Ore Reserve (and Saleable Product) and Mineral Resource Report 2021

(Remaining after 31 December 2021)

AngloAmerican

KUMBA IRON ORE LIMITED

Kumba's Ore Reserve replenishment

2017

In 2017 Kumba Iron Ore adopted its Tswelelopele strategy to:

- operate our assets to their full potential (Horizon 1: one to three years)
- leverage our endowment in the medium term (Horizon 2: three to five years)
- optimise competencies and assets to sustain and expand the business (Horizon 3: five to seven years)

To unlock Kumba's full potential and achieve disciplined growth for a sustainable future, Kumba adopted an Ore Reserve and Mineral Resource theme in 2018, which is aligned with Horizons 1 and 2 of the Tswelelopele strategy.

The target was to convert an additional 385 Mt of Mineral Resources to Ore Reserves by 2022, which equates to an Ore Reserve replenishment target of 200 Mt (30% of Ore Reserve portfolio in 2017) before depletion.

The LoM at the commencement of Tswelelopele was 2032.

2018

In 2018, Kumba replenished its Ore Reserve portfolio by 112.1 Mt (before depletion), primarily as a result of pit slope optimisation (phase 1 of a geotechnical study) as well as the adoption of world-class benchmark efficiencies into the Sishen LoM plan. The Sishen reserve life was increased from 13 to 14 years.

This subsequently translated into a 20% increase in the value of the Sishen operation.

At that stage the target was to convert an additional 390 Mt of Mineral Resources to Ore Reserves by 2022.

2019

This year could be considered a hiatus period where the Ore Reserve replenishment of 12.8 Mt, primarily as a result of improved Resource to Reserve conversion, did not succeed in outperforming the annual Ore Reserve depletion.

Pit optimisation at Kolomela did, however, result in a significant decrease in the waste to ore stripping ratio from 4.1 : 1 to 3.8 : 1.

2020

A total Ore Reserve replenishment of 81.5 Mt (before depletion) was achieved in 2020. As a result, the Sishen reserve life increased from 13 to 15 years.

The year-on-year increase in Ore Reserves reflected the benefit of an improved long-term economic outlook, as well as optimised haul road designs, combined with yet another year of advances made as a result of a continuation of the geotechnical study at Sishen.

In 2020, Kumba achieved the 200 Mt (before depletion) Ore Reserve replenishment target set in 2018, two years ahead of schedule.

Kumba continued with exploration to gauge the potential of near-mine exploration targets identified through its 3D regional geological genetic model of the Northern Cape province iron ore belt and gained access to two prospective targets through a joint venture partnership.

2021

At the end of 2021, a cumulative (2018 to 2021) Ore Reserve replenishment of 322.8 Mt (before depletion) was achieved against a target of 200 Mt set early at the commencement of Tswelelopele.

The feasibility study of the Sishen ultra-high dense media separation (UHDMS) project (conversion of dense media separation plant into a UHDMS) was approved in Q1 of 2021, contributing a further 135.3 Mt low-grade Ore Reserves to the Sishen portfolio. The Sishen LoM was extended from 15 to 18 years (2039) with the inclusion of the UHDMS project although from 2035 to 2039 annual production will be in the order of 10 to 15 Mt.

The Kapstevel South pit at Kolomela was increased, adding an additional 12.9 Mt Ore Reserves, extending the LoM from 2032 to 2034.

Near-mine exploration between the two Northern Cape operations continued.

Kumba Iron Ore (KIO), a business unit of Anglo American plc (its largest shareholder), is a single commodity iron ore minerals Company listed on the Johannesburg Stock Exchange (JSE) in the Republic of South Africa (market cap – US$9.3 billion at 31 December 2021), focusing its business on competing in the global iron ore market through premium product delivery.

Cover image
Core samples at Kolomela.

Feedback:
(jean.britz@angloamerican.com)

Contents

Navigating our 2021 reports
Our integrated reporting suite comprises the following reports:

All information for the year ended 31 December 2021

Integrated report*
A succinct review of our strategy and business model, operating context, governance and operational performance, targeted primarily at current and prospective investors.

Annual financial statements
Detailed analysis of our financial results, with audited financial statements, prepared in accordance with International Financial Reporting Standards.

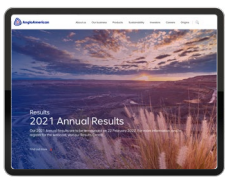
Sustainability report*
Reviews our approach to managing our significant environmental, social and governance (ESG) impacts and addressing those sustainability issues of interest to a broad range of stakeholders.

Ore Reserve (and Saleable Product) and Mineral Resource (ORMR) report
Reported in accordance with the South African Code for the Reporting of Exploration Results, Mineral Resources and Mineral Reserves (SAMREC Code – 2016 Edition) as required by section 12.13 of the JSE listing rules.

The updated Ore Reserve and Mineral Resource estimates and associated ancillary information contained in the ORMR report are based on input from site-specific Reserve and Resource (R&R) Statements, which are compiled before year end to allow for peer reviews by KIO and Anglo American before estimates are published. Information such as annual production, etc. which are forecasted, may therefore differ from those quoted in the Kumba Integrated report, the latter compiled after calendar year end and reflecting actual figures. Adjustments to Mineral Resource, Ore Reserve and Saleable Product estimates are made in the following year to correct any differences between actual and forecasted estimates used in the previous reporting period.

Kumba appreciates any feedback regarding the competency, materiality and transparency with which its Ore Reserves (and Saleable Product) and Mineral Resources have been presented in this report.

*** Online**
Each of these reports, with additional updated information, will be available on our website from 14 April 2022 .



→ **For more information see**
www.angloamericankumba.com

An abridged version of the 2021 ORMR report is chaptered within the 2021 Kumba Integrated report. (https://www.angloamericankumba.com/investors/annual-reporting/reports-archive/2021)

Introduction

KIO proudly operates two open-pit mines in the Northern Cape province of the Republic of South Africa.

- Kolomela is a predominantly direct shipping ore (DSO) operation with a crushing and screening plant and a small-scale UHDMS facility.
- Sishen mine beneficiates its run-of-mine through large-scale beneficiation facilities, utilising dense media separation (DMS) and Jigging technologies (with a portion of the Jig plant discard being treated via two small-scale UHDMS modules).

A range of high-grade Lump and Fine iron ore products are produced at the operations and railed to the Saldanha harbour on the west coast of South Africa from where it is shipped to fulfil Client off-take. The products are globally marketed as three Kumba blend products:

- Premium Lump @ 65.2% Fe
- Standard Lump @ 64.1% Fe
- Standard Fines @ 63.5% Fe

Both the Kolomela and Sishen mines are conventional drill and blast and truck and shovel open-pit operations with ex-pit ore at Kolomela hauled to designated finger stockpiles from which a run-of-mine blend is delivered, while at Sishen the run-of-mine originates directly from the pit, as well as from designated buffer stockpiles. The Kolomela finger stockpiling is necessary to produce the correct run-of-mine blend for the predominantly DSO operation, while at Sishen the run-of-mine buffer stockpiling facilitates plant feed consistency through partial blending with ex-pit ore.

View of Saldanha Bay port

Kumba's ability to generate value is dependent on access to financial capital, skilled people, quality relationships and various natural and Mineral Resources, supported by the right company culture and access to necessary infrastructure. This report focuses on the iron ore Mineral Resources for which Kumba has obtained the right to mine, and convert to Saleable Product. Consistent Saleable Product delivery over time can only be achieved through disciplined mining and diligent planning. This report is the outcome of Kumba's long-term planning cycle, a process of defining the Mineral Resources via exploration and subsequent spatial modelling, designing safe and economical pit layouts and compiling production schedules to extract the iron ore considering available mining infrastructure and converting it into Saleable Product considering available beneficiation and logistical infrastructure. The final life-of-mine (LoM) plans honour social and environmental requirements. Plans are continuously optimised in support of Horizon 1 (financial margin enhancement programme) of the Kumba Tswelelopele[1] strategy.

Sishen mine – at the end of the shift the Komatsu 860 haul trucks are parked in a safe area ready for the night shift

Kumba's exploration programme retained its focus on on-mine exploration, with the dual aim of improving the confidence in the spatial definition of its Mineral Resources inside and outside current LoM plans, and to generate spatial geometallurgical information in an attempt to optimise value and safeguard niche product generation in support of Horizon 1 (short term) of the Tswelelopele strategy. Drilling outside mining right areas in the Northern Cape province has continued on from 2020, exploring some of the target areas Kumba has generated through its regional genetic geological model of the Northern Cape iron ore belt, to determine its iron ore endowment potential in support of Horizon 2 (leveraging endowment) of the Tswelelopele strategy.

1) Tswelelopele means "progress" in Setswana.

The statement

KIO Limited is a JSE-listed minerals company that focuses its business (iron ore exploration, mining, beneficiation and marketing) in the Northern Cape province of the Republic of South Africa. It proudly operates two open-pit mines, namely Kolomela and Sishen. Both operations have established infrastructure, which is applied to convert *in situ* haematite mineralisation into saleable iron ore product that earns the Company a premium in the global iron ore market. Current production output is mostly railed across a rail line linking the mining operations with the commodity export harbour facility at Saldanha Bay on the west coast of South Africa, from where it is shipped to the various global client destinations.

Reporting code

The 2021 KIO online Ore Reserve (and Saleable Product) and Mineral Resource (ORMR) report is a condensed version of the full 2021 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 R&R Statements; the latter are structured to address all aspects listed in the Checklist of reporting and Assessment Criteria Table of the SAMREC Code (2016 Edition).

The Kumba ORMR report, therefore, aims to meet the JSE Listings Requirements as per section 12 for minerals companies, referencing reporting requirements as set out in SAMREC Code (2016 Edition). Adherence is governed in the Company's business processes via an R&R reporting policy.

→ **For more information see** (website: https://www.angloamericankumba.com/~/media/Files/A/Anglo-American-Group/Kumba/sustainability/approach-and-policies/kumba-mineral-resource-and-ore-reserve-reporting-policy.pdf).

The policy is supported by detailed reporting requirements documents and associated reporting templates, which channel the reporting requirements down to a site-specific level, to ensure that Kumba meets the relevant JSE Listings Requirements.

The extent of the content in this R&R report demonstrates Kumba's commitment to the Material, transparent and competent reporting of its Ore Reserves and Mineral Resources.

Reporting basis

The Ore Reserve (and Saleable Product) and exclusive Mineral Resource estimates are stated on a 100% basis, irrespective of attributable shareholding. Kumba's attributable ownership in operations and projects is, however, stipulated per site in the Ore Reserve (and Saleable Product) and Mineral Resource tables as listed in this statement.

The Ore Reserves and exclusive Mineral Resources 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 (RPEEE) (Mineral Resources).

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.

Effective date

This report states Kumba's Ore Reserves (and Saleable Product) and Mineral Resources as remaining at 31 December 2021 and compares it with the R&R figures published for 2020.

Ore Reserve: Assumed mineable under foreseen long-term economic conditions

A long-term iron ore price forecast (based on the Platts 62% index) and exchange rate, adjusted with Kumba-specific forecasts of Lump and Fe premiums, deleterious element specifications and freight tariffs were agreed upon and form the basis of Ore Reserves and Mineral Resources presented in this document. This 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 pit shell (typically at a revenue factor of 1) is chosen for each site and converted into a pit design or layout, which spatially envelopes the currently economically mineable Ore Reserves.

The Ore Reserves are derived from the in situ Measured and Indicated portion of the Mineral Resource occurring within the approved pit layouts only, through the modification 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 capacity and efficiencies, concerning specific ore types planned for beneficiation.

Site-specific cut-off grades are assigned in run-of-mine schedules to achieve a sustainable delivery of Saleable Product that complies with Client product specifications*.

* Although site-specific cut-off grades are assigned in run-of-mine schedules to achieve a sustainable delivery of Saleable Product that complies with Client product specifications, the 2021 LoM plans do contain periods where the Saleable Product contaminant grades (in particular Al_2O_3 and K_2O) exceed the current Client product specifications. Further work is ongoing to fully align to the cut-off grade assignments and the latest ore blending potential assumptions.

The statement continued

Mineral Resource: assumed to have RPEEE

Mineral Resources are declared exclusive of (in addition to) Ore Reserves. Apart from cut-off grades, which consider the current or at least concept-approved beneficiation processes, Kumba spatially distinguishes Mineral Resources from other mineral occurrences by applying a resource shell (1.6 x revenue factor "optimistic" shell). This is derived during the annual pit optimisation process conducted on the latest site-specific 3DI mining block models, considering mining bench configurations, etc. The resource shell is then subsequently applied to the geological block models, defining the classified ore occurring inside the resource shell as the resultant Mineral Resource portion considered to have RPEEE.

A further condition is that the iron ore price corresponding with a 1.6 revenue factor pit shell must have been historically achieved in the global iron ore market. This process, therefore, considers site-specific beneficiation, mining practices, as well as realistic pricing and cost.

Inferred Mineral Resources considered in LoM plans are separately indicated in the exclusive Mineral Resource Statement, with the extrapolated Inferred portion of the Mineral Resources quoted in the footnotes of the exclusive Mineral Resource Statement.

Security of tenure

All of the Ore Reserves and Mineral Resources as stated occur within mining rights granted by the South African Department of Mineral Resources and Energy (DMRE), which have been notarially executed and registered at the Mining Titles Office of the DMRE by Sishen Iron Ore Company Proprietary Limited (SIOC) (76.3% owned by KIO Limited) and have not expired at the time of reporting. In the case of the Ore Reserves, the associated reserve life does not exceed the expiry date of the applicable right.

Mabusha Nyelisani and Luke Kawonde , Geologists working in the core shed at the Heuningkranz exploration site, busy logging core samples from the drill rigs.

Reserve and Resource figures are not exact

The Kumba R&R figures are derived from interpretation and estimation processes, informed by forward looking assumptions, which may not materialise as expected.

By their nature, the R&R figures quoted in this report are therefore inherently subject to some level of risk and uncertainty that could cause actual figures to differ from estimated figures.

Salient features

What stood out in 2021

Ore Reserve replenishment

Kumba continued to deliver on its Ore Reserve replenishment drive in support of the Company's Tswelelopele strategy, which aims to enhance Kumba's financial margins and sustain its business for the future.

The target set at the beginning of Tswelelopele (2017 base year) was to replenish (before depletion) Ore Reserves with 200 Mt and Saleable Product by 120 Mt by 2022. In support of this ambition, the following projects and initiatives have been successfully delivered:

- Improved operational efficiencies, translating into higher resource to reserve conversion rates in both the Sishen and Kolomela LoM plans from 2018 to 2021
- The implementation of the modular UHDMS plants at Sishen mine in 2018 to beneficiate the Jig plant discard
- Sishen pit slope optimisation phase 1 (2019)
- Kolomela waste stripping optimisation (2019)
- Sishen pit slope optimisation phase 2 (2020)
- Sishen UHDMS project approval (2021)
- Expansion of Kapstevel South pit at Kolomela (2021)

Kumba has exceeded the initial Tswelelopele targets by 61% on Ore Reserves and 58% on Saleable Product, with a cumulative (2018 to 2021) Ore Reserve replenishment of 322.8 Mt (before depletion of 199.3 Mt run-of-mine) and a cumulative Saleable Product replenishment of 191.0 Mt (before production of 164.0 Mt). After fully accounting for depletion over the period (2018 – 2021), the estimated Ore Reserves have increased by 123.5 Mt and the estimated Saleable Product by 27 Mt.

- The latest 2021 replenishment contribution is primarily the result of the Sishen UHDMS project feasibility study being approved in 2021. This project will enable the beneficiation of low-grade ore with the planned upgrade of the existing DMS plant to a UHDMS plant, scheduled for completion towards the end of 2023 with first product to be delivered from January 2024 onwards. Apart from enabling the beneficiation of low-grade material, the UHDMS technology enables Sishen to increase the average grade of its products until 2035, and increase the reserve life from 2035 to 2039, with the last five years of production consisting of standard Lump and Fine iron ore products (~10 Mtpa) derived from low-grade Ore Reserves.

2021 progress

- Tswelelopele Horizon 1 – Improve KIO's financial margins through achieving benchmark productivities, maximising resource utilisation, cost control and obtaining the maximum price for our superior iron ore products.
  - The Kapstevel South pit layout increased in size (12.9 Mt additional Ore Reserves) with a pit optimisation update considering 2020 long-term economic parameters to align it with the other pit layouts within Kumba.
- Tswelelopele Horizon 2 – Apply new beneficiation technology and conduct exploration to extend the Company's LoM. The programme focuses on converting lower-grade material to Saleable Product by fully utilising the UHDMS technology and exploration knowledge and expertise we have in the Northern Cape to discover new deposits both on and off-lease.
  - The Sishen UHDMS project feasibility study was approved in Q1 2021.
  - Kolomela will launch a study in 2022 to evaluate the possibility of converting 59.1 Mt Measured and Indicated Mineral Resources of the Ploegfontein deposit to Ore Reserves. The deposit is located within the mining right area but not considered in the current LoM plan.
  - On the exploration front, SIOC has continued its exploration activities in the Northern Cape province, including drilling on near-mine properties in relative proximity to existing operations that have been identified as potential iron ore mineralisation targets through its regional genetic geological model. Access for exploration has been achieved through option agreements with current third-party right holders. If the properties are prospective, and meet Kumba's expected criteria, Kumba has the right to take up 70% of the ownership in the assets.

The results achieved at the end of 2021 represent the culmination of the Horizon 1 and 2 Tswelelopele journey from a technology and planning perspective.

Salient features continued

Reserve and Resource movements from 2020 to 2021

Saleable Product over the reserve life decreased by 2% (-14.1 Mt) year-on-year, primarily as a result of production, which was partially offset by the addition of Saleable Product attributable to the Sishen UHDMS project.

Ore Reserves showed a net year-on-year increase of 10% (+70.0 Mt), mainly due to the addition of low-grade ore to the Sishen Ore Reserve portfolio with the approval of the Sishen UHDMS project in 2021.

Mineral Resources (in addition to Ore Reserves) realised a material 20% (-139.0 Mt) decrease from 2020 to 2021, mainly as a result of the conversion of Measured and Indicated low-grade Mineral Resources to Ore Reserves at Sishen mine (UHDMS project).

Other

Saleable Product portfolio

The Sishen mine 2021 LoM plan, with the introduction of the UHDMS technology, was able to increase the percentage of planned premium Saleable Product to 50% (37% Lump and 13% Fines). Further work is being done to appropriately define the chemical qualities associated with the premium Lump product to ensure alignment between the Ore Reserve capability and the marketing strategy. The high demand for Kumba's premium product, however, places risk on remaining standard Lump and Fine products in terms of Al_2O_3 and K_2O contaminant grades.

As mitigation, Kumba is in discussion with the Anglo American marketing division to ensure an aligned and optimal way forward where value is maximised while considering the inherent grade characteristics of the Mineral Resources in various planning scenarios.

Logistics

Kumba faces several challenges securing its future export logistics capacity, including continued channel underperformance, uncertainty and competition from manganese for rail and insufficient Northern Cape iron ore resources to sustain a major channel expansion. Kumba is actively engaging and making progress with Transnet (state owned railway company) to improve both the performance and longevity of the rail and port infrastructure.

High-level overview of Kumba's Saleable Product, Ore Reserves and Mineral Resources

These are the foundation on which our business is based and continuously developed.

Saleable Product

KIO processes or beneficiates its run-of-mine at its mining operations through crushing and screening, and various DMS processes, as well as jigging to produce on-site products that are combined into final premium Lump, standard Lump and standard Fines iron ore products for Client off-take.

Remaining Saleable Product estimates are determined through the application of fundamental and empirically derived beneficiation algorithms to the scheduled Ore Reserves (and reported excluding estimated modified beneficiated Inferred Mineral Resources) to convert the applicable run-of-mine tonnage and grade estimates into product tonnage and grade estimates. The fundamental beneficiation algorithms are derived from geometallurgical beneficiation test work in the case of Sishen mine, while the empirical beneficiation algorithms are derived from historical performances as measured for Kolomela. The beneficiation algorithms consider the various site-specific run-of-mine ore types, site-specific beneficiation capacities and site-specific beneficiation efficiencies.

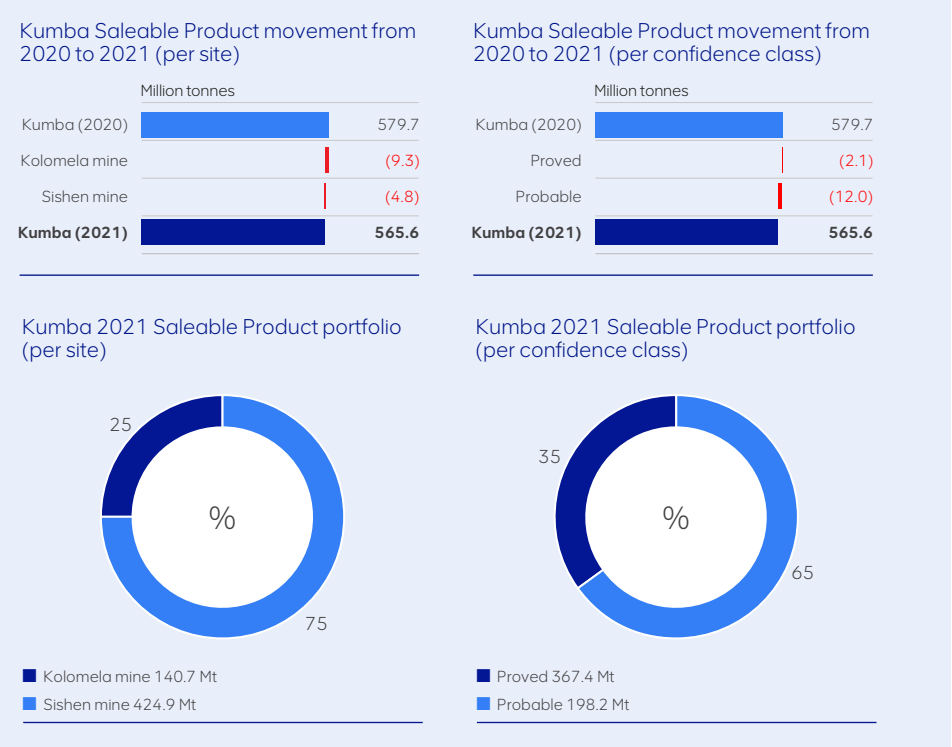


Figure 1: Kumba 2021 (versus 2020) Saleable Product summary

The Saleable Product tonnages are summarised in Figure 1 per site and per confidence class.

It is important to note that the Saleable Product figures are not in addition to the Ore Reserve figures, i.e. the Ore Reserve figures are inclusive of the Saleable Product.

As at 31 December 2021, KIO plans to produce an estimated 565.6 Mt of Saleable Product (excluding estimated modified beneficiated Inferred Mineral Resources) at an estimated average beneficiated grade of 63.5% Fe from its two mining operations over its remaining reserve life:

Kolomela	Sishen
140.7 Mt @ average 64.7% Fe (The 2020 Kolomela LoM plan delivers an average 60% Lump and 40% Fines Saleable Product.)	**429.7 Mt @ average 63.2% Fe** (The 2020 Sishen LoM plan delivers an average 69% Lump and 31% Fines Saleable Product.)

The overall average Lump-to-Fine ratio of the Saleable Product is estimated at 67 : 33. The Sishen products are co-located with the Kolomela products at the Saldanha export harbour and are marketed as the following Saleable Products under the KIO brand:

Premium Lump @ 65.2% Fe	Standard Lump @ 64.1% Fe	Standard Fines @ 63.5% Fe

High-level overview of Kumba's Saleable Product, Ore Reserves and Mineral Resources continued

Year-on-year movement

A 2% overall decrease of 14.1 Mt is noted for the Kumba Saleable Product compared to 2020. The average Fe content of the Saleable Product decreased by -1.1% (absolute) year-on-year as a result of the inclusion of low-grade run-of-mine (21% of total run-of-mine over the reserve life) in the 2021 Sishen LoM plan with the approval of the Sishen UHDMS project's feasibility study in 2021. The low-grade ore portion only beneficiates to standard Lump and Fines product with lower Fe contents compared to the products obtained from high and medium-grade run-of-mine. The low-grade ore extracted from the Sishen pit will be stockpiled over the course of the mine life and only fed to the UHDMS plant from 2035 to 2039.

Kumba Saleable Product profile

The Kumba combined (Sishen and Kolomela) planned Saleable Product profile (including estimated modified and beneficiated Inferred ore) is indicated in Figure 2. The material step-down in production from 2035 onwards is the result of the depletion of high and medium-grade Ore Reserves; with only standard Lump and standard Fine ore planned to be produced from low-grade run-of-mine in the last five years.

