the SAMREC Code. All Competent Persons have sufficient experience relevant to the style of mineralisation and type of deposit under consideration and to the activity which they are undertaking. All the Competent Persons consent to the inclusion in this statement of the information in the form and context in which it appears. All Competent Persons informing the 2016 Kumba Iron Ore Reserve and Resource Statement assumed responsibility by means of signing a Competent Person appointment letter, kept by the company's Principal – Mineral Resources & Geometallurgy, at Kumba's Centurion Office in Pretoria, South Africa.

TABLE 2: CORPORATE RESPONSIBILITY

Republic of South Africa – Kumba corporate office

Business unit	Field	Name	Title	Employed by	Professional organisation	Registration number	Years relevant experience
Kumba	Mineral Resources	Jean Britz	Principal Mineral Resources & Geometallurgy	Sishen Iron Ore Company (Pty) Ltd	SACNASP Professional Natural Scientist	400423/04	12
Kumba	Ore Reserves	Theunis Otto	Head Mining Engineering	Sishen Iron Ore Company (Pty) Ltd	ECSA Professional Engineer	990072	12

TABLE 3: MINING OPERATION RESPONSIBILITY

Republic of South Africa – Kumba operations

Operations	Field	Name	Title	Employed by	Professional organisation	Registration number	Years relevant experience
Kolomela mine	Mineral Resources	Hannes Viljoen	Section Manager, Exploration and Resource Geology	Sishen Iron Ore Company (Pty) Ltd	SACNASP Professional Natural Scientist	400245/10	9
	Ore Reserves	Neil Rossouw	Technical Services Manager	Sishen Iron Ore Company (Pty) Ltd	ECSA Professional Engineer	20080143	6
Sishen mine	Mineral Resources	Mike Carney	Technical Services Manager	Sishen Iron Ore Company (Pty) Ltd	SACNASP Professional Natural Scientist	400096/99	19
	Ore Reserves	Derek Esterhuysen	Principal Mining Engineer	Sishen Iron Ore Company (Pty) Ltd	ECSA Professional Engineer	20040033	8

TABLE 4: PROJECT RESPONSIBILITY

Republic of South Africa – Kumba projects

Projects	Field	Name	Title	Employed by	Professional organisation	Registration number	Years relevant experience
Zandrivierspoort project	Mineral Resources	Stuart J Mac Gregor	Acting Head, Geosciences	Sishen Iron Ore Company (Pty) Ltd	SACNASP Professional Natural Scientist	400029/09	10
	No Ore Reserve declared in 2016						

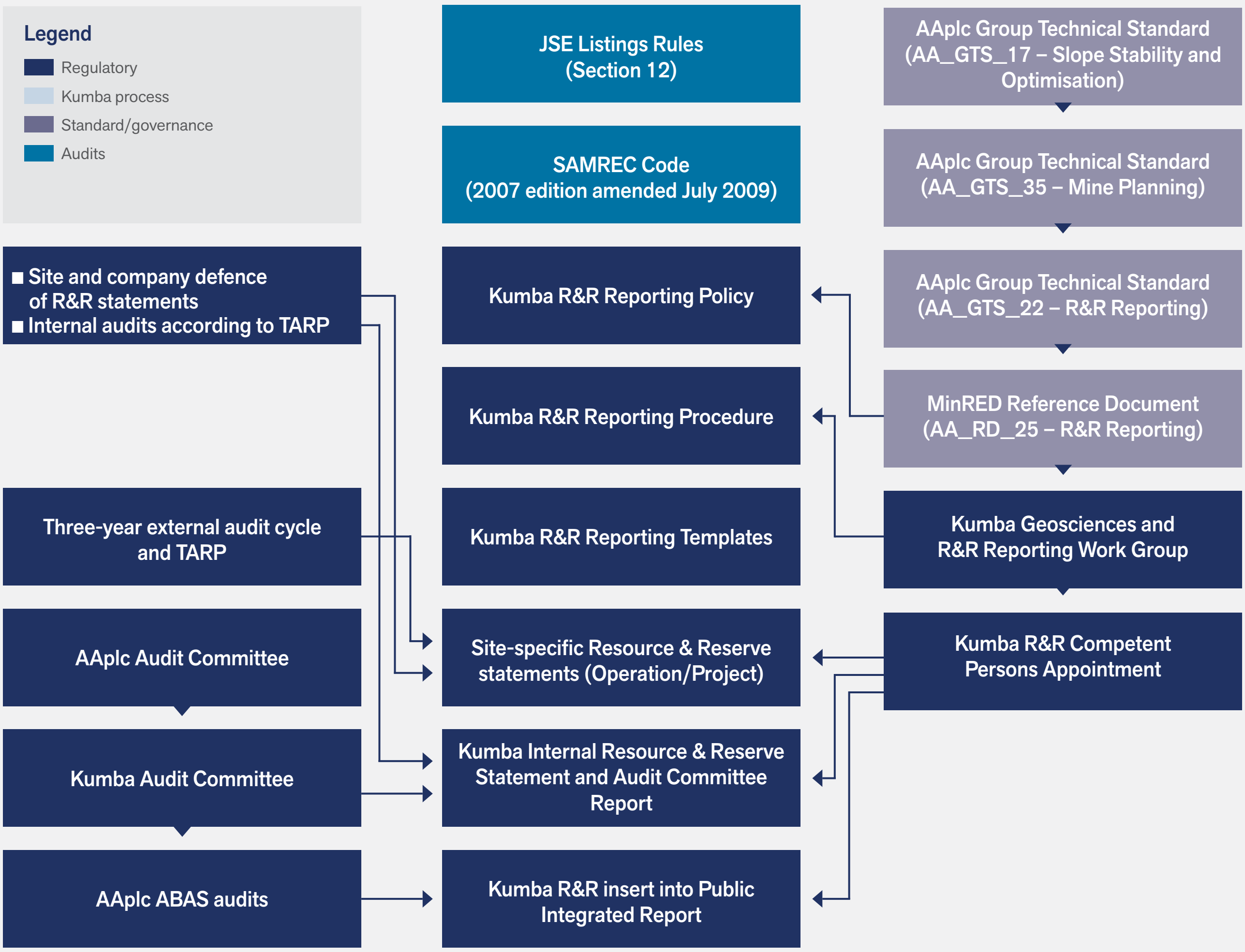
GOVERNANCE

Applicable codes and policies are uniformly applied throughout Anglo American plc (Anglo American plc) via a governance document, ie the Anglo American plc group technical standard (AA_GTS_22), which holistically governs Resource and Reserve reporting for all the Anglo American plc business units, of which Kumba Iron Ore forms part.

Kumba internalised the SAMREC Code and its policy and the relevant Anglo American plc group standards by deriving a reporting procedure (Kumba Iron Ore Mineral Resource and Ore Reserve Reporting Procedure) applicable to iron ore as a commodity and the opencast mining thereof, that stipulates adherence to the former. The procedure is revised annually, with refinements proposed by an official Resource and Reserve Reporting Work Group, with changes annually communicated to the Executive Management of Kumba.

The Kumba Reserve and Resource Reporting governance framework is summarised in **Figure 2**.

FIGURE 2: **KUMBA MINERAL RESOURCE AND ORE RESERVE REPORTING GOVERNANCE FRAMEWORK**



RISK LIABILITY AND ASSURANCE

Apart from the annual in-house peer review of site-specific Ore Reserve and Mineral Resource Statements, Kumba is subject to a comprehensive programme of reviews aimed at providing assurance in respect of Ore Reserve and Mineral Resource estimates. The reviews are conducted by suitably qualified Competent Persons from within the Anglo American Group, or by independent consultants.

The frequency and depth of the reviews is a function of the perceived risks and/or uncertainties associated with a particular Ore Reserve and/or Mineral Resource.

Three external audits were conducted in 2016:

- TECT Geological Consulting reviewed the Kolomela mine implicit solids models (compiled using new software technology) that will be used as a base for the 2017 geological block modelling and Mineral Resource estimation, to verify the integrity of the models. Overall, TECT was satisfied with the implicit solids models. No major errors or significant adverse changes were observed.
- AMC Consultants reviewed the Sishen mine planning process. AMC found that:
  - In general, the mine planning process is well established and appropriate, comprising mine planning tools and outputs consistent with industry standard;
  - The alignment of mine planning horizons is adequate, although there is duplication which is mostly redundant; and
  - The process of communication of mine plans to mine production is well established and generally consistent with industry standard.
- SRK Consulting was appointed in 2016 to conduct a detailed independent technical review of the Kumba Iron Ore total Mineral Resource and Ore Reserve portfolio (as at 30 June 2016). The SRK findings in relation to mid-year Mineral Resources and Ore Reserves are summarised below:
  - SRK has reviewed the data collection, geological modelling and Mineral Resource estimates, including independent validations of the parameters and results used in the estimates, and consider the data to be sufficiently reliable to generate Mineral Resource estimates. The geological modelling is undertaken in a rigorous manner, and is consistent with the geological interpretation, and the available drilling, geophysical surveys, and structural mapping.

    Kumba has a comprehensive set of standards and procedures in place at each of the operations and projects in order to ensure that there is consistency between the geological modelling approach and Mineral Resource estimates. SRK is of the opinion that the documented procedures and controls are sufficient to ensure that the Mineral Resource estimates are compliant with the SAMREC Code 2016. Kumba undertakes a comprehensive validation of its geological models and Mineral Resource estimates, including peer review and validation, at each stage of the data collection, modelling and estimation.
  - The LoM process at Kumba is governed by the Anglo American plc standards and compliance is measured on a yearly basis. Sishen and Kolomela mine both follow the same LoM planning process. The pit optimisation process adheres to the standards and is well managed. At Sishen mine the geological and mining modifying factors are well defined and backed by the value chain reconciliation process. At Kolomela mine the modifying factors are backed by the value chain reconciliation process but less history is available and therefore planned modifying factors are less reliable.

The next full Ore Reserve and Mineral Resource external audit is planned for Sishen mine in 2017 and for Kolomela mine in 2018.

In addition to the external audits conducted in 2016, an unscheduled independent internal due diligence audit was conducted on the Sishen 2016 geological model, input into the model, and associated Mineral Resource estimation and reporting by the Mining Geology and Reconciliation and Mineral Resource Departments of Anglo American plc. This review has found that the geological model and associated publicly reported Mineral Resource estimates for Sishen have no fatal flaws.

Furthermore, a mandatory pre-feasibility A stage-gate review was conducted on the Sishen low-grade project, including the geological model used to front-end-load the study. Anglo American plc's Mineral Resource Department reviewed the geology and approved the project's pre-feasibility A study from a geological perspective. The project was subsequently approved by the relevant Kumba and Anglo American plc Investment Committees, which enabled Sishen mine to include the low-grade ore in its 2016 Mineral Resource portfolio. A conservative approach was followed whereby only the low-grade ore in the pit layout instead of all low-grade ore in the resource shell was included in the 2016 Mineral Resource portfolio.

SECURITY OF TENURE

All Ore Reserves and Mineral Resources (in addition to Ore Reserves) quoted in this document for the Kumba mining operations are held under notarially executed mining and prospecting rights granted in terms of the Mineral and Petroleum Resources Development Act 28 of 2002 (the MPRDA), the prospecting rights located immediately adjacent to the Sishen mine mining right.

On 26 September 2016, the Department of Mineral Resources (DMR) has granted the residual 21.4% undivided share of the mining right for the Sishen mine to Kumba subsidiary, Sishen Iron Ore Company (Pty) Ltd (SIOC) following the completion of an internal appeal process, as prescribed by section 96 of the Minerals and Petroleum Resources Development Act.

SIOC is now the exclusive holder of the mining rights at Sishen mine, Kolomela mine and Thabazimbi mine, as well as 100% of the relevant prospecting rights adjacent to Sishen mine and the Zandrivierspoort prospecting right, all entities for which Mineral Resources and/or Ore Reserves are declared in the 2016 Statement.

STATUS OF MINING RIGHTS

SIOC is the holder of mining rights for all operations of sufficient duration to enable the complete execution of the life-of-mine plans from which the Ore Reserves and Saleable Product have been derived. In terms of the MPRDA, SIOC also has the exclusive right to extend the period of these mining rights if so required.

The status of the mining rights are as follows:

- Kolomela mine was granted a mining right for iron ore on 18 September 2008 for a 30-year mining period. An application to amend the supporting mining work programme (MWP) has been lodged in 2015 and the MWP is scheduled for further amendment via a section 102 application in 2017 to cater for inter alia the increase in production levels as per the 2016 LoM Plan.
- Sishen mine was granted a mining right for iron ore and quartzite on 11 November 2009 for a 30-year mining period.

  The mining right area was extended in 2014, following a section 102 application to incorporate the old Transnet railway properties transecting the mining area from north to south, granted by the DMR on 28 February 2014. As stated above, the outstanding 21.4% undivided share in the mining right was also granted to SIOC in 2016, making it the sole owner of the right to mine iron ore and quartzite within the mining right area.

  The Sishen Complex (including adjacent prospecting right areas) section 22 new mining right application submitted in 2011 has not yet been granted by the DMR. To gain traction in this regard, as the execution of the 2016 Sishen Life-of-Mine Plan is dependent on the Sishen Complex application being granted, SIOC has engaged in talks with the DMR and subsequently, on 1 July 2016, submitted a section 102 application to incorporate the Sishen mine complex within the existing Sishen mining right.
- Thabazimbi mine (Kwaggashoek) was granted a mining right on 5 October 2009 for a 30-year period, while Thabazimbi mine (Donkerpoort) was granted a mining right on 21 October 2009, also for a 30-year period. SIOC has given notice of its intention to cease all mining operations in 2016 and is in the process of compiling a closure application for Thabazimbi mine (Kwaggashoek and Donkerpoort).

Outstanding mining right amendment applications include:

- 2014 – Section 102 application to amend clause 8 of the Kolomela mining right to cater for the ArcelorMittal SA transaction.
- 2015 – Section 102 application to amend the Kolomela mining right to substitute the Regulation 42 plan with an approved SG Diagram.
- 2016 – Section 102 application to amend the Sishen mining right to extend the existing mining right to incorporate the adjacent prospecting rights.

Changes brought about by the revision of the 2016 LoM Plans in quarter 4 of the calendar year of both Kolomela and Sishen mine, will be accommodated for in section 102 Mining Work Programme, Environmental Plan and Social and Labour Plan amendment applications as relevant.

SECURITY OF TENURE CONTINUED

STATUS OF PROSPECTING RIGHTS

Kumba has declared Mineral Resources on two prospecting rights:

- The Dingleton prospecting right area (included in Sishen mine complex section 102 mining right amendment application) located immediately adjacent to the Sishen mine's mining right area, which comprises 1.3% and 0.3% respectively of Sishen mine's exclusive Mineral Resource and Ore Reserves. The prospecting right has been renewed for a three-year period and the renewal expires 1 December 2018.
- The Zandrivierspoort exploration project, which comprises 43% of SIOC's total 2016 exclusive Mineral Resource. The prospecting right for Zandrivierspoort (50:50 joint venture with ArcelorMittal SA) expired on 17 November 2011. SIOC has applied for renewal on 16 August 2011 and is awaiting a decision by the DMR regarding the granting of the renewal application.

MINING CHARTER

Significant uncertainty remains around the draft Mining Charter III process which may impact further empowerment of mining companies and granting of new mining rights. The Chamber of Mines is actively engaging in order to obtain greater clarity as to the future requirements and Kumba continues to closely monitor these developments.

Image: A view of the plant at Kolomela mine situated in Postmasburg, Northern Cape.

ORE RESERVES (AND SALEABLE PRODUCT)

ESTIMATION

The *in situ* Mineral Resource tonnages and grades as estimated and classified within the geological block models are initially discounted by converting the geological block models into mining block models, considering aspects such as smallest mining unit and open pit bench definitions. From the mining block model, planned modifying factors such as dilution and mining losses are realised while other factors such as geological losses, design and mining recovery efficiencies, determined via value chain and mine-to-design reconciliations, are applied.

The resultant mining block model is then constrained via pit optimisation to spatially distinguish between ore material which is currently and eventually economically extractable. The long-term price is adjusted to convert it from a market figure to a site-specific figure used to define current and eventual economic extractability:

- The first adjustment made to the price is the sea freight adjustment and is done to reflect the long-term price at Saldanha (Kumba's export harbour) in US$/tonne free-on-board (FOB) terms at a 62% Fe grade.
- Higher Fe-content, as well as lump ore, gains a premium in the market. This is the second adjustment, considering site-specific planned lump-fine ratios and average Fe contents, ie prices are derived for the lump and fine products from each of the processing streams (for example the dense media separation and Jig processing streams at Sishen mine or direct shipping ore at Kolomela mine). Thereafter price averaging is applied based on a mass weighted average calculation.
- Once the average product prices are calculated in US$/tonne FOB terms, the long-term real exchange rate is applied to convert the price to a Rand/tonne FOB Saldanha base.
- To calculate the Rand/tonne free-on-rail (FOR) price for the products, the long-term rail cost is subtracted for each of the sites. The rail cost includes related logistics and marketing costs.
- As a final adjustment, contractual obligations are considered. This completes the long-term adjustment process.

The site-specific long-term price and current budget costs extrapolated over time (representing the mining value chain) are then used to derive an optimal and resource pit shell.

The optimal pit shell is engineered or designed into a safe practical pit layout, considering geotechnical slope stability parameters, that envelops the current economically extractable ore volume, and forms the basis for the life-of-mine scheduling and resultant Ore Reserve and Saleable Product estimates.

The SAMREC Code approach is adopted for Ore Reserve classification, whereby Measured Mineral Resources occurring within the optimised pit are converted to either Proved or Probable Ore Reserves and Indicated Mineral Resources are converted to Probable Ore Reserves. The Competent Person may reclassify the Ore Reserves and even re-allocate Ore Reserves back to Mineral Resources should certain mining-related, legal, environmental, governmental and social aspects warrant it.

The run-of-mine derived from such a schedule represents the Ore Reserves. The product derived via the application of metallurgical factors (in the form of beneficiation algorithms defining the relationship between yield and product qualities with the mining block model grades) in the mining model and subsequent scheduling represents what is referred to as 'Saleable Product'.

Inferred Mineral Resources occurring within the Life-of-Mine Plan (LoMP) are reported as 'Mineral Resources considered for LoMP' in the Exclusive Mineral Resource table (**Table 7**) and not as Ore Reserves and are the unmodified version of the modified Inferred run-of-mine.

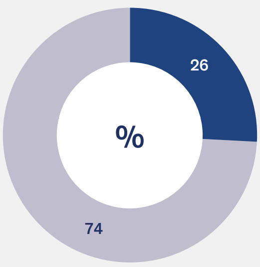
2016 VS 2015 ORE RESERVES

As of 31 December 2016, Kumba, from a 100% ownership reporting perspective, had access to an estimated Haematite Ore Reserve of 744 million tonnes **(Figure 3)** at an average unbeneficiated or feed grade of 59.7% Fe from its two mining operations:

- Kolomela 191.8 Mt @ 64.4% Fe (against a 50% Fe cut-off grade), showing a year-on-year decrease of 10; and
- Sishen 552.2 Mt @ 58.0% Fe (against a 40% Fe cut-off grade), showing a year-on-year decrease of 18%.

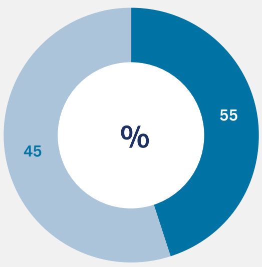
FIGURE 3: **2016 KUMBA ORE RESERVE PORTFOLIO – REPORTED AS 100%** (per site and per confidence class)

Per site Mt



Kolomela mine	191.8
Sishen mine	552.2

Per confidence class Mt



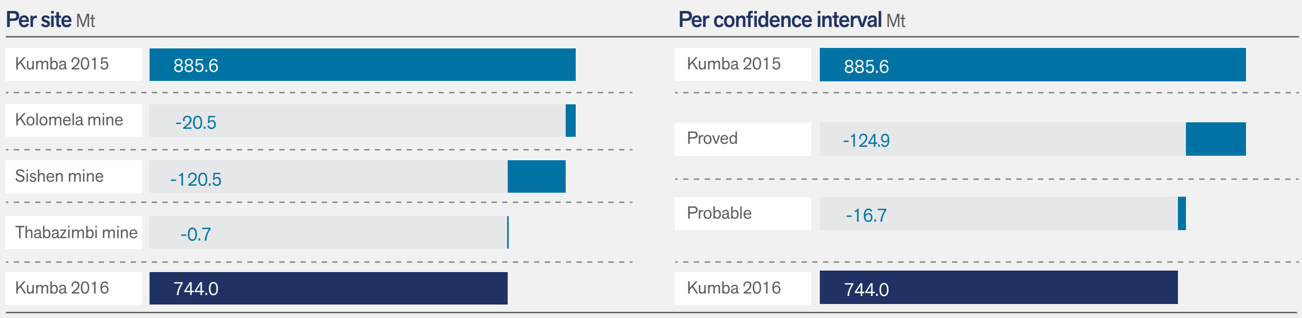
Proved	412.8
Probable	331.2

ORE RESERVES (AND SALEABLE PRODUCT) CONTINUED

A 16% net decrease of 141.6 Mt[4] is noted for the total Kumba Ore Reserve compared to 2015.

The Ore Reserve movements per operation and per confidence class is summarised in **Figure 4** and detailed in the footnotes of **Table 5**.

FIGURE 4: **KUMBA 2016 ORE RESERVES RECONCILED AGAINST 2015** (per site and per confidence class)



The decrease in the Proved to Probable Ore Reserve ratio from 61:39 in 2015 to 55:45 in 2016 is the result of:

- downgrading Proved Ore Reserves on run-of-mine buffer stockpiles to Probable Ore Reserves as per the Kumba standard as the grade estimations of these Ore Reserves are global estimates; and
- the increase of the size of the smallest mining unit at Sishen mine from 10 m(X) x 10 m(Y) x 12.5 m(Z) to 20 m(X) x 20 m(Y) by 12.5 m(Z). During the up-blocking from geological cells to the smallest mining unit in the mining block model, when Measured and Indicated cells are combined the resultant confidence assigned to the larger mining cell is Probable.