Kumba Iron Ore combined 2021 LoM plan Saleable Product profile (per confidence class)

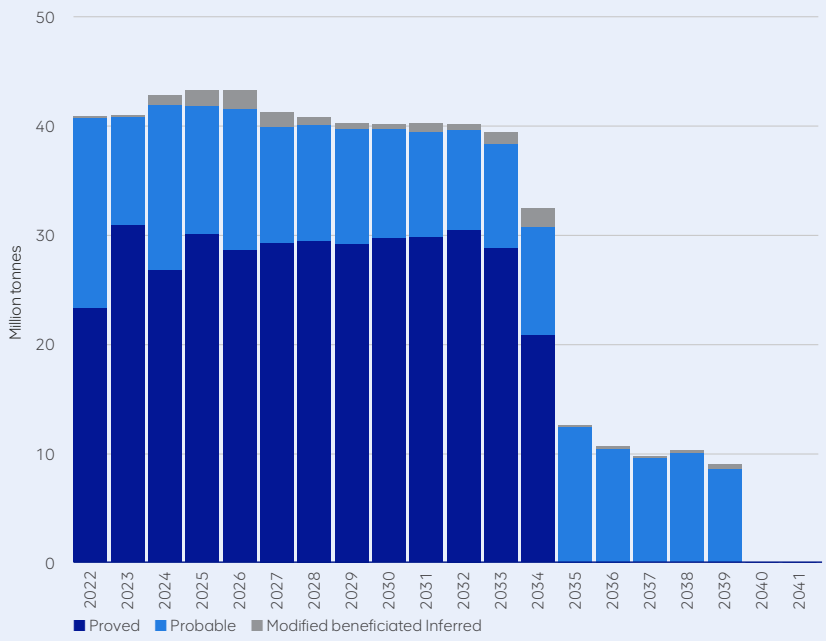


Figure 2: Kumba combined Saleable Product profile (including estimated modified beneficiated Inferred Mineral Resources)

Kolomela

6% (-9.3 Mt) year-on-year decrease, primarily as a result of annual production (-13.1 Mt) and the correction of a 2020 reporting error (-9.5 Mt), partially off-set by an increase in Saleable Product as a result of an expansion to the Kapstevel South pit layout (+12.4 Mt).

(The total movement balance is detailed in footnotes of Table 4.)

Sishen

1% (-4.8 Mt) year-on-year decrease, primarily attributed to annual production (-24.3 Mt) and the correction of a 2020 reporting error (-14.4 Mt), all of which the gain in Saleable Product as a result of the approval of the UHDMS project feasibility study in 2021 (+50.3 Mt).

(The total movement balance is detailed in footnotes of Table 4.)

Ore Reserves

Kumba's Ore Reserves are the economically mineable and beneficiable part of its Measured and Indicated Mineral Resources, making use of existing infrastructure and technology. It includes diluting materials and allowances for losses, which occurs when the material is mined, and is defined as economically extractable as per Kumba's latest view of economic parameters in terms of long-term pricing and exchange rate as well as cost (which considers social, environmental and legislative requirements) as is scheduled in the 2021 LoM plans.

Where new infrastructure and/or technologies are considered, Ore Reserves are only declared once a pre-feasibility or feasibility study has been approved by the relevant Anglo American and KIO Investment Committees.

The Ore Reserve tonnages are summarised in Figure 3 per site and per confidence class.

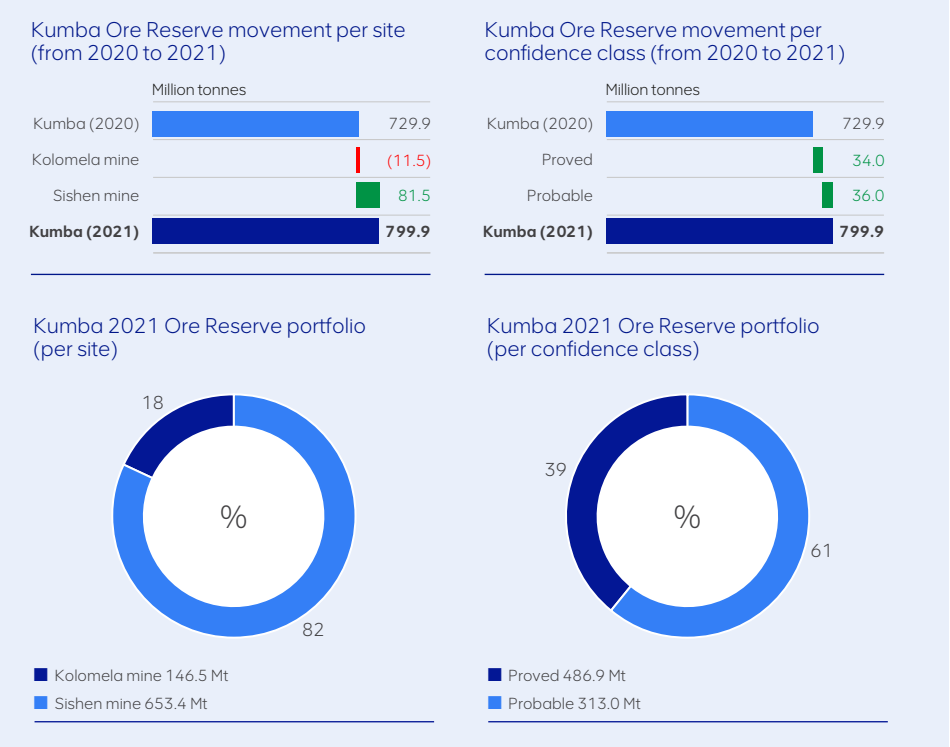


Figure 3: Kumba 2021 (versus 2020) Ore Reserve Summary

As of 31 December 2021, KIO, from a 100% ownership reporting perspective, has access to an estimated haematite Ore Reserve of 799.9 Mt at an estimated average unbeneficiated or feed grade of 55.8% Fe from its two mining operations:

Kolomela	Sishen
146.5 Mt @ 63.6% Fe against a 50.0% Fe cut-off grade	653.4 Mt @ 54.0% Fe against a 40.0% Fe cut-off grade

High-level overview of Kumba's Saleable Product, Ore Reserves and Mineral Resources continued

Year-on-year movement

A 10% net increase of 70.0 Mt (after depletion) is noted for the overall Kumba Ore Reserves compared to 2020. The average Fe content of the Ore Reserves decreased from 58.8% in 2020 to 55.8% in 2021 as a result of including low-grade ore in the Sishen Ore Reserve portfolio after the approval of the Sishen UHDMS project's feasibility study in 2021.

Kumba run-of-mine profile (including modified Inferred Mineral Resources)

The Kumba combined (Sishen and Kolomela) planned run-of-mine profile is indicated in **Figure 4**. The reserve life has increased from a combined 15 years in 2020 to 18 years in 2021 with the incorporation of low-grade run-of-mine into the 2021 LoM plan after the approval of the Sishen UHDMS project feasibility study in Q1 2021. The material step-down in run-of-mine from 2035 onwards is the result of the depletion of high- and medium grade run-of-mine; with only low-grade run-of-mine scheduled as plant feed in the last five years.

Kumba Iron Ore combined 2021 LoM plan run-of-mine profile (per confidence class)

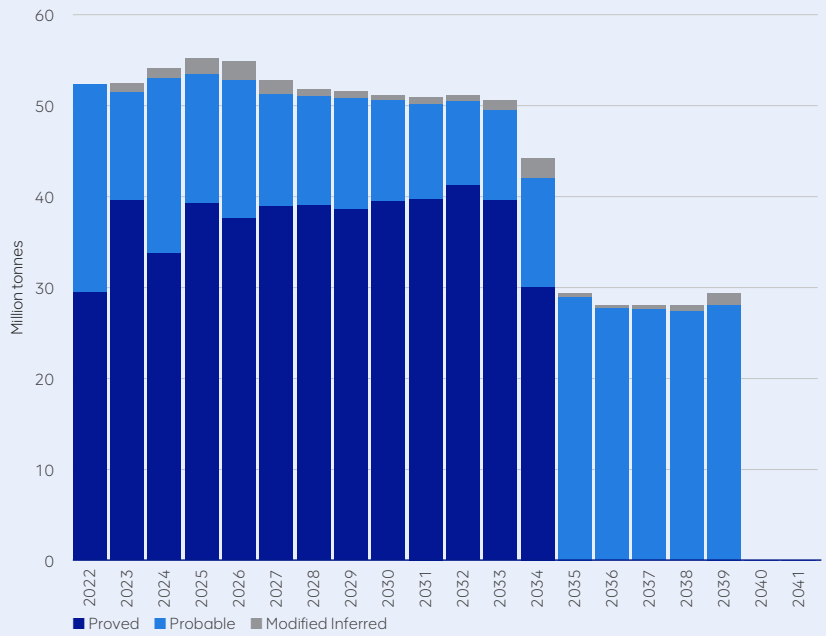


Figure 4: Kumba combined run-of-mine profile (including estimated modified Inferred Mineral Resources)

Kolomela

7% (-11.5 Mt) year-on-year decrease, primarily as a result of annual production (-13.6 Mt) and correction of a 2020 reporting error (-11.0 Mt), partially offset by the addition of Ore Reserves associated with the larger pit layout at Kapstevel South (+12.9 Mt).

(The total movement balance is detailed in footnotes of Table 5.)

Sishen

14% (+81.5 Mt) year-on-year increase, mainly attributable to the addition of low-grade ore (+135.3 Mt) to the Ore Reserve portfolio after approval of the Sishen UHDMS project feasibility study in 2021.

(The total movement balance is detailed in footnotes of Table 5.)

Mineral Resources

Kumba's Mineral Resources are the *in situ* iron ore of which the form, grade and quantity are spatially defined. In addition, long-term iron ore stockpiles with an average grade above the site-specific cut-off grades are also declared as Mineral Resources. The Mineral Resources are 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 have reasonable prospects for its eventual economic extraction as per Kumba's current understanding of its value chain and market conditions. The location, quantity, grade, continuity and other geological characteristics of the Mineral Resources are known, interpreted and estimated from specific geological evidence and knowledge, including sampling.

Mineral Resources are reported exclusively i.e. in addition to Ore Reserves.

The Mineral Resource tonnages are summarised per site and per confidence class in Figure 5.

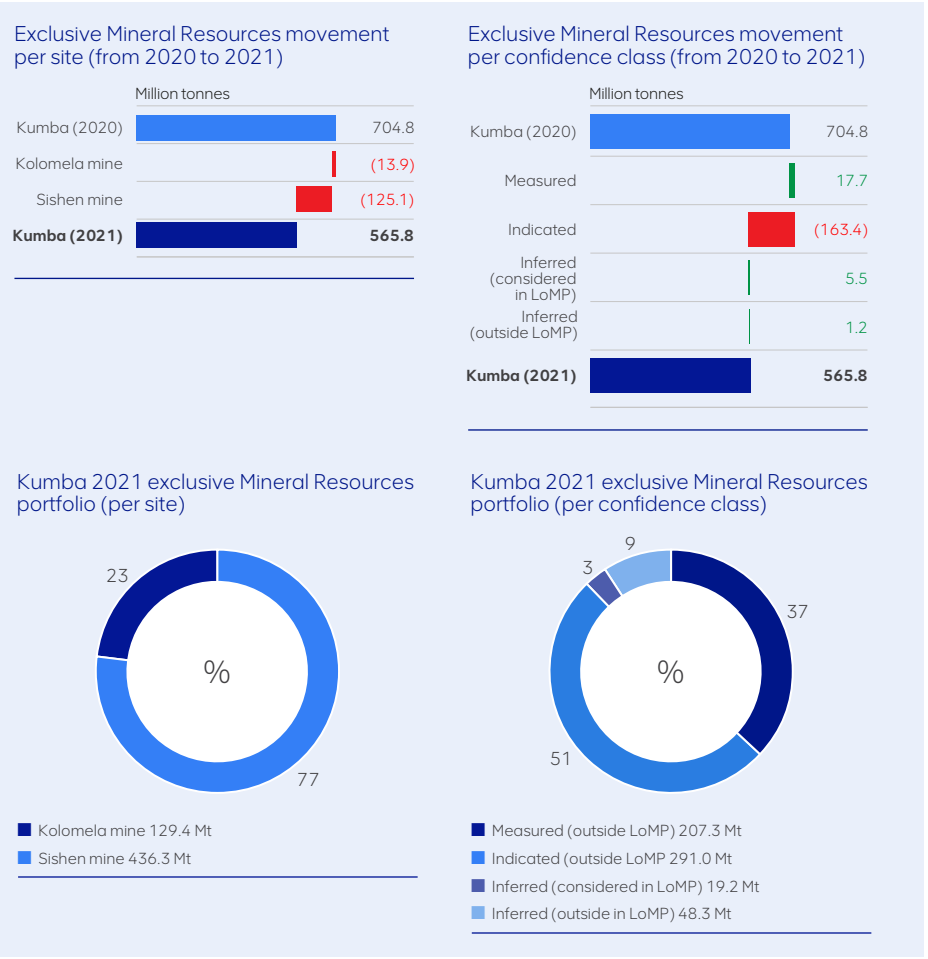


Figure 5: Kumba 2021 (versus 2020) excludes Mineral Resources Summary

As at 31 December 2021, Kumba's remaining exclusive (in addition to Ore Reserves) Mineral Resource base is estimated at 565.8 Mt at an estimated average *in situ* grade of 58.4% Fe.

Haematite ore bodies

Kolomela	Sishen
129.4 Mt @ average 63.1% Fe (against a 50.0% Fe cut-off grade)	436.6 Mt @ average 57.0% Fe (against a 40.0% Fe cut-off grade)

High-level overview of Kumba's Saleable Product, Ore Reserves and Mineral Resources continued

Year-on-year movement

A substantial 20% net decrease of 139.0 Mt is noted for the overall Kumba exclusive Mineral Resource compared to 2020. The average *in situ* Fe of the exclusive Mineral Resources has increased from 55.5% in 2020 to 58.3% in 2021, primarily as a result of the conversion of Sishen low-grade Measured and Indicated Mineral Resources inside the pit layout to Ore Reserves, with the remainder of the Sishen exclusive Mineral Resource portfolio consisting of a larger portion of medium- and high-grade ore compared to 2020.

The overall Measured plus Indicated versus Inferred exclusive Mineral Resource ratio changed from 91 : 9 in 2020 to 88 : 12 in 2021, primarily as a result of the conversion of some Measured and Indicated Mineral Resources to Ore Reserves.

Kolomela

10% (-13.9 Mt) year-on-year decrease, primarily as a result of an increase in the size of the Kapstevel South pit layout , with Measured and Indicated Mineral Resources being converted to Ore Reserves.

(The total movement balance is detailed in footnotes of Table 7.)

Sishen

22% (-125.1 Mt) year-on-year material decrease, mostly as a result of the conversion of Measured and Indicated low-grade Mineral Resources inside the pit layout to Ore Reserves, after approval of the Sishen UHDMS project feasibility study in 2021.

(The total movement balance is detailed in footnotes of Table 7.)

Purpose

This statement describes the foundation for Kumba's long-term business as per the Company's current understanding, thinking and planning.

It is the objective of this statement to declare the Kumba Ore Reserves (and Saleable Product) and exclusive Mineral Resources as remaining at 31 December 2021 and compare it with the 31 December 2020 published figures. In addition, it aims to provide all relevant detail in support of the statement to explain how the Ore Reserve and Mineral Resource estimates were derived and what aspects thereto may be material for investment decisions.

It must be noted that the Mineral Resource and Ore Reserve figures presented in this statement are estimates, and although it has been derived to the best possible knowledge of the Competent Persons (CPs), it is inherently subject to some level of uncertainty and inaccuracy, based on forward looking assumptions and associated risks. The respective CPs, however, take full responsibility for the Mineral Resource and Ore Reserve declarations.

This statement is the collective view of the Ore Reserve and Mineral Resource CPs and strives to deliver a transparent and material view of the Kumba Ore Reserves and Mineral Resources to inform all relevant stakeholders.

A small camel thorn tree stands near the entrance of the Kolomela mine . In the background is one of the 4 km trains which carry the processed iron ore from Kolomela to Saldanha Bay , where it is shipped to customers .

Location

Location of operations and exploration projects is dictated by geology.

All the Kumba sites for which Ore Reserves and/or Mineral Resources were declared in 2021 are located within the Republic of South Africa (Figure 6). As is the case with all mineral companies, the location of operations and exploration projects is dictated by geology.

The Kumba operations (Kolomela and Sishen mine) are located in the Northern Cape province.

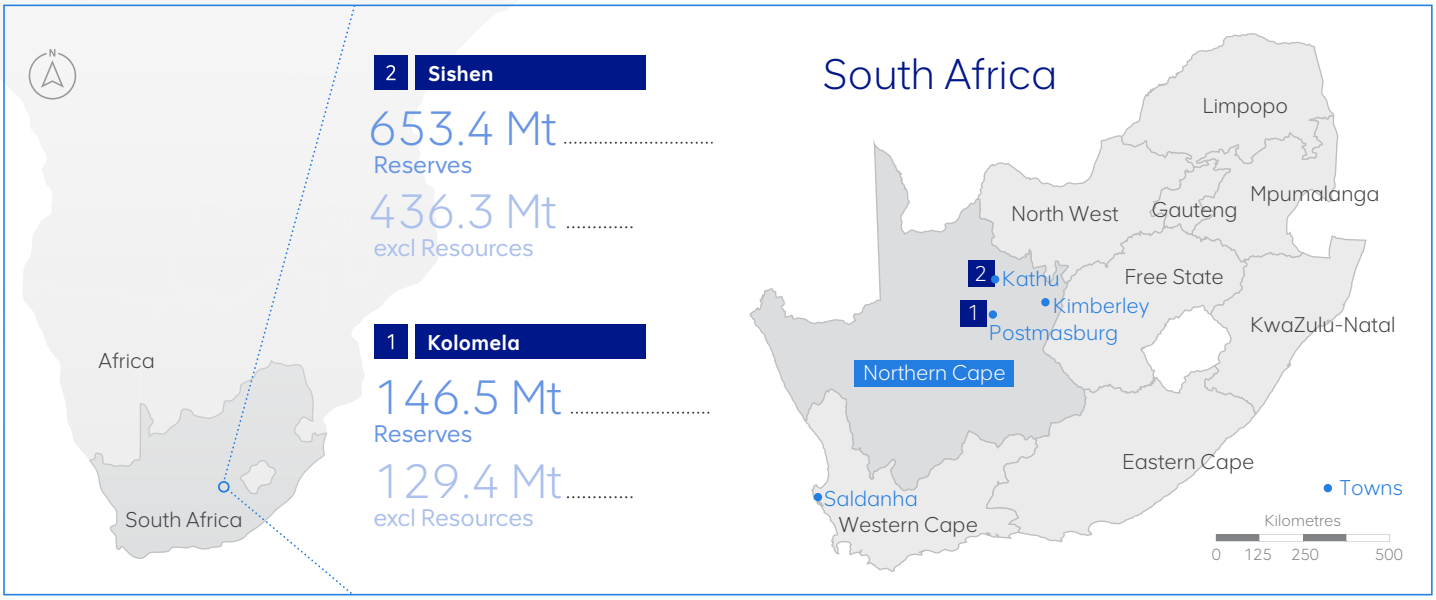


Figure 6: Geographical locations of Kumba operations and projects for which Ore Reserves and Mineral Resources have been declared

The WGS84 latitude/longitude geographical coordinate map references of the Kumba entities for which Ore Reserves and/or Mineral Resources have been declared in 2021 are listed below:

1 Kolomela	2 Sishen mine
Kolomela in the Northern Cape province near the town of Postmasburg	Sishen mine in the Northern Cape province near the town of Kathu, which accounts for the bulk of Kumba's production
(28°23'30.05" S and 22°58'46.88" E)	**(27°44'02.29" S and 23°00'39.95" E)**

Attributable ownership

Kumba has access to its Ore Reserves and Mineral Resources through SIOC, in which it has 76.29% attributable ownership.

Kumba, a business unit of the Anglo American plc (AA plc) group as the major shareholder, has access to its iron Ore Reserves and Resources through SIOC. SIOC is the entity to which the mining and prospecting rights have been granted. The relevant KIO ownership structure is illustrated in Figure 7.

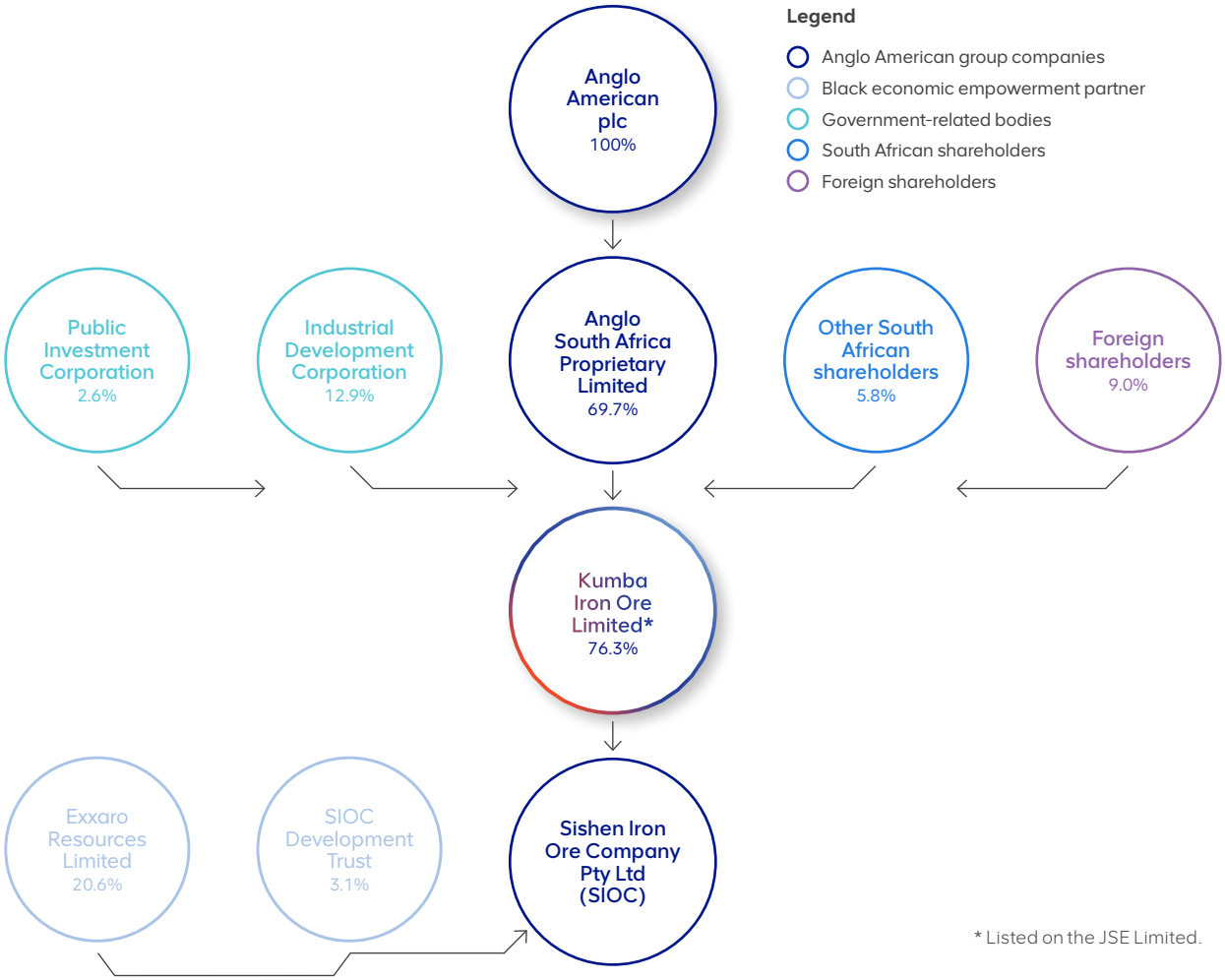


Figure 7: Kumba ownership structure (at the time of reporting)

For this statement, all Ore Reserve (and Saleable Product) and Mineral Resource estimates, whether KIO's attributable ownership in the specific mineral asset is less than 100% or not, are reported as 100%; with the percentages attributable to KIO indicated in the relevant tables. The overall proportion attributable to SIOC, KIO and AA plc is summarised in Table 1.

Table 1: SIOC, KIO and AA plc mineral asset ownership (31 December 2021)

Mineral asset	% owned by SIOC		% owned by Kumba Iron Ore		% owned by other shareholders		% owned by AA plc via KIO[1]	
	2021	2020	2021	2020	2021	2020	2021	2020
Kolomela	100	100	76.3	76.3	23.7	23.7	53.2	53.2
Sishen mine	100	100	76.3	76.3	23.7	23.7	53.2	53.2

[1] The holding Company, SIOC, is 76.3% owned by KIO and KIO is 69.7% owned by AA plc (as at 31 December 2021).

Security of tenure

Kumba's right to mine.

All Ore Reserves (and Saleable Product) and Mineral Resources (in addition to Ore Reserves) quoted in this document are held under notarially executed and registered mining rights granted to SIOC in terms of the Mineral and Petroleum Resources Development Act No 28 of 2002 (MPRDA) by the DMRE of the South African government. Kumba holds a 76.3% share in SIOC (at the time of reporting).

Status of mining rights

SIOC is the holder of mining rights for both its operations and the rights are of sufficient duration to enable the complete execution of the LoM 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 as at the time of reporting are as follows:

Kolomela was granted a mining right for iron ore on 18 September 2008 for a 30-year mining period. The latest Mining Work Programme section 102 amendment application was approved on 7 July 2017.

The following deeds of amendment/variation in terms of section 102 of the Mineral and Petroleum Resources Development Act 28 of 2002 were registered at the Mineral and Petroleum Titles Office: Pretoria on 31 July 2019 to amend:

- clause 8 ("Conditions on disposal of Minerals and/or Products Derived from Mining") of the mining right
- clause 1 of the mining right by substituting the diagram/ marked as Annexure C to the mining right with the approved SG Mining Right diagram N179/2015 and amending clause 1 of the mining right by amending the extent as it appears under measurement from 16,941.92 ha to 16,954.1466 ha

The deed to amend the Kolomela mining right and the mining work programme to include Farm 364 (Heuningkranz) and portion 1 of Farm 432 (Langverwacht) of the former Heuningkranz prospecting right, was registered on 2 October 2019.

The Kolomela Mining Work Programme will be updated and submitted to the DMRE for consideration in 2022 once the Kapstevel South autonomous haulage project feasibility study has been completed.

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 amend the mining right to incorporate the old Transnet railway properties transecting the mining area from north to south. The application was granted by the DMRE on 28 February 2014.

The Sishen mining right was again amended in 2016 to award SIOC the outstanding 21.4% undivided share previously held by ArcelorMittal South Africa in the Sishen mining right.

The Sishen mining right was further amended during 2018 to include the Dingleton properties into the Sishen mining right.

The following deeds of amendment/variation in terms of section 102 of the MPRDA, were registered at the mining titles office on 6 and 7 November 2019:

- notarial deed of amendment/variation (railway properties);
- notarial deed of amendment/variation (21.4%); and
- notarial deed of amendment/variation (Dingleton properties).

Sishen mine has scheduled an update of the Mining Work Programme to be submitted to the DMRE in 2022 to account for the increase in the size of pit layout in 2020 and the incorporation of low-grade ore in the 2021 LoM plan.

Legal proceedings in relation to Kumba's mining rights

SIOC has launched legal proceedings through the Anglo American Legal Department, which appointed a legal firm, lodging objections on behalf of SIOC in terms of section 10(2) and appeals in terms of section 96(1) of the MPRDA against the granting of prospecting right applications to eight entities by the DMRE over certain farm portions included in the Kolomela and Sishen mining rights.

Status of environmental authorisations associated with mining rights

All required permits and licensing to operate the Kolomela and Sishen mine operations have been granted. The following recent (2020 and 2021) applications considering future projects are pending approval by the relevant governmental authorities:

Kolomela

- Water use licence amendment
- Planned Kapstevel South autonomous haulage system environmental management programme (EMPr) amendment (if project is approved in 2022)
- Planned Ploegfontein pit EMPr amendment

Sishen mine

- Amendment of the EMPr to allow for the rezoning of the tyre processing yard in the industrial area in Kathu.
- Amendment of the EMPr for the establishment of dumping facilities for the planned Sishen western expansion project.

Other applications that must still be submitted in support of the 2021 LoM plan are environmental authorisation and licensing/ permitting for planned mining activities in the Far South area at Sishen mine.

The status of the de-proclamation of the Dingleton urban areas at Sishen mine in order to conduct mining in these areas has progressed, with the District Municipality Planning Tribunal having approved two of the three areas applied for. The phase 3 de-proclamation application was lodged on 26 May 2021 but has not been granted at the time of reporting. Mining of Pushback 17 can, however, commence as per the memorandum of understanding signed between SIOC and the Gamagara local municipality, authorising mining provided that the area has been vacated and the de-proclamation application has been lodged, which is the case. The Municipality is in the process of establishing its Municipal Planning Tribunal that will decide on the land use applications.

Waste licensing associated with mining rights

All relevant waste licensing are in place. Sishen mine will however re-evaluate its waste management programme to consider the combined effect of the larger pit that was designed in 2020 and the subsequent the finalisation of the Sishen UHDMS project in 2021, which converted low-grade ore (considered as waste in the 2020 LoM plan) into Ore Reserves in the 2021 LoM plan. This work is expected to commence in 2022.

Closure cost associated with mining rights

In terms of immediate closure cost:

- The Kolomela figure (as at the time of reporting) amounts to R1,341 million (a total of R154 million is provided for within the KIO Rehabilitation Trust Fund with an additional R1,096 million furnished through bank guarantees; guarantees for the shortfall of R91 million will be issued during 2022.
- The Sishen mine figure (as at the time of reporting) amounts to R3,826 million (a total of R642 million is provided for within the KIO Rehabilitation Trust Fund with an additional R2,983 million through bank guarantees; guarantees for the shortfall of R201 million will be issued during 2022.

Royalties associated with mining rights

KIO's royalty contribution to the South African government's fiscus for 2021 amounts to R4,171 million as calculated at the time of reporting:

- R1,199 million for Kolomela
- R2,972 million for Sishen mine

Status of prospecting rights

KIO has declared no Mineral Resources on prospecting rights.

SIOC has submitted a closure application for the Zandrivierspoort prospecting right, as was acknowledged by the Regional Manager of the DMRE office in Limpopo on 22 November 2021. The right expired on 21 March 2020.

ESG reporting deviation

KIO, in collaboration with its parent company Anglo American, is evaluating the reporting requirements of the newly introduced SAMESG Guideline.

It must be noted that the SAMESG Guideline has not been incorporated in the JSE listing rules as stipulated for minerals companies. In 2021, Kumba will again provide comprehensive feedback in this regard by means of its annual sustainability report in accordance with the GRI's Sustainability Reporting Standards (core compliance) and Mining Sector Supplement. The reporting is also aligned with the AA1000 stakeholder engagement standard, the sustainable development principles and reporting framework of the International Council on Mining and Metals, and the principles of the United Nations Global Performance Compact.

Competence

Kumba considers its relevant technical specialists as competent to declare Ore Reserves and Mineral Resources in accordance with the SAMREC Code – 2016 Edition, to provide the decision maker with a transparent and material insight into the Company's Ore Reserve and Mineral Resource status at a given point in time.

The Ore Reserve and Mineral Resource estimates were prepared by or under the direct supervision of CPs as defined in the SAMREC Code (2016 Edition). All CPs 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 CPs consent to the inclusion in this statement of the information in the form and context in which it appears. All CPs (Table 2 and Table 3) informing the 2021 Kumba Ore Reserve (and Saleable Product) and Mineral Resource report assumed responsibility by means of signing a CPs appointment letter, kept by the Company's Principal – Resource Geology, at Kumba's Centurion Gate office in Pretoria, South Africa. These letters contain the full name, address, professional qualifications, and relevant experience of the CPs.

Table 2: Corporate responsibility – Lead competent persons – Kumba corporate office

Business unit	Field	Name	Title	Employed by	Professional organisation	Registration number	Years' relevant experience
Kumba Iron Ore	Mineral Resources	Jean Britz	Principal Mineral Resources	Sishen Iron Ore Company Proprietary Limited	SACNASP** Professional Natural Scientist	400423/04	17
	Ore Reserves*	Theunis Otto	Head Mining Engineering	Sishen Iron Ore Company Proprietary Limited	ECSA*** Professional Engineer	990072	17

* The term "Ore Reserves" in the context of this report has the same meaning as "Mineral Reserves", as defined by the SAMREC Code. The term "Ore Reserves" is preferred because it emphasises the difference between these and Mineral Resources.
** SACNASP – South African Council for Natural Scientific Professions (https://www.sacnasp.org.za/ - Address: Management Enterprise Building, 1 Mark Shuttleworth Street, Innovation Hub, Pretoria).
*** ECSA – Engineering Council of South Africa (https://www.ecsa.co.za/default.aspx - Address: Lake Office Park, 1st Floor, Waterview Corner Building, 2 Ernest Oppenheimer Ave, Bruma, Johannesburg, 9301).

Table 3: Mining operation responsibility – Kumba operations

Operations	Field	Name	Title	Employed by	Professional organisation	Registration number	Years' relevant experience
Kolomela	Mineral Resources	Venter Combrink	Specialist Modelling Resource Geologist	Sishen Iron Ore Company Proprietary Limited	SACNASP Professional Natural Scientist	400053/08	18
	Ore Reserves	Grant Crawley	Professional Mining Engineer	School of Rock (owner)	ECSA Professional Engineer	20130120	10
Sishen mine	Mineral Resources	Mike Carney	Professional Natural Scientist	VBKOM (sub-contracted)	SACNASP Professional Natural Scientist	400096/99	20
	Ore Reserves	Derek Esterhuysen	Principal Mining Engineer	Sishen Iron Ore Company Proprietary Limited	ECSA Professional Engineer	20040033	13

The Lead CPs for Ore Reserves and Mineral Resources as appointed in 2021 can without any qualifications state that:

- The Ore Reserve and Mineral Resource figures presented in this report are considered to be a true reflection of the Ore Reserve and Mineral Resource estimates as at 31 December 2021 for Kumba, and that public reporting is based on-site-specific R&R Statements that have been carried out in accordance with the minimum standards and guidelines of the SAMREC Code (2016 Edition) as verified and to the best of the knowledge of the CPs.
- The Ore Reserve and Mineral Resource figures quoted in this report have been reviewed by a panel of peers, including technical specialists from Anglo American.
- The Lead CPs have not been unduly influenced by KIO or any person commissioning the Ore Reserve (and Saleable Product) and Mineral Resource report and are of the opinion that all critical assumptions are documented, and adequate disclosure is made of all material aspects that the informed reader may require, to make a reasonable and balanced judgement of the Ore Reserve and Mineral Resource figures.
- The Lead CPs have sufficient experience relevant to the style and type of mineral deposit under consideration and to the activity which is being undertaken to qualify as a CP as defined in the SAMREC Code (2016 Edition).
- The Lead CPs consent to the inclusion in the KIO integrated report as well as in the AA plc R&R report and R&R summary section of the AA plc annual report, of the public R&R information (as defined in the Kumba R&R policy and reporting procedure documents) in the form and context in which it appears in this statement.

Kumba appreciates any feedback regarding the competency, materiality and transparency with which its Ore Reserves and Mineral Resources have been presented in this report.

→ **Feedback:** (jean.britz@angloamerican.com)

Governance

Kumba, through Anglo American plc, applies a rigorous scheduled governance programme to ensure representative Ore Reserve (and Saleable Product) and Mineral Resource reporting.

Applicable R&R reporting codes are applied throughout AA plc via a group policy for the reporting of Ore Reserves and Mineral Resources, which holistically governs R&R reporting for all the AA plc business units, of which KIO forms part. The policy is supported by a requirements document [AA_RD_22_25 – Version 12 (2021)] which sets out the minimum requirements for R&R reporting throughout the Anglo group, to ensure a uniform approach to reporting and adherence to the latest applicable national reporting codes, which in the case of Kumba is the SAMREC Code (2016 Edition). The requirements document is revised annually prior to R&R reporting, with refinements approved by the AA plc R&R reporting Committee.

The Kumba R&R reporting governance framework is summarised in Figure 8.

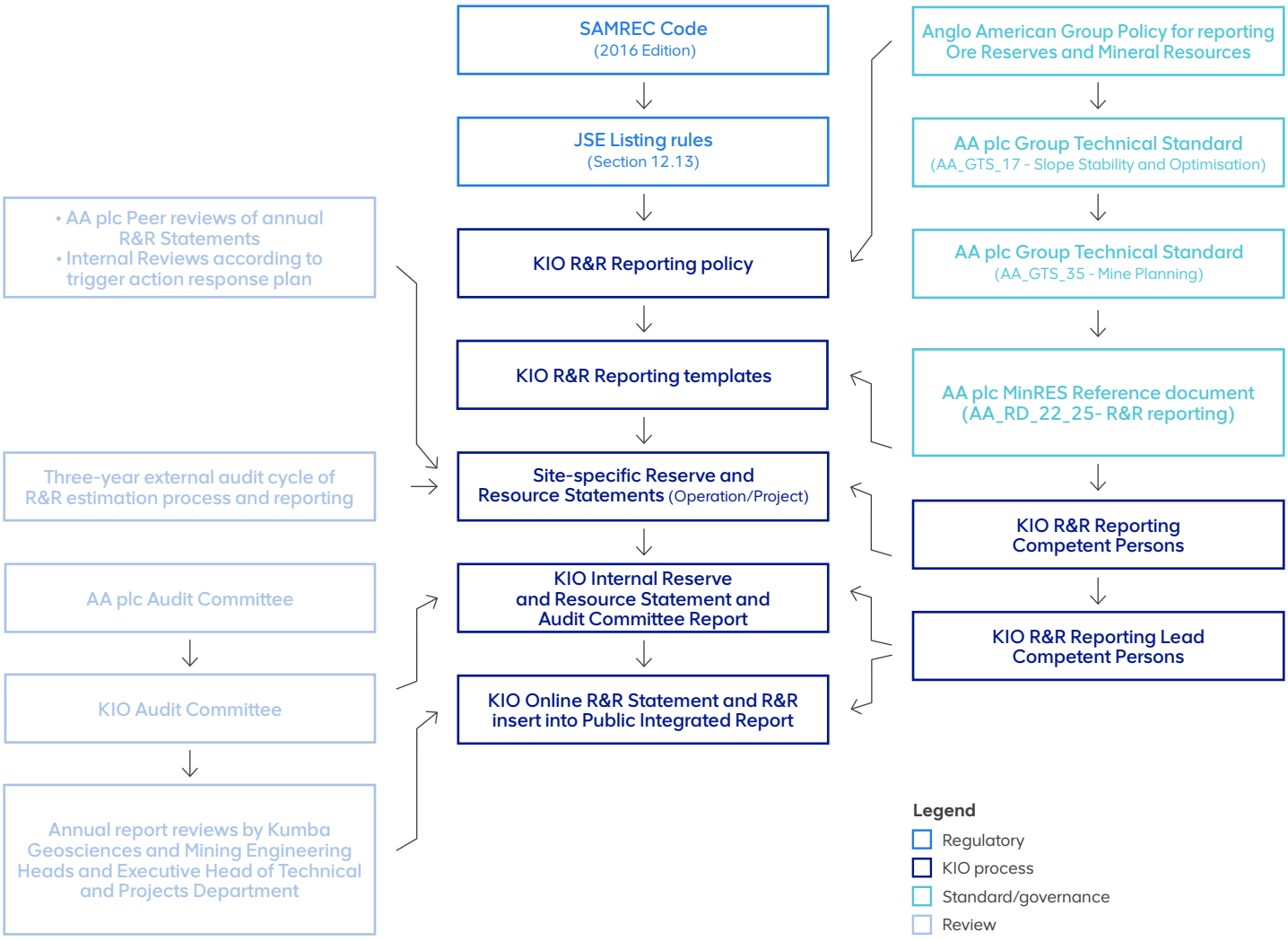


Figure 8: Kumba R&R reporting governance framework

Assurance

Kumba follows a structured internal and external review programme to not only verify Ore Reserve (and Saleable Product) as well as Mineral Resource reporting, but also the estimation thereof.

The Anglo American and KIO Audit Committees require all reporting entities (operations, projects and exploration) to undergo a continuous and comprehensive programme of audits and reviews aimed at providing confidence and assurance in respect of all components contributing to the Ore Reserve and Mineral Resource estimation processes and the public reporting of those estimates.

As most of the Kumba R&R estimation and reporting is conducted by SIOC employed technical specialists and CPs, Kumba recognises the importance of independent external audits of its R&R estimation and reporting processes and associated output to provide assurance regarding its published R&R estimates. Since the inception of KIO, its executive management has sustained a governance cost centre that sponsors or allows for the contracting of a reputable independent external mining consultancy firm, to be changed every four years.

Kumba requires that each operation/project for which Ore Reserves and/or Mineral Resources are declared, undergo an external independent due diligence audit once every three years. The scope of work required encompasses a due diligence (sign-off) audit of about two to four weeks and must include an additional one-week site visit by the auditors. The audit should not only produce ranked findings but also ranked opportunities. Ranking is conducted according to the Anglo American risk matrix (Figure 9), a standard adopted by all disciplines/functions within the group as part of its risk management process, to allow for a uniform approach to the assessment and comparisons of risks across the value chain.

Consequence

(Where an event has more than one "consequence type", choose the "consequence type" with the highest rating)

Probability		Insignificant	Minor	Moderate	High	Major
		Risk level				
Almost certain	90% and higher probability of occurring	11	16	20	23	25
Likely	Between 60% and less than 90% of occurring	7	12	17	21	24
Possible	Between 30% and 60% probability of occurring	4	8	13	18	22
Unlikely	Between 1% and 30% probability of occurring	2	5	9	14	19
Rare	Less than 1% probability of occurring	1	3	6	10	15

Risk rating	Risk level	Guidelines for risk matrix
21 to 25	High	A high risk exists that management's objectives may not be achieved. Appropriate mitigation strategy to be devised immediately.
13 to 20	Significant	A significant risk exists that management's objectives may not be achieved. Appropriate mitigation strategy to be devised as soon as possible.
6 to 12	Medium	A moderate risk exists that management's objectives may not be achieved. Appropriate mitigation strategy to be devised as part of the normal management process.
1 to 5	Low	A low risk exists that management's objectives may not be achieved. Monitor risk, no further mitigation required.

Figure 9: Anglo American risk matrix

Golder Associates (Africa) was in its fourth year of contract to audit the Kumba Reserves and Resources in 2020. Due to the national lockdown restrictions imposed by the South African government in reaction to the Covid-19 pandemic, the planned external audits of the Sishen Ore Reserves and Mineral Resources and associated estimation processes have been postponed to 2021. The Golder CPs earmarked to review the Sishen resources and reserves are based in Australia and could not conduct the required site visits which are a minimum requirement during the lockdown period. Kumba will apply for exemption from the site visit requirement for the external auditing of the Sishen Mineral Resources and Ore Reserves in 2021.

Assurance continued

Internal reviews/validations

The borehole data informing geological models is validated to determine assay representivity by means of an extensive quality assurance/quality control (QA/QC) programme monitoring and reporting on primary sampling (including sample location), sample preparation and sample assay accuracy and precision. In addition, borehole database validations are conducted to ensure relational information is correct. The fact that the Kumba borehole databases contain historical information (generated prior to 2010) that were not validated by means of a QA/QC programme is addressed by determining a sample representivity index for each sample, by means of a scorecard approach weighting parameters such as type of drilling, material recovery, QC parameters of sample preparations and QC parameters of sample assaying, which is indexed. The resulting sample representivity index is spatially applied and considered during geological confidence classification.

Geological solids models are peer reviewed and geological block models (exploratory data analysis, variography and search parameters as well as spatial grade estimations are peer reviewed and spatially reconciled against the previous geological block models.

Geological block models are converted into mining block models and comparisons are performed to understand the dilution and mining loss components during up-blocking to selective mining unit (SMU) resolution. Other modifying factors such as geological gains/losses and mining recovery efficiencies are referenced against three-year averaged value chain reconciliation results and assigned to the mining block model by means of a single long-term planning modifying factor as derived per material type.

Subsequent pit optimisation is conducted using approved long-term economic assumptions and approved geotechnical input parameters to derive pit and resource shells. The latter is peer reviewed whereafter pit and pushback layouts are designed and again validated in terms of practical vs. economical execution and most importantly pit safety in terms of slope stability considering geohydrological and geotechnical aspects.

An LoM schedule exercise considering various scenarios as required by the business is then conducted. Such scheduling is informed by the remaining Ore Reserves and Inferred Mineral Resources located inside the pit layout as well as run-of-mine buffer stockpile material and honours thresholds on Saleable Product qualities, run-of-mine buffer stockpile levels, exposed ore and mining and beneficiation infrastructure capacities as approved by a Kumba Planning Steering Committee. The chosen LoM planning scenario, of which the first five years are aligned with the business plan, is peer reviewed by the internal technical specialists and signed off by all relevant stakeholders up to executive level in the Company.

Ore Reserve (and Saleable Product) and Mineral Resource reporting is peer reviewed internally by Kumba but also undergoes an independent internal peer review by technical specialists of Anglo American corporate office.

External audits

Golder Associates (Africa) audit of 2020 Sishen Ore Reserve (and Saleable Product) and Mineral Resource estimates and reporting

The external due diligence audit of the Sishen mine Ore Reserve and Mineral Resource estimation processes and reporting that was postponed in 2020 due to national lockdown restrictions in reaction to the Covid-19 pandemic , was conducted in 2021. Kumba obtained exemption from the Anglo American group regarding the required one-week site visit. A data warehouse was compiled to enable a remote audit of the 2020 Sishen Ore Reserves and Mineral Resources by CPs representing Golder Associates (Africa) based in Australia.

The external due diligence audit (audit report:) revealed:

- No high or significant risk audit findings pertaining to the 2020 Sishen Mineral Resource estimation processes and Sishen Mineral Resource reporting
- One finding with an associated high risk and two findings with associated significant risks in terms of the 2020 Sishen Ore Reserve estimation processes and Sishen Ore Reserve reporting as summarised below:
  - *High risk finding* - Ore Reserve reporting error: Individual pushbacks' CSV files used for LoM scheduling should be investigated with particular focus on overlaps in pushbacks occurring, to ensure there is no overstatement of reserves

    Mitigation: *During 2020, the Sishen Ore Reserves were overstated with 19.4 Mt (3%) and the Saleable Product was overstated by 14.4 Mt (3%) due to overlaps in pushback layout CSV files. This error occurred during the scheduling setup phase where the individual CSV files were imported, resulting in overlaps. From 2021 onwards the combined CSV pushback layout was imported, and an additional validation step was built in to confirm that no overlaps exist.*

    This finding prompted Kumba to review the reported Kolomela Ore Reserve figures for 2020 and it was established that a similar error was made, resulting in an overstatement of the 2020 Kolomela Ore Reserves by 11.0 Mt (7%) and the Saleable Product by 9.5 Mt (6%).
  - *Significant risk finding 1* - RPEEE of scheduled end of LoM stockpile material: The ability to reclassify material unutilised by the LoM plan to Mineral Resources should be reconsidered, since if it is rejected due to inability to process to a Saleable Product, the capacity to meet the criteria of RPEEE should also be questioned. A separate evaluation demonstrating economic non-viability of excluded stockpile material needs to be completed or included in future Mineral Reserve reporting.

Mitigation: During 2020, a total of 583.1 Mt of ore was reported as plant feed and another 6.3 Mt as being unutilised by the 2021 LoM plan schedule. The unutilised ore was reallocated to Mineral Resources and comprised medium-grade ore. In total 3.6 Mt, of this material were, however, utilised in the 2021 LoM plan (disproving the audit finding to a certain extent). Only 2.7 Mt (0.4%) ore remained unutilised in the 2021 LoM plan. This material was not reallocated to Mineral Resources in 2021 as it is considered to not have RPEEE.

– *Significant risk finding 2:* Economic extraction of low-grade run-of-mine buffer stockpile material: The location, dilution, and recovery of each of the stockpiles are to be reviewed on a monthly basis, supported by the monthly surveys to produce solid wireframes for each of the stockpiles on a monthly basis. The capacity to process remaining low-grade stockpiles, relegated to resources as not meeting scheduling constraints for Saleable Products, should also be reviewed. Improved process recovery routes and/or marketing of a lower-grade product category could add to the reserve base. Golder notes that Sishen has done considerable work in the definition of legacy/unused stockpiles and that future work is being completed on remaining stockpiles.

Mitigation: There were 15 run-of-mine buffer stockpiles, totalling 18.4 Mt, included in the 2020 LoM plan. Of this 18.4 Mt, 12.0 Mt was utilised in the 2020 LoM schedule together with 571 Mt of ex-pit ore, and 6.3 Mt unutilised reallocated to Mineral Resources at the end of the LoM.

The location, dilution, and recovery of each of the 15 stockpiles will be reviewed on a regular basis (annually in line with the LoM schedule process), supported by the regular monthly surveys (for active stockpiles) to produce solid wireframes for each of the stockpiles.

JSE feedback on KIO Reserve and Saleable Product) and Mineral Resource report 2020

In a letter (Ref: ZR/124968) dated 14 June 2021, the JSE provided feedback on its review of the KIO Ore Reserve (and Saleable Product) and Mineral Resource report 2020:

- In terms of paragraph 12.13(i)(5) of the Listings Requirements, mineral companies must disclose the full name, address, professional qualifications, and relevant experience (including the name and address of the body recognised by SAMREC of which the CP is a member) of the Lead CP authorising publication of the information disclosed in terms of these paragraphs (refer to Table 11). The physical address of the bodies recognised by SAMREC of which the Lead CPs and other CPs are a member do not appear to be provided. A website address to satisfy this requirement would not suffice.

  Response: The addresses of the SACNASP and ECSA institutes to which the various CPs are affiliated have been indicated in the footnotes of Table 2 of the "Competence" section on page 18 of this report.

- The locality and other maps included in the 2020 report could be improved by including more detail on towns or other relevant locality information. In some cases, e.g., in Figure 13, no north arrow is included.

  Response: Locality maps with references to nearby towns have been included in the "Ancillary Reserve and Resource Information per operation" section on page 39 with reference to Kolomela (Figure 13) and page 55 with reference to Sishen mine (Figure 24). A north arrow indication has been added to Figure 14 on page 40 (referenced as Figure 13 in the 2020 report).

- Figure 8 on page 20 of the 2020 report; Section 12.11 should read Section 12.13.

  Response: The diagram in Figure 8 of the 2020 report (referenced as Figure 8 on page 20 in the "Governance" section of the 2021 report) has been updated as per the finding.

Ore Reserves (and Saleable Product)

Kumba's drive to accurately plan and extract the maximum value from its mineral endowment through safe, responsible and cost-effective production which meets its Clients' requirements.