Kumba replenished its Ore Reserves in 2016 by 0.7% (5.8 Mt) only, with the introduction of the small-scale dense media separation plant at Kolomela mine, rendering more low-grade ore material as plant feed.

Table 5 gives a full account of the 2016 versus 2015 Kumba Ore Reserves.

TABLE 5: **KUMBA'S ORE RESERVE STATEMENT FOR 2016** (referenced against 2015)

						Ore reserves							
						2016				2015			
Operation/project	Operation status	Mining method	Ore type	% owned by Kumba	Reserve category	**Tonnage (Mt)**	**Grade (% Fe) Average**	**Grade (% Fe) Cut-off***	**Reserve Life** Years**	Tonnage (Mt)	Grade (% Fe) Average	Grade (% Fe) Cut-off	Reserve Life Years
Mining operations													
Kolomela mine[1]	Steady-state	Open Cut	Haematite	76.3	Proved	59.0	64.4	50.0	18	75.4	65.1	50.0	21
					Probable	132.8	64.4			136.8	63.9		
					Sub-total	**191.8**	**64.4**			**212.3**	**64.3**		
Sishen mine[2]	Steady-state	Open Cut	Haematite	76.3	Proved	353.8	59.8	40.0	17	462.3	59.4	40.0	15
					Probable	198.4	54.8			210.4	57.2		
					Sub-total	**552.2**	**58.0**			**672.7**	**58.7**		
Thabazimbi mine[3]	Production halted	Open Cut	Haematite	76.3	Proved	0.0	0.0			0.0	0.0	54.3	1
					Probable	0.0	0.0			0.7	58.7		
					Sub-total	**0.0**	**0.0**			**0.7**	**58.7**		
Kumba					Proved	412.8	60.5			537.7	60.2		
– mining operations					Probable	331.2	58.6			347.9	59.8		
					Total	**744.0**	**59.7**			**885.6**	**60.0**		

4 The year-on-year material decrease in the Kumba Ore Reserves and Mineral Resources was forewarned in the 2015 Ore Reserve and Mineral Resource Statement (http://www.angloamericankumba.com/~/media/Files/A/Anglo-American-Kumba/documents/867115-kumba-rr-fy15-es102.pdf):
"It is expected that the 2016 Kumba Ore Reserves and Mineral Resources may decrease materially from those stated in 2015… In addition, the continued softening of the iron ore market is expected to have a material impact on the 2016 Ore Reserves (~150 Mt reduction) and Mineral Resources."

ORE RESERVES (AND SALEABLE PRODUCT)

TABLE 5: **KUMBA'S ORE RESERVE STATEMENT FOR 2016** (referenced against 2015) continued

						Ore reserves							
						2016				2015			
Operation/project	Operation status	Mining method	Ore type	% owned by Kumba	Reserve category	Tonnage (Mt)	Grade (% Fe) Average	Grade (% Fe) Cut-off*	Reserve Life** Years	Tonnage (Mt)	Grade (% Fe) Average	Grade (% Fe) Cut-off	Reserve Life Years
Company													
Kumba					Proved	412.8	60.5			537.7	60.2		
Total Ore Reserves					Probable	331.2	58.6			347.9	59.8		
					Total	744.0	59.7			885.6	60.0		

- The tonnages are quoted in dry metric tonnes and million tonnes is abbreviated as Mt.
- Rounding of figures may cause computational discrepancies.
- Ore Reserve figures are reported at 100% irrespective of percentage attributable ownership to Kumba.
- Ore Reserves are spatially constrained via a pit layout, enveloping iron ore considered to be currently economically viable for mining.

* The cut-off grade assigned to Ore Reserves is variable and is dependent on the beneficiability and/or blending capacity of the modified ore scheduled as run-of-mine, which is iteratively determined during life-of-mine plan scheduling to achieve a scheduling grade target that is set to meet the client product specifications. The % Fe cut-off illustrated is therefore the lowest of a range of variable cut-offs for the various mining areas. It includes dilution material and can therefore, in certain cases, be less than the Mineral Resource cut-off grade.

** Reserve Life represents the period in years in the approved life-of-mine plan for scheduled extraction of Proved and Probable Reserves. The Reserve Life is limited to the period during which the Ore Reserves can be economically exploited. Where the scheduled Ore Reserves falls below 25% of the average annual production rate, the period beyond this is excluded from the Reserve Life, implying for example that the period beyond and including a year where the run-of-mine of an operation is made up of 24% Proved and Probable Ore Reserves and 76% Inferred Mineral Resources does not count towards Reserve Life.

– For Kolomela mine an 18-year remaining reserve life, at an average 13.6 Mtpa (14.1 Mt from 2018 to 2024) Saleable Product output (13.0 Mtpa in 2015 LoM Plan), has been quoted in 2016, which includes 22% modified Inferred run-of-mine ore compared to 20% in 2015 (the modified Inferred in the first five years of the LoM Plan has however decreased from 8% in 2015 to 5% in 2016 due to a continued on-mine exploration focus to minimise the risk). The reserve life decreased from 2015, primarily due to the 0.6 Mt increase in the average annual Saleable Product output, and because of the re-allocation of Ore Reserves to Mineral Inventory with the decrease in the size of the Kapstevel South mining area pit layout because of 7% year-on-year lowering in the long-term forward looking iron ore price.

Kolomela mine is in the process of compiling a section 102 mining right amendment application to accommodate the higher annual output (to be submitted to the DMR in 2017).

To define the risk of having >10% modified Inferred Mineral Resources in the LoM Plan, Kolomela mine valuated a long-term mine plan scheduling scenario excluding Inferred Mineral Resources which remained economically viable, although at a 42% lower net present value (@ 8% real).

– For Sishen mine, a 17-year reserve life has been quoted in 2016; which includes 7% modified Inferred run-of-mine ore compared to a 15-year reserve life in 2015, including 7% modified Inferred run-of-mine ore. The 2016 LoM Plan delivers an average 26.0 Mt annual Saleable Product output level, not achieved for the last year (ramp down) of the reserve life. The year-on-year increase in reserve life can be attributed to the material decrease in annual run-of-mine depletion associated with the smaller pit layout, which in turn is the result of applying a year-on-year 7% lower-long-term forward looking iron ore price during pit optimisation. This is in line with the SENS announcement that was published on 8 December 2015.

Sishen mine is in the process of compiling a section 102 mining right amendment application to accommodate the lower annual output (to be submitted to the DMR in 2017).

– Production at Thabazimbi mine ceased in 2016 and Sishen Iron Ore Company is in process of compiling a closure application for the two Thabazimbi mining rights.

Footnotes to table 5 explaining annual Ore Reserve differences:

1 **Kolomela mine's Ore Reserves decreased with 20.5 Mt (-10%) from 2015 to 2016.**

Run-of-mine production of 12.0 Mt Ore Reserves (excluding modified inferred run-of-mine ore) is the primary contributing factor to the year-on-year decrease in Ore Reserves, while other factors include:
- an 8.4 Mt re-allocation of Ore Reserves to Mineral Resources, based on a smaller Kapstevel South mining area pit layout as a result of the layout being aligned with a year-on-year 7% decrease in the long-term iron ore price.
- a 7.3 Mt decrease in Ore Reserve as a result of a refinement of the Leeuwfontein mining area geological model.

The reduction in Ore Reserves as explained above was offset by a 1.9 Mt increase in the run-of-mine buffer stockpiles levels as well as the conversion of more lower grade Mineral Resources to Ore Reserves (+5.8 Mt) to schedule run-of-mine required as plant feed for the new small-scale dense media separation plant that was commissioned in 2016.

2 **Sishen mine's Ore Reserves decreased substantially by 120.5 Mt (-18%) year-on-year.**

An update of the pit layout, whereby certain pushback areas included in 2015 were excluded in 2016 to align with the 7% lowering of the long-term forward looking iron ore price, as part of KIO's focus to maintain a sustainable and competitive business in the long term, resulted in a substantial re-allocation of 106.2 Mt of Ore Reserves to Mineral Resources. Other major movements include:
- run-of-mine production of Ore Reserves of 32.0 Mt (excluding modified Inferred run-of-mine ore); and
- a 19.3 Mt decrease in Ore Reserves based on implementing new grade control material class definitions.

The overall decrease was offset by a 36.6 Mt gain in Ore Reserves based on a revised dilution modifying factor considering a larger smallest mining unit, the latter however resulting in a 0.7% year-on-year decrease in the average % Fe, as well as a 0.7 Mt increase in the run-of-mine buffer stockpile levels and a correction made for production in 2015, which was 0.8 Mt less that estimated.

3 **The Thabazimbi Ore Reserves decreased to a zero level with 0.7 Mt.**

Thabazimbi mine is in the process of compiling a closure application to be submitted to the DMR in 2017.

A total of 0.5 Mt of Ore Reserves were mined (depleted) as run-of-mine in 2016, with 0.2 Mt remaining unused on run-of-mine buffer stockpiles because of quality reasons.

ORE RESERVES (AND SALEABLE PRODUCT) CONTINUED

2016 VS 2015 SALEABLE PRODUCT

The Saleable Product estimates are derived by applying site-specific metallurgical yield and associated product grades algorithms (defining the relationship between run-mine and product tonnages and grades) to the Ore Reserves. The yield (and associated product grade) algorithms for Sishen mine have been derived through metallurgical test work, the latter also considering efficiency differences between laboratory scale and pilot scale test work versus real-scale plant performances, while for Kolomela mine it has been empirically derived.

The 2016 life-of-mine plans, considering current contract and Client supply agreement conditions, deliver a total Saleable Product of 599.0 Mt with an average 64.6% Fe over the reserve life years for the two mining operations (**Table 6**).

TABLE 6: **KUMBA'S SALEABLE PRODUCT FOR 2016** (referenced against 2015)

								Saleable Product			
								2016		2015	
Operation/project	Operation status	Mining method	Ore type	% owned by Kumba	Saleable Product category	**2016 Metal-lurgical yield (%)**	2015 Metal-lurgical yield (%)	**Tonnage (Mt)**	**Grade (% Fe) Average**	Tonnage (Mt)	Grade (% Fe) Average
Mining operations											
Kolomela mine[1]	Steady-state	Open Cut	Haematite	76.3	Proved	**97.3**	99.8	57.3	65.0	75.3	65.1
					Probable			129.3	64.9	136.6	63.9
					Sub-total			**186.6**	**65.0**	**211.8**	**64.3**
Sishen mine[2]	Steady-state	Open Cut	Haematite	76.3	Proved	**74.7**	73.7	272.8	65.6	360.4	65.2
					Probable			139.6	63.5	135.6	64.7
					Sub-total			**412.4**	**64.9**	**496.0**	**65.1**
Thabazimbi mine[3]	Production halted	Open Cut	Haematite	76.3	Proved		78.6	0.0	0.0	0.0	0.0
					Probable			0.0	0.0	0.5	63.4
					Sub-total			**0.0**	**0.0**	**0.5**	**63.4**
Kumba – mining operations					Proved	**80.5**	80.0	330.2	65.5	435.7	65.2
					Probable			268.9	63.5	272.7	64.3
					Total			**599.0**	**64.6**	**708.4**	**64.8**
Company											
Kumba Total Ore Reserves					Proved	80.5	80.0	**330.2**	**65.5**	**435.7**	**65.2**
					Probable			**268.9**	**63.5**	**272.7**	**64.3**
					Total			**599.0**	**64.6**	**708.4**	**64.8**

1 Kolomela mine is primarily a direct shipping ore operation where Ore Reserves are crushed and screened to deliver Saleable Product at the required top sizes. The mine commissioned a small-scale modular dense media separation plant in 2016 to treat lower Fe-grade ore, resulting in a year-on-year decrease in the overall yield.

2 Sishen mine beneficiates its high-grade Ore Reserves by means of a dense media separation plant and its lower grade Ore Reserves by means of a Jig facility to produce Saleable Product according to required client specifications. The mine furthermore commissioned a small-scale dense media separation plant in 2016 to treat a portion of the Jig plant discard and produce Saleable Product. Since additional Saleable Product is generated from discard, the overall yield increased year-on-year.

3 Thabazimbi mine's production ceased in 2016.

Image: Janine Botes, specialist communication standing on the ramp at the load-out station at Kolomela mine.

EXCLUSIVE MINERAL RESOURCES

ESTIMATION

Kumba only derives Mineral Resource estimates from geological models that spatially (three-dimensionally) define the iron ore deposits, ie if an ore body is not spatially modelled no Mineral Resources can be declared for that ore body.

The initial step involves the compilation of tectono-stratigraphic solids models that domain the various iron ore types of each deposit as it is hosted within surrounding non-mineralised material, ie in relation to the non-economic or waste materials. In the case of Kumba it is mainly the geological logging of borehole samples that is used to conduct geological (stratigraphical) interpretations, in combination with structural mapping to derive final tectono-stratigraphic domain boundaries.

Within the solids model, the ore body is divided into different zones or domains that reflect areas of common grade, metallurgical characteristics where available, or other relevant characteristics so that appropriate interpolation functions can be applied to distinct ore domains within the deposit.

The validated borehole sample assay data intersecting the three-dimensionally defined domains are then composited, validated to verify correct assignment and to identify possible outliers, and used to interpolate critical *in situ* grades (Fe, SiO_2, Al_2O_3, K_2O and P as a minimum) and other parameters, including as a minimum requirement relative density, using a number of techniques, eg various types of Kriging for ore domains (dependent on sample support and sample density, etc) and Inverse Distance Squared for waste domains into pre-defined blocks. The models containing this blocked information is referred to as geological block models.

Where sample data is sparse, a global estimate is used, ie arithmetic mean of the grade data available in the domain. The interpolation method applied relies on geostatistical analyses of the ore domain grades to determine its site-specific relationship in space per domain.

The blocks making up the geological block model that intersects the solids model, are specifically sized and designed through quantitative Kriging neighbourhood analysis to manage the volume-variance effect and accommodate the smallest selective mining unit. These blocks, referred to as parent cells, are sub-blocked into smaller cells to honour, as closely as practically possible, domain boundaries.

The interpolated grades and tonnages assigned to the blocks within the geological block models are then used to estimate the grades and tonnages of the iron ore under consideration.

The Mineral Resource portion of the iron ore is spatially constrained or distinguished from other iron ore occurrences by a resource shell (2 x revenue factor pit shell derived during pit optimisation) and a % Fe cut-off grade, to make a clear distinction between ore considered to have reasonable prospects for eventual economic extraction and ore that do not.

Estimated Mineral Resource tonnages and grades are reconciled at the Kolomela and Sishen operations by comparing the estimates with tonnages and grades captured in grade control/production geology models which are compiled using additional infill drilling and/or blast hole sampling data.

In agreement with the SAMREC Code, Mineral Resources are classified according to the degree of confidence in the estimates (tonnes and grades), where this confidence is established as a function of several geological and grade continuity measurements. Kumba's Geosciences Department compiled a guideline for geological confidence classification, and where applicable, Mineral Resource classification which promotes a RD scorecard approach (with Competent Person override). This guideline is the preferred approach to Mineral Resource classification within the company but not a standard as the company acknowledges the autonomy of its Competent Persons (CP) and technical specialists in defining Mineral Resource confidence levels. The guideline recommends parameters deemed critical for grade and geological continuity of the ore body.

These parameters are then quantified and spatially estimated, ie each parameter is captured in every parent cell of the geological block model that intersects ore. The CP is then expected to weight each parameter in terms of its importance (as per the CP's experience and understanding of the deposit under investigation) in relation to the ore deposit grade or geological estimate. The weighting is applied to determine a normalised 'Grade Confidence Index' and a 'Geometry Confidence Index'.

These two indices are then again weighted and combined into a 'Geological Classification Index (GCI)'. The last step required from the CP is to assign cut-offs on the normalised GCI index figures contained in each parent cell in the geological block model to distinguish between Measured Indicated and Inferred Mineral Resources.

Inferred Mineral Resources are further subdivided into interpolated and extrapolated Inferred Mineral Resources as required by the SAMREC Code.

EXCLUSIVE MINERAL RESOURCES CONTINUED

2016 VS 2015 EXCLUSIVE MINERAL RESOURCES

From a 100% attributable reporting perspective, Kumba has a remaining exclusive (in addition to Ore Reserves) Mineral Resource base estimated at 1.1 billion tonnes, of which 638.2 Mt, at an average *in situ* grade of 55.5% Fe can be assigned to the Kumba mining operations and associated on-lease projects. The Zandrivierspoort (prospecting right) Magnetite deposit contributes 476.1 Mt @ 34.5% Fe to the Kumba Resource base. The detail of the respective ore bodies are listed below and is depicted in **Figure 5**.

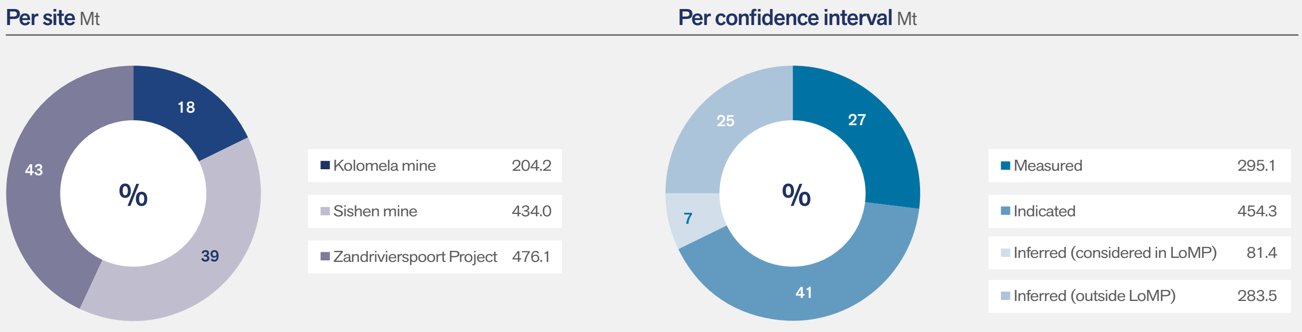
Haematite ore bodies:

- Operation: Kolomela mine (204.2 Mt @ 63.5% Fe), year-on-year increase of 8%
- Operation: Sishen mine (434.0 Mt @ 51.7% Fe), year-on-year decrease of 19%
- Operation: Thabazimbi mine (0 Mt), year-on-year decrease of 100% due to mine closure.

Magnetite ore bodies:

- Project: Zandrivierspoort (476.1 Mt @ 34.5% Fe and 40.8% Magnetite), remained unchanged from 2015

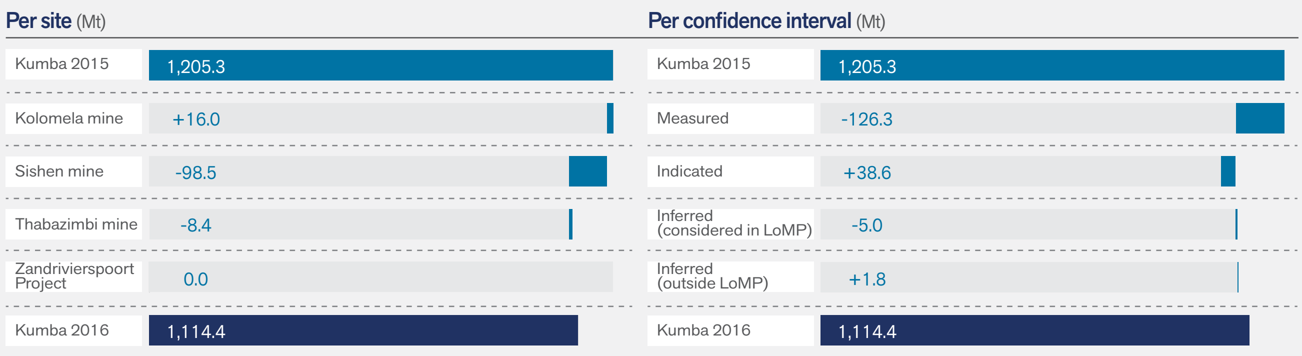
FIGURE 5: **2016 KUMBA MINERAL RESOURCE PORTFOLIO – SHOWN AS 100%** (per site and per confidence class)



An 8% net decrease of 90.9 Mt is noted for the total Kumba exclusive Mineral Resource compared to 2015.

The year-on-year decrease in Kumba's total exclusive Mineral Resource base of 90.9 Mt (-8%) is summarised in **Figure 6** and detailed in the footnotes of **Table 7**.

FIGURE 6: **KUMBA'S 2016 EXCLUSIVE MINERAL RESOURCE RECONCILED AGAINST 2015** (per site and per confidence class)



It must be categorically stated that Kumba's 2016 exclusive Mineral Resources are not an inventory of all mineral occurrences drilled or sampled regardless of cut-off grade, likely dimensions, location, depth or continuity. Instead they are a realistic record of those, which under assumed and justifiable technical, legal and economic conditions, show reasonable prospects for eventual economic extraction.

The Kumba exclusive Mineral Resources for 2016 are detailed in **Table 7**.

EXCLUSIVE MINERAL RESOURCES CONTINUED

TABLE 7: **KUMBA'S EXCLUSIVE MINERAL RESOURCE FOR 2016** (referenced against 2015)

				2016				2015			
Operation/project	Ore type	% owned by Kumba	Resource category	**Tonnage (Mt)**	**Average % Fe**	**Average % Fe_3O_4***	**% Fe Cut-off****	Tonnage (Mt)	Average % Fe	Average % Fe_3O_4*	% Fe Cut-off**
Mining operations											
Kolomela mine[1] ■ mineral resources in addition to ore reserves	Haematite	76.3	Measured	27.5	63.7	Not applicable	50.0	32.9	61.9	Not applicable	
			Indicated	67.4	62.6			57.2	61.5		50.0
			Measured & Indicated	94.9	62.9			90.2	61.6		
			Inferred (considered in LoMP)	52.7	65.2			51.5	64.8		
			Inferred (outside LoMP)	56.6	62.9			46.6	62.6		
			Sub-total	**204.2**	**63.5**			**188.3**	**62.8**		
Sishen mine[2] ■ mineral resources in addition to ore reserves	Haematite	76.3	Measured	160.6	57.2		40.0	281.2	63.3		
			Indicated	180.5	47.1			144.4	56.4		40.0
			Measured & Indicated	341.1	51.9			425.6	61.0		
			Inferred (considered in LoMP)	28.7	58.1			35.0	56.9		
			Inferred (outside LoMP)	64.2	48.2			72.0	57.0		
			Sub-total	**434.0**	**51.7**			**532.5**	**60.2**		
Thabazimbi mine[3] ■ mineral resources in addition to ore reserves	Haematite	76.3	Measured	0.0	0.0			0.2	63.0		
			Indicated	0.0	0.0			7.7	62.3		
			Measured & Indicated	0.0	0.0			8.0	62.3		55.0
			Inferred (considered in LoMP)	0.0	0.0			0.0	0.0		
			Inferred (outside LoMP)	0.0	0.0			0.4	58.9		
			Sub-total	**0.0**	**0.0**			**8.4**	**62.1**		
Kumba – mining operations ■ total mineral resources in addition to ore reserves			Measured	188.1	58.2			314.4	63.2		
			Indicated	247.9	51.3			209.4	58.0		
			Measured & Indicated	436.0	54.3			523.8	61.1		
			Inferred (considered in LoMP)	81.4	62.7			86.4	61.6		
			Inferred (outside LoMP)	120.8	55.1			119.0	59.2		
			Total	**638.2**	**55.5**			**729.2**	**60.9**		
Projects											
Zandrivierspoort[4] ■ mineral resources in addition to ore reserves	Magnetite and Haematite	38.2	Measured	107.0	34.7	41.5	21.7	107.0	34.7	41.5	
			Indicated	206.4	34.4	42.5		206.4	34.4	42.5	
			Measured & Indicated	313.4	34.5	42.2		313.4	34.5	42.2	21.7
			Inferred (considered in LoMP)	0.0	0.0	0.0		0.0	0.0	0.0	
			Inferred (outside LoMP)	162.7	34.5	38.1		162.7	34.5	38.1	
			Total	**476.1**	**34.5**	**40.8**		**476.1**	**34.5**	**40.8**	
Kumba – projects ■ total mineral resources in addition to ore reserves			Measured	107.0	34.7	41.5		107.0	34.7	41.5	
			Indicated	206.4	34.4	42.5		206.4	34.4	42.5	
			Measured & Indicated	313.4	34.5	42.2		313.4	34.5	42.2	
			Inferred (considered in LoMP)	0.0	0.0	0.0		0.0	0.0	0.0	
			Inferred (outside LoMP)	162.7	34.5	38.1		162.7	34.5	38.1	
			Grand total	**476.1**	**34.5**	**40.8**		**476.1**	**34.5**	**40.8**	

EXCLUSIVE MINERAL RESOURCES CONTINUED

TABLE 7: **KUMBA'S EXCLUSIVE MINERAL RESOURCE FOR 2016** (referenced against 2015) continued

Operation/project	Ore type	% owned by Kumba	Resource category	2016 Tonnage (Mt)	2016 Average % Fe	2016 Average % Fe_3O_4*	2016 % Fe Cut-off**	2015 Tonnage (Mt)	2015 Average % Fe	2015 Average % Fe_3O_4*	2015 % Fe Cut-off**
Company											
Kumba			Measured	295.1	49.7	Not applicable		421.4	56.0	Not applicable	
■ Grand total mineral resources in addition to ore reserves			Indicated	454.3	43.6			415.8	46.3		
			Measured & Indicated	749.5	46.0			837.2	51.1		
			Inferred (considered in LoMP)	81.4	62.7			86.4	61.6		
			Inferred (outside LoMP)	283.5	43.3			281.7	44.9		
			Grand total	**1,114.4**	**46.5**			**1,205.3**	**50.4**		

- The tonnages are quoted in dry metric tonnes and million tonnes is abbreviated as Mt.
- Rounding of figures may cause computational discrepancies.
- Mineral Resource figures are reported at 100% irrespective of percentage attributable Kumba ownership.
- The term Inferred Mineral Resource (outside LoMP) refers to that portion of the Mineral Resources not utilised in the life-of-mine plan (LoMP) of the specific mining operation or project.
- The term Inferred Mineral Resource (considered for LoMP) refers to that portion of the Mineral Resources utilised in the life-of-mine plan (LoMP) of the specific mining operation; reported without having any modifying factors applied – therefore the term "considered for LoMP" instead of "inside LoMP".
- Due to the uncertainty that may be attached to some Inferred Mineral Resources, it cannot be assumed that all or part of an Inferred Mineral Resource will necessarily be upgraded to an Indicated or Measured Resource after continued exploration.

* Fe_3O_4 – Magnetite

** The cut-off grade quoted for all the Kumba sites except the Zandrivierspoort Project, is a fixed chemical cut-off grade. In the case of Zandrivierspoort, the 21.7% Fe cut-off grade is a minimum value, with the cut-off grade being spatially dynamic. A minimum yield of 34.3% is required to define eventual economic extractability. This yield has been empirically derived considering the total *in situ* % Fe as well as the *in situ* Magnetite:Haematite ratio and a break-even cost.

Footnotes to table 7 explaining year-on-year Mineral Resource differences:

1 **Kolomela mine quotes a 16.0 Mt (+8%) increase in exclusive Mineral Resources from 2015 to 2016.**

The overall increase is primarily the result of:
- 8.4 Mt of Kapstevel South Ore Reserves re-allocated to Mineral Resources because of a smaller pit layout and the Ploegfontein ore body (not included in life-of-mine plan) Mineral Resource showing a year-on-year increase of 14.1 Mt with the resource shell being larger than previous year's after the 2016 pit optimisation process; and
- a 0.9 Mt increase in Mineral Resources based on a refinement of the geological ore domaining of the Leeuwfontein ore body, following new implicit solids modelling techniques replacing the old wireframing technique to derive more representative solids model geological interpretations.

The increase in Mineral Resources was offset by a 1.1 Mt depletion of Inferred Mineral Resources and a further 7.1 Mt of Mineral Resources converted into Ore Reserves to deliver plant feed for the new small-scale dense media separation plant that was commissioned in 2016.

Of the 56.6 Mt Inferred Mineral Resources (outside the LoM plan), 4.8 Mt is extrapolated.

2 **The Sishen mine exclusive Mineral Resources showed a substantial 19% decrease of 98.5 Mt from 2015.**

As was the case with the Sishen Ore Reserves, the mine's Mineral Resource was the most sensitive to the lowering in the long-term forward looking iron ore price, with the resource shell shrinking substantially, resulting in a 288.6 Mt decrease in Mineral Resources. Other contributing factors include:
- a 17.3 Mt decrease in Mineral Resources based on a revision of the methodology to define grade control material classes (including a revision of the beneficiation algorithms informing the grade control material class definitions being fundamentally derived in 2016, replacing the former empirically derived algorithms);
- a 15.3 Mt depletion of Mineral Resources comprising the mining of 5.8 Mt of Inferred Mineral Resources and 9.5 Mt of low-grade Mineral Resources (the latter occurring inside the pit layout but not converted to Ore Reserves as a concept study has been completed in 2016 but the pre-feasibility study is still in progress); and
- a further 3.8 Mt decrease in Mineral Resources due to minor aspects involving a reconciliation of 2015 depletion estimates and higher Ore Reserve conversions compared to 2015.

The annual Mineral Resource decrease at Sishen mine was offset by:
- A 213.4 Mt increase in Mineral Resources, with the inclusion of the low-grade or C-grade ore in the Sishen Mineral Resource portfolio after the approval of the Sishen low-grade project concept study by the relevant KIO and Anglo American plc Investment Committees in 2016, albeit lowering the total exclusive Mineral Resource average Fe-grade from 60.2% in 2015 to 51.7% in 2016. The Sishen low-grade project introduces new ultra-high dense media separation technology that can achieve client grade specifications via the beneficiation of lower grade material, hence the lowering in the average percentage Fe.
- A 3.6 Mt increase in the Mineral Resources, based on an update of the geological model using additional borehole information.

Of the 64.2 Mt Inferred Mineral Resources (outside the LoM plan), 4.2 Mt is extrapolated.

3 **The Thabazimbi mine exclusive Mineral Resource decreased to a zero level with 8.4 Mt.**

The total 8.4 Mt of the exclusive Thabazimbi Mineral Resource declared in 2015 was zeroed in 2016, with the ore not qualifying as having reasonable prospects for eventual economic extraction from a Kumba Iron Ore perspective, after ceasing production in 2016. Sishen Iron Ore Company is in the process of compiling a closure application for the two Thabazimbi mining rights, to be submitted in 2017.

4 **The Zandrivierspoort Project Mineral Resources remained unchanged from 2015.**

The reasonable prospects for eventual economic extraction of the Mineral Resource were re-affirmed in 2016 with the latest applicable long-term fiscal parameters.

ANCILLARY RESERVE AND RESOURCE INFORMATION PER OPERATION AND PROJECT

All the production-related figures quoted in this section are estimated (9 + 3) as the site Resource and Reserve Statements from which this summary Resource and Reserve Statement was compiled for Kumba, were started in the beginning of October 2016.

KOLOMELA MINE

Geological outline

Regional geology

The Transvaal Supergroup (Eriksson et al, 1993; 1995), or Griqualand West Supergroup as it is referred to where it occurs in the Northern Cape, is host to all of the iron ore occurrences in the region. The Supergroup was deposited in fault-controlled basins on a basement of Archaean granite gneisses and greenstones and/or lavas of the Ventersdorp Supergroup (Beukes, 1983). In the Kathu-Postmasburg region, the oldest rocks of the approximately 8 km thick Griqualand West Supergroup (Beukes, 1980) are the ~1.6 km thick carbonate platform sediments (dolomites with minor limestone, chert and shale) of the Campbellrand Subgroup of the Ghaap Group (Beukes, 1983; Altermann and Wotherspoon, 1995; Beukes, 1986).

Conformably overlying the carbonates is the banded iron formation unit, the Asbestos Hills Subgroup (Beukes, 1980), which can be up to 500 m thick. Locally the upper portion of the banded iron formation (Kuruman Iron Formation) has been enriched to ore grade, ie Fe>60%, and the ores found within this unit comprise the bulk of the high-grade iron ores in the region. The Kuruman Iron Formation is conformably overlain by the Griquatown Iron Formation. The two iron formations differ in that the Griquatown Iron Formation, comprising mainly allochemical sediments, was deposited in a shallow-water, storm-dominated epeiric sea (Beukes,1984), whereas the Kuruman Iron Formation, comprising orthochemical iron formations, was developed in the basin (Beukes, 1980). However, in the Maremane dome area, the Griquatown Iron Formation has been almost entirely removed by erosion along an unconformity separating the banded iron formations from the overlying clastic sediments of the Gamagara Formation.

During uplift and erosion solution and karstification of the upper dolomitic units of the lower Ghaap Group occurred and a 10 to 20 m thick, residual solution breccia, referred to as the ‘Manganese Marker’, ‘Wolhaarkop Breccia’ (van Wyk, 1980; van Schalkwyk and Beukes, 1986) or ‘Wolhaarkop Formation’, developed between the basal dolomites and overlying banded iron formation. Locally, deep sinkholes developed in the dolomites, into which the overlying iron formation collapsed (Beukes, 1983).

A thick sequence of younger clastic sediments (shales, quartzites and conglomerates) of the Gamagara Formation unconformably overly the Ghaap Group rocks and some of the conglomerates, comprised almost entirely of haematite, constitute lower-grade iron ore. The Gamagara Formation, interpreted as the base of the Palaeoproterozoic (~2.1-1.83 Ga) Olifantshoek Supergroup is overlain by the Palaeoproterozoic (~2.35-2.1 Ga) Postmasburg Group along an interpreted thrust contact in the study area (van Schalkwyk and Beukes, 1986; Friese and Alchin, 2007). The thrust fault has been folded during subsequent deformation.

Image: Petrus Skhungweni, a shovel operator and Kobus Ellis, a mining safety officer at a giant P&H 4100 shovel at Sishen mine.

ANCILLARY RESERVE AND RESOURCE INFORMATION PER OPERATION AND PROJECT CONTINUED

An altered gabbroic sill in the Kolomela area typically separates the iron ore from the underlying host banded iron formation, or is intrusive in the banded iron formation at Kolomela (Carney and Mienie, 2002). It is interpreted to have intruded into the Griqualand West Supergroup in late Proterozoic times (Friese and Alchin, 2007). The localised unit is prominent in the Leeuwfontein and Klipbankfontein ore bodies but absent in other areas.

Diamictite of the Makganyene Formation (de Villiers and Visser, 1977) and lava of the Ongeluk Formation (Postmasburg Group) have been thrust over the Gamagara Formation sediments in the vicinity of Postmasburg, which are now preserved only within the larger synclinal basins (Schütte, 1992).

The Makganyene diamictites comprise massive to poorly-bedded diamictite, pebbly sandstone and siltstone, shale and mudstone up to 100 m thick, which are interpreted as piedmont glacial and glaciofluvial assemblages (Beukes, 1983, Visser 1971). A second facies within the Makganyene contains mainly stacked cycles of graded bedded diamictite-greywacke-siderite bandlutite, which have been interpreted as glaciomarine deposits (Beukes, 1983). The Ongeluk lavas (600 m thick; Schütte, 1992) were extruded under water in a marginal basin within the continental setting of the Kaapvaal craton (Schütte, 1992), and comprise essentially tholeiitic basaltic andesites.

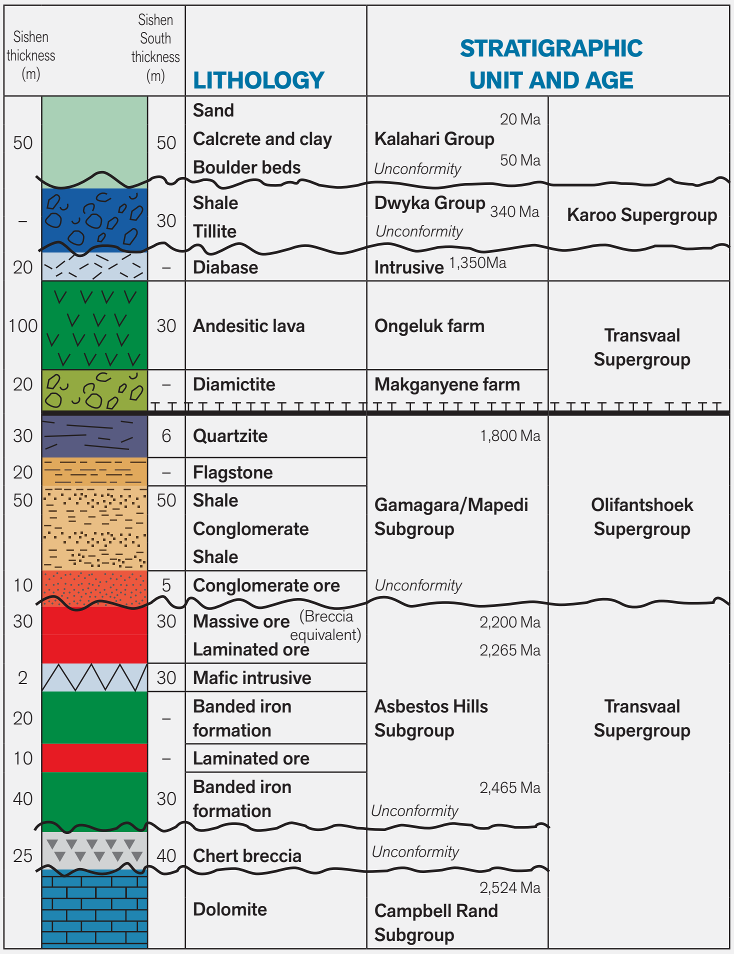
The lavas have been dated at 2240 ± 57 Ma (Walraven et al, 1982), 2239 ±90 Ma (Armstrong, 1987) and 2222 ± 13 Ma (Cornell et al, 1996).

A considerable portion of the upper parts of the stratigraphy was eroded during Dwyka glaciation and re-deposited as tillite (Visser, 1971) during the Cretaceous era. The entire, folded sequence was later truncated by Tertiary erosion and a thick blanket of calcrete, dolocrete, clays and pebble layers of the Kalahari Group were deposited unconformably over older lithologies.

Stratigraphy

Iron ore at Kolomela mine is associated with the chemical and clastic sediments of the Proterozoic Transvaal Supergroup. These sediments define the western margin of the Kaapvaal Craton in the Northern Cape province. The stratigraphy has been deformed by thrusting from the west and has undergone extensive karstification. The thrusting has produced a series of open, north-south plunging anticlines, synclines and grabens and karstification has been responsible for the development of deep sinkholes. The iron ore at Kolomela has been preserved from erosion within these geological structures. These structures are therefore important exploration targets. The Kolomela local stratigraphy is illustrated in **Figure 7**.

FIGURE 7: **SIMPLIFIED STRATIGRAPHIC COLUMN DEPICTING THE KOLOMELA LOCAL GEOLOGY**



The Transvaal Supergroup lithologies were deposited on a basement of Archaean granite gneisses and greenstones, and/or lavas of the Ventersdorp Supergroup. In the Sishen – Postmasburg region, the oldest rocks of the Transvaal Supergroup form a carbonate platform sequence (dolomites with minor limestone, chert and shale) known as the Campbell Rand Subgroup. The upper part of the Transvaal Supergroup comprises a banded iron formation unit, the Asbestos Hills Subgroup, which has been conformably deposited on the carbonates. In places, the upper portion of the banded iron formation has been supergene-enriched to Fe ≥ 60%. The iron ore/banded iron formation zone is referred to as the Kuruman Formation. The ores found within this formation comprise the bulk of the higher-grade iron ores in the region.

ANCILLARY RESERVE AND RESOURCE INFORMATION PER OPERATION AND PROJECT CONTINUED

Iron ore at Kolomela mine is associated with the chemical and clastic sediments of the Proterozoic Griqualand West Supergroup. These sediments define the western margin of the Kaapvaal Craton in the Northern Cape province.

The stratigraphy has been deformed by thrusting from the west and has undergone extensive karstification. The thrusting has produced a series of open, north-south plunging anticlines, synclines and grabens and karstification has been responsible for the development of deep sinkholes. The iron ore at Kolomela has been preserved from erosion within these geological structures. These structures are therefore important exploration targets.

The Griqualand West Supergroup lithologies were deposited on a basement of Archaean granite gneisses and greenstones, and/or lavas of the Ventersdorp Supergroup. In the Sishen – Postmasburg region, the oldest rocks of the Griqualand West Supergroup form a carbonate platform sequence (dolomites with minor limestone, chert and shale) known as the Campbell Rand Subgroup.

The upper part of the Griqualand West Supergroup comprises a banded iron formation unit, the Asbestos Hills Subgroup, which has been conformably deposited on the carbonates. In places, the upper portion of the banded iron formation has been supergene-enriched to Fe ≥ 60%. The iron ore/banded iron formation zone is referred to as the Kuruman Formation. The ores found within this formation comprise the bulk of the higher-grade iron ores in the region.

An altered mafic intrusive sill (originally of gabbroic composition) usually separates the iron ore deposits from the underlying host iron formation. It is believed to have intruded the Griqualand West Supergroup in late Proterozoic times.

A thick sequence of younger clastic sediments (shales, quartzites and conglomerates) belonging to the Gamagara Subgroup unconformably overlies the banded iron formations. Some of the conglomerates comprise predominantly of haematite and are of lower-grade ore quality. The unconformity separating the iron formations from the overlying clastic sediments represents a period of folding, uplift and erosion.

During this time, dissolution and karstification took place in the upper dolomitic units. This resulted in the formation of residual solution breccias, referred to as the 'Manganese Marker' or 'Wolhaarkop Breccia', between the dolomites and overlying banded iron formations. In places, deep sinkholes developed in the dolomites, into which the overlying iron formation and iron ore deposits collapsed.

Diamictite of the Makganyene Formation and lava of the Ongeluk Formation have been thrusted over the Gamagara sediments in the Kolomela region. These are preserved only within larger synclinal structures.

A considerable portion of the upper parts of the stratigraphy were eroded and re-deposited as tillite during Dwyka glaciation.

The entire folded sequence was then eroded during Tertiary times. A thick blanket of calcrete, dolocrete, clays and pebble layers (Kalahari Group) was deposited unconformably over the older lithologies.

Evidence of karst formation after the development of the calcretes of the Edin and Boudin Formation can be seen in the current Leeuwfontein pit.

Tectonic setting

Structurally, Kolomela mine lies on the western margin of the Kaapvaal Craton, and has been affected by Kheis Orogeny. The deformation intensity increases from east to west and the area is dominated by a regional-scale synforms and antiforms – the so-called Welgevonden Basin and Wolhaarkop antiform.

The area west of the Wolhaarkop antiform (including the western limb of the antiform), is characterised by tight overturned fold structures that verge towards the east. The overturned limbs of the fold structures are locally disrupted, which has produced thrusts with limited displacement. East of the antiform (Kolomela area), the folds are upright, tight to open structures that have variable inter-limb angles. All of the fold structures west of the antiform are the product of east-west crustal contraction during the Kheis Orogeny, which produced eastward-directed thrusting.

Thrust faults that were intersected in drill core in the Welgevonden north area caused duplication of the stratigraphy. The high degree of associated deformation is clearly illustrated in drill core from the Welgevonden area and duplication or elimination of iron ore may occur.

The Wolhaarkop area is structurally more intensely deformed than the Kapstevel and the Welgevonden areas. The folds are tight to isoclinal, over-folded with an eastwards vergence. With subsequent deformation the fold structures became disrupted, resulting in thrust structures with eastwards-directed movement.

The high-strain zones (thrusts) are locally characterised by a high degree of ferruginisation of extensively brecciated BIF. In some places, the ore is preserved as narrow, tightly folded lenses within the high-strain zones.

Local geology

Four distinct iron ore types have been described at Kolomela mine. Their chemical properties do, however, differ slightly. At Kolomela mine the iron ore comprises high quality, clastic-textured (28.8% of total), laminated (52.9% of total), collapse breccia (9.8% of total) and conglomeratic (8.6% of total) ores.