Kumba applies a uniform Ore Reserve estimation process at all its sites as explained below:

Reserve estimation

Process Step	Explanation	Software
Mining block modelling	The *in situ* Mineral Resource tonnages and grades as estimated and classified within 3D geological block models are initially modified by converting the geological block models into mining block models, considering aspects such as smallest mining unit and open-pit bench definitions.	GEOVIA Surpac™ and Deswik™.
	In the mining block model, planned modifying factors such as dilution and mining losses are realised while other factors such as geological losses and mining recovery efficiencies, determined via value chain reconciliation of actual geological accuracies and extraction efficiencies, are applied to convert *in situ* ore to a run-of-mine ore equivalent.	
Pit optimisation	The resultant mining block model is constrained via pit optimisation, using various fiscal parameters and geotechnical slope inputs, to spatially distinguish between ore which is currently (optimal pit shell) and eventually economically extractable (optimistic pit shell). The fiscal parameters used for pit optimisation is explained in a separate section.	GEOVIA Whittle 4X™.
Pit design	The optimal pit shell is engineered or designed into a safe practical pit layout, considering geotechnical slope stability parameters, equipment aligned haul road and ramp as well as bench definitions. The pit layout envelopes the current economically extractable ore volume, and forms the basis for the LoM scheduling and resultant Ore Reserve and Saleable Product estimates.	Trimble Open Pit Design™, GEOVIA Surpac™ and Deswik™.
Life-of-mine scheduling	The mining blocks as constrained by the pit layout are then scheduled using various equipment utilisation, mining activity effectiveness, cut-off grade and blending and stockpile philosophy inputs. The modified ore is scheduled to the various beneficiation plants and/or stockpile destinations, as well as from stockpiles to honour annual Saleable Product targets and client off-take specifications, while the waste is scheduled to the various waste destinations. This is an iterative process as sequencing of mining activities must be such that consistent output is achieved over time.	RPM Open Pit Metals Solution™.
	Scenarios are generated considering strategic and tactical plans to be able to decide on a best fit LoM plan for the business.	
Infrastructure match	The infrastructure required to achieve the LoM schedule is then compared with existing infrastructure and associated lifespans and if adjustments are required in terms of equipment purchases or stoppages or changes in terms of waste dumping, etc. it is indicated as such to timeously plan the subsequent infrastructure to match the LoM schedule.	
	The placing of any additional permanent infrastructure is usually done outside the optimistic shell extents.	
Valuation	The best fit plan is valuated through the assignment of value chain costs (including ESG costs) and long-term pricing and other fiscal parameters. This valuation is conducted including and excluding modified Inferred run-of-mine to indicate the risk associated with the modified Inferred run-of-mine included in the LoM plan.	
Reporting	The Proved and Probable Ore Reserves (as modified from the *in situ* Measured and Indicated Mineral Resources occurring inside the pit layout), excluding the modified Inferred run-of-mine, are then reported as Ore Reserves, and include all the planned Proved and Probable run-of-mine scheduled over the total LoM period. The Proved and Probable product derived from applying relevant yield modifications to the Proved and Probable Ore Reserves, are quoted as the Saleable Product and include all the planned Proved and Probable Saleable Product derived over the total LoM period.	

Commodity pricing process

Kumba prefers not to disclose its forward looking iron ore price and therefore provides a breakdown of how it is derived. The long-term price, as obtained from the Anglo American Commodities Research Department, is adjusted by Kumba 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$/tonne free-on-board (FOB) terms at a 62% Fe grade.
- Higher Fe content, as well as Lump ore, gains a premium in the market. This is the second adjustment, considering site-specific planned Lump-Fine ratios and average Fe contents, i.e. prices are derived for the Lump and Fine products from each of the processing streams (for example the DMS and Jig processing streams at Sishen mine or DSO at Kolomela). Thereafter price averaging is applied based on a mass weighted average calculation.
- Once the average product prices are calculated in US$/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 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.

Site-specific long-term pricing and a long-term exchange rate as well as current budget costs (representing the total mining value chain) escalated over time, are then used to derive an optimal pit shell (1 revenue factor) and resource shell (1.6 revenue factor). The iron ore price required to obtain a 1.6 revenue factor has historically been achieved in the iron ore market and therefore supports RPEEE as per Kumba's interpretation of iron ore price cycles.

Application of modifying factors

Apart from the pit optimisation and subsequent engineered pit layout design (to spatially isolate ore that can be economically extracted), Kumba also applies other modification factors to convert *in situ* Mineral Resources into Ore Reserves.

The first is cut-off grade. At Kumba, the Ore Reserve cut-off grade of each site is primarily determined by the processing plant's capability to produce product to the correct grade specification. Studies conducted determined the feed (run-of-mine) grade required to achieve product grade after processing. The average run-of-mine grade in turn informed the Ore Reserve cut-off grade by means of applying cumulative site-specific grade tonnage curves. As a secondary measure a break-even cut-off grade calculation is done to ensure profitability is maintained in the short term.

The second step of modification involves the up-blocking of the geological block model into a mining block model to achieve a mining block model resolution that matches the SMU X, Y and Z dimensions. An SMU represents the smallest economical but practical mineable unit as derived through optimisation studies considering site-specific ore geometry and mining equipment loading and hauling capacities. The resulting mining block Z boundaries also coincide with bench definitions as per the pit design. During the up-blocking, some waste material is included in SMU sized ore blocks, which is calculated as dilution, and similarly some ore material is included in SMU sized waste blocks, which in turn is calculated as a mining loss.

Subsequently, the resource to reserve conversion process must consider geological accuracy and mining efficiencies. This is done by applying a long-term modifying factor, which is a combination of site-specific geological loss/gain factors as well as mining recovery efficiencies.

- Geological gains/losses are determined by the Kumba value chain reconciliation process, whereby the resource model is compared to the Unmodified Ore Control Model (an Unmodified Ore Control Model does not consider blast block demarcations), the latter informed by additional ore control borehole and pit mapping information for areas that have been mined.
- Mining recovery efficiency is also determined by the Kumba value chain reconciliation process, whereby the reserve model (adjusted to accommodate for geological gains/losses) is compared to the ex-pit tonnages mined as officially surveyed for areas that have been mined.

Furthermore, where applicable, a design recovery efficiency factor is also applied for areas where it is evident that the pit design has not been achieved with actual mining, to consider sterilisation of ore at depth as a result of the former.

It must be noted that this process converts *in situ* Mineral Resources into run-of-mine. Only the Measured and Indicated portions of the Mineral Resources and subsequent Proved and Probable portion of the run-of-mine are reported as Ore Reserves.

2021 versus 2020 Saleable Product

Saleable Product has been derived through the application of:

- Beneficiation (yield and associated product grade) algorithms to the Proved and Probable portions (per ore type) of the scheduled run-of-mine at Sishen mine. The beneficiation algorithms have been derived from geometallurgical (densimetric) borehole data and adjusted or scaled up to represent plant beneficiation using measured plant beneficiation efficiencies at Sishen mine
- Empirically estimated yield and Saleable Product grade performances (per ore type) to the Proved and Probable portions of the scheduled run-of-mine at Kolomela

Run-of-mine blending is one of the main levers used during scheduling to ensure that the resultant iron ore product is suitable for off-take in current market conditions.

Ore Reserves (and Saleable Product) continued

The 2021 Kolomela and Sishen LoM plans, considering current contract and Client supply agreement conditions, deliver a total estimated Saleable Product of 565.6 Mt at an average 63.5% Fe over the reserve life years for the two mining operations (Table 4).

Table 4: Kumba's Saleable Product for 2021 (referenced against 2020)

Operation/Project	Operation status	Mining method	Ore type	% owned by Kumba Iron Ore	Saleable Product category	Yield %		Saleable Product			
								2021		2020	
						2021	2020	Tonnage (Mt)	Grade (% Fe) Average	Tonnage (Mt)	Grade (% Fe) Average
Mining operations											
Kolomela[1]											
Saleable Product from pit	Steady-state	Open-pit	Haematite	76.3	Proved	96.0	94.9	97.9	64.8	101.1	64.4
					Probable			31.7	64.5	41.3	64.6
					Sub-total			**129.6**	**64.7**	**142.4**	**64.5**
Saleable Product from run-of-mine buffer stockpiles					Proved			0.0	0.0	0.0	0.0
					Probable			11.1	64.2	7.6	64.5
					Sub-total			**11.1**	**64.2**	**7.6**	**64.5**
Total Saleable Product					Proved			97.9	64.8	101.1	64.4
					Probable			42.8	64.4	48.8	64.6
					Total			**140.7**	**64.7**	**150.0**	**64.5**
Sishen mine[2]											
Saleable Product from pit	Steady-state	Open-pit	Haematite	76.3	Proved	65.0	75.1	269.4	64.7	268.4	65.1
					Probable			120.4	61.1	151.2	64.1
					Sub-total			**389.8**	**63.6**	**419.6**	**64.7**
Saleable Product from run-of-mine buffer stockpiles					Proved			0.0	0.0	0.0	0.0
					Probable			35.1	59.0	10.2	63.8
					Sub-total			**35.1**	**59.0**	**10.2**	**63.8**
Total Saleable Product					Proved			269.4	64.7	268.4	65.1
					Probable			155.5	60.6	161.4	64.1
					Total			**424.9**	**63.2**	**429.7**	**64.7**
Company											
Kumba Iron Ore											
Grand total Saleable Product					Proved	70.7	79.4	367.4	64.7	369.5	64.9
					Probable			198.2	61.4	210.2	64.2
					Grand total			**565.6**	**63.5**	**579.7**	**64.6**

Footnotes to the Ore Reserves (Table 4)

- The tonnages are quoted in dry metric tonnes and million tonnes is abbreviated as Mt
- Rounding of figures may cause computational discrepancies.
- Saleable Product figures are reported at 100% irrespective of percentage attributable ownership to KIO
- Yield is calculated as: Saleable Product tonnes/Ore Reserves tonnes x 100

Footnotes to Saleable Product (Table 4) explaining year-on-year differences

1 Kolomela's Saleable Product decreased by 9.3 Mt (-6%) from 2020 to 2021.

The overall decrease is a result of:

- a 9+3 forecasted annual production of 13.1 Mt (excluding depletion of modified beneficiated Inferred Mineral Resources)
- reconciliation to account for a reporting error made in 2020 i.e. 9.5 Mt less Saleable Product as a result of a pit pushback overlap calculation error
- an insignificant decrease in Saleable Product as a result of the 2021 geological model updates, incorporating the latest additional validated borehole information

The total decrease of 23.2 Mt was offset by a 13.9 Mt increase, primarily as a result of:

- the scheduled beneficiation of additional Ore Reserves resulting in 12.4 Mt additional Saleable Product as a result of the expansion of the Kapstevel South pit layout based on pit optimisation conducted in 2021
- the revision of resource to reserve modification (decrease in long-term planning modification based on value chain reconciliation results), resulting in more high-grade Ore Reserves available for beneficiation into an additional 0.9 Mt of Saleable Product over the reserve life
- a year-on-year increase in the product stockpile levels of 0.6 Mt

2 Sishen's Saleable Product decreased by 4.8 Mt (-1%) year-on-year.

Despite a material year-on-year increase in Ore Reserves, there is a net decrease in the Sishen Saleable Product which manifested as a result of:

- annual production of 24.3 Mt (excluding depletion of modified beneficiated Inferred Mineral Resources and modified beneficiated Mineral Resources extracted outside the pit layout as a result an approved small-scale localised pit optimisation exercise)
- reconciliation for a reporting error in 2020 (overlap of pushbacks) resulting in an over-statement of Saleable Product of 14.4 Mt
- reconciliation of the 2020 Q4 production to account for the fact that 0.7 Mt more Saleable Product was produced during the period than forecasted at the time of reporting in 2020
- 17.5 Mt less high and medium-grade *in situ* Mineral Resources available for conversion to Ore Reserves and subsequent planned beneficiation into Saleable Product as a result of geological model updates based on new validated exploration borehole information
- reduced yields of high and medium-grade ore (resulting in 10.8 Mt less Saleable Product) with the introduction of the UHDMS technology in the 2021 LoM plan that will separate at higher cut densities to beneficiate not only low-grade ore but also produce higher-grade Saleable Product from high and medium-grade run-of-mine

All of the above was offset by:

- a 50.3 Mt increase in Saleable Product to be derived from the beneficiation of low-grade Ore Reserves introduced into the 2021 LoM plan as a result of the approval of the Sishen UHDMS project in 2021
- an insignificant increase in the final product stockpile levels

It must be noted that there has been a 1.6% (absolute) decrease in the average Fe of the Sishen Saleable Product year-on-year; the reason being that the 2021 Sishen LoM plan plant feed contains the newly introduced low-grade ore as run-of-mine (21% of total run-of-mine over the reserve life) and the plant feed ratio has changed year-on-year from 61% : 39% (DMS vs. Jig and modular UHDMS) in 2020 to 73% : 27% (UHDMS vs. Jig and modular UHDMS) in 2021.

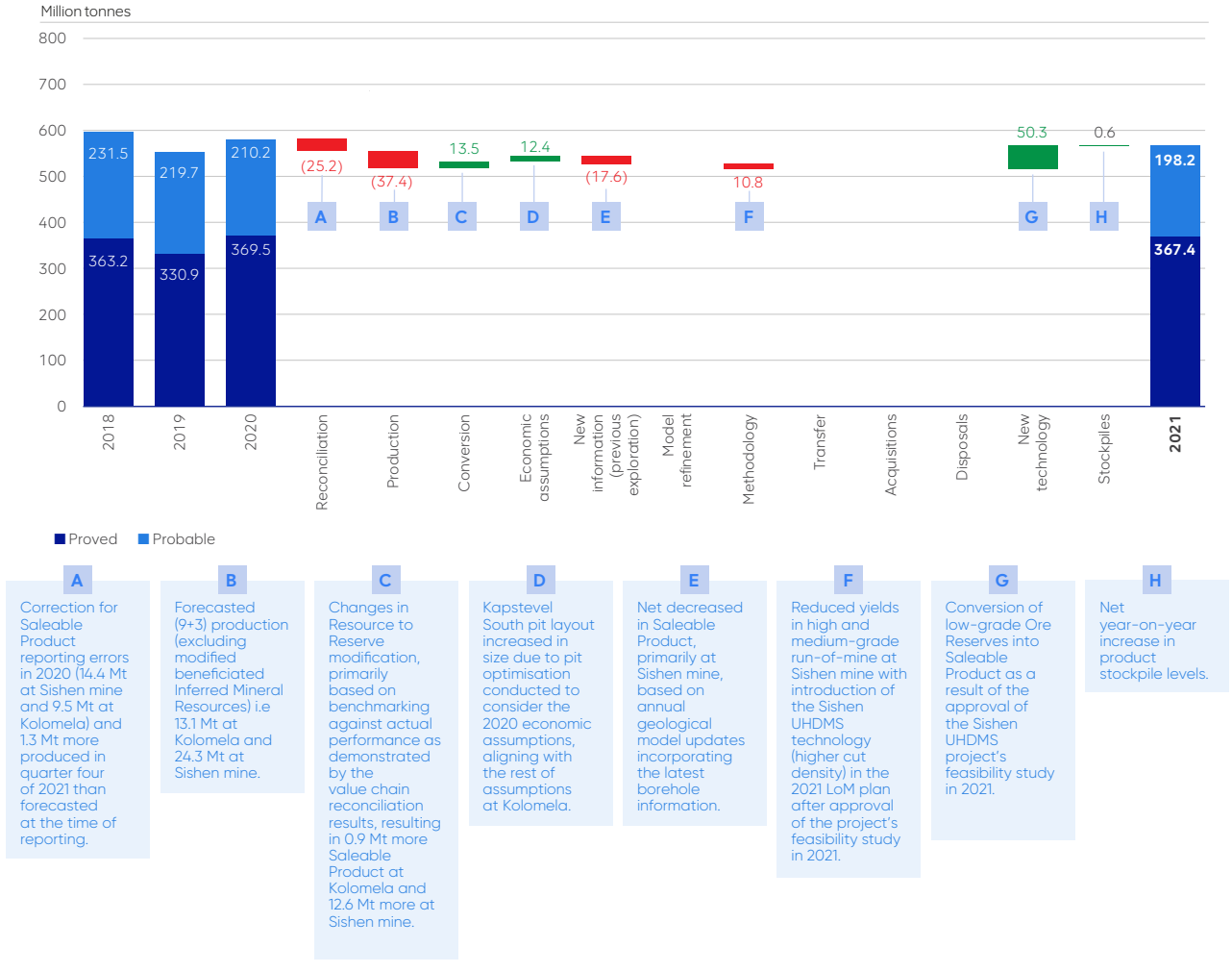
Ore Reserves (and Saleable Product) continued

The Sishen products are co-stockpiled with the Kolomela products at the Saldanha export port to deliver the following Saleable Products for the market:

Premium Lump @ 65.2% Fe	Standard Lump @ 64.1% Fe	Standard Fine @ 63.5% Fe

The 2021 LoM plans do contain periods where the premium Lump and standard Saleable Product contaminant grades (in particular Al_2O_3) exceed the current Client product specifications. Further work is ongoing to fully align to the cut-off grade assignments and the latest ore blending potential assumptions. Kumba has tabled this matter on its marketing forum meetings and it is being resolved.

The year-on-year change in the estimated Saleable Product is reconciled in Figure 10.



A Correction for Saleable Product reporting errors in 2020 (14.4 Mt at Sishen mine and 9.5 Mt at Kolomela) and 1.3 Mt more produced in quarter four of 2021 than forecasted at the time of reporting.

B Forecasted (9+3) production (excluding modified beneficiated Inferred Mineral Resources) i.e 13.1 Mt at Kolomela and 24.3 Mt at Sishen mine.

C Changes in Resource to Reserve modification, primarily based on benchmarking against actual performance as demonstrated by the value chain reconciliation results, resulting in 0.9 Mt more Saleable Product at Kolomela and 12.6 Mt more at Sishen mine.

D Kapstevel South pit layout increased in size due to pit optimisation conducted to consider the 2020 economic assumptions, aligning with the rest of assumptions at Kolomela.

E Net decreased in Saleable Product, primarily at Sishen mine, based on annual geological model updates incorporating the latest borehole information.

F Reduced yields in high and medium-grade run-of-mine at Sishen mine with introduction of the Sishen UHDMS technology (higher cut density) in the 2021 LoM plan after approval of the project's feasibility study in 2021.

G Conversion of low-grade Ore Reserves into Saleable Product as a result of the approval of the Sishen UHDMS project's feasibility study in 2021.

H Net year-on-year increase in product stockpile levels.

Figure 10: 2020 to 2021 movement in Kumba Saleable Product

2021 versus 2020 Ore Reserves

The 2021 Kolomela and Sishen LoM plans, considering the latest technical and business inputs, estimate the Ore Reserves (Proved and Probable portion of scheduled run-of-mine) at 799.9 Mt at an average 55.8% Fe over the mine life years for the two mining operations (Table 5).

Table 5: Kumba's Ore Reserves for 2021 (referenced against 2020)

Operation/Project	Operation status	Mining method	Ore type	% owned by Kumba Iron Ore	Reserve category	Ore Reserves 2021 Tonnage (Mt)	2021 Average Grade (% Fe)	2021 Grade Cut-off * (% Fe)	2021 Reserve life** (Years)	2020 Tonnage (Mt)	2020 Average Grade (% Fe)	2020 Grade Cut-off * (% Fe)	2020 Reserve life** (Years)
Mining operations													
Kolomela[1]													
Ore Reserves from pit	Steady- state	Open-pit	Haematite	76.3	Proved	102.0	63.8	50.0	13	104.0	62.8	50.0	12
					Probable	33.0	63.3			42.5	61.6		
					Sub-total	**135.0**	**63.7**			**146.5**	**62.5**		
Ore Reserves from run-of-mine buffer stockpiles					Proved	0.0	0.0			0.0	0.0		
					Probable	11.5	63.3			11.5	57.4		
					Sub-total	**11.5**	**63.3**			**11.5**	**57.4**		
Total Ore Reserves					Proved	102.0	63.8			104.0	62.8		
					Probable	44.6	63.3			54.0	60.7		
					Total	**146.5**	**63.6**			**158.0**	**62.1**		
Sishen mine[2]													
Ore Reserves from pit	Steady- state	Open-pit	Haematite	76.3	Proved	384.9	57.6	40.0	18	348.9	58.8	40.0	15
					Probable	211.3	48.9			209.4	56.6		
					Sub-total	**596.2**	**54.5**			**558.2**	**58.0**		
Ore Reserves from run-of-mine buffer stockpiles					Proved	0.0	0.0			0.0	0.0		
					Probable	57.2	48.3			13.7	54.6		
					Sub-total	**57.2**	**48.3**			**13.7**	**54.6**		
Total Ore Reserves					Proved	384.9	57.6			348.9	58.8		
					Probable	268.5	48.8			223.1	56.5		
					Total	**653.4**	**54.0**			**571.9**	**57.9**		
Company													
Kumba Iron Ore													
Grand total Ore Reserves					Proved	486.9	58.9			452.9	59.7		
					Probable	313.0	50.9			277.1	57.3		
					Grand total	**799.9**	**55.8**			**729.9**	**58.8**		

Footnotes to the Ore Reserves (Table 5)

- 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 KIO.
- 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 LoM 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 LoM 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 fall below 25% of the average annual production rate, the period beyond this is excluded from the reserve life.

Ore Reserves (and Saleable Product) continued

Footnotes to the Ore Reserves (Table 5) – summarising reserve life

1 **For Kolomela a 13-year remaining reserve life, at an average 11.2 Mtpa (13.5 Mtpa for first five years and 9.8 Mtpa for last eight years) Saleable Product output has been quoted in 2021.**
Saleable Product is derived from an average 11.7 Mtpa plant feed, (14.2 Mtpa for first five years and 10.2 Mtpa for last eight years), which includes 4% modified Inferred Mineral Resources as run-of-mine ore.

To define the risk of having low confidence modified Inferred Mineral Resources in the LoM plan, Kolomela valuated a long-term mine plan scheduling scenario excluding the modified Inferred Mineral Resources. The plan remained economically viable, although at a 9% lower net present value (at 8% real discount rate).

2 **For Sishen mine, an 18-year reserve life, at an average 24.0 Mtpa (29.2 Mtpa for first 13 years and 10.4 Mtpa for last five years) Saleable Product output has been quoted in 2021.**
Saleable Product is derived from an average 36.9 Mtpa (40.1 Mtpa for first 13 years and 28.6 Mtpa for last five years) plant feed, which includes 1% modified Inferred Mineral Resources as run-of-mine ore.

To define the risk of having low confidence modified Inferred Mineral Resources in the LoM plan, Sishen mine valuated a long-term mine plan scheduling scenario excluding the modified Inferred Mineral Resources. The plan remained economically viable, although at a 2% lower net present value (at 8% real discount).

Footnotes to Ore Reserves (Table 5) – explaining annual Ore Reserve differences

1 **Kolomela realised a year-on-year net decrease in Ore Reserves of 11.5 Mt (-7%).**
The overall decrease is primarily a result of annual production of -13.6 Mt run-of-mine (excluding depletion of modified Inferred Mineral Resources) as well as a reconciliation adjustment to account for reporting errors made in 2020 whereby the Ore Reserves were overstated by 11.0 Mt due to a pushback overlap error calculation. In addition, reconciliation of the forecasted production for Q4 of 2020 to match actual production figures for the period, resulted in a 0.7 Mt decrease in remaining Ore Reserves.

The overall 25.3 Mt decrease was partially offset by:
- a 12.9 Mt year-on-year increase in Ore Reserves (excluding 6.8 Mt modified Inferred Mineral Resources) as a result of the expansion of the Kapstevel South pit layout due to pit optimisation conducted in 2021 to align the pit design with the 2020 long-term economic input assumptions used for the other pit layouts at Kolomela already completed in 2020
- a 1.0 Mt increase in Ore Reserves with more Ore Reserves available for scheduling as run-of-mine due to a lowering in the overall resource to reserve conversion of high-grade ore based on value chain reconciliation results

The 1.5% (absolute) year-on-year increase in the average Ore Reserve Fe grade is the result of a change in the modification thereof, whereby the Fe modification has been lowered from 2023 onwards based on action plans to address the gap between actual versus planned Fe results.

The overall waste stripping ratio of the increased materially by 25% from 3.6 : 1 in 2020 to 4.5 : 1 in 2021, primarily as a result of the increase in the size of the Kapstevel South pit layout. The pit layout considers the favourable 2020 long-term economic assumptions, and caters for autonomous trucking in terms of pushback and ramp design.

In the case of the Kolomela mining operation, the Ore Reserve reference point is the primary crusher feeders where the planned run-of-mine is delivered to either the crushing and screening plant (where DSO is produced), or the small-scale DMS plant.

2 **Sishen mine's Ore Reserves increased materially by 81.5 Mt (+14%) year-on-year.**
Most of the year-on-year increase is the result of the conversion of low-grade Measured and Indicated Mineral Resources to Ore Reserves due to the approval of the Sishen UHDMS project's feasibility study in 2021, allowing for an additional 97.8 Mt of Ore Reserves to be derived from *in situ* Mineral Resources and a further 37.5 Mt stockpiled low-grade Mineral Resources to be recategorised as Probable Ore Reserves.