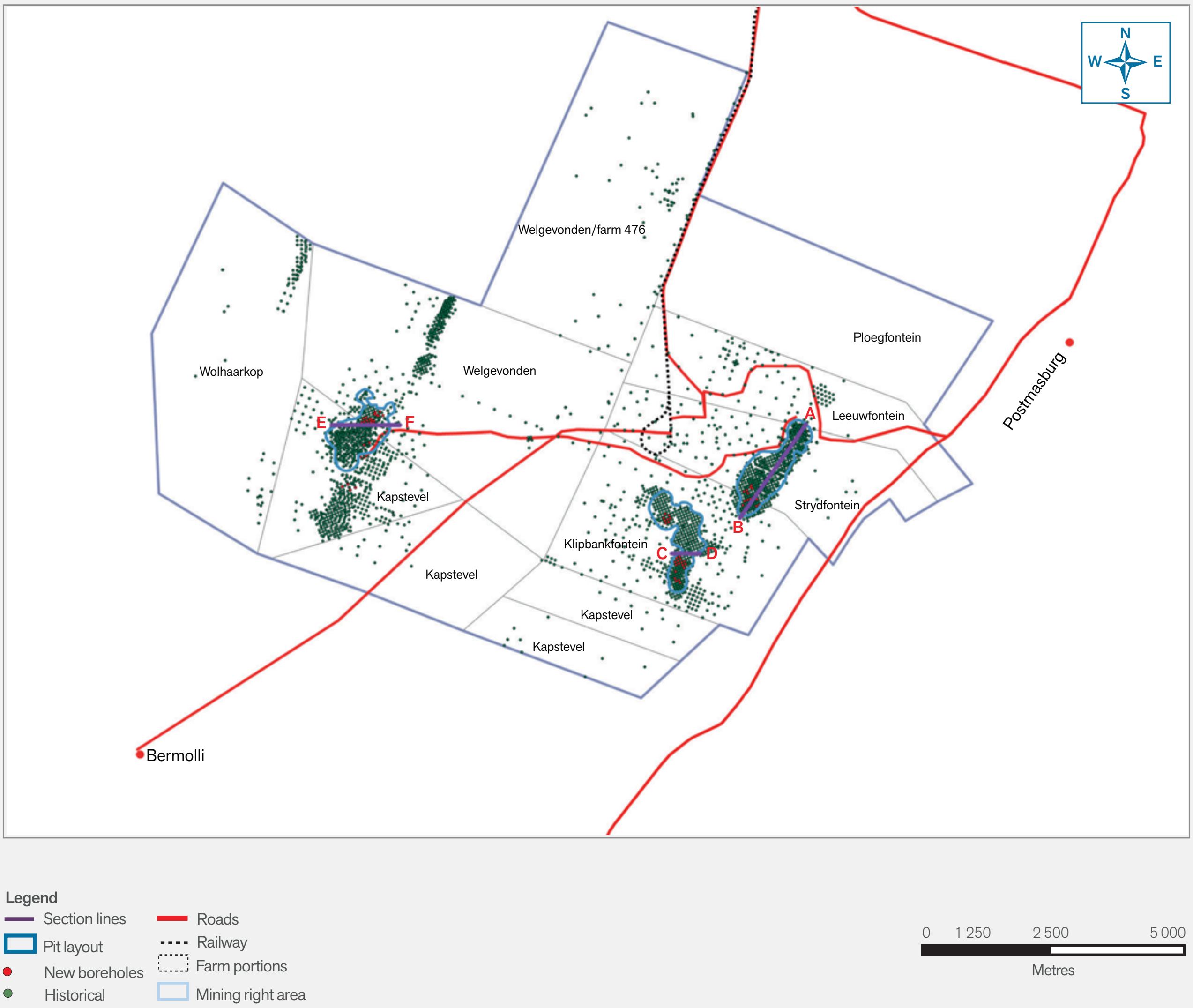
ANCILLARY RESERVE AND RESOURCE INFORMATION PER OPERATION AND PROJECT CONTINUED

The iron ore has been preserved as a number of discontinuous bodies within synclinal, graben and sinkhole structures, which were later influenced by thrusting from the west.

Each geological environment contains a unique combination of ore types and associated waste lithologies, but there are relatively few, lower-grade, conglomeratic and collapse breccia ores. The overall quality of the iron ore at Kolomela mine makes it acceptable as a high-grade metallurgical iron ore.

Geological interpretations have been derived from a borehole database comprising 3 215 boreholes (~465 000 m drilled in total). Boreholes drilled in 2016 are depicted in red in **Figure 8**.

FIGURE 8: **BOREHOLES SUNK IN 2016 (RED DOTS) WITHIN THE KOLOMELA MINING RIGHT AREA AS PART OF THE MINE'S ONGOING EXPLORATION PROGRAMME**



The geometry of the different ore bodies are depicted via cross-sections taken through the three-dimensional solids models of the various ore bodies:

- Cross-section AB (**Figure 9**) as referenced in plan (**Figure 8**) – North-east to south-west cross section through the Leeuwfontein Ore body.
- Cross-section CD (**Figure 10**) as referenced in plan (**Figure 8**) – East to west cross section through the Klipbankfontein Ore body.
- Cross-section GH (**Figure 11**) as referenced in plan (**Figure 8**) – East to west cross section through the Kapstevel North Ore body.

ANCILLARY RESERVE AND RESOURCE INFORMATION PER OPERATION AND PROJECT CONTINUED

FIGURE 9: **NE-SW CROSS-SECTION THROUGH THE LEEUWFONTEIN ORE BODY**

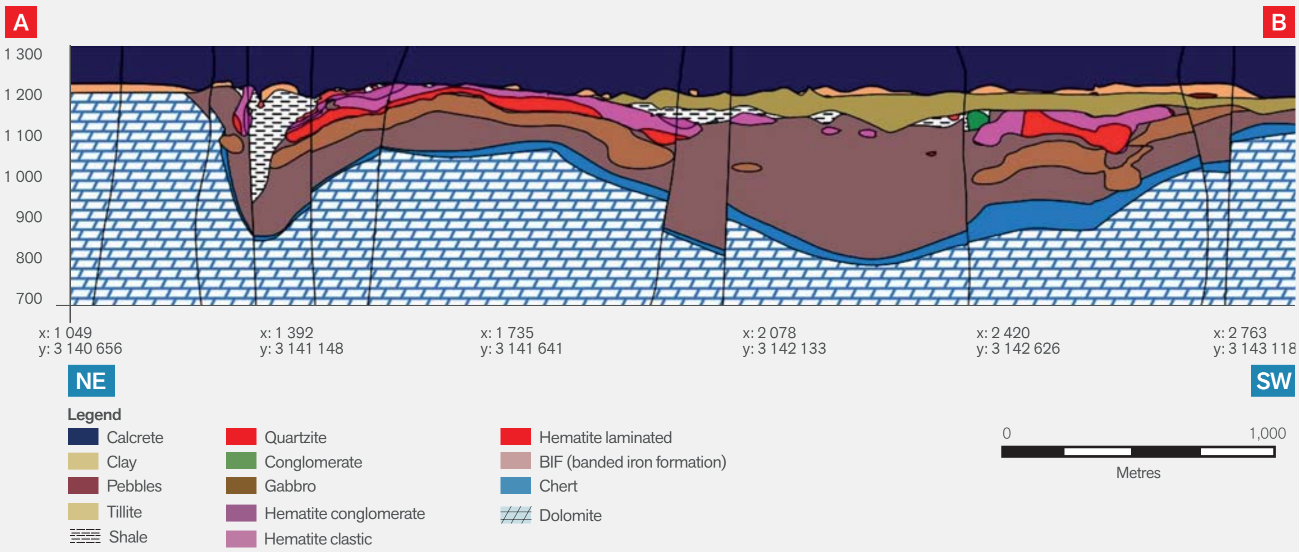
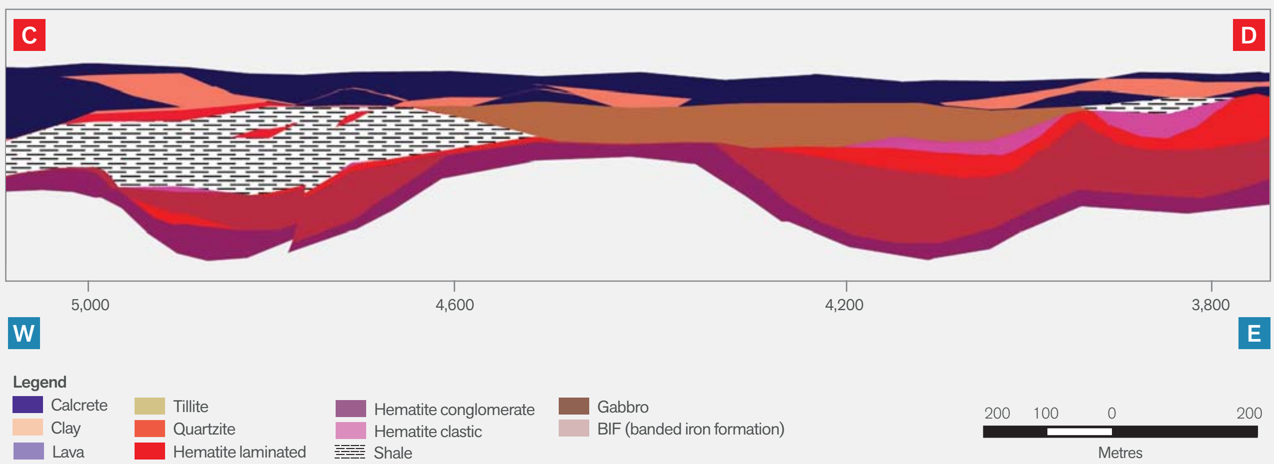
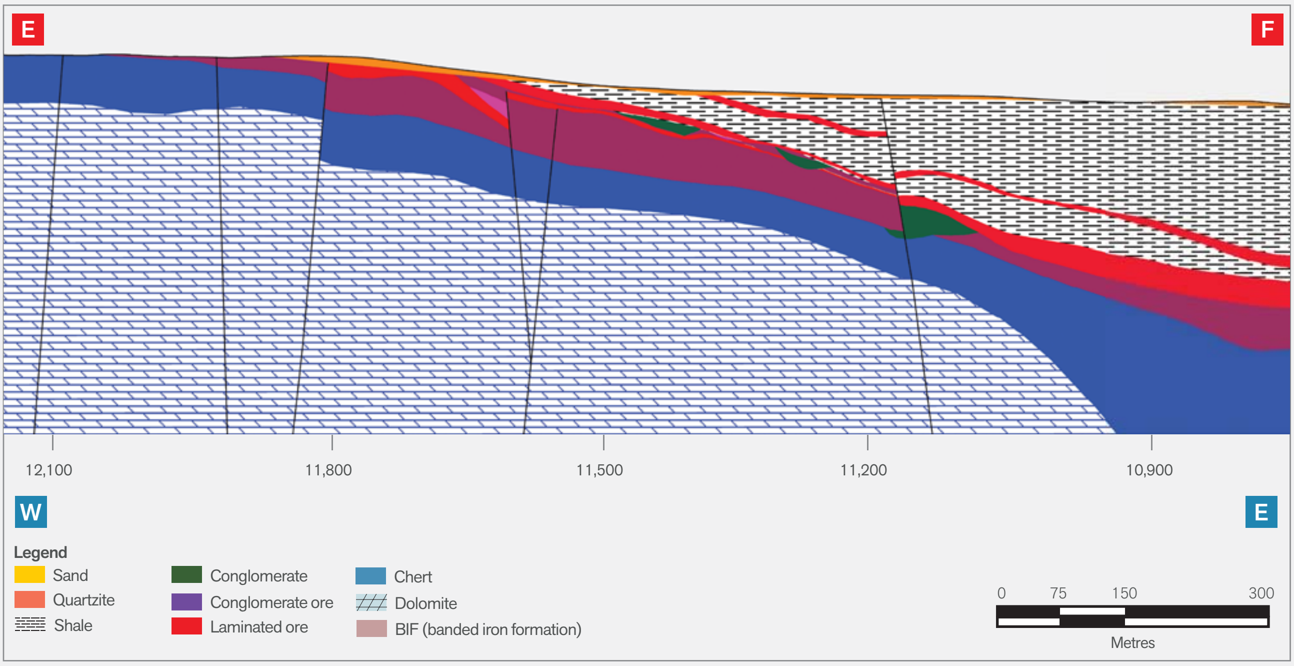


FIGURE 10: **WE CROSS-SECTION THROUGH THE KLIPBANKFONTEIN ORE BODY**



ANCILLARY RESERVE AND RESOURCE INFORMATION PER OPERATION AND PROJECT CONTINUED

FIGURE 11: **WE CROSS-SECTION THROUGH THE KAPSTEVEL NORTH ORE BODY**



Operational outline

Kolomela mine has been designed as a direct shipping ore operation, where conventional open pit drilling and blasting; shovel-and-truck loading and hauling mining processes are applied to generate plant feed. Currently the Leeuwfontein and Klipbankfontein ore bodies are mined, but the 2016 LoM Plan also includes future mining of the Kapstevel North and Kapstevel South ore bodies. Kapstevel North has been mined in the past.

The iron ore is loaded according to blend (grade) requirements and transported to designated buffer stockpiles dependent on the Fe grade and contaminant grade of the load. The primary crushing and screening plant is fed from the these stockpiles in blend ratios ensuring that the lump and fine product is suitable for Client uptake (considering subsequent blending with Sishen mine product). A modular small-scale dense media separation (DMS) plant was commissioned in 2016 and will in future contribute 5% to the Saleable Product output of Kolomela mine, through the treatment of previously stockpiled lower-grade material.

The iron ore product is railed to the Saldanha export harbour via the OREX iron ore export line. The product is marketed to SIOC's current overseas customer base as part of the SIOC marketing strategy and is blended with Sishen mine's product. Kolomela mine produces lump and fine ore, with the physical properties of the lump ore of such a high standard that it meets niche demand. Kolomela mine's key operational parameters are summarised in **Table 8.**

ANCILLARY RESERVE AND RESOURCE INFORMATION PER OPERATION AND PROJECT CONTINUED

TABLE 8: **KOLOMELA MINE OPERATIONAL OUTLINE SUMMARY**

Key details	
Ownership (AAplc)	53.2%
Ownership (Kumba)	76.3%
Commodity	Iron Ore
Country	Republic of South Africa
Mining method	Open pit – Conventional
Reserve Life* in years	18 years
Estimated Saleable Product Lump:Fine ratio	57:43
Saleable Product design capacity	13.5 Mtpa
Estimated 2016 Run-of-Mine production	13.1 Mt (15.0 Mt Ex-pit)
Estimated 2016 Saleable Product	12.7 Mt
Estimated 2016 waste production	48.8 Mt
Overall planned stripping ratio	3.8
Estimated product sold in 2016	13.4 Mt
Product types	Lump and Fine
Mining right expiry date	17 September 2038

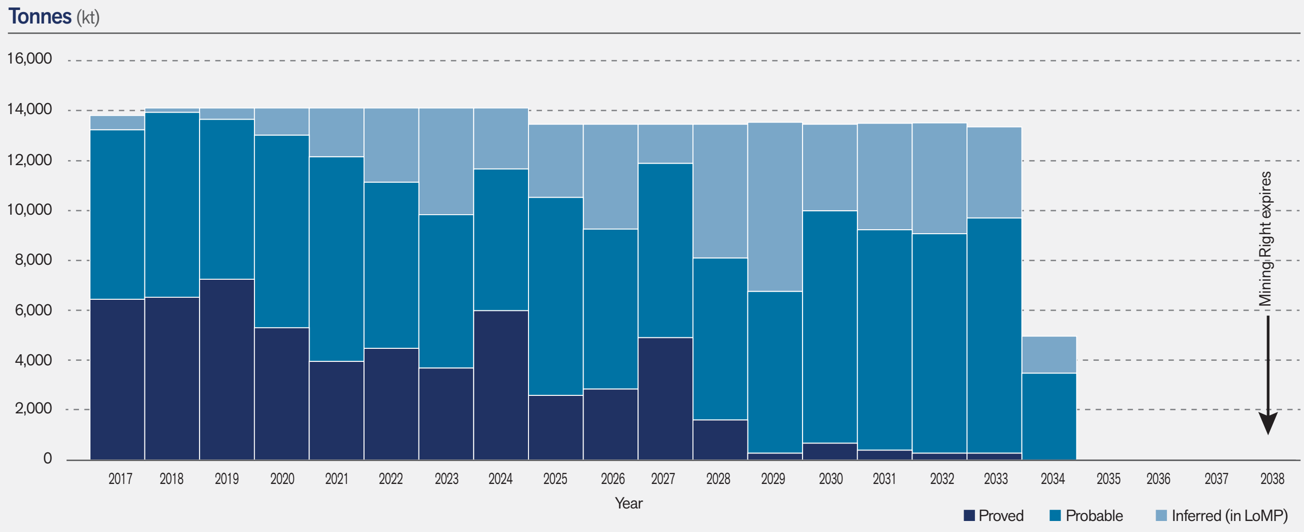
* Reserve Life includes all consecutive years in the life-of-mine plan where the Proved and Probable Ore Reserves make up >25% of the year's run-of-mine.

The total tonnes extracted from two pits (Leeuwfontein and Klipbankfontein) at Kolomela mine increased by 8% from 58.5 Mt (in 2015) to an estimated 63.8 Mt in 2016. The 2016 mining performance (as estimated at the time of reporting) comprises 48.8 Mt of waste and 15.0 Mt of ex-pit ore, the latter comprising 13.1 Mt of run-of-mine (including 1.1 Mt of Inferred Mineral Resources) delivered to the DSO and DMS plants and a year-on-year run-of-mine stockpile growth of 1.9 Mt.

In total, 12.7 Mt of Saleable Product will be produced on site from the run-of-mine delivered to the crushing & screening and DMS plants in 2016, compared to 12.1 Mt in 2015. With the inclusion of stockpiled product, 13.4 Mt is expected to be sold via the Saldanha Port.

The 2016 Life-of-Mine Plan Saleable Product profile is depicted in **Figure 12**. The operation is conducting an intensive exploration programme to reduce the modified Inferred Mineral Resources in the life-of-mine plan.

FIGURE 12: **KOLOMELA MINE'S 2016 LIFE-OF-MINE PLAN ANNUAL SALEABLE PRODUCT PROFILE** (including modified Inferred Mineral Resources)



Ore Reserve ancillary information

The Kolomela mine Ore Reserve ancillary information is summarised in **Table 9a** (background information) and **Table 9b** (Leeuwfontein Ore Reserve estimation parameters – as an example).

Mineral Resource ancillary information

The Kolomela mine Mineral Resource ancillary information is summarised in **Table 10a** (background information) and **Table 10b** (Leeuwfontein Mineral Resource estimation parameters – as an example).

ANCILLARY RESERVE AND RESOURCE INFORMATION PER OPERATION AND PROJECT CONTINUED

TABLE 9A: KOLOMELA MINE'S 2016 VS 2015 ORE RESERVE BACKGROUND INFORMATION

KOLOMELA MINE	2016	2015
LOCATION		
Country	Republic of South Africa	Republic of South Africa
Province	Northern Cape	Northern Cape
OWNERSHIP		
Sishen Iron Ore Company (Pty) Ltd	100%	100%
Kumba Iron Ore Limited	76.3%	73.9%
AA plc	53.2%	51.5%
OPERATIONAL STATUS		
Operation status	Steady-state	Steady-state
Mining method	Open cast (conventional drilling and blasting and truck and shovel operation)	Open cast (conventional drilling and blasting and truck and shovel operation)
Beneficiation method	Direct shipping ore (only crushing and screening of high grade RoM) as well as Dense Media Separation plant for B-grade material	Direct shipping ore (only crushing and screening of RoM)
Annual Saleable Product (Mt)	13.6	13.0
Annual supply to domestic market (Mt)	0.0	0.0
Annual supply to export market (Mt)	13.6	13.0
Number of products	2 product types (Lump and Fine)	2 product types (Lump and Fine)
GOVERNANCE		
Code	THE SAMREC CODE – 2007 EDITION (as amended July 2009)	
AA plc group technical standard	AA_GTS_22 (Reporting of Exploration Results, Mineral Resources and Ore Reserves in Anglo American)	
KIO reporting policy	http://www.angloamericankumba.com/sd_policies.php	http://www.angloamericankumba.com/sd_policies.php
KIO reporting protocols	KIOReportingProcedure(2015)	KIOReportingProcedure(2015)
	KIO Reserve Classification Guideline (version 1)	KIO Reserve Classification Guideline (version 1)
KIO reporting template	Ore Reserve (and Saleable Product) Reporting Template	KIO_R&R_Reporting_Template_082015
REPORTING METHOD		
Approach	Ore Reserves are those derived from Measured and Indicated Mineral Resources only (through application of modifying factors) and do not include Inferred Mineral Resources. In the case of Kumba Iron Ore all Ore Reserves are constrained by practical pit layouts, mining engineered from pit shells that define 'current economically mineable'. The geological block model(s) is converted into a mining block model considering a site-specific practical mineable smallest mining unit. Furthermore protocols ensure that Kumba Iron Ore's operations/projects consider expected long-term revenues versus the operating and production costs associated with mining and beneficiation as well as legislative, environmental and social costs, in determining whether or not a Mineral Resource could be economically extracted and converted to an Ore Reserve. This is performed by applying a Lerch-Grossman algorithm to the mining model to derive an optimised pit shell. This optimised pit shell is then iteratively converted to a practical layout by applying geotechnical slope stability parameters and haul road and ramp designs, legal restrictions, etc with safety being one of the most considered parameters. Once a practical pit layout has been established the material within the pit is scheduled over time to achieve client specifications and thus a LoM schedule is produced. The average % Fe grade and metric tonnage estimates of 'Saleable Product' are also reported to demonstrate that beneficiation losses have been taken into account.	