Other positive movements include:
- a 17.0 Mt increase in Ore Reserves based on the lowering of the overall resource to reserve modification of high and medium-grade ore as referenced against value chain reconciliation results
- a 6.0 Mt year-on-year increase in run-of-mine buffer stockpile levels

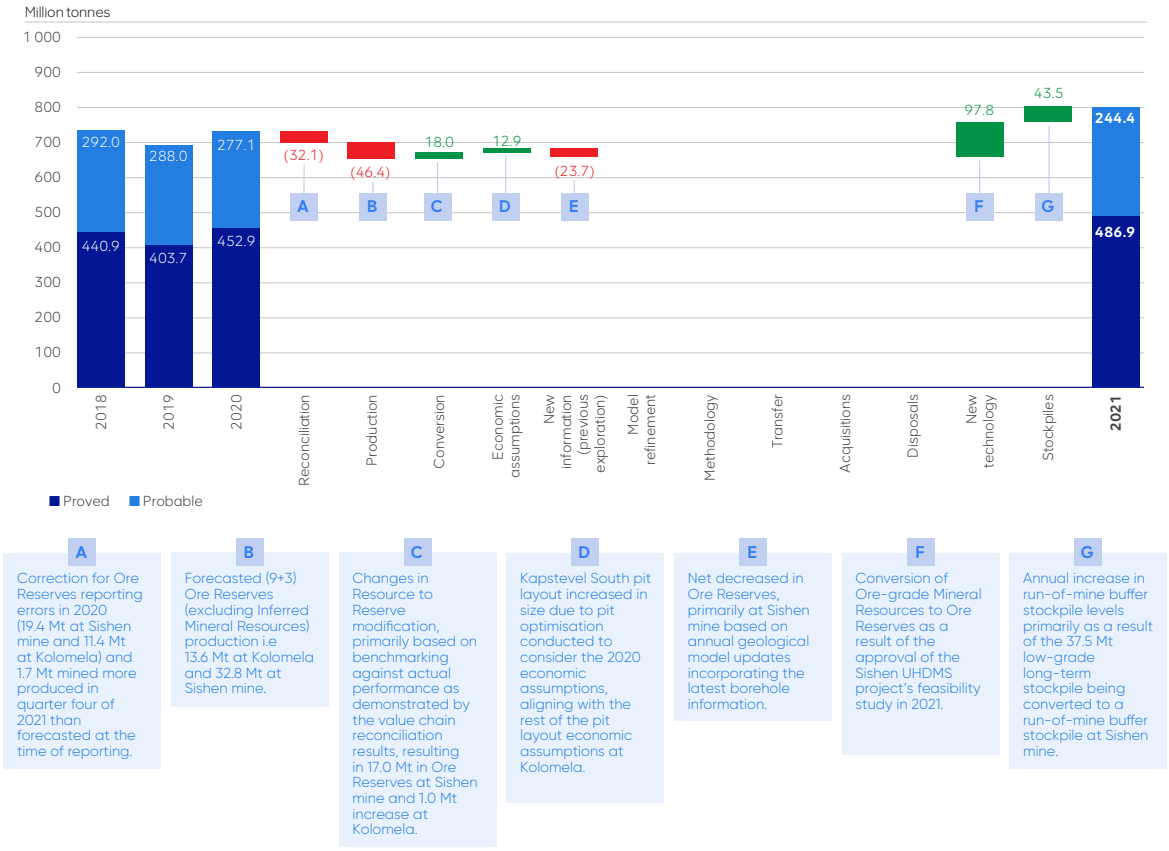
The overall increase was offset by:
- a decrease of 32.8 Mt in Ore Reserves (excluding modified Inferred Mineral Resources and modified Mineral Resources extracted outside the pit layout as a result an approved small-scale localised pit optimisation exercise) due to annual run-of-mine production
- 23.6 Mt less Ore Reserves as a result of the 2021 geological model update considering the latest additional validated exploration borehole data
- a 19.4 Mt reconciliation adjustment made to correct for a reporting error (pit pushback overlap calculation error) made in 2020
- a further reconciliation adjustment made to correct for the fact that actual mining for Q4 of 2020 exceeded the forecasted production for the period by 0.9 Mt

It must be noted that there is a 3.9% (absolute) decrease in the average Fe of the Sishen Ore Reserves year-on-year as a result of the inclusion of low-grade run-of-mine on approval of the UHDMS project.

In the case of the Sishen mining operation the Ore Reserve reference point is the primary crusher feeders where the planned run-of-mine is delivered to either the DMS plant or the Jig (+ small scale UHDMS) plant.

The Proved portion of the low-grade Ore Reserves have been downgraded to Probable Ore Reserves as the run-of-mine in the 2021 LoM plan originates from run-of-mine buffer stockpiles (low-grade ex-pit ore is hauled to stockpiles before beneficiation), and it is protocol in Kumba to assign a Probable confidence to stockpile material as grade estimates thereof are based on averages.

The year-on-year change in the estimated Ore Reserves is reconciled in Figure 11.



A
Correction for Ore Reserves reporting errors in 2020 (19.4 Mt at Sishen mine and 11.4 Mt at Kolomela) and 1.7 Mt mined more produced in quarter four of 2021 than forecasted at the time of reporting.

B
Forecasted (9+3) Ore Reserves (excluding Inferred Mineral Resources) production i.e 13.6 Mt at Kolomela and 32.8 Mt at Sishen mine.

C
Changes in Resource to Reserve modification, primarily based on benchmarking against actual performance as demonstrated by the value chain reconciliation results, resulting in 17.0 Mt in Ore Reserves at Sishen mine and 1.0 Mt increase at Kolomela.

D
Kapstevel South pit layout increased in size due to pit optimisation conducted to consider the 2020 economic assumptions, aligning with the rest of the pit layout economic assumptions at Kolomela.

E
Net decreased in Ore Reserves, primarily at Sishen mine based on annual geological model updates incorporating the latest borehole information.

F
Conversion of Ore-grade Mineral Resources to Ore Reserves as a result of the approval of the Sishen UHDMS project's feasibility study in 2021.

G
Annual increase in run-of-mine buffer stockpile levels primarily as a result of the 37.5 Mt low-grade long-term stockpile being converted to a run-of-mine buffer stockpile at Sishen mine.

Figure 11: 2020 to 2021 movement in Kumba Ore Reserves

Exclusive Mineral Resources

The ore in addition to Ore Reserves on which Kumba focuses as part of "Horizon 1" (improved resource utilisation) and "Horizon 2" (continued exploration, project studies, technology development and possible partnerships) of its strategy, in an attempt to convert it to Ore Reserves. It must be noted that only a portion of the current Mineral Resource portfolio can be converted to Ore Reserves by achieving improved resource utilisation targets; conversion of the rest is dependent on an increase in Kumba's long-term iron ore price outlook, thus market related.

Exploration

Kumba Iron Ore primarily conducted on-mine exploration in 2021 to refine the characterisation of existing Mineral Resources associated within actively mined pits, as well as improving the geological confidence of satellite deposit Mineral Resources within mining right areas not associated with actively mined pits. The on-mine exploration focus has also shifted to cater for more large-diameter core drilling to generate spatial geometallurgical information to better inform the conversion of Ore Reserves to Saleable Product in the future.

Near-mine exploration for 2021 continued in areas in the Northern Cape province outside the SIOC mining right areas, in association with third-party prospecting right holders, for areas that have been identified as potential iron ore mineralisation targets via the Kumba regional geological genetic model of the iron ore belt.

Exploration Expenditure

Exploration drilling activities recovered by more than 100% (+34,514 drill metres) year-on-year, primarily as a result of less stringent lockdown restrictions imposed by the South African government in response to the Covid-19 pandemic, and sufficient progress made with the site establishment of equipment of the newly appointed drilling Contractor. The associated total exploration spent increased by 48% (+R114.8 million) from 2020 to 2021. The all-inclusive cost associated with exploration conducted on behalf of KIO in 2021 is summarised in Table 6. The 2021 (9 actual + 3 forecast) exploration expenditure comprises 0.4% of KIO's 2021 (9 actual + 3 forecast) revenue.

Table 6: Summary of 2021 versus 2020 Kumba exploration expenditure (9+3 forecast)

	Total exploration spend x million		Drilling spend x million		Number of holes drilled		Metres drilled		Average drilling cost per metre	
	2021	2020	2021	2020	2021	2020	2021	2020	2021	2020
Mining right areas	R257.0	R203.0	R211.2	R160.0	228	89	44,640	21,042	R4,730.41	R7,605.65
Third-party prospecting right areas	R97.2	R36.4	R86.0	R30.6	75	10	15,186	4,270	R5,661.72	R7,162.87
Total	R354.2	R239.4	R297.1	R190.6	303	99	59,826	25,312	R4,966.81	R7,530.96

The exploration costs as set out in the table above is the combined costs of various types of core, reverse circulation and percussion drilling.

Sampling and assaying

All primary geological samples taken from drilled core (and in some instances reverse circulation drilling (RC) and percussion drilled chips) via normal exploration drilling at all the relevant Kumba sites in 2021 were prepared and assayed by the Chemistry Laboratory (Company registration number: 1921/0067130/06) of the Technical Solutions Division of AA plc (TS of AA plc).

All samples taken from drilled core of dedicated geometallurgical boreholes were prepared and tested for an array of metallurgical and other physical property measurements by the Metallurgical Laboratory of the TS Division of AA plc, with subsequent assaying of these samples conducted by the AA 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 until 30 April 2026) for the preparation and assaying of iron ore samples, applying methods that comply with the requirements of KIO.

As per the 9+3 forecast, Kumba Geosciences submitted 30,681 (24,141 exploration and 6,540 grade control) borehole samples in 2021 to the TS Chemistry Laboratory to be prepared and analysed. In addition, 1,420 borehole samples were submitted to the TS Metallurgical laboratory to be prepared and tested. A total of 32,101 primary samples were submitted to the TS Chemistry and TS Metallurgical laboratories. Of the samples submitted, the Chemistry laboratory prepared 30,420 samples and assayed 29,636 samples for the year. Differences between submitted and prepared sample numbers are influenced by laboratory turnaround times. Differences between prepared and assayed samples are primarily because of a backlog of samples carried over from 2020 as well as additional 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 Kumba Geosciences QA/QC protocol.

All the primary exploration samples were prepared, assayed and tested in the Republic of South Africa except for a total of 5% pulp replicate QC samples generated by the TS Chemistry Laboratory, which were analysed by the Bureau Veritas Laboratory in Perth, Australia, an ISO and National (Australian) Association of Testing Authorities accredited laboratory for iron ores and a member of the ISO MN-002-02 Chemical Analysis Committee, as part of the Kumba Geosciences Department's required external independent QA/QC validation.

The TS Metallurgical laboratory prepared 1,918 samples in 2021 (including backlog of samples from 2020). The samples were then composited based on lithology and chemistry to obtain minimum masses as required by certain geometallurgical tests.

Geometallurgical test work conducted involved:

- 565 bulk density Archimedes tests
- 116 geotechnical hardness tests
- 271 comminution-related tests
- 204 densimetric tests
- 257 mineralogy tests
- 146 refinement (Lump ore value-in-use) tests

The 2021 (9 actual +3 forecast) spend on sample preparation and assaying at the TS of AA plc Chemistry laboratory amounted to R38.8 million (11% of total exploration expenditure). The 2021 (9 actual +3 forecast) spend on sample preparation and metallurgical testing at the TS of AA plc Metallurgical Laboratory in 2021 amounted to R18.3 million (5% of total exploration expenditure).

Kumba ensures sample representativity by means of applying a stringent QA/QC protocol *[KIO Exploration Drilling Guideline and associated QC Protocol for Drilling, Sampling, Sub-sampling and Assaying (Version 10)]* that governs all stages of sampling, sub-sampling and assaying, including blind validation of the sample preparation and assaying of laboratories. The results of this validation is summarised in the annual Kumba QA/QC report which is compiled and made available end October of each year in support of the in-house annual R&R Statement and Audit Committee report.

In addition, the Anglo American Technical Solutions Chemistry and Metallurgical Laboratories also apply their own internal QA/QC protocols and provide feedback to Kumba in the form of a detailed quarterly report. Kumba's Geosciences Department, however, does not add much value to round robin results as it does not consider sampling preparation errors and the laboratories participating are aware of the fact that they are monitored and take special care in analysing round robin samples. Previous blind monitoring has shown that accredited laboratories fails Kumba Geosciences certified reference material control limit criteria with large margins.

Exclusive Mineral Resources continued

Mineral Resource estimation

Kumba applies a uniform Mineral Resource estimation process at all its sites as explained below.

Process Step	Explanation	Software
Data assembly and quality	The data generated by exploration, primarily drilling, must be representative of the volume of material being sampled. Samples are generated through quasi regular sampling (drilling) grids and are validated by means of a stringent quality control programme which blindly monitors sample location, primary sampling, sample preparation and sample assaying. Because some of the historically drilled samples used for estimation do not have QA/QC metadata, Kumba introduced a sample representivity indexing method, which is considered during spatial geological confidence classification.	acQuire™.
	Validated exploration data is used to compile spatially referenced 3D tectono-stratigraphic models based on the geologists' understanding and interpretation of the regional and local geology and ore genesis.	
Solids modelling	The solids model geometrically domains the various iron ore types in relation to the waste lithologies, within primary structural domains. Because of the pervasive nature of the iron ore mineralisation in the Northern Cape province of South Africa, Kumba has to compile full 3D solids models and ferruginisation is often of such a nature that lower-grade ore domains are distinguished from waste and higher-grade ore applying soft boundaries or Fe cut-off grades.	
	Each domain's bounding surface in effect provides an efficient volume description of the tectono-stratigraphical unit.	Seequent Leapfrog Geo™ and GEOVIA Surpac™.
Exploratory data analysis	The validated borehole grade data intersecting the various solids model domains is statistically analysed through univariate and multivariate statistical methods to understand its distributions and relations and to identify outliers.	
	Thereafter the data is composited to achieve constant sample support and again statistically analysed per domain and sub-domaining based on grade is conducted if different populations within a single solids domain can be spatially distinguished.	JMP™.
Geological block modelling	Iron ore is a typical multivariate grade commodity and Kumba geostatistically models composited sample density and the following composited sample grade parameters of the ore domains as a minimum, i.e. Fe, SiO_2, Al_2O_3, K_2O and P to establish its spatial variability. Generally, co-variograms are modelled for correlated variables (Fe, SiO_2 and density) and conventional variograms for the other variables). These calculations are done using unfolded data. The variograms are interpreted to consider spatial anisotropy. Waste lithologies, by virtue of having a poorer sample coverage are usually characterised by default grades and densities, statistically derived from the sample data.	Isatis™
	The optimal parent block size is determined using Quantitative Kriging Neighbourhood Analysis.	
	A Quantitative Kriging Neighbourhood Analysis is used to determine the best search plan (number of samples and ranges) by optimising the Krige variance and slope-of-regression while minimising negative weights in the Krige matrix.	
	Ordinary Kriging or Ordinary Co-Kriging are conducted to estimate the attributes where the data density is sufficient. Generally Ordinary Co-Krige is used to estimate the correlated variables although Ordinary Krige may be used if necessary. In areas with sparse sampling, Simple Kriging is applied or default values (global estimates) are assigned. The block grades are informed during three rounds of interpolation. In the first-round block grades are estimated using the optimal Krige neighbourhood. This represents the best possible estimates. Blocks not estimated in the first pass are then Kriged using an enlarged (*2) neighbourhood. These estimates thus use sample beyond the range of the variogram and is extrapolated and of a lower quality. Any blocks still not informed receive the global mean grade. This process is repeated for each variable.	Isatis™, GEOVIA Surpac™, DataMine Studio™
Confidence classification	Kumba applies a scorecard approach whereby certain key site-specific parameters as identified by the CP, are indexed and used to measure geometry and grade continuity. Each block within the geological block model is populated with these indices. The individual grade indices and geometry indices are then weighted as per the CP's understanding of its impact. The weights are applied to derive a combined grade index as well as a combined geometry index, which in turn is weighted, as per the CP's understanding of the deposit to derive a final single geological confidence index. The final confidence index is then classed against index boundaries as derived by the CP to distinguish between Measured, Indicated and Inferred Mineral Resources. The CP also has the authority to over-ride areas of indexed classification and downgrade them.	Isatis™, GEOVIA Surpac™, DataMine Studio™.
Resource reporting	Inclusive Mineral Resources are determined as that portion of the ore in the 3D geological block model that has *in situ* grades above the Fe cut-off grade (derived from beneficiation potential), that are located within the 1.6 revenue factor resource shell (as derived through pit optimisation). Only that portion of the inclusive Mineral Resources which are not converted to Ore Reserves (everything inside the resource shell above the specified cut-off grades, excluding the Measured and Indicated Mineral Resources inside the pit layout converted to Ore Reserves), are reported as exclusive Mineral Resources.	

Reasonable prospects for eventual economic extraction

KIO's 2021 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 and economic conditions, may be economically extractable in future.

Apart from cut-off grades, which consider the current or at least concept-approved beneficiation processes, Kumba spatially distinguishes Mineral Resources from other mineral occurrences by applying a resource shell (1.6 x revenue factor shell). This is derived during the pit optimisation process conducted on the latest site-specific 3D mining block models, considering SMU and mining bench configurations, etc. The resource shell is then subsequently applied to the geological block models, defining the classified ore occurring inside the resource shell as the resultant inclusive Mineral Resource portion considered to have RPEEE.

A further condition is that the iron ore price corresponding with a 1.6 revenue factor pit shell must have been historically achieved in the global iron ore market. This process, therefore, considers site-specific beneficiation, mining practices as well as realistic pricing and cost.

The inclusive Mineral Resources are therefore the mineralisation at a Fe cut-off grade (50% for Kolomela and 40% for Sishen), occurring inside the 1.6 revenue factor resource shell.

By implication, all-inclusive Mineral Resources are therefore 3D modelled with an associated geological confidence classification which spatially defines the confidence in the Mineral Resource tonnage and grade estimates.

For Mineral Resource reporting purposes, Kumba, under the direction of the Anglo American group, prefers to report Mineral Resources exclusive of Ore Reserves, in other words, all the Measured and Indicated inclusive Mineral Resources occurring inside the pit layout derived from a 1.0 revenue factor pit shell (converted to Ore Reserves) are not reported as part of the exclusive Mineral Resources.

2021 versus 2020 exclusive Mineral Resources

The Kumba Mineral Resources (in addition to Ore Reserves) for 2021 (referenced against 2020) are detailed in Table 7.

Table 7: Kumba's exclusive Mineral Resources for 2021 (referenced against 2020)

Operation/Project	Ore type	% owned by Kumba Iron Ore	Resource category	2021 Tonnage (Mt)	2021 Average % Fe	2021 % Fe Cut-off**	2020 Tonnage (Mt)	2020 Average % Fe	2020 % Fe Cut-off**
Mining operations									
Kolomela[1]									
In situ Mineral Resources (in addition to Ore Reserves)	Haematite	76.3	Measured (outside LoM plan)	30.5	64.8	50.0	40.1	63.2	50.0
			Indicated (outside LoM plan)	59.8	63.1		66.4	63.1	
			Measured and Indicated (outside LoM plan)	**90.4**	**63.7**		**106.5**	**63.1**	
			Inferred (considered in LoM plan)	6.6	64.8		1.5	65.8	
			Inferred (outside LoM plan)	23.8	63.1		28.7	63.8	
			Total Inferred	**30.4**	**63.5**		**30.1**	**63.9**	
			Sub-total	**120.7**	**63.6**		**136.6**	**63.3**	
Long-term Stockpiled Mineral Resources (in addition to Ore Reserves)			Measured (outside LoM plan)	0.0	0.0		0.0	0.0	
			Indicated (outside LoM plan)	8.7	55.2		6.7	55.1	
			Measured and Indicated (outside LoM plan)	**8.7**	**55.2**		**6.7**	**55.1**	
			Inferred (considered in LoM plan)	0.0	0.0		0.0	0.0	
			Inferred (outside LoM plan)	0.0	0.0		0.0	0.0	
			Total Inferred	**0.0**	**0.0**		**0.0**	**0.0**	
			Sub-total	**8.7**	**55.2**		**6.7**	**55.1**	
Total Mineral Resources (in addition to Ore Reserves)			Measured (outside LoM plan)	30.5	64.8		40.1	63.2	
			Indicated (outside LoM plan)	68.5	62.1		73.1	62.4	
			Measured and Indicated (outside LoM plan)	**99.1**	**62.9**		**113.2**	**62.7**	
			Inferred (considered in LoM plan)	6.6	64.8		1.5	65.8	
			Inferred (outside LoM plan)	23.8	63.1		28.7	63.8	
			Total Inferred	**30.4**	**63.5**		**30.1**	**63.9**	
			Sub-total	**129.4**	**63.0**		**143.3**	**63.0**	

Exclusive Mineral Resources continued

Table 7 (continued): Kumba's exclusive Mineral Resources for 2021 (referenced against 2020)

Operation/Project	Ore type	% owned by Kumba Iron Ore	Resource category	2021 Tonnage (Mt)	2021 Average % Fe	2021 % Fe Cut-off**	2020 Tonnage (Mt)	2020 Average % Fe	2020 % Fe Cut-off**
Mining operations									
Sishen mine[2]									
In situ Mineral Resources (in addition to Ore Reserves)	Haematite	76.3	Measured (outside LoM plan)	176.7	59.4	40.0	149.6	57.0	40.0
			Indicated (outside LoM plan)	222.4	55.4		355.8	53.2	
			Measured and Indicated (outside LoM plan)	**399.2**	**57.2**		**505.4**	**54.3**	
			Inferred (considered in LoM plan)	12.6	50.8		12.2	56.6	
			Inferred (outside LoM plan)	24.6	56.7		18.5	48.1	
			Total Inferred	**37.2**	**54.7**		30.7	51.5	
			Sub-total	**436.3**	**57.0**		**536.1**	**54.1**	
Long-term Stockpiled Mineral Resources (in addition to Ore Reserves)			Measured (outside LoM plan)	0.0	0.0		0.0	0.0	
			Indicated (outside LoM plan)	0.0	0.0		25.4	41.1	
			Measured and Indicated (outside LoM plan)	**0.0**	**0.0**		**25.4**	**41.1**	
			Inferred (considered in LoM plan)	0.0	0.0		0.0	0.0	
			Inferred (outside LoM plan)	0.0	0.0		0.0	0.0	
			Total Inferred	**0.0**	**0.0**		0.0	0.0	
			Sub-total	**0.0**	**0.0**		**25.4**	**41.1**	
Total Mineral Resources (in addition to Ore Reserves)			Measured (outside LoM plan)	176.7	59.4		149.6	57.0	
			Indicated (outside LoM plan)	222.4	55.4		381.2	52.4	
			Measured and Indicated (outside LoM plan)	**399.2**	**57.2**		**530.8**	**53.7**	
			Inferred (considered in LoM plan)	12.6	50.8		12.2	56.6	
			Inferred (outside LoM plan)	24.6	56.7		18.5	48.1	
			Total Inferred	**37.2**	**54.7**		**30.7**	**51.5**	
			Sub-total	**436.3**	**57.0**		**561.5**	**53.6**	
Company									
Kumba Iron Ore									
Grand total Mineral Resources (in addition to Ore Reserves)			Measured (outside LoM plan)	207.3	60.2		189.6	58.3	
			Indicated (outside LoM plan)	291.0	57.0		454.3	54.0	
			Measured and Indicated (outside LoM plan)	**498.2**	**58.3**		**643.9**	**55.3**	
			Inferred (considered in LoM plan)	19.2	55.6		13.7	57.6	
			Inferred (outside LoM plan)	48.3	59.8		47.2	57.6	
			Total Inferred	**67.5**	**58.6**		**60.8**	**57.6**	
			Total	**565.8**	**58.3**		**704.8**	**55.5**	

Footnotes to the exclusive Mineral Resources (Table 7)

- 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 KIO ownership.
- The term Inferred Mineral Resource (outside LoM plan) refers to that portion of the Inferred Mineral Resources not utilised in the LoM plan.
- The term Inferred Mineral Resource (considered for LoM plan) refers to that portion of the Inferred Mineral Resources utilised in the LoM plan; reported without having any modifying factors applied – therefore the term "considered for LoM plan" instead of "inside LoM plan".
- While it would be reasonable to expect that the majority of Inferred Mineral Resources would upgrade in confidence to Indicated Mineral Resources with continued exploration, due to the uncertainty of Inferred Mineral Resources, it should not be assumed that such upgrading will always occur on a one-to-one basis.

** The cut-off grade quoted for each of the Kumba sites is a fixed *in situ* Fe percentage.

Footnotes to exclusive Mineral Resources (Table 7) explaining year-on-year differences:

1 Kolomela quotes a 13.9 Mt (-10%) decrease in exclusive Mineral Resources 2020 to 2021.

An overall decrease of 16.5 Mt was the result of:

- An increase in the size of the Kapstevel South pit layout which resulted in 10.3 Mt of Measured and Indicated Mineral Resources being converted to Ore Reserves.
- Material remaining unutilised in the 2021 LoM plan and therefore not reported as Ore Reserves were also not reallocated to Mineral Resources (-5.6 Mt) as was the case in 2020, as it was established that the material contains a large portion of diluted waste material with an Fe grade below the 50% Fe cut-off grade.
- Depletion of Inferred Mineral Resources inside the pit layout (-0.3 Mt).
- Reconciliation adjustment of -0.3 Mt to account for more Inferred Mineral Resources depleted in Q4 of 2020 than forecasted for the period.

The decrease was partially offset by a 2.7 Mt increase as a result of a 2.0 Mt increase in the level of the medium-grade long-term stockpiled Mineral Resources and a +0.7 Mt overall gain as a result of the 2021 geological model updates, incorporating the latest available validated exploration borehole information.

Of the 23.8 Mt Inferred Mineral Resources (outside the LoM plan), 15.0 Mt is extrapolated. None of the Inferred Mineral Resources considered in the 2021 LoM plan are extrapolated.

2 **The Sishen mine exclusive Mineral Resources showed a material 22% decrease of -125.1 Mt year-on-year.**
The material year-on-year decrease is primarily the result of the conversion of Measured and Indicated low-grade Mineral Resources (-187.2 Mt) to Ore Reserves with the approval of the Sishen UHDMS project feasibility study in 2021, allowing for the incorporation of the low-grade ore in the 2021 LoM plan.

The other contributing factors were:

- Reallocation of 6.2 Mt of unutilised material in 2020 LoM plan (declared as Mineral Resources in 2020) to Mineral Inventory (ore not having RPEEE) after the 2021 LoM plan update (which incorporated the beneficiation of low-grade material) demonstrated the unutilised low-grade material to no longer have RPEEE.
- Forecasted (9+3) depletion of 11.0 Mt for 2021 consisting of 10.6 Mt low-grade ore (mined to the low-grade run-of-mine buffer stockpiles) and 0.4 Mt other Inferred Mineral Resources being depleted.

The overall decrease was partially offset by a 78.3 Mt gain in Mineral Resources based on the 2021 geological model updates, incorporating the latest available validated exploration borehole information, as well as a reconciliation correction to align the forecasted depletion for 2020 Q4 with the actual depletion figures that were 0.9 Mt less than forecasted.