ANCILLARY RESERVE AND RESOURCE INFORMATION PER OPERATION AND PROJECT CONTINUED

TABLE 9A: **KOLOMELA MINE'S 2016 VS 2015 ORE RESERVE BACKGROUND INFORMATION** continued

KOLOMELA MINE	2016	2015
REPORTING METHOD		
Scheduled run-of-mine metric tonnes (dry/wet)	Dry	Dry
Tonnage calculation	Tonnages are calculated from the life-of-mine schedule, originating from the mining block models, and are modified tonnages considering geological losses. The effect of dilution, mining losses, mining recovery efficiencies and design recovery efficiencies to derive the run-of-mine tonnages delivered to the crushing and screening plant.	Tonnages are calculated from the life-of-mine schedule, originating from the mining block models, and are modified tonnages considering geological losses. The effect of dilution, mining losses, mining recovery efficiencies and design recovery efficiencies to derive the run-of-mine tonnages delivered to the crushing and screening plant.
Fe grade	Ore Reserve % Fe grades reported, represent the weighted average grade of the 'plant feed' or 'Run-of-Mine' (RoM) material and take into account all applicable modifying factors.	Ore Reserve % Fe grades reported, represent the weighted average grade of the 'plant feed' or 'Run-of-Mine' (RoM) material and take into account all applicable modifying factors.
Cut-off grade	50% Fe (includes diluting material)	50% Fe (includes diluting material)
Ore type	Haematite Ore	Haematite Ore
Saleable Product selling unit	Iron Ore – Fe (US$/tonne)	Iron Ore – Fe (US$/tonne)
Optimised pit shell revenue factor	0.92	0.92
Life-of-Mine scheduling		
Software	OPMS	OPMS
Method	Product tonnage and grade target driven to achieve required client product specifications	Product tonnage and grade target driven to achieve required client product specifications
Stripping strategy	Deferred waste stripping strategy	Deferred waste stripping strategy
Reserve Life years	18	21
LoM Plan run-of-mine tonnes (including modified Inferred) (expressed in million tonnes)	245.3	266.4
Overall average stripping ratio (including Inferred Mineral Resources)	1.0:3.8	1.0:3.9
Production data cut-off date (date whereafter short-term plan instead of actual figures are used to estimate the annual run-of-mine and Saleable Product production for the mine until 31 December of year of reporting)	30 September 2016	31 August 2015
Topography and pit progression assigned	31 December 2016	31 December 2015
Reserve schedule ID (Schedule file name + extension)	2016 LoM V1	2015 LoM including KSS
Reserve schedule completion date	25 July 2016	19 November 2015

ANCILLARY RESERVE AND RESOURCE INFORMATION PER OPERATION AND PROJECT CONTINUED

TABLE 9B: KOLOMELA MINE'S 2016 VS 2015 LEEUWFONTEIN ORE RESERVE ESTIMATION PARAMETERS (AS AN EXAMPLE)

	2016	2015
ESTIMATION		
Leeuwfontein		
Mining block model name	lf_2016_10_10_10.mdl	2015_lf_10_10_10_v1.mdl
Smallest mining unit	10 m(X) x 10 m(Y) x 10 m(Z)	10 m(X) x 10 m(Y) x 10 m(Z)
Practical mining parameters		
Bench height	10 m	10 m
Ramp gradient	8% to 10.0% (1 in 8 to 1 in 10)	8% to 10.0% (1 in 8 to 1 in 10)
Road width	35 m	35 m
Minimum mining width	80 m (hydraulic shovel and truck mining)	80 m (hydraulic shovel and truck mining)
Geohydrology	Groundwater level maintained 20 m below pit floor	Groundwater level maintained 20 m below pit floor
Pit slopes	Designed according to a defendable risk matrix, guided by an appropriate factor of safety of 1.3 and a probability of failure of 10%	Designed according to a defendable risk matrix, guided by an appropriate factor of safety of 1.3 and a probability of failure of 10%
Pit optimisation		
Software	Whittle 4X	Whittle 4X
Method	Lerch-Grossman (marginal cost cut-off analysis)	Lerch-Grossman (marginal cost cut-off analysis)
Modification		
Modifying factors		
■ Geological loss (%)	0%	0%
■ Dilution (%)	2.5%	0%
■ Mining loss (%)	0.0%	-0.3%
■ Mining recovery efficiency (%)	100.0%	100%
■ Design Recovery Efficiency (%)	100.0%	100%
■ Ore Reserves re-allocated to Mineral Resources (%)	-3.9%	-8.0%
■ Metallurgical Yield (%) to convert to Saleable Product	97.3%	99.8%
Estimator		
Reserve estimator	Angelique Stoker	Grant Crawley
Reserve estimator status	Internal technical specialist	Internal technical specialist
Estimator employer	Sishen Iron Ore Company (Pty) Ltd	Sishen Iron Ore Company (Pty) Ltd

ANCILLARY RESERVE AND RESOURCE INFORMATION PER OPERATION AND PROJECT CONTINUED

TABLE 10A: KOLOMELA MINE'S 2016 VS 2015 MINERAL RESOURCE BACKGROUND INFORMATION

	2016	2015
LOCATION		
Country	Republic of South Africa	Republic of South Africa
Province	Northern Cape	Northern Cape
OWNERSHIP		
Sishen Iron Ore Company (Pty) Ltd	100.0%	100.0%
Kumba Iron Ore Limited	76.3%	73.9%
Anglo American plc	53.2%	51.5%
SECURITY OF TENURE		
Number of applicable prospecting rights	1	1
Mining right status	Registered	Registered
Mining right expiry date(s)	17 September 2038	17 September 2038
EXPLORATION STATUS		
Exploration type	Geological Confidence (in mine)	Life Extension (in mine)
Exploration phase	In Execution	In Execution
GOVERNANCE		
Code	THE SAMREC CODE – 2007 EDITION (as amended July 2009)	
AA plc group technical standard	AA_GTS_22 (Reporting of Exploration Results, Mineral Resources and Ore Reserves in Anglo American)	
KIO reporting policy	http://www.angloamericankumba.com/sd_policies.php	http://www.angloamericankumba.com/sd_policies.php
KIO reporting protocols	KIOReportingProcedure(2015)	KIOReportingProcedure(2015)
	KIO Resource Classification Guideline (version 2)	KIO Resource Classification Guideline (version 2)
KIO reporting template	Mineral Resource (and Mineral Inventory) Reporting Template	KIO_R&R_Reporting_Template_082015
REPORTING METHOD		
Approach	Mineral Resources are reported exclusive of Ore Reserves and not factoring in attributable ownership and only if: (1) spatially modelled; (2) spatially classified; (3) spatially constrained in terms of reasonable and realistic prospects for eventual economic extraction (occurring within an RRPEEE defined envelope, in other words not all mineral occurrences are declared as Mineral Resources); (4) declared within (never outside) executed tenement boundaries.	
***In situ* metric tonnes** (dry/wet)	Dry	Dry
Tonnage calculation	Tonnages are added from cells in geological block models of which the centroids intersect the relevant geological ore domains in the solids models which occur inside the resource shell. The volume of each ore cell is multiplied with the estimated relative density of the same cell.	Tonnages are added from cells in geological block models of which the centroids intersect the relevant geological ore domains in the solids models which occur inside the resource shell. The volume of each ore cell is multiplied with the estimated relative density of the same cell.
Fe_3O_4 grade	Weighted average above cut-off grade	Weighted average above cut-off grade
Fe_3 calculation	Tonnage-weighted mean of the estimated *in situ* Mineral Resource Fe grades contained within geological block models, constrained by the relevant Resource geological ore domains and RRPEEE resource shell.	Tonnage-weighted mean of the estimated *in situ* Mineral Resource Fe grades contained within geological block models, constrained by the relevant Resource geological ore domains and RRPEEE resource shell.
Cut-off grade	50% Fe	50% Fe
Ore type	Haematite Ore	Haematite Ore

ANCILLARY RESERVE AND RESOURCE INFORMATION PER OPERATION AND PROJECT CONTINUED

TABLE 10B: KOLOMELA MINE'S 2016 VS 2015 LEEUWFONTEIN MINERAL RESOURCE ESTIMATION PARAMETERS (AS AN EXAMPLE)

	2016	2015
ESTIMATION		
Leeuwfontein geological model		
Input data		
Borehole type	Core and Percussion bore hole lithological logs and associated chemical analyses	
Relative density measurement	Picnometer analyses on pulp samples	Picnometer analyses on pulp samples
Kumba QA/QC protocol	Kumba QC Protocol for Exploration Drilling Sampling and Sub sampling (version 4)	
Primary laboratory	ANGLO AMERICAN RESEARCH Division of Anglo Operations Limited CHEMISTRY LABORATORY (Co. reg no: 1921/006730/07)	ANGLO AMERICAN RESEARCH Division of Anglo Operations Limited CHEMISTRY LABORATORY (Co. reg no: 1921/006730/07)
Accreditation	Accredited under International Standard ISO/IEC 17025:2005 by the South African National Accreditation System (SANAS) under the Facility Accreditation Number T0051 (valid from 01 May 2011 to 30 April 2016)	Accredited under International Standard ISO/IEC 17025:2005 by the South African National Accreditation System (SANAS) under the Facility Accreditation Number T0051 (valid from 01 May 2011 to 30 April 2016)
Borehole database software	acQuire	acQuire
Borehole database update cut-off date	30 April 2014	30 April 2014
Database validation conducted	Yes	Yes
Segmentation conducted	Yes. To allow for simplification of logged lithologies for spatial correlation purposes.	
STATISTICAL AND GEOSTATISTICAL EVALUATION		
Data compositing interval	1 m	1 m
Data compositing method	Length weighted average per lithology	Length weighted average per lithology
Grade parameters evaluated	% Fe, % SiO_2, % Al_2O_3, % K_2O, % S and % P as well as Relative Density	% Fe, % SiO_2, % Al_2O_3, % K_2O, % S and % P as well as Relative Density
Variography updated in current year	Yes	Yes
Search parameters updated in current year	Yes	Yes
SOLIDS MODELLING		
Solids modelling software	Leapfrog	Surpac
Input	Previous 3D explicit solids model	Electronically captured two-dimensional sections (interpreted on borehole lines)
Method	Implicit modelling for all domains	Digital wireframe modelling (manual triangulation) for ore segments and ore domain hangingwall and footwall waste domains Digital terrain models for other waste segments
Domaining	Yes, by lithology and structural controls	Yes, by segment code and structural controls
Topography and pit progression assigned	31 December 2016 (planned pit boundary)	31 December 2015 (planned pit boundary)
Validation conducted	Yes (for gaps and overlaps by software queries as well as honouring of borehole contacts)	Yes (for gaps and overlaps by software queries as well as honouring of borehole contacts)

ANCILLARY RESERVE AND RESOURCE INFORMATION PER OPERATION AND PROJECT CONTINUED

TABLE 10B: **KOLOMELA MINE'S 2016 VS 2015 LEEUWFONTEIN MINERAL RESOURCE ESTIMATION PARAMETERS (AS AN EXAMPLE)** continued

	2016	2015
GRADE ESTIMATION METHODOLOGY		
Ore segments	Ordinary (Co-) Kriging	Ordinary (Co-) Kriging
Waste segments	Global estimate	Global estimate
GEOLOGICAL BLOCK MODELLING		
Block modelling software	Surpac	Surpac
Model type	Centroid Model	Centroid Model
Parent cell size	40 m x 40 m x 10 m (Kriging neighbourhood analyses)	40 m x 40 m x 10 m (Kriging neighbourhood analyses)
Minimum sub-block cell size	10 x 10 x 5	10 x 10 x 2.5
Cell population method		
Tonnage	Volume of lithology intersected by cell centroid and constrained by cell limits, multiplied with relative density estimate of the same lithology at same unique cell centroid position in space.	Volume of lithology intersected by cell centroid and constrained by cell limits, multiplied with relative density estimate of the same lithology at same unique cell centroid position in space.
Grade	Estimate of grade at unique cell centroid position in space applicable to total volume or tonnage constrained by the cell.	Estimate of grade at unique cell centroid position in space applicable to total volume or tonnage constrained by the cell.
Updated geological block model ID (file name + extension)	lf022016c.mdl	lf_022015c.mdl
Update completion date	28 February 2016	28 February 2015
ESTIMATOR		
Resource estimator (name and surname)	Fanie Nel	Bosta Pratama
Resource estimator status	Internal technical specialist	External technical specialist
Estimator employer	Sishen Iron Ore Company (Pty) Ltd	QG Consulting

ANCILLARY RESERVE AND RESOURCE INFORMATION PER OPERATION AND PROJECT CONTINUED

SISHEN MINE

Geological outline

Regional geology

Please see Kolomela mine "Regional geology" section.

Stratigraphy

The carbonates of the Campbell Rand Subgroup are separated from the overlying Banded Iron Formation (BIF) of the Asbestos Hills Subgroup by a siliceous, residual breccia. This breccia is known locally as the Wolhaarkop Breccia and is developed on an irregular, karst surface.

The BIFs of the Asbestos Hills Subgroup are characteristically fractured and brecciated, especially near the contact with the Wolhaarkop breccia. Both upper and lower contacts are erosion surfaces and together with the lack of easily identifiable marker horizons, make correlation of individual beds virtually impossible.

A highly altered, slickensided, intrusive sill is commonly found separating the BIF from the overlying laminated ore. At Sishen mine it is generally less than 2 m thick. The sill is invariably folded into the basinal geometry and only rarely crosscuts (intrudes) the ore bodies.

At the Sishen deposit, the upper parts of the Asbestos Hills Subgroup have been ferruginised to ore grade. These stratiform, laminated and massive ores constitute the bulk of the resource. The laminated and massive ores are commonly folded and faulted into basinal and pseudo-graben structures.

Deep palaeo-sinkholes, filled with brecciated ore and Gamagara sedimentary rocks, are found on the southern parts of the Sishen properties. The sinkholes are restricted to antiformal structures close to the Maremane Dome on the southern portions of the mine. They are an important mechanism for preserving collapse breccia ore.

They are unconformably overlain by a thick package of sedimentary rocks (conglomerates, shales, flagstone and quartzite) termed the Gamagara Subgroup (S.A.C.S., 1995). Many researchers including Beukes and Smit (1987) and Moore (pers. comm.) have correlated this unit with the Mapedi Formation, which constitutes the lowermost unit of the Olifantshoek Supergroup. The Olifantshoek Supergroup is the oldest recognised red-bed sequence in the region. It is some 400 ma younger than the Transvaal Supergroup.

Conglomerates of ore-grade with well-rounded clasts and fine-grained, well-sorted, gritty ores are common at Sishen mine. Partly ferruginised shales, interbedded with ore conglomerates and thick flagstones are also a feature of the Gamagara Subgroup.

Along the western margin of Sishen mine, diamictite of the Makganyene Formation and lavas of the Ongeluk Formation have been thrust over the sedimentary rocks of the Gamagara Subgroup. The diamictite and lava have been eroded by later events. Tillite of the Dwyka Group and pebble beds, clay and calcrete of the Kalahari Group, have been deposited on these erosional unconformities.

A few thin, diabase dykes with north-south and northeast-southwest orientations, have intruded the stratigraphic sequence. They form impervious barriers and compartmentalise the groundwater.

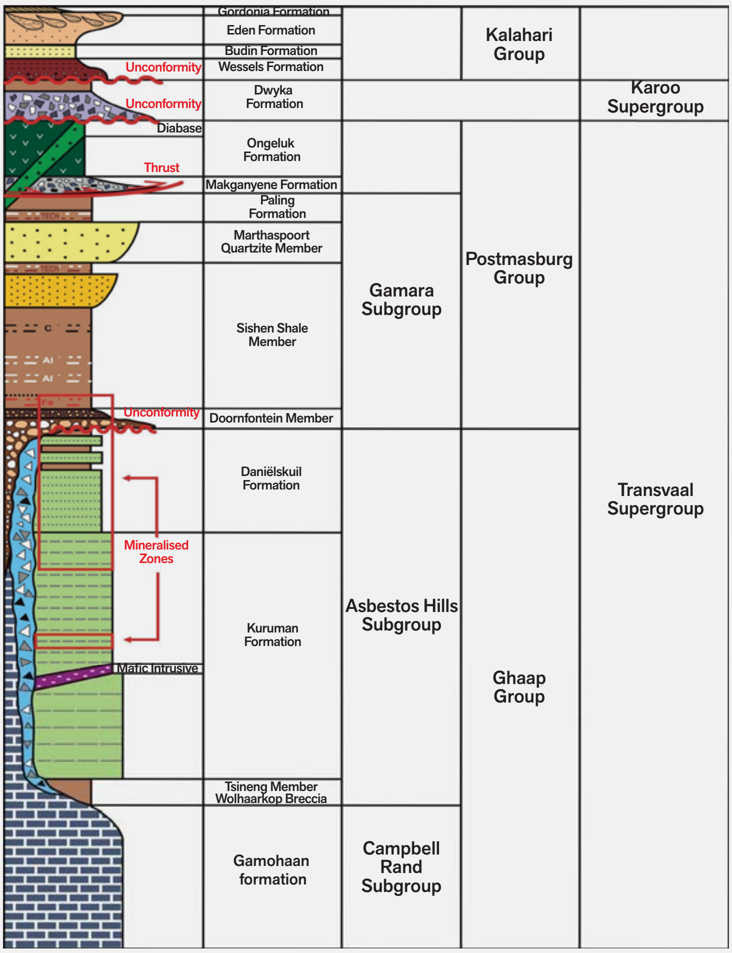
A buried glacial valley, filled with Dwyka tillite and mudstones has been identified with reconnaissance drilling. The valley is located between the mine and Kathu. It has a north-south orientation that changes to northwest-southeast between Dibeng and the mine.

The valley does not fall within the planned open pit.
The Kalahari Group comprises boulder beds, clays, calcrete, dolocrete and windblown sands. The Kalahari Group is developed to a maximum thickness of 60 m. The clay beds at Sishen can attain a thickness of up to 30 m on the northern parts of the deposit. The Kalahari beds of calcrete, limestone and clay and Quaternary sand and detritus, blanket more than 90% of the Sishen mining area. Only scattered outcrops of iron ore, quartzite and banded iron ore formation are found on the south-eastern parts of the Sishen mine properties.

A generalised version of the Sishen mine stratigraphy is depicted in **Figure 13**.

ANCILLARY RESERVE AND RESOURCE INFORMATION PER OPERATION AND PROJECT CONTINUED

FIGURE 13: **SIMPLIFIED STRATIGRAPHIC COLUMN DEPICTING THE SISHEN LOCAL GEOLOGY**



Tectonic setting

Structural studies by Stowe (1986), Altermann and Hälbich (1991) and Hälbich et al (1993) concluded that the lower Transvaal Supergroup exhibits at least three major phases of compressional tectonism at the western edge of the Kaapvaal Craton. The overall number of events may be significantly higher; for example, Altermann and Hälbich (1991) suggested that there were seven events. The development of this part of the Kaapvaal Craton is summarised below, in chronological order and using current azimuths, from Stowe (1986), Altermann and Hälbich (1991), Hälbich et al (1993), Friese (2007a, b) and Friese and Alchin (2007):

- ~2.78-2.64 Ga: Ventersdorp rift basin development. NE-SW trending faults, which formed graben boundaries, developed due to basin initiation and subsidence;
- ~2.64-2.6 Ga: Extrusion and deposition of the volcano sedimentary Vryburg Formation and Ventersdorp lavas;
- ~2.60-2.52 Ga: Development of a carbonate platform, during widespread marine transgression; consequent conformable deposition of the Schmidtsdrif and Campbell Rand Subgroup dolomites;
- ~2.52-2.46 Ga: Off-craton/oceanic rifting to the west, accompanied by hydrothermal deposition of manganiferous chert of the Wolhaarkop Formation. This was followed by deposition of the Asbestos Hill Subgroup (banded iron formation/Kuruman Formation);
- ~2.46-2.35 Ga: Incipient break-up and rifting, along a set of N-S trending, W-dipping normal faults in the Kaapvaal Craton during a 'second extensional stage' (Friese and Alchin, 2007). According to Dalstra and Rosière (2008), "E1" or their first extensional event occurred immediately before the 'Kalahari Orogeny';
- ~2.35-2.25 Ga: The first phase of folding (F1) resulted from the E-verging 'Kalahari Orogeny'. Altermann and Hälbich (1991) cite the >2.24 Ga or pre-Makganyene development of the Uitkomst cataclasite as part of this event, which they attribute to a bedding-parallel thrust. F1 folds were predominantly N-S trending; therefore the main axis of the Maremane Dome is effectively a 2.35-2.25 Ga F1 anticline or an F2-tightened F1 anticline. Pre-existing, predominantly rift-related normal faults were inverted and underwent a component of strike-slip reactivation, concomitant with this eastwards tectonic vergence; their adjacent, uplifted blocks were eroded. An additional feature of this event appears to be the formation of conjugate NE- and SE-trending strike-slip faults which are radially distributed around the eastern curve of the Maremane Dome. This orogeny also caused uplift and erosion of underlying units, including the Ghaap Group, to form the Postmasburg Unconformity, which is pivotal in regional ore development and/or preservation. The deposition of the Makganyene Formation of the Lower Postmasburg Group, which has a minimum age of 2.22 Ga, probably resulted from this event;

ANCILLARY RESERVE AND RESOURCE INFORMATION PER OPERATION AND PROJECT CONTINUED

- ~2.24-1.83 Ga: Reactivation of faults related to both the N-S trending passive margin rift and the Ventersdorp Rift, causing deposition of the fault-controlled or fault-bounded, volcano-sedimentary/volcanoclastic Upper Postmasburg Group. Ongeluk lavas signify the peak of mafic lava extrusion at c. ~2.22 Ga, via feeder dykes that exploited reactivated NNE- to NE-trending faults (Friese and Alchin, 2007; Figure 1). Dalstra and Rosière (2008) correctly inferred that dykes locally recrystallised ores. Within this interval, deposition of clastic sediments in the form of conglomerate, 'grit', quartzite and shale of the lower Olifantshoek Supergroup took place at ~2.05-1.93 Ga, thereby forming and terminating the deposition of the Gamagara/Mapedi Formation, which formed within a shallow-water rift environment (Beukes, 1983). The second extensional event or 'E2' of Dalstra and Rosière (2008) occurred during or shortly after this period, as reactivated normal faults displaced or offset the lower Olifantshoek Group, although such structures tend to pre-date the Kheis Orogeny. Apparently overlapping in age with this extensional event is the formation of south-verging folds and thrusts, which, according to Altermann and Hälbich (1991), are the oldest post-Matsap event at 2.07-1.88 Ga;
- ~1.83-1.73 Ga; The Kheis Orogeny or tectono-metamorphic event, like the Kalahari Orogeny, showed eastward tectonic vergence that was accompanied by thrusting and folding (Stowe, 1986; Beukes and Smit, 1987; Altermann and Hälbich, 1991; Hälbich et al, 1993). The Kheis Orogeny is more precisely dated at ~1780 Ma, using a 39Ar-40Ar metamorphic age derived from the Groblershoek Schist Formation of the Olifantshoek Supergroup (Schlegel, 1988). Rift structures of the Postmasburg Group and Olifantshoek Supergroup depositional settings were reactivated while F2 folding and thin-skinned thrusting occurred along major unconformities and lithological contacts. In some areas, F1 folds were tightened co-axially during F2 folding. In the Sishen area, thrusting was concentrated at the shale-dominated, tectonised margins of a quartzite member within the upper Olifantshoek Group; these horizons are termed 'tectonised shale' in drill core, although this sequence appears to be very poorly developed at the Heuningkranz prospect. Friese (2007a, b) and Friese and Alchin (2007) have termed these and other low-angle thrusts 'principal décollements'; and
- ~1.15-1.0 Ga: The NNW-directed Lomanian (Namaqua-Natal) Orogeny caused deformation along the southern margin of the Kaapvaal Craton. The effects of this were manifold: reactivation and buckling of N-S trending normal and inverted normal faults, reactivation of the 2.35-2.24 Ga NE- and SE-trending conjugate strike-slip faults, usually with upthrow to the SE and SW, respectively, the development of ENE-trending F3 folds, which may have contributed to broad F2/F3 fold interference patterns (q.v. Mortimer, 1994, 1995). This may also have contributed to the geometry of the Maremane Dome, which is effectively a large-scale 'Ramsay style' interference fold with a radial set of fractures/faults, in which conjugate relationships may still be observed (Figure 1). The Dimoten and Ongeluk-Witwater Synclines, wherein the Postmasburg Group is preserved, are situated towards the eastern foreland of the Maremane Dome.