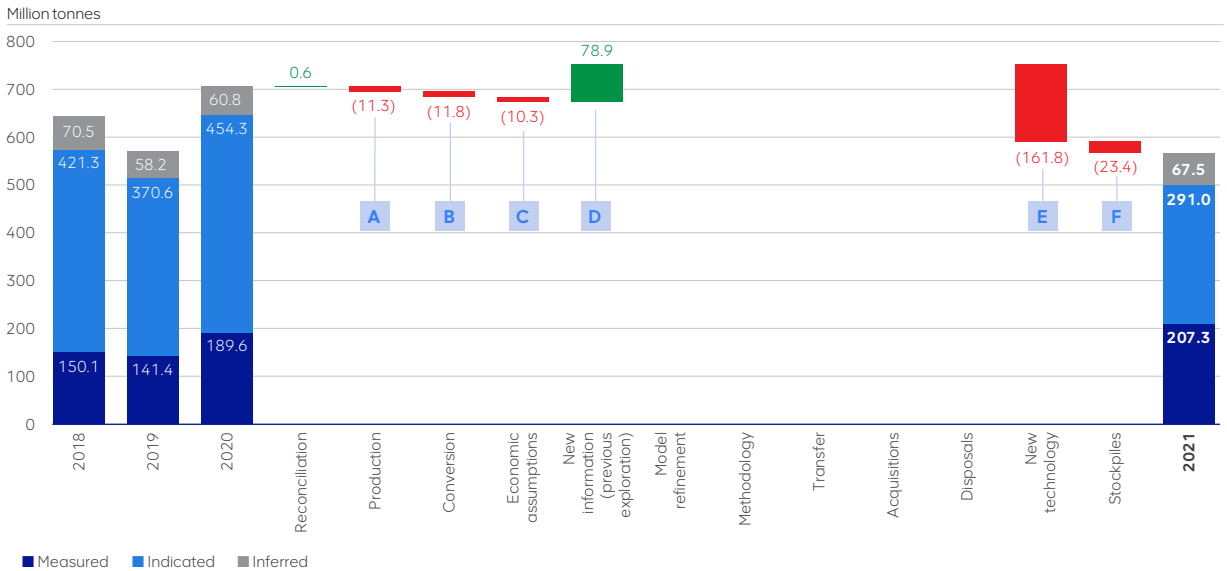
The 3.4% absolute year-on-year increase in the average Fe grade is the direct result of the conversion of the low-grade Measured and Indicated Mineral Resources inside the pit layout to Ore Reserves, with the remaining portion of the exclusive Mineral Resource portfolio consisting of a greater portion of medium- and high-grade ore.

The increase in the Measured to Indicated ratio from 28 : 78 in 2020 to 44 : 56 in 2021 is primarily the result of:

- the removal of the low-grade ore from the Sishen Mineral Resource portfolio, which have been converted to Ore Reserves and was mostly classified as Indicated in 2020, as well as
- the additional borehole sample information included in the 2021 geological model update.

Of the 24.6 Mt Inferred Mineral Resources (outside the LoM plan), 7.5 Mt is extrapolated. None of the Inferred Mineral Resources inside the 2021 LoM plan are extrapolated.

The year-on-year change in the estimated exclusive Mineral Resources is reconciled in Figure 12.



A
Annual depletion consisting of 10.6 Mt low-grade (C) Mineral Resources mined to long-term stockpiles and 0.7 Mt Inferred Mineral Resources mined in 2021.

B
Mineral Resources previously (2020) remaining unutilised by the LoM plans of Kolomela and Sishen mine were removed from the Mineral Resources being converted to Ore Reserves.

C
The pit optimisation conducted for the Kapstevel South deposit to align the pit design to align the pit design with the 2020 long-term economic assumptions as for the rest of the pit layouts of Kolomela resulted in an increase in the pit layout, with Measured and Indicated Mineral Resources being converted to Ore Reserves.

D
The net increase in exclusive Mineral Resources at Sishen mine based on additional borehole information amounted to 78.3 Mt (additional low-grade ore offset decrease in medium and high-grade Ore, while Kolomela accounted.

E
The approval of the Sishen UHDMS project feasibility study in 2021, allowing for the conversion of the current DMS plant to UHDMS facility, resulted in the conversion of the Measured and Indicated low-grade Mineral Resources inside the Sishen pit layout to Ore Reserves as this ore has been proved economically beneficial by the new technology.

F
The low-grade long-term stockpiles at Sishen mine were converted to low-grade run-of-mine buffer stockpiles at Sishen mine resulting in a 25.4 Mt decrease, that was partially offset by a 2.0 Mt increase in the level of the medium-grade long-term stockpile at Kolomela.

Figure 12: 2020 to 2021 movement in Kumba Mineral Resources

Risk

What are the most prominent risks that can result in the Ore Reserves and Mineral Resources not realising as estimated?

Apart from the Mineral Resource and Ore Reserve estimation confidence classifications, Kumba, on an annual basis, asks its CPs to highlight prominent (ranked high and significant as per the standard Anglo American risk matrix) R&R risks relevant to their specific sites. These risks are then re-evaluated and rated by the Lead CPs to consider its potential impact on the total Kumba business.

Ore Reserve risks

The 2021 Ore Reserve (and Saleable Product) estimates are subject to the following high/significant risks:

Planning (internal risk)

The Sishen mine 2021 LoM plan, with the introduction of the UHDMS technology, is able to deliver 50% high-value premium products (37% Lump and 13% Fines) over the full extent of the reserve life. Kumba's ambition is to improve this percentage over time. Further work is being done to appropriately define the chemical qualities associated with the premium Lump product to ensure optimal alignment between the Ore Reserve capability and the marketing strategy. The high demand for Kumba's premium product however places risk on remaining standard Lump and Fine products in terms of Al_2O_3 and K_2O contaminant grades.

Mitigation: Kumba is in discussion with the Anglo American Marketing Division to ensure an aligned and optimal way forward where value is maximised while considering the inherent grade characteristics of the Mineral Resources.

Market (external risk)

KIO is a relatively small player in the global iron ore market and its Ore Reserves are sensitive to price changes. Should the long-term iron ore price outlook deteriorate over time, Kumba will have to account for this by reducing the size of its pit layouts to manage costs in order to protect its income margin.

Mitigation: Pit designs compiled by Kumba are in the form of individual pushbacks, of differing strip ratios. Pushbacks can be activated or deactivated in a modular fashion to consider significant changes in the long-term iron ore price. The conversion of the low-grade Mineral Resources to Ore Reserves at Sishen mine has alleviated this risk to a certain degree as the pit layout remained unchanged year-on-year.

Logistics (external risk)

Kumba faces several challenges securing its future export logistics capacity, including continued channel underperformance, uncertainty and competition from Manganese for rail and insufficient Northern Cape iron ore resources to sustain a major channel expansion. Without intervention, this could result in a material reduction in Kumba's export logistics capacity and steep tariff increases. The Sishen -Transnet Agreement must be renewed by 1 January 2026 (current contract expires 1 January 2028). The Kolomela-Transnet Agreement must be renewed by 1 January 2030 (current contract expires 31 December 2031). A reduction in annual sales volumes will affect the economical valuation of the Ore Reserves and may result in some pushback designs with higher stripping ratios at both Kolomela and Sishen mine becoming uneconomical for mining.

Mitigation: Kumba is actively engaging and making progress with Transnet (state owned railway entity) to improve both the performance and longevity of the rail and port infrastructure.

Mineral Resource risks

The 2021 Mineral Resource estimates are subject to the following significant risks:

Geological and geometallurgical confidence (internal risks) of Ploegfontein deposit at Kolomela

The Ploegfontein deposit at Kolomela, which is earmarked as the next deposit to be evaluated for inclusion in the Kolomela LoM plan:

- consists of 92% Indicated and Inferred Mineral Resources
- is made up of a group of orebodies that are smaller and geometrically less continuous than deposits currently mined as a result of its palaeokarst topography
- has a higher medium-grade to high-grade *in situ* ore ratio compared to other deposits included in the 2021 Kolomela LoM plan as a result of its different ore genesis
- is also characterised by higher *in situ* K_2O and P contents than current deposits included in the LoM plan

The beneficiation potential of the high and medium-grade ore must also be established.

Mitigation: Kumba is continuing with intensive exploration (including large-diameter geometallurgical drilling and sampling) to improve the geological confidence of the deposit as well as to establish the beneficiation potential of the deposit.

Ancillary Reserve and Resource information per operation

All the production-related figures quoted in this section are forecasted (9 actual + 3 planned) as the compilation of the site R&R Statements, from which this condensed public R&R Statement was derived for Kumba, commenced on 1 October 2021. This early reporting date prior to year end is necessitated by the time required for the stringent peer review process within the Anglo American group, which requires R&R estimates to be interrogated by peers before being published.

Kolomela

Location

Kolomela is located 12km south-west of the town of Postmasburg (Figure 13) in the Tsantsabane Local Municipality within the boundaries of the ZF Mgcawu District of the Northern Cape province in the Republic of South Africa.

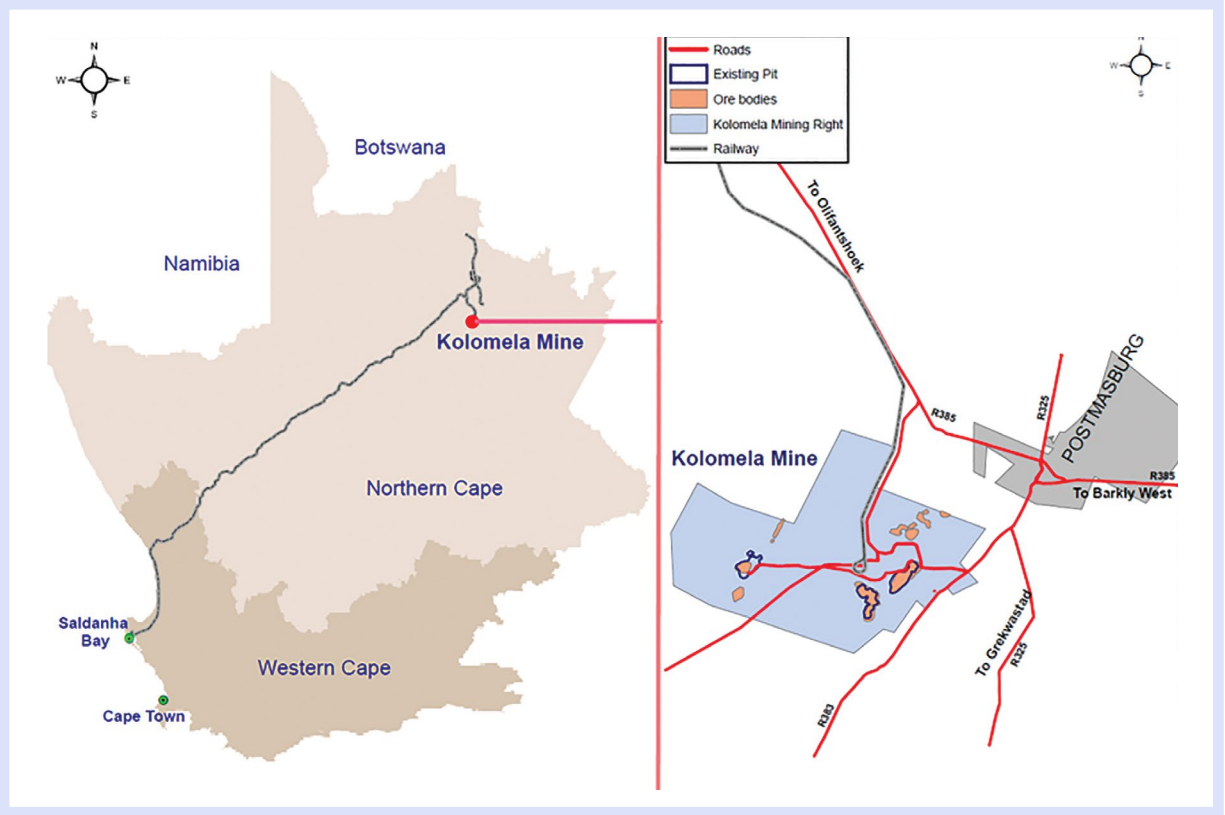


Figure 13: Location and logistics chain of Kolomela

Ancillary Reserve and Resource information per operation continued

Geological outline

Regional geology

Kolomela is located towards the southern end of the iron ore belt in the Northern Cape province of South Africa (Figure 14).

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 Campbell Rand Subgroup of the Ghaap group (Beukes, 1983; Altermann and Wotherspoon, 1995; Beukes, 1986).

Conformably overlying the carbonates is the BIF unit, the Asbestos Hills Subgroup (Beukes, 1980), which is considered to be a Superior-type BIF, that can be up to 500m thick. Locally the upper portion of the BIF (Kuruman Iron Formation) has been enriched to ore grade, i.e. 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 Meramane Dome area, the Griquatown Iron Formation has been almost entirely removed by erosion along an unconformity separating the BIFs 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 BIF. Locally, deep sinkholes developed in the dolomites, into which the overlying iron formation collapsed (Beukes, 1983).

3D geological model of the Sishen-Kolomela area

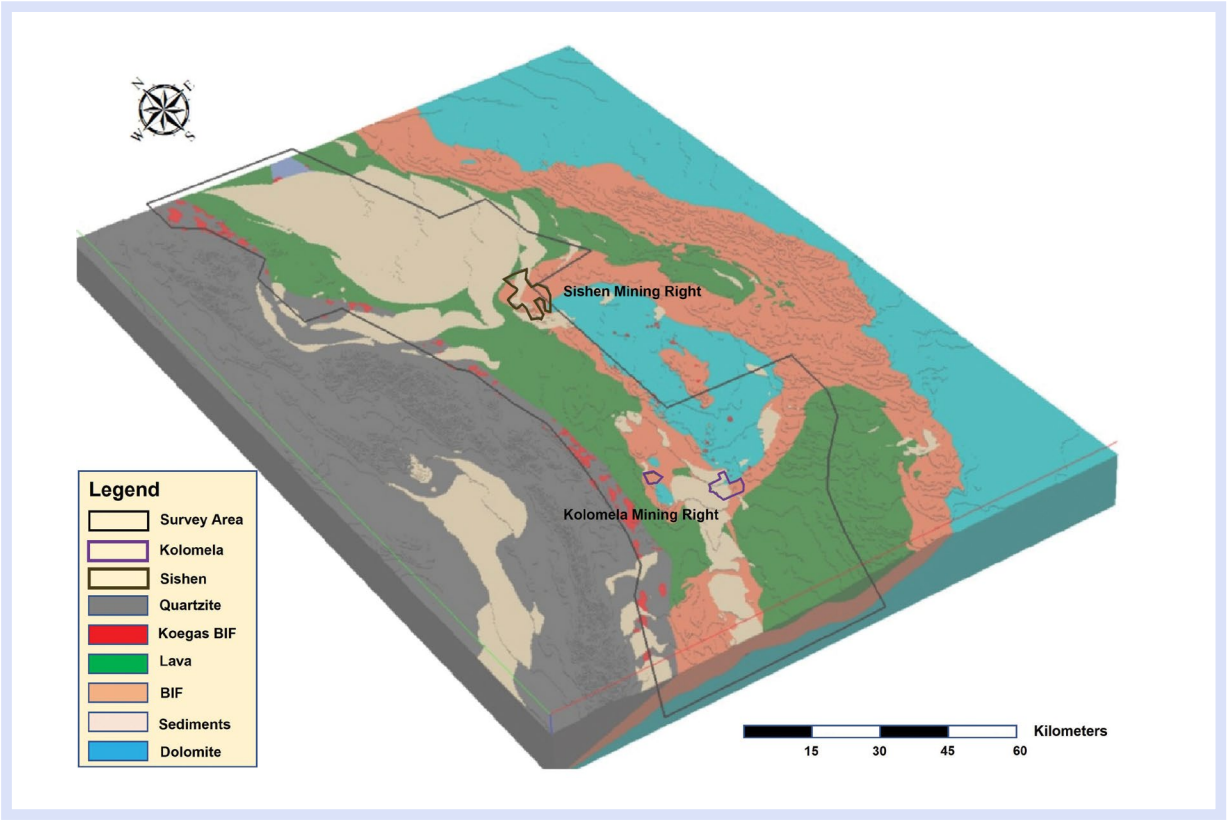


Figure 14: Kolomela's location in the Northern Cape province iron ore belt of RSA

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.

An altered gabbroic sill in the Kolomela area typically separates the iron ore from the underlying host BIF, or is intrusive in the BIF 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).

Makganyene diamictites comprise massive to poorly bedded diamictite, pebbly sandstone and siltstone, shale and mudstone up 100m 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 (600m 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 2,240 ± 57 Ma (Walraven et al, 1982), 2,239 ±90 Ma (Armstrong, 1987) and 2,222 ± 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 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 have 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 15.

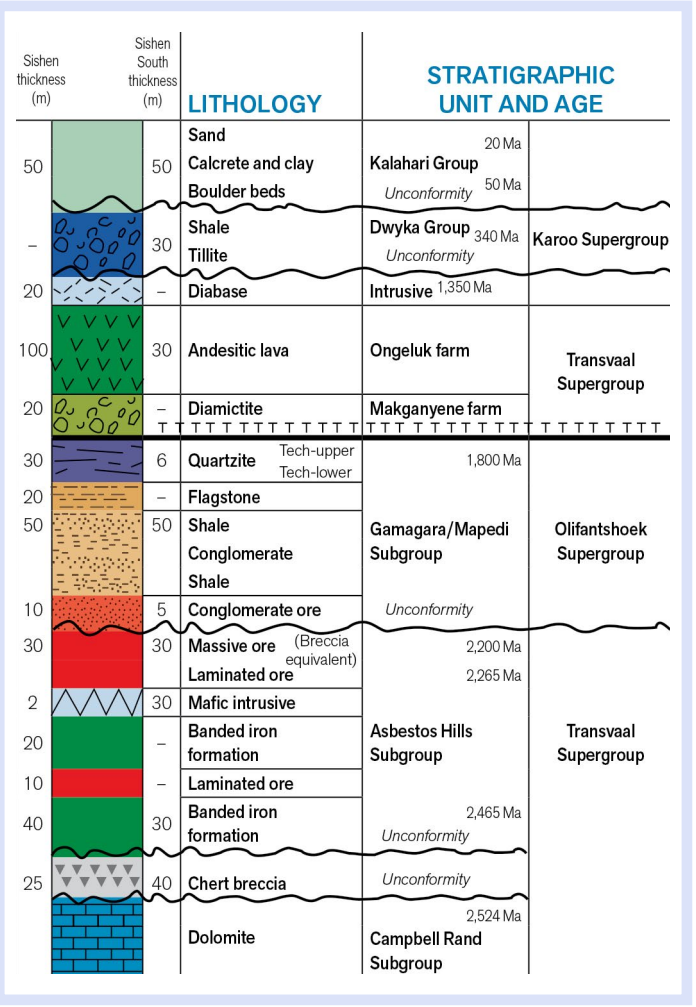


Figure 15: Simplified stratigraphic column depicting the Kolomela local geology

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 BIF unit, the Asbestos Hills Subgroup, which has been conformably deposited on the carbonates. In places, the upper portion of the BIF has been supergene-enriched to Fe ≥ 60%. The iron ore/BIF 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.

Iron ore at Kolomela 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.

Ancillary Reserve and Resource information per operation continued

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.

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The upper part of the Griqualand West Supergroup comprises a BIF unit, the Asbestos Hills Subgroup, which has been conformably deposited on the carbonates. In places, the upper portion of the BIF has been supergene-enriched to Fe ≥ 60%. The iron ore/BIF 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 BIFs. 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 represent 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 BIFs.

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 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 have 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 high-grade iron ore types have been described at Kolomela in the various separate iron ore deposits:

High-grade (Fe-rich) Laminated ore, which constitutes the main ore type and comprises alternating micro bands of high-lustre haematite with equally thin, porous bands of lower-lustre haematite and specularite. The primary lamination of the precursor BIF is still preserved, suggesting supergene enrichment (in situ replacement) of silica by iron.

High-grade (Fe-rich) Clastic-textured ore, comprising alternating haematite and specularite layers, thicker than those of the laminated ore and characterised by distorted, wavy bedding and occurs as lenses and massive units.

High-grade (Fe-rich) Collapse breccia-type ore, comprising angular fragments of laminated and clastic-textured ore in chaotic arrangement. The fragments are cemented by fine-grained specularite and haematite. The brecciation is probably as a result of karstification of the underlying dolomites, i.e. the collapse breccia ore is the product of sudden, brittle collapse of laminated and clastic-textured ores into underlying solution cavities and is preserved in deep sinkhole structures.

High-grade (Fe-rich) Conglomeratic ore, comprising poorly sorted, rounded to sub-rounded haematite pebbles and clasts in a ferruginised matrix representing, which usually occurs very localised and is considered to represent ferruginised Gamagara conglomerates.

In addition, material defined in the geological models with an *in situ* 50% ≤ Fe < 61%, comprising ferruginised BIF, conglomerates and collapse breccia material, is termed medium-grade ore.

The proportion of high-grade ore to medium-grade ore for the inclusive Mineral Resources as stated in 2021 is 87 to 13.

Geological interpretations have been derived from validated borehole data comprising 6,471 boreholes (3,247 exploration and 3,224 grade control boreholes). The red dots in Figure 16 depict the additional exploration boreholes used in the 2018 geological model update.

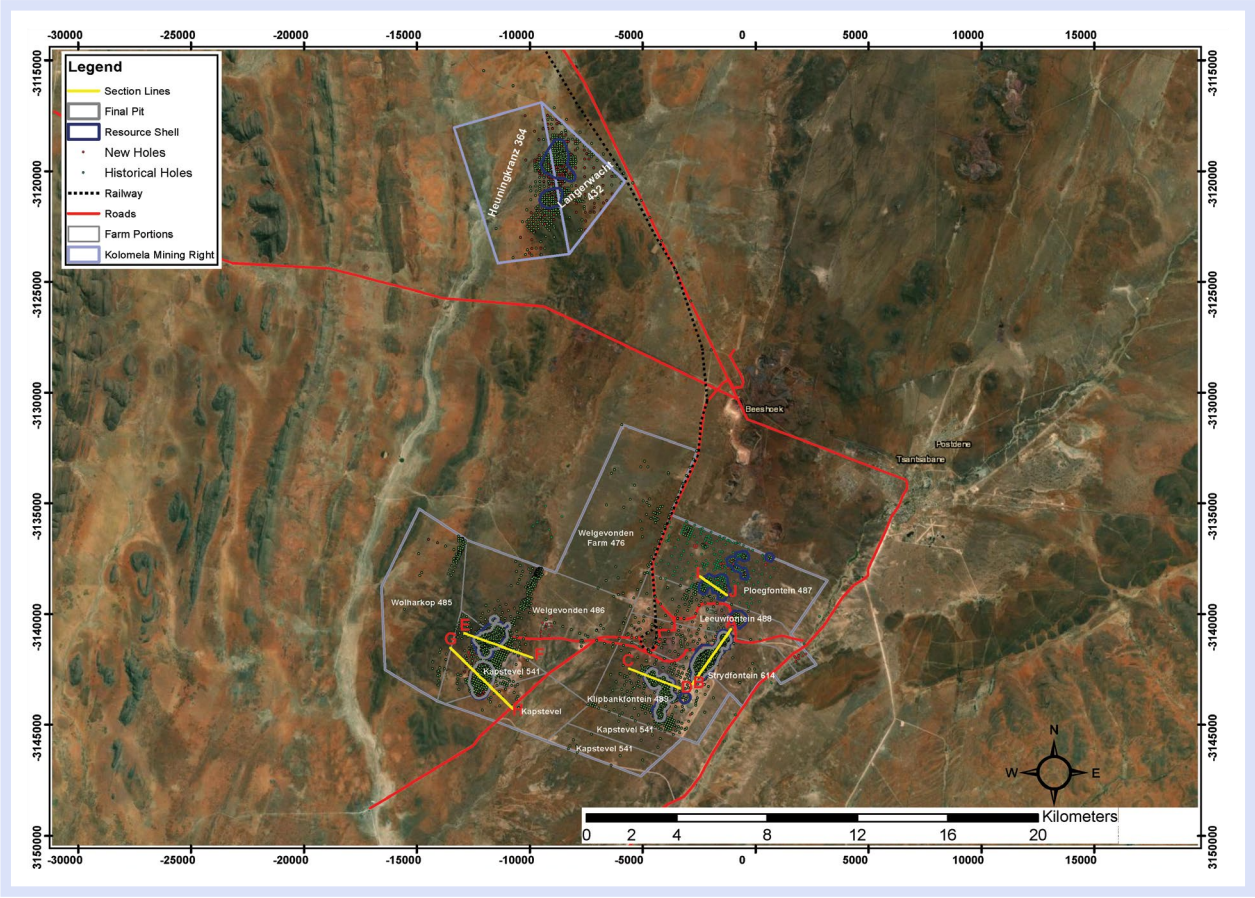


Figure 16: Kolomela mining right area

The geometry of the different ore bodies is depicted via cross-sections taken through the 3D solids models of the various ore bodies:

- Cross-section AB (Figure 17) as referenced in plan (Figure 16)
- (North-east to South-west cross-section through the Leeuwfontein ore body)
- Cross-section CD (Figure 18) as referenced in plan (Figure 16)
- (West-north-west to East-south-east cross-section through the Klipbankfontein ore body)
- Cross-section EF (Figure 19) as referenced in plan (Figure 16)
- (West-north-west to East-south-east cross-section through the Kapstevel North ore body)
- Cross-section GH (Figure 20) as referenced in plan (Figure 16)
- (North-west to South-east cross-section through the Kapstevel South ore body)
- Cross-section IJ (Figure 21) as referenced in plan (Figure 16)
- (West-north-west to East-south-east cross-section through the Ploegfontein ore body)

It can be noticed in some of these figures that the pit layout boundaries in some instances exceed the resource shell in size. This is possible where during pit optimisation ore geology is the limiting factor and not economic viability, and when the pit shell is engineered into a safe pit layout or design, the layout boundaries in some areas exceed the resource shell.

Also, the vertical scale has been exaggerated in all the cross-sections, for illustration purposes, resulting in ore body dip angles appearing steeper than actual.

Ancillary Reserve and Resource information per operation continued

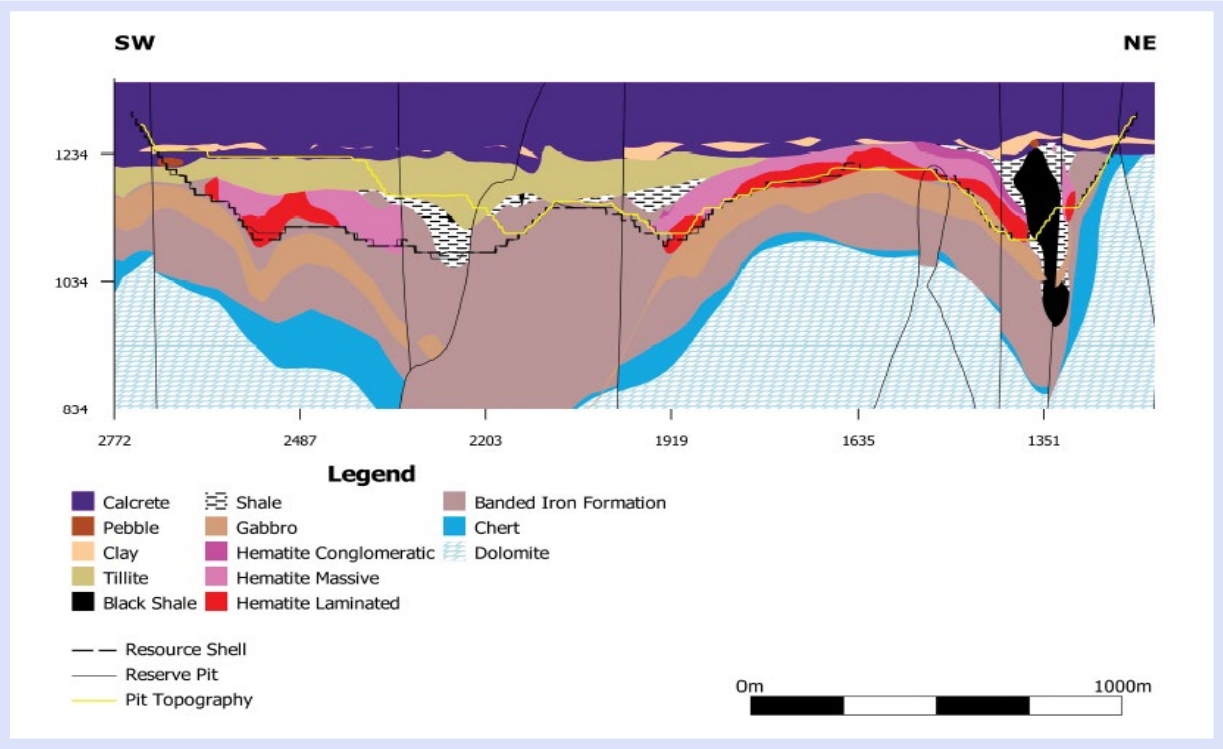


Figure 17: South-west-NE cross-section through the Leeuwfontein deposit

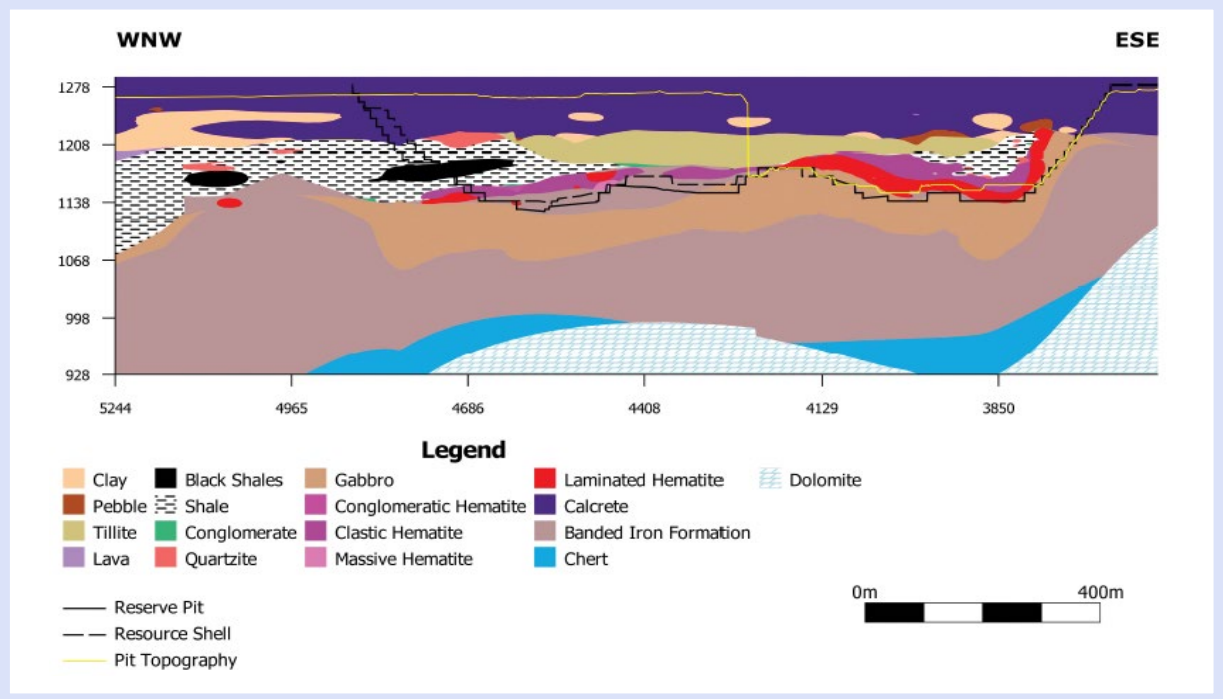


Figure 18: WNW-ESE cross-section through the Klipbankfontein deposit

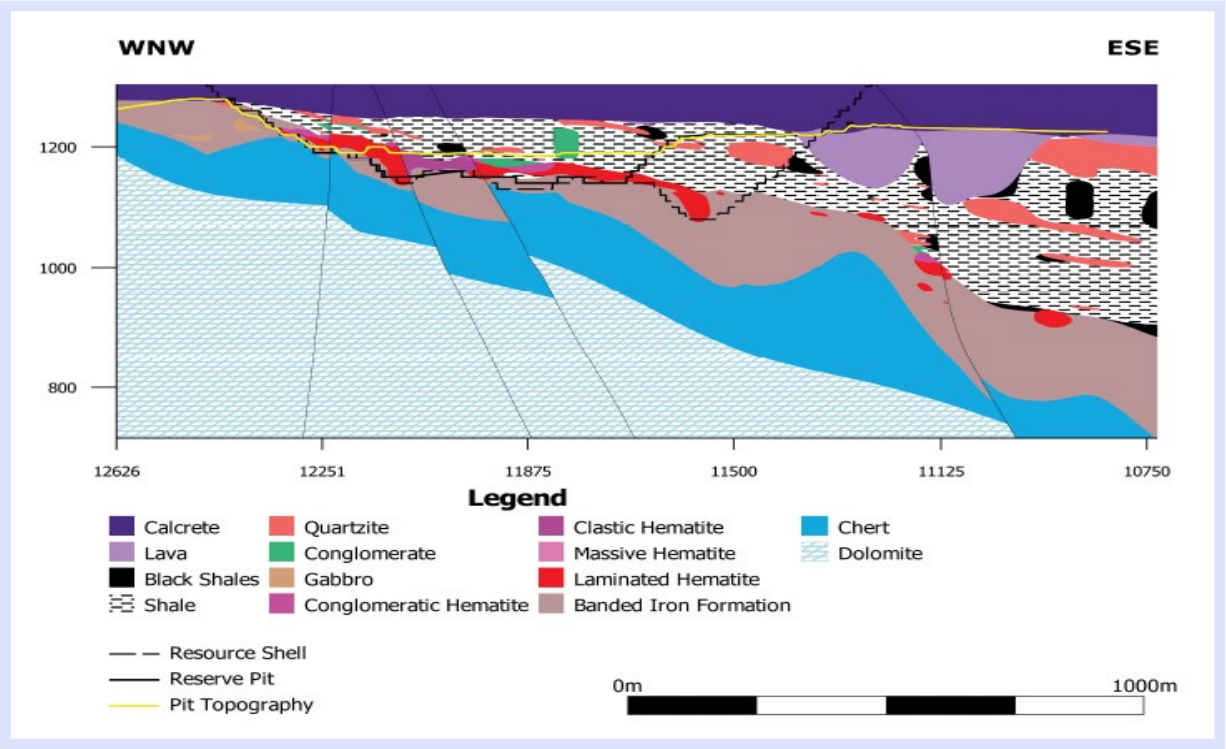


Figure 19: WNW-ESE cross-section through the Kapstevel North deposit

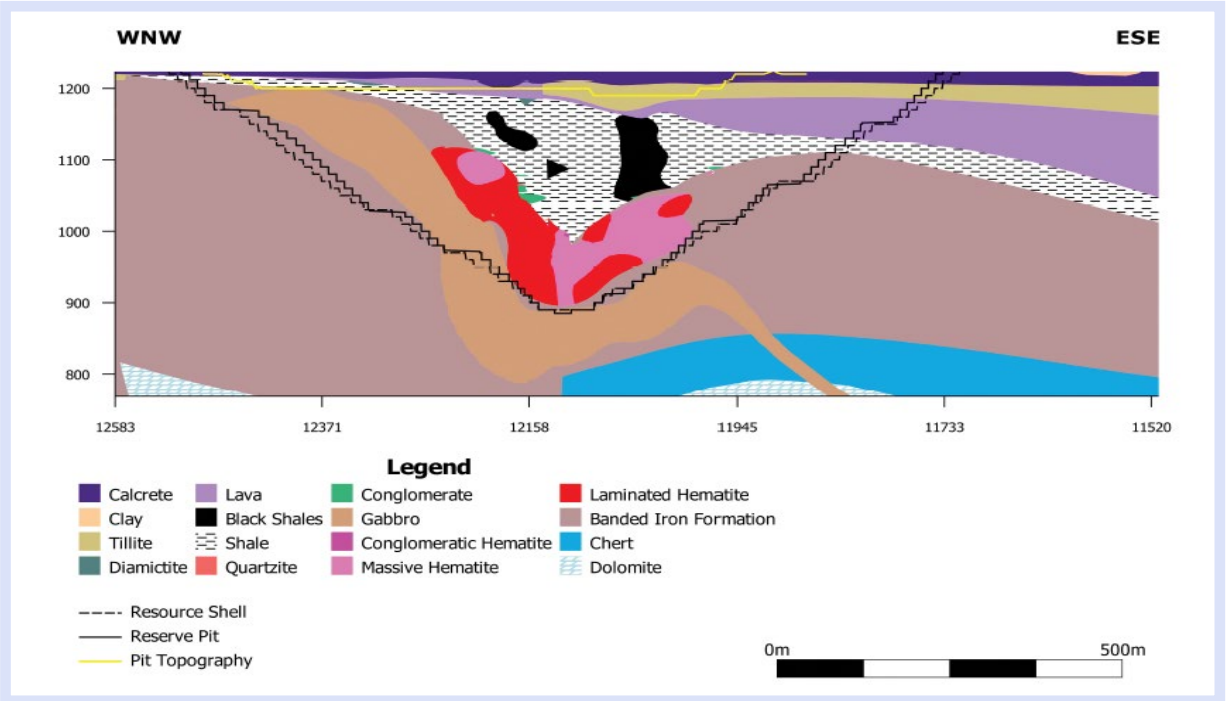


Figure 20: WNW-ESE cross-section through the Kapstevel South deposit

Ancillary Reserve and Resource information per operation continued

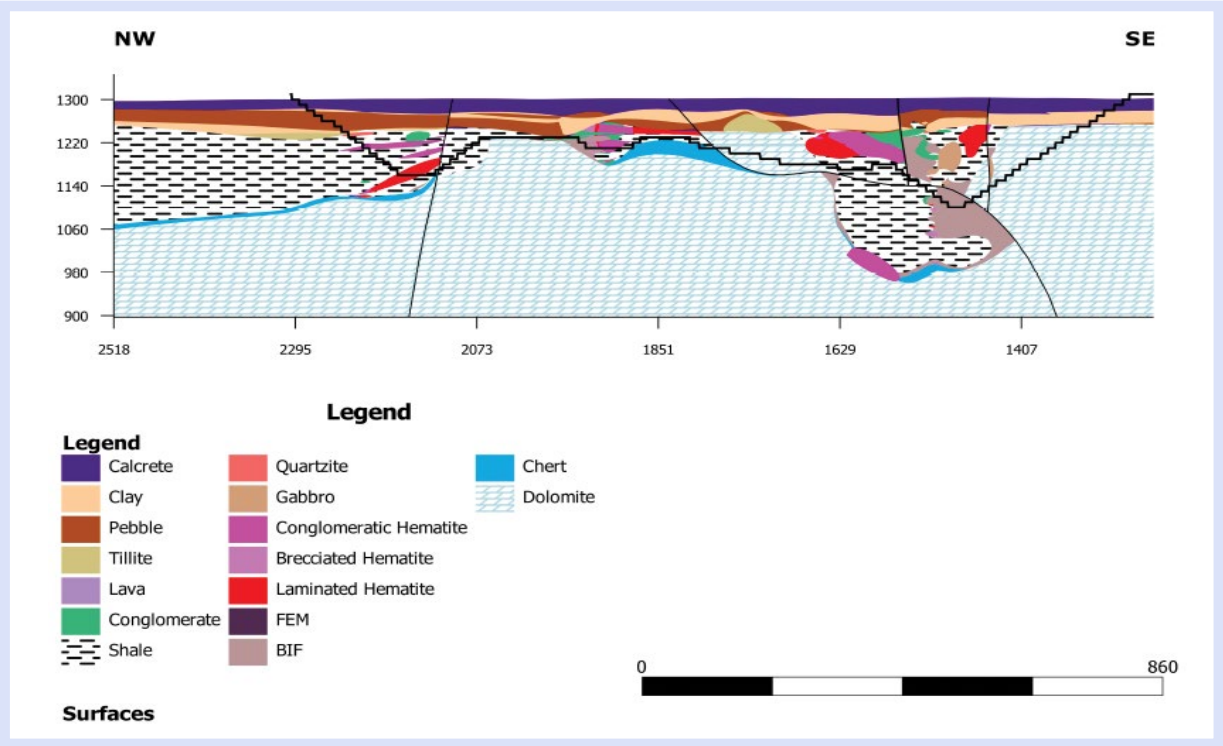


Figure 21: NW-south-east cross-section through the Ploegfontein deposit

Operational outline

Kolomela has been designed as a DSO operation, where conventional open-pit drilling and blasting, truck and shovel loading and hauling mining processes are applied to generate plant feed. Currently the Leeuwfontein, Klipbankfontein and Kapstevel North ore bodies are mined. The 2021 LoM plan also includes mining of the Kapstevel South ore body with waste stripping that commenced in 2020.

The iron ore is loaded according to blend (grade) requirements and transported to designated run-of-mine finger stockpiles dependent on the Fe grade and contaminant grade of the load. The primary crushing and screening direct shipping ore plant is fed from the finger stockpiles in blend ratios ensuring that the Lump and Fine product is suitable for client uptake (considering subsequent blending with Sishen mine product at the Saldanha harbour stock yard). A modular small DMS plant was commissioned in 2016 and contributes an average 8% to the Saleable Product output of Kolomela, through the treatment of medium-grade ore material.

The iron ore product (on average 60% Lump to 40% Fine) is railed to the Saldanha export harbour via the Ore export line Sishen-Saldanha line iron ore export line. The product is marketed to SIOC's current overseas customer base as part of the SIOC marketing strategy and are blended with Sishen mine's product. Kolomela produces Lump and Fine ore, with the grade and physical properties of the Lump ore of such a high standard that it meets niche demand.

Kolomela's key operational parameters are summarised in Table 8.

Table 8: Kolomela operational outline summary

Key details	**2021 9+3 forecast**	2020 9+3 forecast (actual)
% Ownership (AA plc)	53.2	53.2
% Ownership (Kumba Iron Ore)	76.3	76.3
Commodity	Iron ore	Iron ore
Country	Republic of South Africa	Republic of South Africa
Mining method(s)	Open-pit – Conventional	Open-pit – Conventional
Beneficiation method(s)	DSO (crushing and screening) and small-scale DMS	DSO (crushing and screening) and small-scale DMS
Reserve life* (years)	13	12
Estimated Saleable Product Lump : Fine ratio	60 : 40	60 : 40
Saleable Product design capacity (Mtpa)	15	15
Estimated run-of-mine production (Mt) including modified Inferred Mineral Resources	13.8 (including 0.2 Mt modified Inferred Mineral Resources)	12.9
Estimated Saleable product (Mt) including modified beneficiated Inferred Mineral Resources	13.3 (including 0.2 Mt modified beneficiated Inferred Mineral Resources)	12.4 forecasted (11.7 actual))
Estimated waste production (Mt)	62.4	59.4 forecasted (56.2 actual)
Overall planned stripping ratio (LoM plan)	4.5 : 1	3.6 : 1
Estimated product sold (Mt)	12.6	12.4
Product Types	Premium Lump and standard Lump and standard Fines	Lump and Fine
Mining right expiry date	17 September 2038	17 September 2038

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

The total tonnes extracted from four pits (Leeuwfontein, Klipbankfontein, Kapstevel North and Kapstevel South) at Kolomela increased by 9% from 71.6 Mt (15.4 Mt ex-pit ore and 56.2 Mt ex-pit waste) in 2020 to an estimated (at the time of reporting) 78.4 Mt (16.0 Mt ex-pit ore and 62.4 Mt ex-pit waste) in 2021. A total of 13.8 Mt (13.6 Mt Ore Reserves and 0.2 Mt modified Inferred Mineral Resources) is forecasted to be delivered to the DSO and UHDMS plants as run-of-mine, with an insignificant year-on-year run-of-mine buffer stockpile growth of 0.05 Mt.

The estimated annual ex-pit waste to ex-pit ore ratio increased from 3.7 : 1 in 2020 to 3.9 : 1 in 2021.

In total, 13.3 Mt of Saleable Product (including 0.2 Mt modified beneficiated Inferred Mineral Resources) is expected to be produced on-site (Figure 22) from the run-of-mine delivered to the crushing & screening and DMS plants in 2021 at an average annual yield of 96.4%, compared to 11.7 Mt in 2020. It is foreseen that 12.6 Mt of product will be sold in 2021.

Ancillary Reserve and Resource information per operation continued

Production history

Kolomela's production history of Saleable Product is summarised in Figure 21.

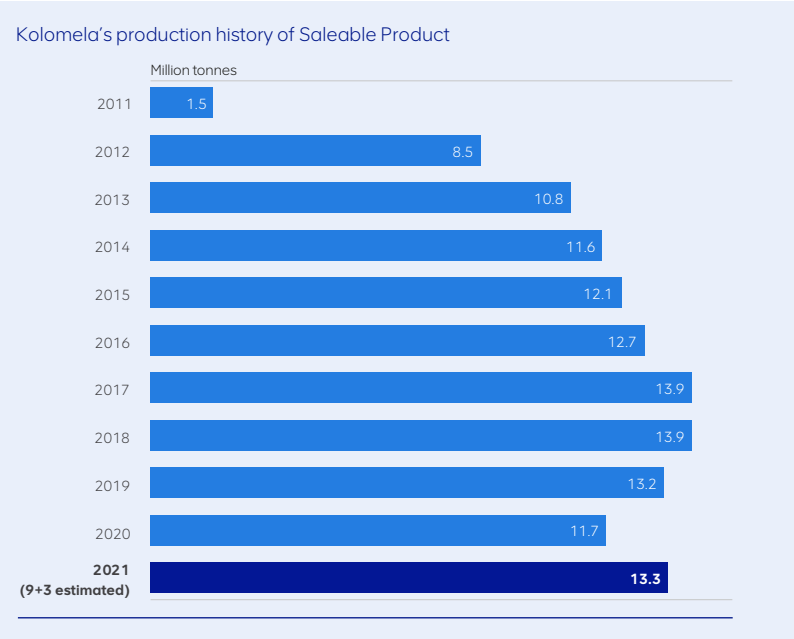


Figure 22: Kolomela production history

LoM plan Saleable Product profile

The 2021 LoM plan Saleable Product profile is depicted in Figure 23.

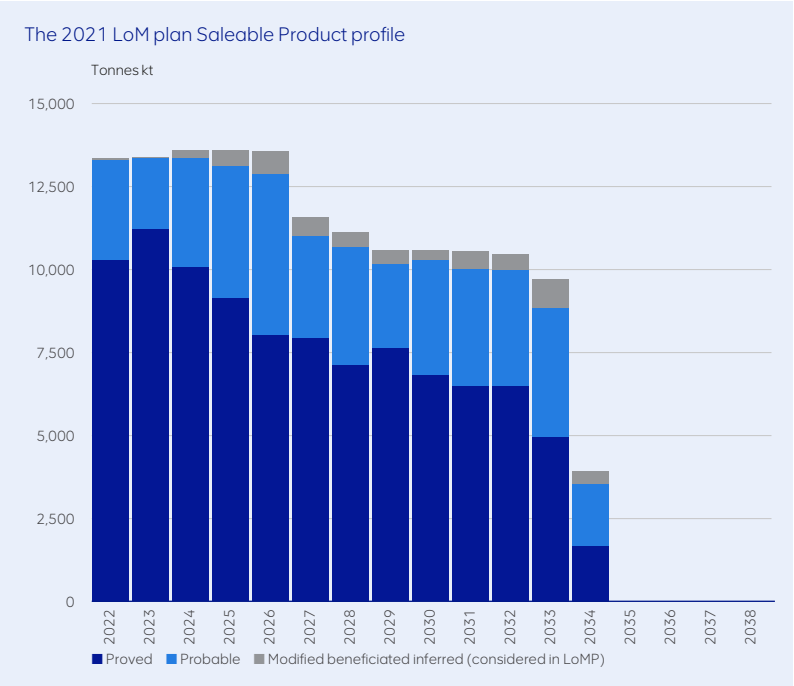


Figure 23: Kolomela's 2021 LoM plan annual Saleable Product profile (including modified beneficiated Inferred Mineral Resources)

Ore Reserve ancillary information

The Kolomela Ore Reserve ancillary information is summarised in Table 9A (background information) and Table 9B (Kapstevel North Ore Reserve estimation parameters – as an example).

Table 9A: Kolomela's 2021 versus 2020 Ore Reserve background information

Kolomela	**2021**	2020
Location		
Country	Republic of South Africa	Republic of South Africa
Province	Northern Cape	Northern Cape
Ownership		
Sishen Iron Ore Company Proprietary Limited	100%	100%
Kumba Iron Ore Limited	76.3%	76.3%
AA plc	53.2%	53.2%
Operational status		
Operation status	Steady-state	Steady-state
Mining method	Open cast (conventional drilling and blasting and truck and shovel operation)	Open-pit (conventional drilling and blasting and truck and shovel operation)
Beneficiation method	DSO (only crushing and screening of high-grade run-of-mine) as well as DMS plant for medium-grade material	DSO (only crushing and screening of high-grade run-of-mine) as well as DMS plant for medium-grade material
Annual Saleable Product (Mtpa)	12.6	12.5
Annual supply to domestic market (Mtpa)	0	0
Annual supply to export market (Mtpa)	12.6	12.5
Number of products	Three product types (premium Lump as well as standard Lump and standard Fines)	Three product types (premium Lump as well as standard Lump and standard Fines)
Governance		
Code	THE SAMREC CODE – 2016 EDITION	
AA plc group policy	Anglo American group policy for reporting of Ore Reserves and Mineral Resources	
AA plc requirements document	AA_RD_22-25 - Version 12 [2021] - (Exploration Results, Mineral Resources and Ore Reserves reporting requirements document	AA_RD_22-25 - Version 11 [2020] - (Exploration Results, Mineral Resources and Ore Reserves reporting requirements document
Kumba Iron Ore reporting policy	https://www.angloamericankumba.com/~/media/Files/A/Anglo-American-Group/Kumba/sustainability/approach-and-policies/kumba-mineral-resource-and-ore-reserve-reporting-policy.pdf	
Kumba Iron Ore reporting protocols	Kumba Iron Ore Reserve Classification Guideline (Version 1)	
Kumba Iron Ore reporting template	Ore Reserve (and Saleable Product) reporting template (2021)	Ore Reserve (and Saleable Product) reporting template (2020)

Ancillary Reserve and Resource information per operation continued

Table 9A (continued): Kolomela's 2021 versus 2020 Ore Reserve background information

Kolomela	**2021**	2021
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 KIO'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 Lerchs-Grosmann 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.	
Scheduled run-of-mine metric tonnes (dry/wet)	Dry	
Tonnage calculation	Tonnages are calculated from the LoM 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 and DMS plants.	
Fe grade	Ore Reserve % Fe grades reported, represent the weighted average grade of the "plant feed" or run-of-mine material and take into account all applicable modifying factors.	
Cut-off grade (Fe)	50%	50%
Ore type	Haematite ore	Haematite ore
Optimised pit shell revenue factor	1.0	1.0
LoM 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	13	12
LoM plan run-of-mine tonnes (including modified Inferred) (expressed in million tonnes)	152.3	159.2
Overall average stripping ratio (including Inferred Mineral Resources)	4.5 : 1	3.6 : 1
Production data cut-off date (date where after 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 2021	31 August 2020
Topography and pit progression assigned	31 December 2021	31 December 2020
Reserve schedule ID (Schedule file name + extension)	2021 LTP Reserve report v3.xlsx	2020 LoM report2.3.xlsx
Reserve schedule completion date	20 October 2021	22 October 2020

Table 9B: Kolomela's 2021 versus 2020 Kapstevel North Ore Reserves estimation parameters (similar tables exist for the Klipbankfontein, Kapstevel North and Kapstevel South mining areas)

Kapstevel North	**2021**	2020
Estimation		
Mining block model name	KSN0321_smu10105v2	ksn_smultmod0318v3.dm
Smallest mining unit	10 m(x) x 10 m(Y) x 5 m(Z)	10 m(X) x 10 m(Y) x 5 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-Grosmann (marginal cost cut-off analysis)	Lerch-Grosmann (marginal cost cut-off analysis)
Modification		
Modifying factors		
Geological loss (%)	0	0
Dilution (%)	0	4
Mining loss (%)	0	-13
Mining recovery efficiency (%)	92	92
Design recovery efficiency (%)	100	100
Ore unutilised in 2021 LoM plan (%)	-9	-6
Metallurgical yield (%) to convert to Saleable Product	96.0	95.8
Estimator		
Reserve estimator	Sthembile Nkambule	Sthembile Nkambule
Reserve estimator status	Internal Specialist	Internal Specialist
Estimator employer	Sishen Iron Ore Company (Pty) Ltd	Sishen Iron Ore Company (Pty) Ltd

Ancillary Reserve and Resource information per operation continued

Mineral Resource ancillary information

The Kolomela Mineral Resource ancillary information is summarised in Table 10A (background information) and Table 10B (Kapstevel North Mineral Resource estimation parameters – as an example).