It has been suggested that the interference or intersection of F2 synclines and F3 synclines has resulted in deep, steep-sided, circular or ovoid depressions in which ore (and banded iron formation) is notably thicker (eg Mortimer, 1994; 1995). This must be weighed against other models which suggest that areas of very thick, deep ore occupy palaeo-sinkholes, ie occur within palaeokarst topography within the Campbell Rand Subgroup (Beukes et al, 2002).

A third model is that of Dalstra and Rosière (2008), which advocates a close association between structures and mineralisation and/or between structures and the preservation of mineralisation. Due to the complex structural and stratigraphic evolution of the area, it is entirely possible that there is a component of all three mechanisms present in a given deposit, albeit substantially complicated by variable preservation.

Subsequent tectonism, including the breakup of Gondwana and Pan-African reworking, had only a minor effect on the modelled volume. Regionally, Bushveld-age gabbroic rocks intruded into the Ghaap and Postmasburg Groups within a clearly-defined NE-trending graben, essentially accommodated by the reactivation of Ventersdorp faults (Friese and Alchin, 2007).

Local geology

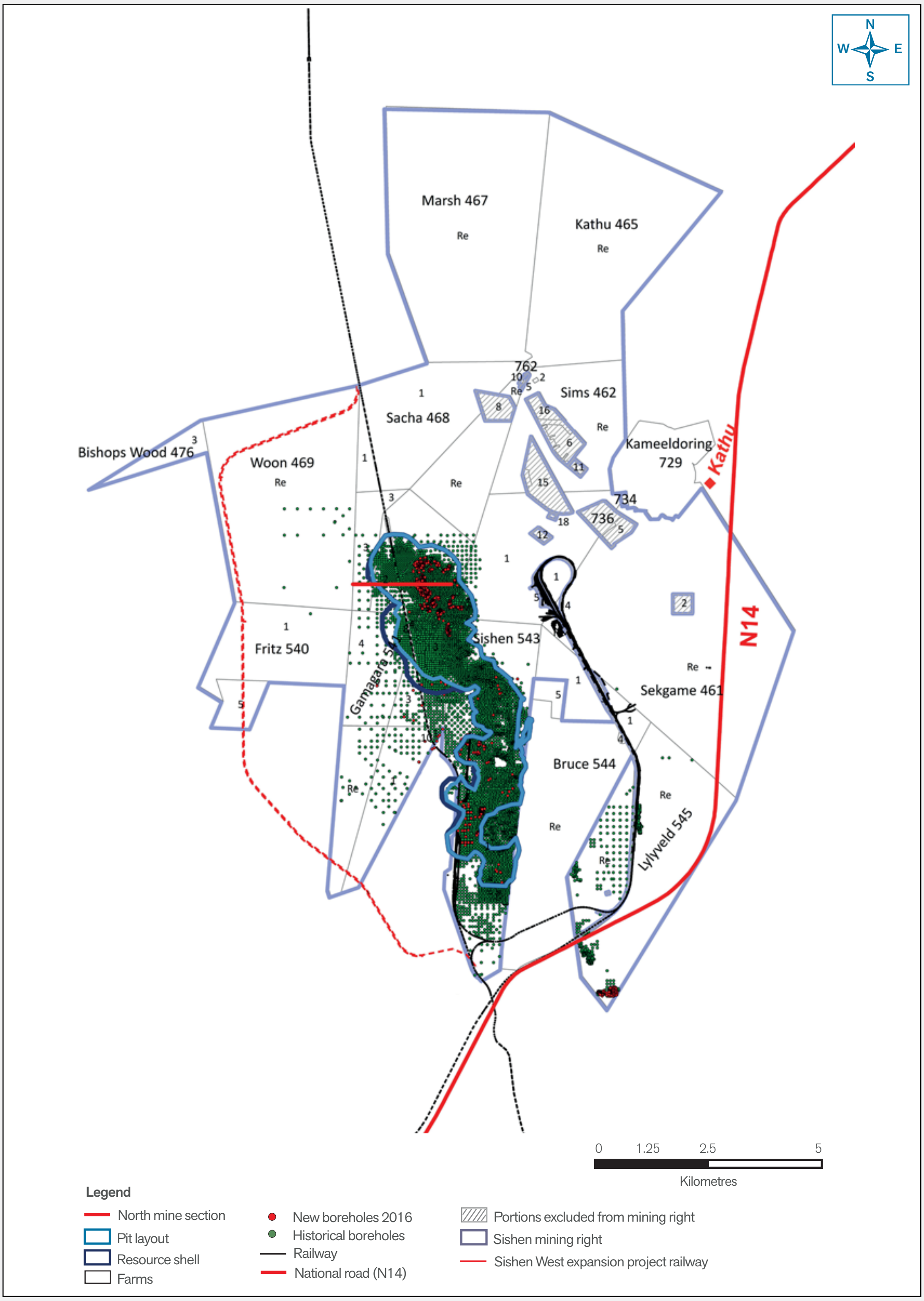
A total of 14,733 core and percussion exploration drill holes (approximately 1,500,000 m) have been drilled at the operation, resulting in a highly developed understanding of the mineral asset (**Figure 14**).

Sishen mine is situated on the northern extremity of the Maremane anticline. At this location the lithologies strike north-south and plunge from the centre of the anticline in a northerly direction. The bulk of the resource comprises high-grade, laminated and massive ores belonging to the Asbestos Hills Subgroup.

The ore bodies are intensely folded and faulted. Dips vary according to local structures, but at Sishen, a regional dip of 11° in a westerly direction prevails.

ANCILLARY RESERVE AND RESOURCE INFORMATION PER OPERATION AND PROJECT CONTINUED

FIGURE 14: **SISHEN MINING RIGHT AREA NEAR THE TOWN OF KATHU IN THE NORTHERN CAPE PROVINCE**

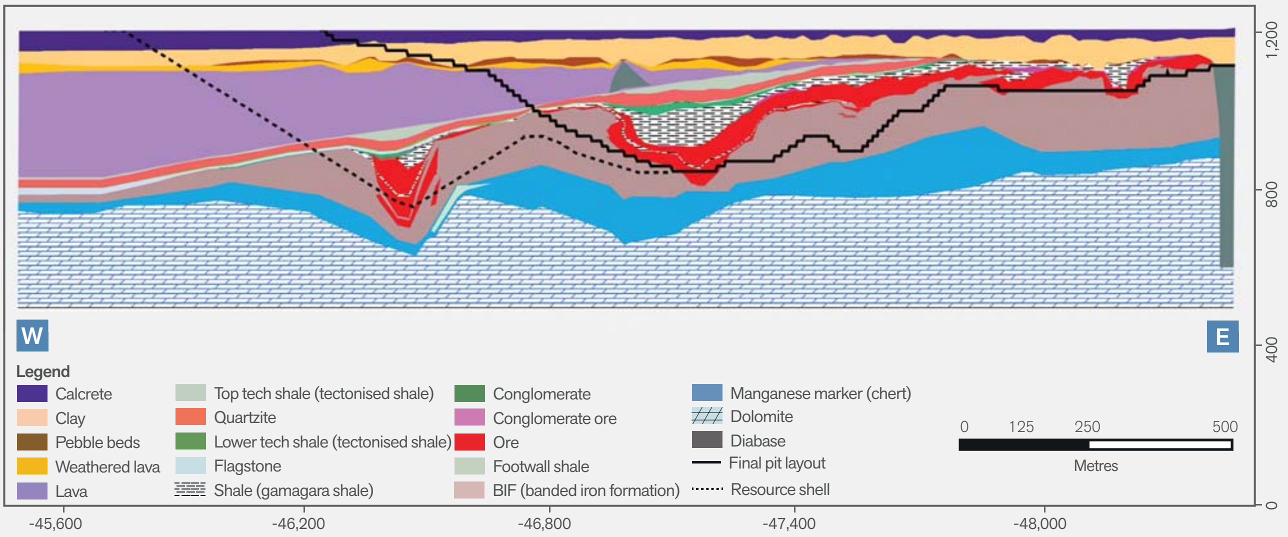


ANCILLARY RESERVE AND RESOURCE INFORMATION PER OPERATION AND PROJECT CONTINUED

The geometry of the lithologies are depicted via cross-sections taken through the latest three-dimensional Sishen geological model:

- **Figure 15** is a west-east section through the Sishen North mine area.

FIGURE 15: **WEST-EAST CROSS-SECTION DEPICTING THE LOCAL GEOLOGY THROUGH THE SISHEN NORTH MINE AREA**



Operational outline

Sishen mine currently comprises a conventional open-pit operation, processing run-of-mine through two processing facilities (dense media separation plant and Jig plant) with a combined operating capacity of 55 Mtpa of RoM.

The current mining process entails topsoil removal and stockpiling, followed by drilling and then blasting of waste lithologies and ore. Overburden is backfilled in the pit or hauled to waste rock dumps. The iron ore is loaded according to blend (grade) requirements and transported to the beneficiation plants, where it is crushed, screened and beneficiated. Each size fraction is separated and beneficiated using a ferrosilicon medium or jigging process before being stockpiled on the product beds. Plant slimes are pumped to evaporation dams and the plant discard material is stacked on a separate waste dump.

Seven iron ore products (conforming to different chemical and physical specifications) are produced. The ores are reclaimed from the product beds and loaded into trains, to be transported to local steel mills and Saldanha Bay for export to international markets.

Kumba has an agreement with ArcelorMittal SA to supply them domestically with a maximum of 6.25 Mtpa of Saleable Product of which a maximum of 1.8 Mtpa is to be delivered to Saldanha Steel. The remainder of the production is exported via the Saldanha Port to various international steel markets.

Sishen mine's key operational parameters are summarised in **Table 11**.

ANCILLARY RESERVE AND RESOURCE INFORMATION PER OPERATION AND PROJECT CONTINUED

TABLE 11: **SISHEN MINE OPERATIONAL OUTLINE SUMMARY**

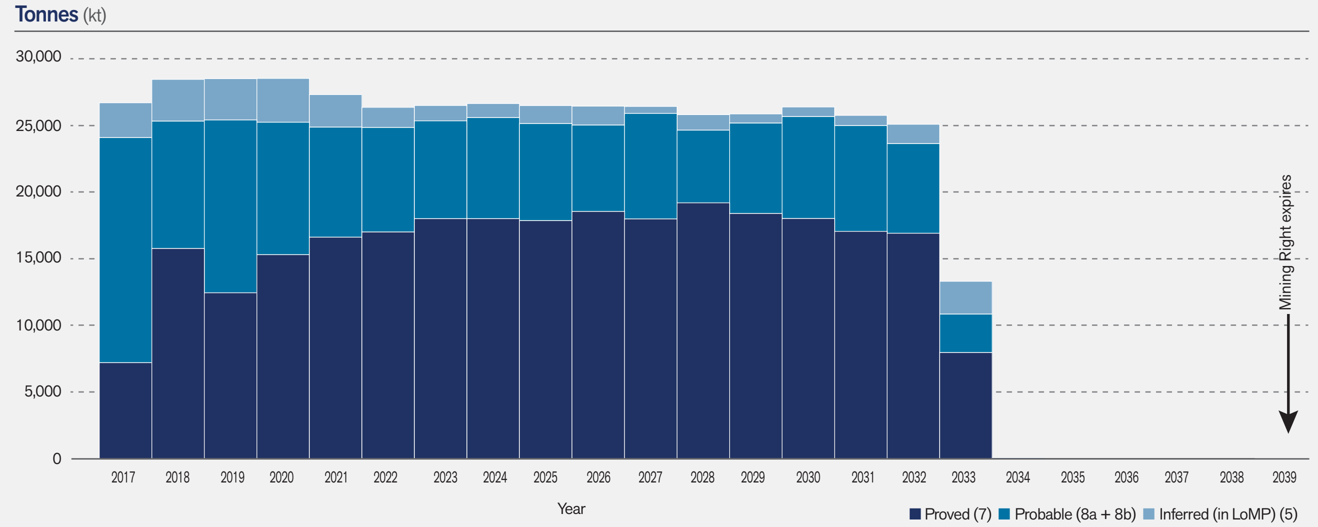
	Key details
Ownership (AA plc)	53.2%
Ownership (Kumba)	76.3%
Commodity	Iron Ore
Country	Republic of South Africa
Mining method	Open pit – Conventional
Reserve Life* (years)	17 years
Estimated Saleable Product Lump:Fine Ratio	60:40
Saleable Product design capacity	41.4 Mtpa
Estimated 2016 Run-of-Mine production	38.1 Mt
Estimated 2016 Saleable Product	28.1 Mt
Estimated 2016 waste production	136.8 Mt
Overall planned stripping ratio	1:3.94
Estimated product sold in 2016	28.0 Mt
Product types	Primarily lump – 69% of products (63.2 - 65.2% Fe), fines (63.2 – 64.4% Fe). In total seven Lump and Fine Product Types of varying grade is produced
Mining right expiry date	10 November 2039

* Reserve Life includes all consecutive years in the life-of-mine plan where the Proved and Probable Ore Reserves make up >25% of the year's run-of-mine.

The total tonnes extracted from the pit at Sishen mine decreased by 39% from 245.7 Mt in 2015 to 177.1 Mt in 2016, of which waste mined in 2016 equates to 136.8 Mt, as estimated at the time of reporting. The latter is the result of Kumba Iron Ore having aligned its business with a lower iron ore price in order to remain competitive and a Sishen specific decision to defer waste stripping for the period 2016 to 2018 to save costs. Total production at Sishen mine has decreased by 11% from 31.4 Mt in 2015 to an estimated 28.1 Mt total Saleable Product in 2016, beneficiated from an annual run-of-mine of 38.1 Mt (including 4.6 Mt Inferred Mineral Resources as well as 1.1 Mt of Mineral Resources mined outside the pit layout) with a resulting estimated overall (DMS and Jig Plant) average annual yield of 73.8%.

The forecast sales for 2016 are 28.0 Mt.

Figure 16: **SISHEN MINE'S 2016 LIFE-OF-MINE PLAN ANNUAL SALEABLE PRODUCT PROFILE**
(including modified Inferred Mineral Resources)



Ore Reserve ancillary information

The Sishen mine Ore Reserve ancillary information is summarised in **Table 12a** (background information) and **Table 12b** (Main Pit Ore Reserve estimation parameters – as an example).

Mineral Resource ancillary information

The Sishen mine Mineral Resource ancillary information is summarised in **Table 13a** (background information) and **Table 13b** (NN1 Geological Model Mineral Resource estimation parameters – as an example).

ANCILLARY RESERVE AND RESOURCE INFORMATION PER OPERATION AND PROJECT CONTINUED

TABLE 12A: **SISHEN MINE'S 2016 VS 2015 ORE RESERVE BACKGROUND INFORMATION**

SISHEN MINE	2016	2015
LOCATION		
Country	Republic of South Africa	Republic of South Africa
Province	Northern Cape	Northern Cape
OWNERSHIP		
Sishen Iron Ore Company (Pty) Ltd	100%	100%
Kumba Iron Ore Limited	76.3%	73.9%
AA plc	53.2%	51.5%
OPERATIONAL STATUS		
Operation status	Steady-state	Steady-state
Mining method	Open cast (conventional drilling and blasting and truck and shovel operation)	Open cast (conventional drilling and blasting and truck and shovel operation)
Beneficiation method	Dense media separation, jig beneficiation and ultra high dense media separation	Dense media separation and jig beneficiation
Annual Saleable Product (Mt)	26.8	35.0
Annual supply to domestic market (Mt)	4.0	6.25
Annual supply to export market (Mt)	22.8	28.75
Number of products	7 product types varying in size and chemical specification according to client requirements	7 product types varying in size and chemical specification according to client requirements
GOVERNANCE		
Code	THE SAMREC CODE – 2007 EDITION (as amended July 2009)	
AA plc group technical standard	AA_GTS_22 (Reporting of Exploration Results, Mineral Resources and Ore Reserves in Anglo American)	
KIO reporting policy	http://www.angloamericankumba.com/sd_policies.php	http://www.angloamericankumba.com/sd_policies.php
KIO reporting protocols	KIOReportingProcedure(2015)	KIOReportingProcedure(2015)
	KIO Reserve Classification Guideline (version 1)	KIO Reserve Classification Guideline (version 1)
KIO reporting template	2016 Ore Reserve (and Saleable Product) Reporting Template	KIO_R&R_Reporting_Template_082015
REPORTING METHOD		
Approach	Ore Reserves are those derived from Measured and Indicated Mineral Resources only (through application of modifying factors) and do not include Inferred Mineral Resources. In the case of Kumba Iron Ore all Ore Reserves are constrained by practical pit layouts, mining engineered from pit shells that define 'current economically mineable'. The geological block model(s) is converted into a mining block model considering a site-specific practical mineable smallest mining unit. Furthermore, protocols ensure that Kumba Iron Ore's operations/projects consider expected long-term revenues versus the operating and production costs associated with mining and beneficiation as well as legislative, environmental and social costs, in determining whether or not a Mineral Resource could be economically extracted and converted to an Ore Reserve. This is performed by applying a Lerch-Grossman algorithm to the mining model to derive an optimised pit shell. This optimised pit shell is then iteratively converted to a practical layout by applying geotechnical slope stability parameters and haul road and ramp designs, legal restrictions, etc, with safety being one of the most considered parameters. Once a practical pit layout has been established the material within the pit is scheduled over time to achieve client specifications and thus a LoM schedule is produced. The average % Fe grade and metric tonnage estimates of 'Saleable Product' are also reported to demonstrate that beneficiation losses have been taken into account.	

ANCILLARY RESERVE AND RESOURCE INFORMATION PER OPERATION AND PROJECT CONTINUED

TABLE 12A: **SISHEN MINE'S 2016 VS 2015 ORE RESERVE BACKGROUND INFORMATION** continued

SISHEN MINE	2016	2015
REPORTING METHOD		
Scheduled run-of-mine metric tonnes (dry/wet)	Dry	Dry
Tonnage calculation	Tonnages are calculated from the life-of-mine schedule, originating from the mining block models, and are modified tonnages considering geological losses. The effect of dilution, mining losses, mining recovery efficiencies and design recovery efficiencies to derive the run-of-mine tonnages delivered to the beneficiation plants.	Tonnages are calculated from the life-of-mine schedule, originating from the mining block models, and are modified tonnages considering geological losses. The effect of dilution, mining losses, mining recovery efficiencies and design recovery efficiencies to derive the run-of-mine tonnages delivered to the beneficiation plants.
Fe grade	Ore Reserve % Fe grades reported, represent the weighted average grade of the 'plant feed' or 'Run-of-Mine' (RoM) material and take into account all applicable modifying factors.	Ore Reserve % Fe grades reported, represent the weighted average grade of the 'plant feed' or 'Run-of-Mine' (RoM) material and take into account all applicable modifying factors.
Cut-off grade	40.00%	40.00%
Ore type	Haematite Ore	Haematite Ore
Saleable Product selling unit	Iron Ore – Fe (US$/tonne)	Iron Ore – Fe (US$/tonne)
Optimised pit shell revenue factor	1.09	1.00
Life-of-Mine scheduling Software	OPMS	OPMS
Method	Product tonnage and grade target driven to achieve required client product specifications	Product tonnage and grade target driven to achieve required client product specifications
Stripping strategy	A stripping strategy that follows a constant annual tonnage target, which remains between the minimum and maximum stripping limits, were chosen for the LoM scheduling. A deferred waste stripping strategy was applied to save costs in the medium term.	A stripping strategy that follows a constant annual tonnage target, which remains between the minimum and maximum stripping limits, were chosen for the LoM scheduling. A deferred waste stripping strategy was applied to save costs in the medium term.
Reserve Life years	17	15
LoM Plan run-of-mine tonnes (including modified Inferred) (expressed in million tonnes)	593.9	720.8
Overall average stripping ratio (including Inferred Mineral Resources)	1.0:3.9	1.0:4.0
Production data cut-off date (date whereafter short-term plan instead of actual figures are used to estimate the annual run-of-mine and Saleable Product production for the mine until 31 December of year of reporting)	30 September 2016	31 August 2015
Topography and pit progression assigned	31 December 2016 (Planned)	31 December 2015 (Planned)
Reserve schedule ID (Schedule file name + extension)	Sishen_2016_LOM_160_clay_bf_June_dms19_lyly.opme	Sishen_OPMS_2015_LOM_2av4.opm
Reserve schedule completion date	08 July 2016	16 October 2015

ANCILLARY RESERVE AND RESOURCE INFORMATION PER OPERATION AND PROJECT CONTINUED

TABLE 12B: SISHEN MINE'S 2016 VS 2015 MAIN PIT ORE RESERVE ESTIMATION PARAMETERS (AS AN EXAMPLE)

	2016	2015
ESTIMATION		
Sishen Pit		
Mining block model name	opt_pit_north_psd2016_3.mdl; opt_pit_south_psd2016_3.mdl	No separate mining block model created
Smallest mining unit	20 m(X) x 20 m(Y) x 12.5 m(Z)	10 m(X) x 10 m(Y) x 12.5 m(Z)
Practical mining parameters		
Bench height	12.5 m	12.5 m
Ramp gradient	8% (1 in 12.5)	8% (1 in 12.5)
Road width	30 m to 56 m	30 m to 56 m
Minimum mining width	80 m (rope shovel and truck mining)	80 m (rope shovel and truck mining)
Geohydrology	Groundwater level maintained 12.5 m below pit floor	Groundwater level maintained 12.5 m below pit floor
Pit slopes	Designed according to a defendable risk matrix, guided by an appropriate factor of safety of 1.3 and a probability of failure of 10%	Designed according to a defendable risk matrix, guided by an appropriate factor of safety of 1.3 and a probability of failure of 10%
Pit optimisation		
Software	Whittle 4X	Whittle 4X
Method	Lerch-Grossman (primary LoM maximisation, secondary NPV maximisation)	Lerch-Grossman (primary LoM maximisation, secondary NPV maximisation)
Modification **Modifying factors**		
■ Geological loss (%)	-5.1	-4.6
■ Dilution (%)	20.7	+9.6
■ Mining loss (%)	-4.4	0.0
■ Mining recovery efficiency (%)	93.6	98.6
■ Design Recovery Efficiency (%)	105.5	99.4
■ Ore Reserves re-allocated to Mineral Resources (%)	-2.4	-1.6
■ Metallurgical Yield (%) to convert to Saleable Product	74.7	73.7
Estimator		
Reserve estimator	Alfred April	Alfred April
Reserve estimator status	Internal technical specialist	Internal technical specialist
Estimator employer	Sishen Iron Ore Company (Pty) Ltd	Sishen Iron Ore Company (Pty) Ltd

ANCILLARY RESERVE AND RESOURCE INFORMATION PER OPERATION AND PROJECT CONTINUED

TABLE 13A: SISHEN MINE'S 2016 VS. 2015 MINERAL RESOURCE BACKGROUND INFORMATION

SISHEN MINE	2016	2015
LOCATION		
Country	Republic of South Africa	Republic of South Africa
Province	Northern Cape	Northern Cape
OWNERSHIP		
Sishen Iron Ore Company (Pty) Ltd	100.0%	100.0%
Kumba Iron Ore Limited	76.3%	73.9%
Anglo American plc	53.2%	51.5%
SECURITY OF TENURE		
Number of applicable mining rights	1	1
Mining right status	Registered	Registered
Mining right expiry date(s)	10 November 2039	10 November 2039
EXPLORATION STATUS		
Exploration type	Geological confidence (in mine)	Geological confidence (in mine)
Exploration phase	In execution	In execution
GOVERNANCE		
Code	THE SAMREC CODE – 2007 EDITION (as amended July 2009)	
AA plc group technical standard	AA_GTS_22 (Reporting of Exploration Results, Mineral Resources and Ore Reserves in Anglo American)	
KIO reporting policy	http://www.angloamericankumba.com/sd_policies.php	http://www.angloamericankumba.com/sd_policies.php
KIO reporting protocols	KIOReportingProcedure(2015)	KIOReportingProcedure(2015)
	KIO Resource Classification Guideline (version 2)	KIO Resource Classification Guideline (version 2)
KIO reporting template	KIO_R&R_Reporting_Template_082015	KIO_R&R_Reporting_Template_082015
REPORTING METHOD		
Approach	Mineral Resources are reported exclusive of Ore Reserves and not factoring in attributable ownership and only if: (1) spatially modelled; (2) spatially classified; (3) spatially constrained in terms of reasonable and realistic prospects for eventual economic extraction (occurring within an RRPEEE defined envelope, in other words not all mineral occurrences are declared as Mineral Resources); (4) declared within (never outside) executed tenement boundaries.	
***In situ* metric tonnes** (dry/wet)	Dry	Dry
Tonnage calculation	Tonnages are added from cells in geological block models of which the centroids intersect the relevant geological ore domains in the solids models which occur inside the resource shell. The volume of each ore cell is multiplied with the estimated relative density of the same cell).	Tonnages are added from cells in geological block models of which the centroids intersect the relevant geological ore domains in the solids models which occur inside the resource shell. The volume of each ore cell is multiplied with the estimated relative density of the same cell).
Fe grade	Weighted average above cut-off grade	Weighted average above cut-off grade
Fe calculation	Tonnage-weighted mean of the estimated *in situ* Mineral Resource Fe grades contained within geological block models, constrained by the relevant Resource geological ore domains and RRPEEE resource shell.	Tonnage-weighted mean of the estimated *in situ* Mineral Resource Fe grades contained within geological block models, constrained by the relevant Resource geological ore domains and RRPEEE resource shell.
Cut-off grade	40% Fe	40% Fe
Ore type	Haematite Ore	Haematite Ore

ANCILLARY RESERVE AND RESOURCE INFORMATION PER OPERATION AND PROJECT CONTINUED

TABLE 13B: **SISHEN MINE'S 2016 VS 2015 NN1 GEOLOGICAL MODEL MINERAL RESOURCE ESTIMATION PARAMETERS (AS AN EXAMPLE)**

	2016	2015
ESTIMATION		
Geological models informing main pit geology		
Input data		
Borehole type	Core and Percussion bore hole lithological logs and associated chemical analyses	
Relative density measurement	Minidense (pre 2010) and Picnometer analyses on pulp samples (2010 to present)	Minidense (pre 2010) and Picnometer analyses on pulp samples (2010 to present)
Kumba QA/QC protocol	Kumba QC Protocol for Exploration Drilling Sampling and Sub sampling (version 4)	
Primary laboratory	ANGLO AMERICAN RESEARCH Division of Anglo Operations Limited CHEMISTRY LABORATORY (Co. reg no: 1921/006730/07)	ANGLO AMERICAN RESEARCH Division of Anglo Operations Limited CHEMISTRY LABORATORY (Co. reg no: 1921/006730/07)
Accreditation	Accredited under International Standard ISO/IEC 17025:2005 by the South African National Accreditation System (SANAS) under the Facility Accreditation Number T0051 (valid from 01 May 2011 to 30 April 2016)	Accredited under International Standard ISO/IEC 17025:2005 by the South African National Accreditation System (SANAS) under the Facility Accreditation Number T0051 (valid from 01 May 2011 to 30 April 2016)
Borehole database software	acQuire	acQuire
Borehole database update cut-off date	30 September 2015	30 September 2014
Database validation conducted	Yes	Yes
Segmentation conducted	Yes. To allow for simplification of logged lithologies for spatial correlation purposes and to simplify the assay composite extractions.	
STATISTICAL AND GEOSTATISTICAL EVALUATION		
Data compositing interval	3 m	3 m
Data compositing method	Length multiplied with density used to weight per lithology	Length multiplied with density used to weight per lithology
Grade parameters evaluated	% Fe, % SiO_2, % Al_2O_3, % K_2O, % S and % P as well as Relative Density	% Fe, % SiO_2, % Al_2O_3, % K_2O, % S and % P as well as Relative Density
Variography updated in current year	No	Yes
Search parameters updated in current year	No	Yes
SOLIDS MODELLING		
Solids modelling software	Surpac	Surpac
Input	Updated solid models	Previous solids models
Method	Digital Wireframe modelling for ore segments and some waste segments (waste in contact with ore zones)	Digital Wireframe modelling for ore segments and some waste segments (waste in contact with ore zones)
	Digital terrain models for other waste segments	Digital terrain models for other waste segments
Domaining	Primary lithological domains are subdomained based on structural discontinuities, and distinguishable variation in grade, ie K_2O as well as where volumes have been informed predominantly by core or percussion borehole data, ie different data populations	Primary lithological domains are subdomained based on structural discontinuities, and distinguishable variation in grade, ie K_2O as well as where volumes have been informed predominantly by core or percussion borehole data, ie different data populations
Topography and pit progression assigned	31 December 2016 (planned)	31 December 2015 (planned)
Validation conducted	Yes (for gaps and overlaps by software queries as well as honouring of borehole contacts) and by standard software validation tools (open sides, self intersecting triangles)	Yes (for gaps and overlaps by software queries as well as honouring of borehole contacts) and by standard software validation tools (open sides, self intersecting triangles)

ANCILLARY RESERVE AND RESOURCE INFORMATION PER OPERATION AND PROJECT CONTINUED

TABLE 13B: **SISHEN MINE'S 2016 VS 2015 NN1 GEOLOGICAL MODEL MINERAL RESOURCE ESTIMATION PARAMETERS (AS AN EXAMPLE)** continued

	2016	2015
GRADE ESTIMATION METHODOLOGY		
Ore segments	Ordinary (Co-) Kriging	Ordinary (Co-) Kriging
Waste segments	Global estimate	Inverse distance
GEOLOGICAL BLOCK MODELLING		
Block modelling software	Isatis/surpac	Isatis/surpac
Model type	Centroid model	Centroid model
Parent cell size	20 m(X) x 20 m(Y) x 12.5 m(Z)	20 m(X) x 20 m(Y) x 12.5 m(Z)
Minimum sub-block cell size	10 m(X) x 10 m(Y) x 6.25 m(Z)	10 m(X) x 10 m(Y) x 6.25 m(Z)
Cell population method		
Tonnage	Volume of lithology intersected by cell centroid and constrained by cell limits, multiplied with relative density estimate of the same lithology at same unique cell centroid position in space.	Volume of lithology intersected by cell centroid and constrained by cell limits, multiplied with relative density estimate of the same lithology at same unique cell centroid position in space.
Grade	Estimate of grade at unique cell centroid position in space applicable to total volume or tonnage constrained by the cell.	Estimate of grade at unique cell centroid position in space applicable to total volume or tonnage constrained by the cell.
Updated geological block model ID (file name + extension)	nn1 (a to c).mdl	nn1 (a to c).mdl
Update completion date	01 March 2016	01 March 2015
ESTIMATOR		
Resource estimator (name and surname)	Fanie Nel	Fanie Nel
Resource estimator status	Internal technical specialist	Internal technical specialist
Estimator employer	Sishen Iron Ore Company (Pty) Ltd	Sishen Iron Ore Company (Pty) Ltd

THABAZIMBI MINE

The Sishen Iron Ore Company (SIOC) board has for some considerable time deliberated on various possible strategies with regard to Thabazimbi mine and engaged with its major shareholder, Kumba Iron Ore Limited, in these aspects. In 2015 the board resolved to close the operation after discussions with the operation's client ArcelorMittal SA and the Department of Mineral Resources, and production subsequently ceased in 2016.

No Ore Reserves remain at Thabazimbi mine in 2016 as production has ceased and the mine is in process of compiling a closure application.

No Mineral Resources have been stated for Thabazimbi mine in 2016 as production has ceased and the mine is in process of compiling a closure application. From a Kumba perspective no reasonable prospects for eventual economic extraction exists.

ZANDRIVIERSPOORT PROJECT

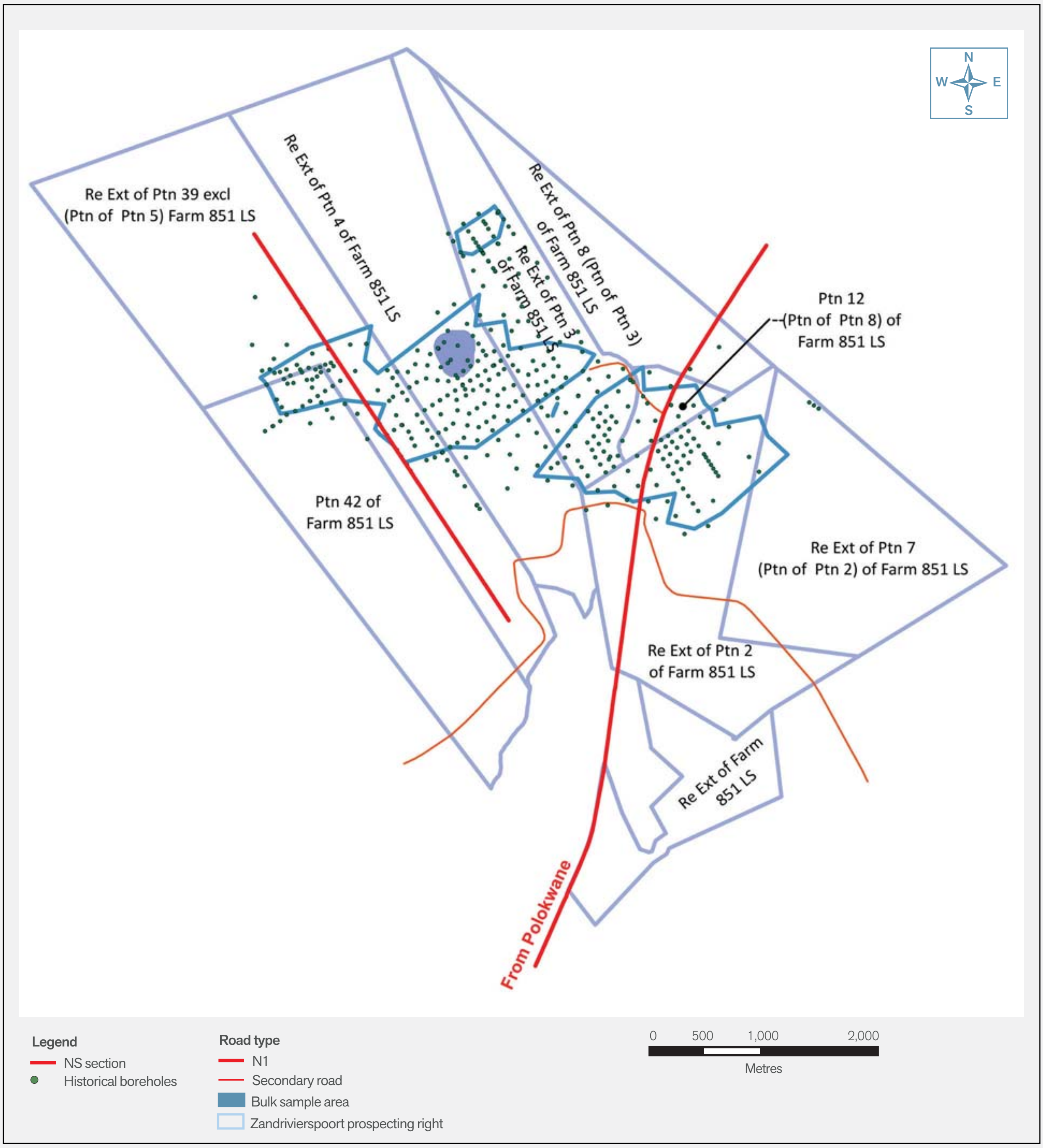
Geological outline

Regional geology

Zandrivierspoort is a low-grade Magnetite deposit in the Palaeo-proterozoic Rhenosterkoppies Greenstone Belt or Rhenosterkoppies Fragment (RF), which occurs to the northwest of the main, northeast-trending Pietersburg Greenstone Belt **(Figure 17)**.

ANCILLARY RESERVE AND RESOURCE INFORMATION PER OPERATION AND PROJECT CONTINUED

FIGURE 17: **ZANDRIVIERSPOORT PROSPECTING RIGHT AREA NORTH OF POLOKWANE IN THE LIMPOPO PROVINCE**



ANCILLARY RESERVE AND RESOURCE INFORMATION PER OPERATION AND PROJECT CONTINUED

The Zandrivierspoort prospect occurs within the SE-trending fold hinge zone of the RF, a feature which some authors have considered to be significant in the thickening or duplication of relatively thin banded ironstone (BIS) units. Both the Pietersburg and the Rhenosterkoppies Greenstone Belts are enclosed in granites, which display the 'pinched-in' or 'keel-like' morphology that is typical of greenstone belts within granite-gneiss terrains of southern Africa.

The RF is unique in that it, firstly, contains relatively little of the Archaean Uitkyk formation, which consists of greenschist to amphibolite facies immature sandstones, siltstones, 'grits', conglomerates and breccias (Kalbskopf and Barton, 2003). Rather, it is dominated by metavolcanics – in the form of amphibolites - and relict banded ironstone units. Secondly, the RF does not trend NE, in contrast to the majority of southern African greenstone belts.

The form of underlying gneisses resulted in a certain 'compartmentalisation' of the RF in the vicinity of the Zandrivierspoort Project. Such compartmentalisation is accentuated in outcropping geology and is also defined by major lineaments, interpreted from regional aeromagnetic data. A single, large diabase dyke runs NNE across the approximate centre of the ZRP prospect.

Stratigraphy

The stratigraphic column depicting the local geology of the Zandrivierspoort Project is illustrated in **Figure 18**.

FIGURE 18: **SIMPLIFIED STRATIGRAPHIC COLUMN DEPICTING THE LOCAL ZANDRIVIERSPOORT PROJECT GEOLOGY**

	STRATIGRAPHIC COLUMN AT ZANDRIVIERSPOORT
	Overburden: scree, alluvium (sand, pebble bands), canga
	Chlorite-actinolite schist
	Calc-silicate rock with occasional thin bands of muscovite biotite, and amphibolite
	Schist (quartz, amphibolite, biotite, garnet)
	Quartzite, pyrrhotite-quartzite and calcite amphibole quartzite
	BIS (upper)
	Quartzite, pyrrhotite-quartzite and calcite amphibole quartzite
	Schist (quartz, amphibolite, biotite, garnet)
	Quartz-amphibole schist and amphibolite (massive and schistose) with subordinate schist (amphibolite, biotite, garnet)
	Schist (quartz, amphibolite, biotite, garnet)
	Quartzite, pyrrhotite-quartzite and calcite amphibole quartzite with various schist bands
	BIS (lower 1)
	Quartzite, pyrrhotite-quartzite and calcite amphibole quartzite with various schist bands
	Schist (quartz, amphibolite, biotite, garnet)
	Quartz-amphibole and amphibolite (massive and schistose) with subordinate schist (amphibolite, biotite, garnet)
	Schist (quartz, amphibolite, biotite, garnet)
	Quartzite, pyrrhotite-quartzite and calcite amphibole quartzite with various schist bands
	BIS (lower 2)
	Quartzite, pyrrhotite-quartzite and calcite amphibole quartzite with various schist bands
	Schist (quartz, amphibolite, biotite, garnet)
	Amphibolite (massive and schistose) with subordinate schist (amphibolite, biotite, garnet)
	Various lower BIS bands

ANCILLARY RESERVE AND RESOURCE INFORMATION PER OPERATION AND PROJECT CONTINUED

Tectonic setting

It is Kumba's understanding that the geology of the Zandrivierspoort Project has been influenced by three tectonic events:

- D1 – First Ductile Deformation Event: D1 is attributed either to 'atectonic' processes, such as soft-sediment slumping during early basinal deformation (Collins, 1986), the major fold orientations of which were constrained by the local down-dip direction of the developing basin. Moore (1975), Sweby (1984), Pearce (1983) and Pearce and Pearce (1983, 1984) attribute the local thickening and duplication of BIS and surrounding units to recumbent isoclinal folding. Thickening or duplication is particularly well-developed in areas where there are stacked isoclinal fold hinge zones. Sweby (1984) also cites evidence for very low-angle, northward-verging thrusting in the NW Portion of the Project Area as being the cause of, or at least being related to, isoclinal folding. 'D1' may have been preceded by earlier deformation phases, such as southward-directed thrusting or back-thrusting, but these phases will be obscured by the dominant D1/F1 event.

  Post-D1/F1 deformation events appear to have had only a minor effect on the structural morphology.

- D2 – Second Ductile Deformation Event: There is confusion regarding D2/F2 and D3/F3. Collins (1986) proposed extensive, EW to ESE-trending F2 folds across the ZRP area (see Figures 2 and 3). These open or gentle folds merely re-orient the dominant S1 such that it is locally either very shallowly N- or S-dipping. A further effect of D2 is apparently the development of laterally extensive, E-W to ESE-trending faults that truncate BIS units. These faults effectively exploit the incipient fracture cleavage developed in the hinge zones of F2 faults. A fault of this type possibly occurs to the NNE of the exposed BIS mapped by Pearce and Pearce. Due to the sub-vertical drilling and the minor offset proposed by previous authors, it is not clear what effect, in terms of offset or a 'damage or contact strain' zone, these faults will have on BIS units. One possible effect, when combined with more easily-observed, NE-trending diabase dykes, is to segment the BIS units into a series of blocks along NE- and ESE-trending lines. Further data is needed to confirm or disprove this. Upright, open, NE-SW-trending, gently-plunging folds are attributed by Sweby (1984) as D2 in age, while Collins (1986) suggests that they are superimposed on the broad, open E-W to ESE-trending folds produced in his D2/F2 classification (described above), ie that they are D3 in age/sequence.

- D3 – Third Ductile Deformation Event: As detailed in the preceding paragraphs, D3 of Collins comprises NE-SW-trending, shallowly-plunging folds, with moderately-developed axial planar cleavage. This cleavage is exploited by the later intrusion of NE-SW-trending diabase dykes. The D3 event of Sweby (1984) and the D4 event of Collins (1986) bear a strong resemblance to the D2 event of Collins (1986), ie NW-SE trending gentle refolding of 'F1' and 'F2'. Therefore, it's not clear if the gentle, flat-lying E-W to ESE trending folds refold the NE-SW trending upright folds, or visa versa.

In summary, the main or controlling deformation events produced early, isoclinal, recumbent folds, which were refolded by essentially co-axial, open to closed, upright folds. The combination of these events resulted in NE-SW trending, non-cylindrical folds, ie folds which die out along strike and which appear to have very gently refolded axes.

This structural style is, moreover, suggested by Moore (1975) and Sweby (1984). Such folds appear to be largely N- or NNW-verging, according to Kalbskopf and Barton (2003) and from observations made by Kumba.

Local geology

The Banded Ironstone (BIS) occurs as fine to medium grained units with well banded layers of predominantly Magnetite and quartz.

Three BIS units have been identified by Kumba and spatially modelled as separate units, ie the Upper BIS, the Lower 1 BIS and the Lower 2 BIS, with BIS units beneath the Lower 2 BIS unit ignored in the modelling because of depth and size and thickness. The top portion of the Upper BIS has been weathered into what Kumba refer to as a Haematite cap and this has been subdomained.

Figure 19 depicts a section through the three-dimensional geological wireframe model which depicts the most recent understanding or interpretation of the local geology.

ANCILLARY RESERVE AND RESOURCE INFORMATION PER OPERATION AND PROJECT CONTINUED

FIGURE 19: **SOUTHEAST-NORTHWEST PROFILE DEPICTING THE LOCAL GEOLOGY THROUGH THE ZANDRIVIERSPOORT MAGNETITE DEPOSIT**

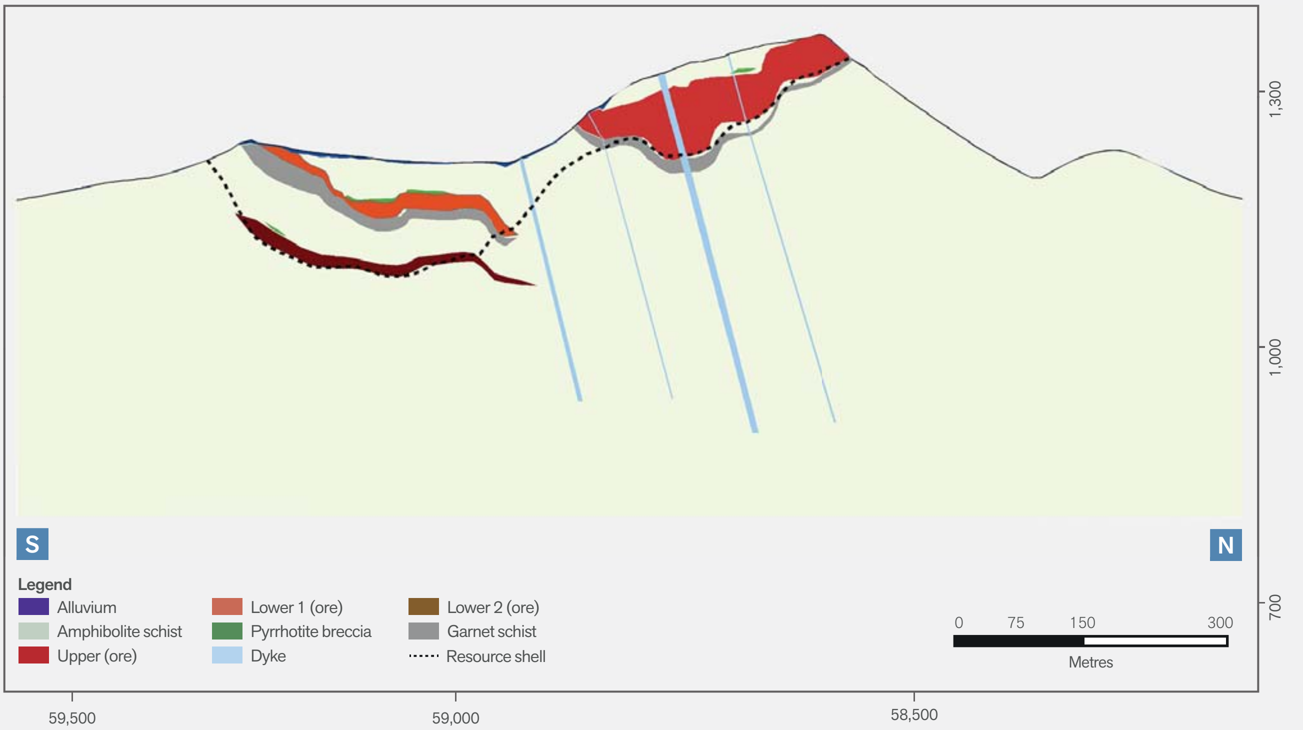


Image: A view of Sishen mine's saleable product stockpile infrastructure.

ANCILLARY RESERVE AND RESOURCE INFORMATION PER OPERATION AND PROJECT CONTINUED

Mineral Resource estimation parameters

The Zandrivierspoort Project Mineral Resource ancillary information is summarised in **Table 14a** (background information) and **Table 14b** (Mineral Resource estimation parameters).

TABLE 14A: **ZANDRIVIERSPOORT PROJECT'S 2016 VS 2015 MINERAL RESOURCE BACKGROUND INFORMATION**

	2016	2015
LOCATION		
Country	Republic of South Africa	Republic of South Africa
Province	Limpopo	Limpopo
OWNERSHIP		
Sishen Iron Ore Company (Pty) Ltd	50.0%	50.0%
Kumba Iron Ore Limited	38.2%	37.0%
AA plc Group	26.6%	25.8%
SECURITY OF TENURE		
Number of applicable prospecting rights	1	1
Prospecting right status	Registered	Registered
Prospecting right expiry date(s)	Renewal application pending	Renewal application pending
EXPLORATION STATUS		
Exploration type	Greenfields	Greenfields
Exploration phase	Pre-feasibility	Pre-feasibility
GOVERNANCE		
Code	THE SAMREC CODE – 2007 EDITION (as amended July 2009)	
AA plc group technical standard	AA_GTS_22 (Reporting of Exploration Results, Mineral Resources and Ore Reserves in Anglo American)	
KIO reporting policy	http://www.angloamericankumba.com/sd_policies.php	http://www.angloamericankumba.com/sd_policies.php
KIO reporting protocols	KIOReportingProcedure(2013)	KIOReportingProcedure(2013)
	KIO Resource Classification Guideline (version 2)	KIO Resource Classification Guideline (version 2)
KIO reporting template	KIO_R&R_Reporting_Template_092013	KIO_R&R_Reporting_Template_092013
REPORTING METHOD		
Approach	Mineral Resources are reported exclusive of Ore Reserves and not factoring in attributable ownership and only if: (1) spatially modelled; (2) spatially classified; (3) spatially constrained in terms of reasonable and realistic prospects for eventual economic extraction (occurring within an RRPEEE defined envelope, in other words not all mineral occurrences are declared as Mineral Resources) and (4) declared within (never outside) executed tenement boundaries.	
***In situ* metric tonnes** (dry/wet)	Dry	Dry
Tonnage calculation	Tonnages are added from cells in geological block models of which the centroids intersect the relevant geological ore domains in the solids models which occur inside the resource shell. The volume of each ore cell is multiplied with the estimated relative density of the same cell).	Tonnages are added from cells in geological block models of which the centroids intersect the relevant geological ore domains in the solids models which occur inside the resource shell. The volume of each ore cell is multiplied with the estimated relative density of the same cell).
Fe_3O_4 grade	Weighted average above cut-off grade	Weighted average above cut-off grade
Fe_3O_4 calculation	Tonnage-weighted mean of the estimated *in situ* Mineral Resource Fe_3O_4 grades contained within geological block models, constrained by the relevant Resource geological ore domains and RRPEEE resource shell.	Tonnage-weighted mean of the estimated *in situ* Mineral Resource Fe_3O_4 grades contained within geological block models, constrained by the relevant Resource geological ore domains and RRPEEE resource shell.
Cut-off grade	21.7% Fe	21.7% Fe
Ore type	Magnetite Ore	Magnetite Ore
Exchange rate – Real (ZAR/USD)	8.07	8.07

ANCILLARY RESERVE AND RESOURCE INFORMATION PER OPERATION AND PROJECT CONTINUED

TABLE 14B: ZANDRIVIERSPOORT PROJECT'S 2016 VS 2015 MINERAL RESOURCE ESTIMATION PARAMETERS

	2016	2015
ESTIMATION		
Zandrivierspoort geological model		
Input data		
Borehole type	Core and Percussion bore hole lithological logs and associated chemical analyses	
Relative density measurement	Picnometer analyses on pulp samples (2010 to present)	Picnometer analyses on pulp samples (2010 to present)
Kumba QA/QC protocol	Kumba QC Protocol for Exploration Drilling Sampling and Sub sampling (version 2)	
Primary laboratory	ANGLO AMERICAN RESEARCH Division of Anglo Operations Limited CHEMISTRY LABORATORY (Co. reg no: 1921/006730/07)	ANGLO AMERICAN RESEARCH Division of Anglo Operations Limited CHEMISTRY LABORATORY (Co. reg no: 1921/006730/07)
Accreditation	Accredited under International Standard ISO/IEC 17025:2005 by the South African National Accreditation System (SANAS) under the Facility Accreditation Number T0051 (valid from 01 May 2011 to 30 April 2016)	Accredited under International Standard ISO/IEC 17025:2005 by the South African National Accreditation System (SANAS) under the Facility Accreditation Number T0051 (valid from 01 May 2011 to 30 April 2016)
Borehole database software	acQuire	acQuire
Borehole database update cut-off date	30 April 2013	30 April 2013
Database validation conducted in current year	No	No
Segmentation conducted	Yes. To allow for simplification of logged lithologies for spatial correlation purposes and to simplify the assay composite extractions.	
STATISTICAL AND GEOSTATISTICAL EVALUATION		
Data compositing interval	1 m	1 m
Data compositing method	Length used to weight per lithology	Length used to weight per lithology
Grade parameters evaluated	% Fe, % SiO_2, % Al_2O_3, % K_2O, % P, % S, % Fe_2O_3, % Fe_3O_4, Relative Density and Satmagan values for % Fe_2O_3, % Fe_3O_4	% Fe, % SiO_2, % Al_2O_3, % K_2O, % P, % S, % Fe_2O_3, % Fe_3O_4, Relative Density and Satmagan values for % Fe_2O_3, % Fe_3O_4
Variography updated in current year	No	No
Search parameters updated in current year	No	No
Solids modelling		
Solids modelling software	Surpac	Surpac
Input	Previous solids models	Previous solids models
Method	Digitally captured two-dimensional sections interpreted on borehole profiles	Digitally captured two-dimensional sections interpreted on borehole profiles
	Digital terrain models for alluvium waste types	Digital terrain models for alluvium waste types
Domaining	Domaining conducted per lithology. Segments smaller than 3 m in thickness are not separately domained.	Domaining conducted per lithology. Segments smaller than 3 m in thickness are not separately domained.
Topography and pit progression assigned	Surface DTM based on high resolution aerial survey.	Surface DTM based on high resolution aerial survey.
Validation conducted	Yes (for gaps and overlaps by software queries as well as honouring of borehole contacts) and by standard software validation tools (open sides, self intersecting triangles) as well as a visual peer review by exploration geologists.	Yes (for gaps and overlaps by software queries as well as honouring of borehole contacts) and by standard software validation tools (open sides, self intersecting triangles) as well as a visual peer review by exploration geologists.

ANCILLARY RESERVE AND RESOURCE INFORMATION PER OPERATION AND PROJECT CONTINUED

TABLE 14B: **ZANDRIVIERSPOORT PROJECT'S 2016 VS 2015 MINERAL RESOURCE ESTIMATION PARAMETERS** continued

	2016	2015
GRADE ESTIMATION METHODOLOGY		
Ore segments	Other (specify below)	Other (specify below)
	Ordinary Kriging with Dynamic Anisostropy	Ordinary Kriging with Dynamic Anisostropy
Waste segments	Global Estimate	Global Estimate
Geological block modelling		
Block modelling software	Surpac	Surpac
Model type	Centroid Model	Centroid Model
Parent cell size	80 m(X) x 80 m(Y) x 10 m(Z)	80 m(X) x 80 m(Y) x 10 m(Z)
Minimum sub-block cell size	10 m(X) x 10 m(Y) x 5 m(Z)	10 m(X) x 10 m(Y) x 5 m(Z)
Cell population method		
Tonnage	Volume of lithology intersected by cell centroid and constrained by cell limits, multiplied with relative density estimate of the same lithology at same unique cell centroid position in space.	Volume of lithology intersected by cell centroid and constrained by cell limits, multiplied with relative density estimate of the same lithology at same unique cell centroid position in space.
Grade	Estimate of grade at unique cell centroid position in space applicable to total volume or tonnage constrained by the cell.	Estimate of grade at unique cell centroid position in space applicable to total volume or tonnage constrained by the cell.
Updated geological block model ID (file name + extension)	ZRP_11_2013.fbm	ZRP_11_2013.fbm
Update completion date	01 November 2013	01 November 2013
ESTIMATOR		
Resource estimator (name and surname)	Pietre Smit	Pietre Smit
Resource estimator status	Internal technical specialist	Internal technical specialist
Estimator employer	Sishen Iron Ore Company (Pty) Ltd	Sishen Iron Ore Company (Pty) Ltd

Project outline

Exploration at the Zandrivierspoort Project has been suspended in 2013. The Mineral Resources stated in 2013, and carried over to 2014, 2015 and 2016 were however reviewed in 2016 in terms of reasonable prospects for eventual economic extraction (RRPEEE), because of the significant changes in the fiscal parameters.

The first RRPEEE check was to conduct a re-run of the pit optimisation, using the latest fiscal parameters provided. The pit optimisation validation showed minor differences if compared to the 2013 resource shell, keeping in mind that in 2016 Kumba has chosen a 2 x RF factor resource shell instead of the 1.34 RF factor resource shell that was chosen in 2013. This change was made to align with 2 x RF resource shells as applied for the Kolomela and Sishen Mineral Resources.

RRPEEE is furthermore applied by assigning a yield cut-off to the resource model, ie yield is modelled spatially using a beneficiation algorithm derived from SATMAGAN test-work and XRF assays, which defined a linear relationship between yield and *in situ* Magnetite content. Total Fe content and SiO_2 content. Mineral Resources are only declared for blocks having yields assigned that are greater or equal to the yield cut-off. The yield cut-off is derived from high-level cost parameters.

Kumba will again review the status of the Mineral Resources in terms of RRPEEE in 2017 to determine if it should still be part of the Kumba Mineral Resource portfolio.

The project was in a pre-feasibility phase of investigation (not yet completed), having received the go-ahead for further evaluation after the concept stage-gate evaluation (as funded by the *Polokwane Iron Ore Company* – 50:50 joint venture between *Sishen Iron Ore Company and ArcelorMittal SA*).

It is assumed that a concentrate product from Zandrivierspoort could be accommodated as part of the feedstock of ArcelorMittal SA's domestic demand. Investigations have indicated that Zandrivierspoort concentrate could comprise up to 5% of a sinter mix, which yields improved production rates in the iron ore sintering process. However, this will only support a limited market and alternatives such as 'green' micro-pellets or baked mini-pellets, both as a sinter ore replacement, or conventional pellets (as a blast furnace feed) have been investigated to increase the domestic demand for Zandrivierspoort's product.

The project outline is summarised in **Table 15**.

ANCILLARY RESERVE AND RESOURCE INFORMATION PER OPERATION AND PROJECT CONTINUED

TABLE 15: **ZANDRIVIERSPOORT PROJECT OUTLINE**

	Key details
Ownership (AA plc)	26.6%
Ownership (Kumba)	38.2%
Commodity	Iron Ore
Country	Republic of South Africa
Prospecting right status	Applied for renewal
Exploration type	Greenfields
Exploration phase	Concept
Foreseen mining method	Open-pit Conventional Truck & Shovel
Foreseen beneficiation method	Low Intensity Magnetic Separation with possible downstream Rare Earth Drum Separation/Flotation
Foreseen product types	Magnetite concentrate
Foreseen market	Domestic
Prospecting right expiry date	Expired (applied for renewal)

Image: Every day starts with a "War room" meeting to review the status of all operations at Kolomela mine.

EXPLORATION

ANNUAL EXPENDITURE

Kumba conducted on and near mine exploration in 2016 to refine existing and target possible new future Mineral Resources. Drilling activities reduced 14% year-on-year with ~13 000 m less sunk in 2016. The all-inclusive cost associated with exploration conducted on behalf of Kumba in 2016 is summarised in **Table 16.**

The 2016 (10 actual +2 forecast) exploration expenditure comprises 1.0% of Kumba Iron Ore's 2016 (10 actual +2 forecast) revenue.

A continued focus on exploration on and near mine resulted in the following outcomes in 2016:

- Drilling of the Doornvlei exploration target on the Gamagara prospecting right, located adjacent to the Sishen mining right, has allowed for the spatial modelling of the ore body and the conversion of the deposit into Mineral Inventory in 2016.
- The intensive exploration campaign on the Heuningkranz project; a prospecting right north of Kolomela mine, continued in 2016. The additional geological information generated has resulted in a substantial 206.6 Mt increase in the Mineral Inventory of the project compared to 2015.
- Exploration at Sishen mine remained focused on improving the confidence classification, as well as to provide geometallurgical information for the Sishen low-grade project evaluation.

SAMPLE PREPARATION AND ASSAYING

Kumba launched its geometallurgical sampling programme in 2016, involving the dedicated drilling of geometallurgical boreholes as budget permits. All primary geological samples taken from drilled core (an in some instances RC chips) via normal exploration drilling at all the relevant Kumba sites in 2016, to be used for future Mineral Resource estimation, were prepared and assayed by the Chemistry Laboratory (Co. Reg No: 1921/0067130/06) of the Technical Solutions (TS) Division of Anglo American plc. All samples taken from drilled core of dedicated geometallurgical boreholes, were prepared and tested for an array of metallurgical measurements by the Metallurgical Laboratory of the Anglo Technical Solutions (TS) Division of Anglo American plc, with subsequent assaying of these samples, where required, conducted by the Anglo American plc Chemistry Laboratory.

The TS Chemistry Laboratory is accredited in accordance with the recognised International Standard ISO/IEC 17025:2005 by the South African National Accreditation System (SANAS) under the Facility Accreditation Number T0051 (valid from 22 July 2011 to 30 April 2021) for the preparation and assaying of iron ore samples, applying methods that comply with the requirements of Kumba Iron Ore.

Kumba Geosciences submitted 26,588 exploration borehole samples in 2016 directly to the TS Chemistry Laboratory to be prepared and analysed, and 1,272 directly to the TS Metallurgical Laboratory to be prepared and tested. A total of 27,830 primary samples were submitted.

Of the samples submitted, the TS Chemistry Laboratory prepared 28,818 samples (including samples from the TS Metallurgical Laboratory) and assayed 31,382 samples for the year (including samples from the TS Metallurgical Laboratory). Differences between submitted, prepared and assayed samples are influenced by laboratory turn-around times, a backlog of 6,430 samples carried over from 2015 as well as additionally created QC samples (5% coarse and 5% pulp duplicates with 5% blind matrix matched certified reference materials counting as a primary sample) as required by the KIO Geosciences QA/QC protocol.

The TS Metallurgical Laboratory prepared and tested all 1,272 samples submitted. All of the exploration samples were prepared and assayed in the Republic of South Africa by the TS Chemistry Laboratory. A total of 5% pulp replicate QC samples generated by the laboratory were analysed by the UltraTrace Laboratory in Perth, Australia, as part of the KIO Geosciences Department's required external independent QA/QC validation.

UltraTrace is ISO and National (Australian) Association of Testing Authorities (NATA) accredited for iron ores and a member of the ISO MN-002-02 Chemical Analysis Committee.

Kumba ensures sample representivity by means of applying a stringent QA/QC protocol (KIO QC Protocol for Exploration Drilling, Sampling and Sub-Sampling (Version 7)) that governs all stages of sampling, sub-sampling and assaying, including blind validation of the sample preparation and assaying of laboratories.

TABLE 16: **SUMMARY OF 2016 VS 2015 KUMBA EXPLORATION EXPENDITURE (10+2)**

	Total exploration spend (10+2) Rand million		Drilling spend (10+2) Rand million		Number of holes drilled (10+2) Rand million		Metres drilled (10+2) Rand million		Average cost per metre Rand million	
	2016	2015	**2016**	2015	**2016**	2015	**2016**	2015	**2016**	2015
Mining right areas	**209.7**	240.2	**140.6**	170.6	**348**	319	**61,174**	62,723	**2,298.91**	2,720.04
Prospecting right areas	**131.0**	137.8	**81.1**	92.0	**95**	157	**23,894**	35,667	**3,394.56**	2,579.57
Total	**340.7**	378.0	**221.7**	262.6	**443**	476	**85,068**	98,390	**2,846.74**	2,649.80

ENDORSEMENT

The persons at Kumba who are designated to take 'corporate responsibility' for Mineral Resources and Ore Reserves are Jean Britz and Theunis Otto. They have reviewed the Mineral Resource and Ore Reserve estimates reported for 2016 and consider it to be SAMREC compliant, and consent to the inclusion of these estimates in the form and context in which they appear in this online statement.

Jean Britz is a professional natural scientist, registered (400423/04) with the South African Council for Natural Scientific Professions. He has a BSc (Hons) in Geology and an MEng in Mining and has 24 years of experience as a mining and exploration geologist in coal and iron ore, of which 12 are specific to iron ore Mineral Resource estimation and evaluation.

Jean Britz
Principal, Mineral Resources and Geometallurgy – Kumba Geosciences

Theunis Otto is a professional mining engineer registered (990072) with the Engineering Council of South Africa. He has a MSc in Mining Engineering and has 21 years of experience as a mining engineer in production management and technical roles in coal and iron ore mining, of which 12 are specific to iron ore Mineral Reserve estimation and evaluation.

Theunis Otto
Head, Kumba Mining Engineering

Kumba's Chief executive officer and Board member, Mr Themba Mkhwanazi, endorses the Mineral Resource and Ore Reserve estimates presented in this document, and acknowledges that the Kumba Policy which governs Mineral Resource and Ore Reserve reporting has been adhered to.

Themba Mkhwanazi
Chief executive officer, Kumba



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