Table 10A: Kolomela's 2021 versus 2020 Mineral Resource background information

Kolomela	**2021**	2020
Location		
Country	Republic of South Africa	Republic of South Africa
Province	Northern Cape	Northern Cape
Ownership (%)		
Sishen Iron Ore Company Proprietary Limited	100	100
Kumba Iron Ore Limited	76.3	76.3
Anglo American plc	53.2	53.2
Security of tenure		
Number of applicable mining rights	1	1
Mining right status	Registered (amendments registered)	Registered (amendments executed)
Mining right expiry date(s)	17 September 2038	17 September 2038
Exploration status		
Exploration type	Geological confidence (on-mine)	Geological confidence (on-mine)
Exploration phase	In execution	In execution
Ore type	Haematite ore	Haematite ore
Governance		
Code	THE SAMREC CODE (2016 edition)	
AA plc group policy	Anglo American group policy for reporting of Ore Reserves and Mineral Resources	
AA plc requirements document	AA_RD_22-25 - Version 12 [2021] - (Exploration Results, Mineral Resources and Ore Reserves reporting requirements document)	AA_RD_22-25 - Version 11 [2020] - (Exploration Results, Mineral Resources and Ore Reserves reporting requirements document)
Kumba Iron Ore reporting policy	https://www.angloamericankumba.com/~/media/Files/A/Anglo-American-Group/Kumba/sustainability/approach-and-policies/kumba-mineral-resource-and-ore-reserve-reporting-policy.pdf	
Kumba Iron Ore reporting protocols	Kumba Iron Ore Geological confidence classification guideline (Version 5)	Kumba Iron Ore Resource classification guideline (Version 2)
Kumba Iron Ore reporting template	Mineral Resource (and additional Mineralisation) reporting template (2021)	Mineral Resource (and Mineral Inventory) reporting template (2019)
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 RPEEE 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	
Tonnage calculation	Tonnages are added from cells in geological block model 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	
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 RPEEE resource shell	
RPEEE		
Cut-off grade	50% Fe	50% Fe
Resource shell revenue factor	1.6	1.6

Table 10B: Kolomela's 2021 versus 2020 Kapstevel North Mineral Resources estimation parameters – as an example (similar tables exist for the Klipbankfontein, Kapstevel North, Kapstevel South, Ploegfontein and Wolhaarkop ore bodies but are not stated in this report)

Kapstevel North geological model	**2021**	2020
Input data		
Borehole type	Core and percussion borehole lithological logs and associated chemical analyses	
Relative density measurement	Picnometer analyses on pulp samples	
Kumba Iron Ore QA/QC protocol	Kumba Iron Ore QC Protocol for Exploration Drilling Sampling and Sub-sampling (version 10)	Kumba Iron Ore QC Protocol for Exploration Drilling Sampling and Sub-sampling (version 9)
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 until 30 April 2026)	Accredited under International Standard ISO/IEC 17025:2005 by the South African National Accreditation System (SANAS) under the Facility Accreditation Number T0051 (valid from 1 May 2016 to 30 April 2021)
Borehole database software	*acQuire*	*acQuire*
Borehole database update cut-off date	31 March 2020	31 January 2019
Database validation conducted	Yes	Yes
Segmentation conducted	Yes. To allow for simplification of logged lithologies for spatial correlation purposes	
Statical and geostatistical evaluation		
Data compositing interval	2 m	1 m
Data compositing method	Length weighted average per lithology	
Grade parameters evaluated	% Fe, % SiO_2, % Al_2O_3, % K_2O, % P, % Mn and % S as well as relative density	
Variography updated in current year	Yes	
Search parameters updated in current year	Yes	
Solids modelling		
Solids modelling software	*Leapfrog*	
Input	Updated solids models	
Method	Implicit solids modelling for all domains	
Domaining	Yes, by lithology and structural controls	
Topography and pit progression assigned	31 December 2021 (planned boundary)	31 December 2020 (planned boundary)
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)	
Grade estimation methodology		
Ore segments	Ordinary (Co-) Kriging	
Waste segments	Simple (Co-) Kriging	
Geological block modelling		
Block modelling software	*Datamine*	*Surpac*
Model type	Centroid Model	
Parent cell size	40 m(X) x 40 m(Y) x 10 m(Z)	
Minimum sub-block cell size	5 m(X) x 5 m(Y) x 5 m(Z)	

Ancillary Reserve and Resource information per operation continued

Table 10B (continued): Kolomela's 2021 versus 2020 Kapstevel North Mineral Resources estimation parameters – as an example (similar tables exist for the Klipbankfontein, Kapstevel North, Kapstevel South, Ploegfontein and Wolhaarkop ore bodies but are not stated in this report)

Kapstevel North geological model	**2021**	2020
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.	
Grade	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)	ks022021_v1.dm	KSN2020_v1.dm
Update completion date	28 February 2021	28 February 2020
Geological confidence classification		
Method summary	Scorecard / CP Over-ride	
Classification thresholding	According to the 2010 Kumba Iron Ore Mineral Resource Classification Guideline (quantitative scorecard approach) with CP judgement applied to: • identify critical factors to be used to evaluate grade and geological continuity. The critical factors increased from 10 to 12 factors in 2013 mainly in the Estimation Confidence Index. The weightings were updated for the Resource Confidence Index for Leeuwfontein, Klipbankfontein Kapstevel North, Kapstevel South • assign weights to establish importance of each parameter • determine boundaries of calculated grade and geological continuity indices to distinguish between Measured, Indicated and Inferred Mineral Resources	
Grade continuity parameters (and associated weighting)	Fe estimate slope-of-regression (50%); Sample representivity index (50%)	
Geometry continuity parameters (and associated weighting)	Distance to closest sample (40%), variability in ore body dimension (20%), variability in ore body structure (20%) and density (real or inferred) (20%)	
Geological confidence		
Grade continuity weighting (%)	40	
Geometry continuity weighting (%)	60	
Confidence index cut-offs within 1 to 9 range		
Measured	≥6.5	
Indicated	5.0 to <6.5	
Inferred	<5.0	
CP over-ride		
Measured to Indicated (Mt)	None	
Indicated to Inferred (Mt)	None	
Estimator		
Resource estimator	Johan van Zyl	Mark Wanless
Resource estimator status	External Technical Specialist	External Technical Specialist
Estimator employer	Golder Associates	SRK Consulting

Sishen mine

Location

The bulk of KIO's annual production is generated by Sishen mine, located in the Northern Cape province near the town of Kathu in South Africa (Figure 24). Sishen mine has been in operation since 1953 and is one of the largest single open-pit iron ore mines in the world.

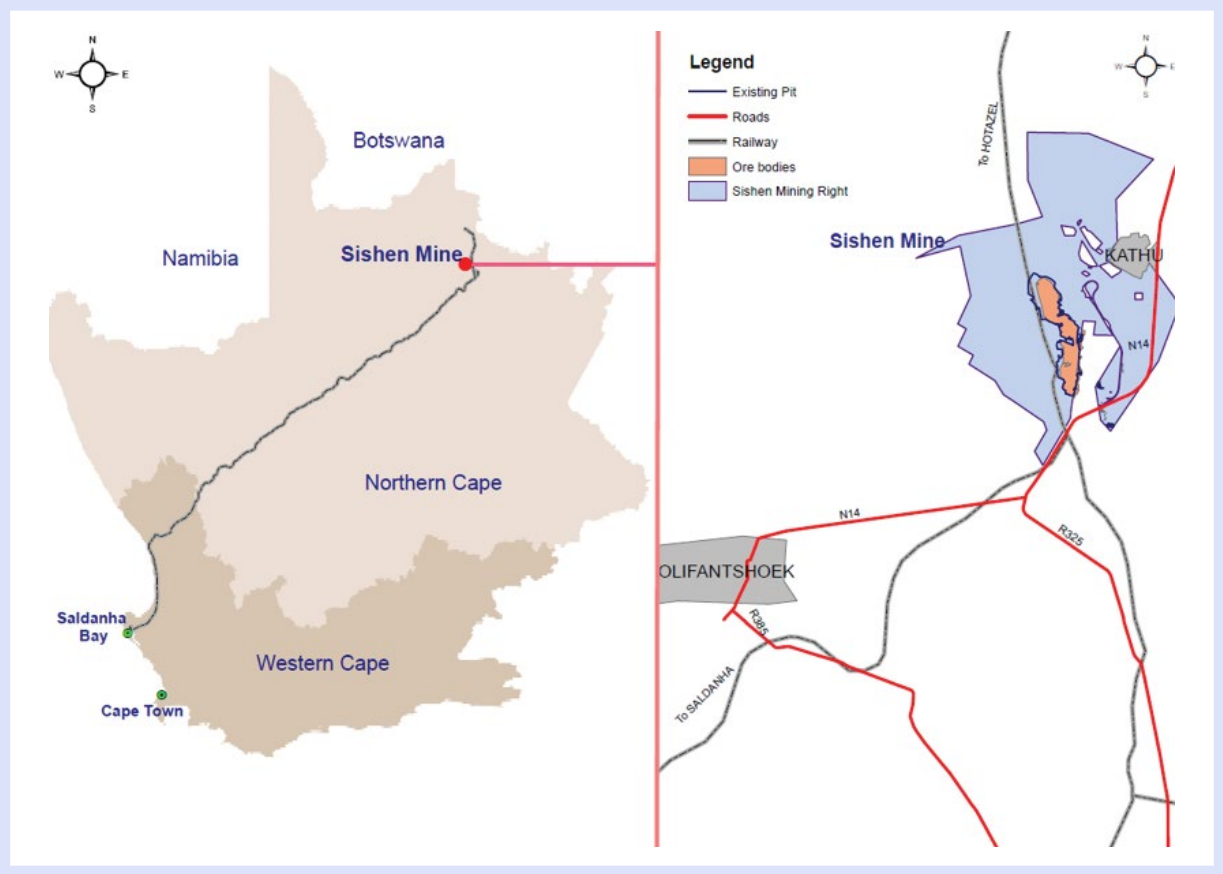


Figure 24: Location and logistics chain of Sishen mine

Ancillary Reserve and Resource information per operation continued

Geological outline

Regional geology

The geology falls within same regional geological environment (towards northern end of Northern Cape province "iron ore belt") as Kolomela .

→ **Please see Kolomela "Regional geology" section** page 40.

Stratigraphy

The carbonates of the Campbell Rand Subgroup are separated from the overlying 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 cross-cuts (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.

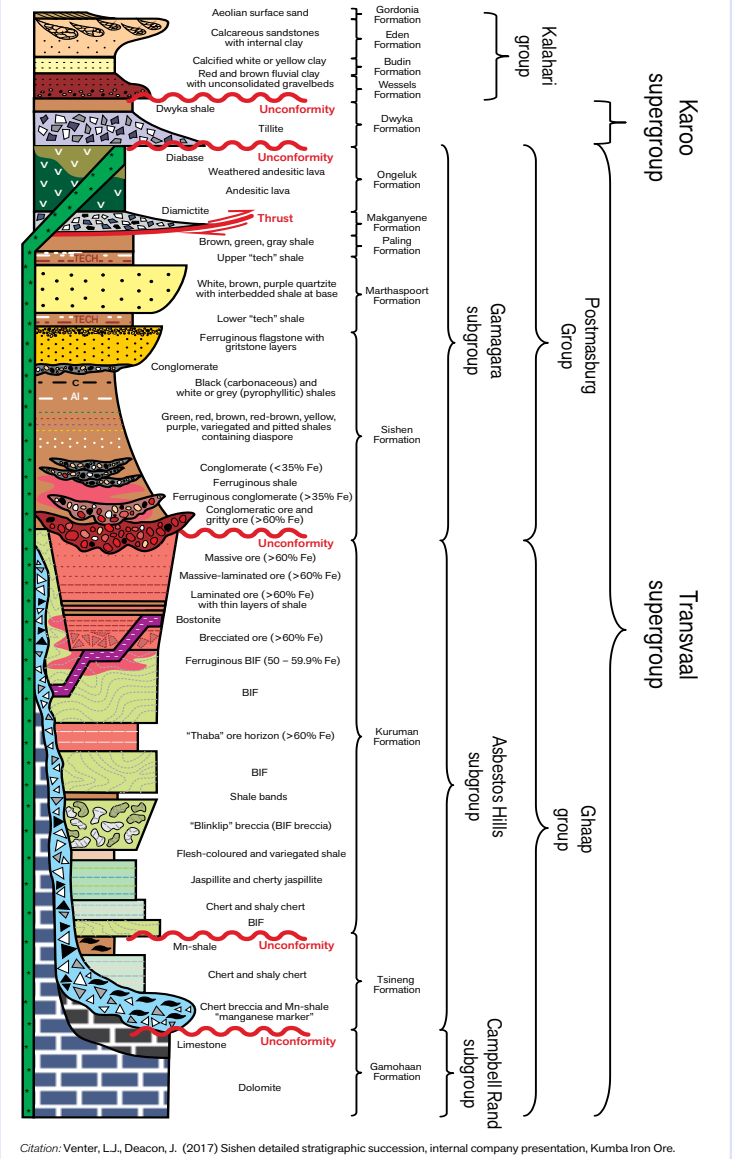
They are unconformably overlain by a thick package of sedimentary rocks (conglomerates, shales, flagstones and quartzite) termed the Gamagara Subgroup (S.A.C.S., 1995). Many researchers including Beukes and Smit (1987) and Moore (pers. comm.) have correlated this unit with the Mapedi Formation, which 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.



Citation: Venter, L.J., Deacon, J. (2017) Sishen detailed stratigraphic succession, internal company presentation, Kumba Iron Ore.

Figure 25: Simplified stratigraphic column depicting the Sishen local geology

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.

A generalised version of the Sishen mine stratigraphy is depicted in Figure 25.

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. Northeast-southwest 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 (BIF/Kuruman Formation)
- ~2.46 – 2.35 Ga: Incipient break-up and rifting, along a set of north-south trending, west 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 north-south 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 eastward tectonic vergence; their adjacent, uplifted blocks were eroded. An additional feature of this event appears to be the formation of conjugate north-east and south-east 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
- ~2.24 – 1.83 Ga: Reactivation of faults related to both the north-south 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 north-east 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 (see below). 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 ~1,780 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"
- ~1.15 – 1.0 Ga: The north-north-west 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 north-south

Ancillary Reserve and Resource information per operation continued

trending normal and inverted normal faults, reactivation of the 2.35 – 2.24 Ga northeast and southeast trending conjugate strike-slip faults, usually with upthrow to the south-east and south-west, respectively, the development of east-northeast 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. 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 have resulted in deep, steep-sided, circular or ovoid depressions in which ore (and BIF) is notably thicker (e.g. Mortimer, 1994; 1995). This must be weighed against other models which suggest that areas of very thick, deep ore occupy palaeo-sinkholes, i.e. occur within palaeokarst topography within the Campbell Rand Subgroup (Beukes et al (2002)).

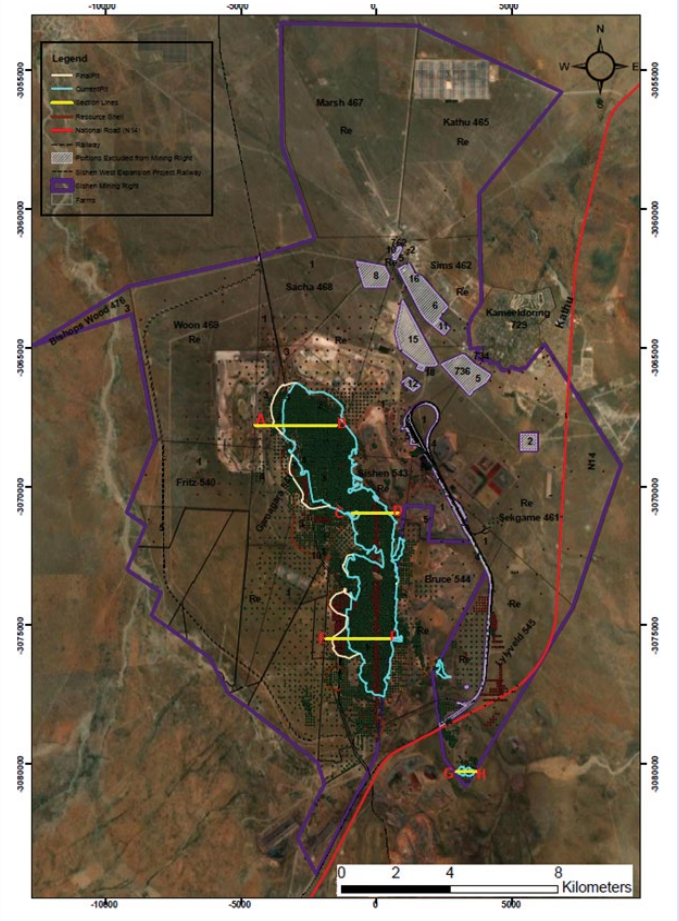


Figure 26: Sishen mining right area

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 break-up 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 north-east trending graben, essentially accommodated by the reactivation of Ventersdorp faults (Friese and Alchin, 2007).

Local geology

A total of 10,009 additional borehole sample log and assay data (325,205 in total) was applied in the update of the 2021 Sishen geological model, 70% thereof derived from cored boreholes and 30% from percussion boreholes (insignificant RC drilling). Drill coverage is illustrated in Figure 26 and is evident of a highly developed understanding of the mineral asset.

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.

The geometry of the lithologies is depicted via cross-sections (referenced in Figure 21) taken through the latest 3D Sishen geological model:

- Figure 27 is a west to east cross-section (line AB in Figure 26) through the Sishen north mine area.
- Figure 28 is a west to east cross-section (line CD in Figure 26) through the Sishen middle mine area.
- Figure 29 is a west to east cross-section (line EF in Figure 26) through the Sishen south mine area.
- Figure 30 is a west to east cross-section (line GH in Figure 26) through the Lylyveld satellite mine area.

It can be noticed in some of these figures that the pit layout boundaries in some instances exceed the resource shell in size. This is possible where during pit optimisation ore geology is the limiting factor and not economic viability, and when the pit shell is engineered into a safe pit layout or design, the layout boundaries in some areas exceed the resource shell.

Also, the vertical scale has been exaggerated in all the cross-sections, for better illustrative purposes, resulting in ore body dip angles appearing steeper than actual.

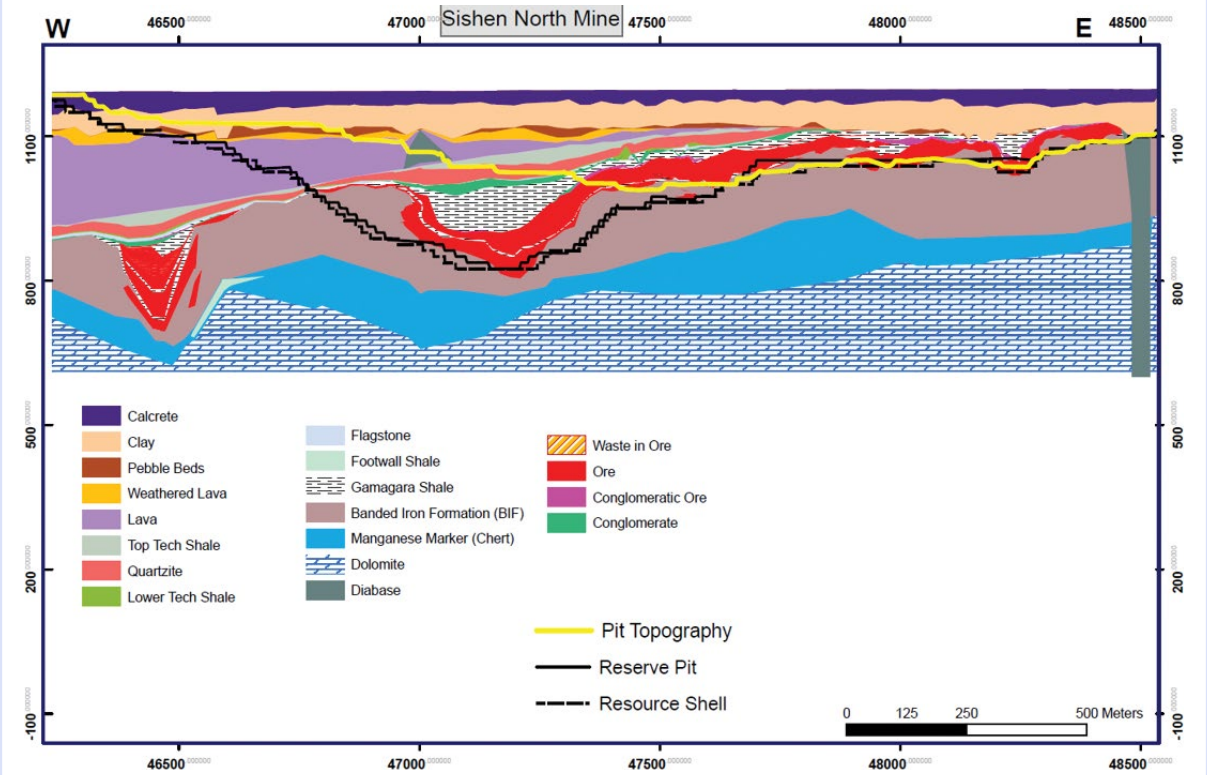


Figure 27: West-east cross-section depicting the local geology of the Sishen north mine area

Ancillary Reserve and Resource information per operation continued

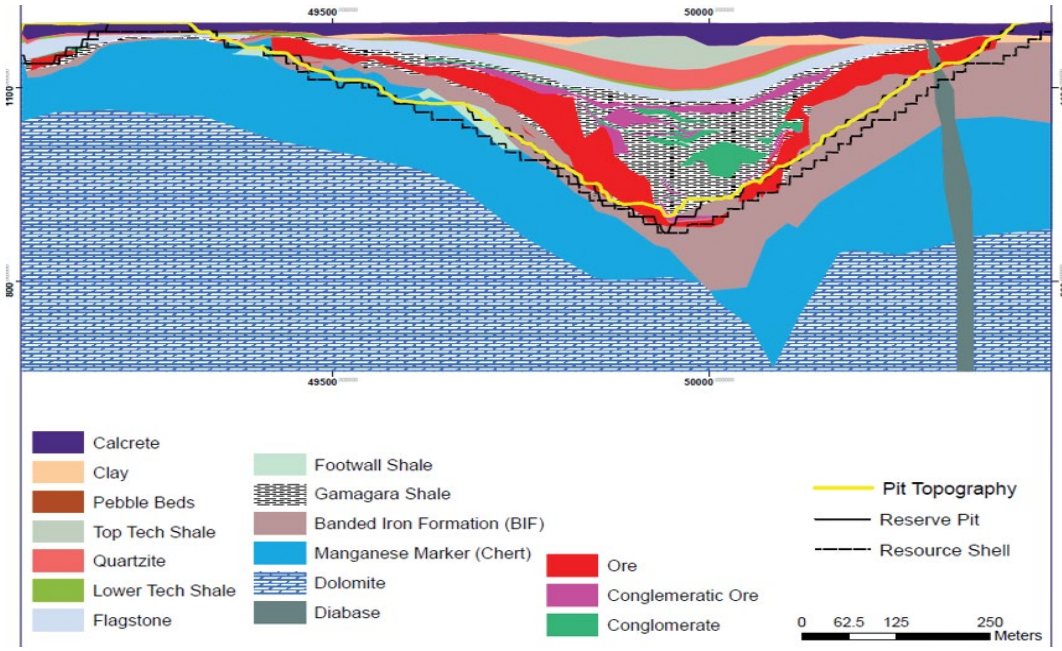


Figure 28: West-east cross-section depicting the local geology of the Sishen middle mine area

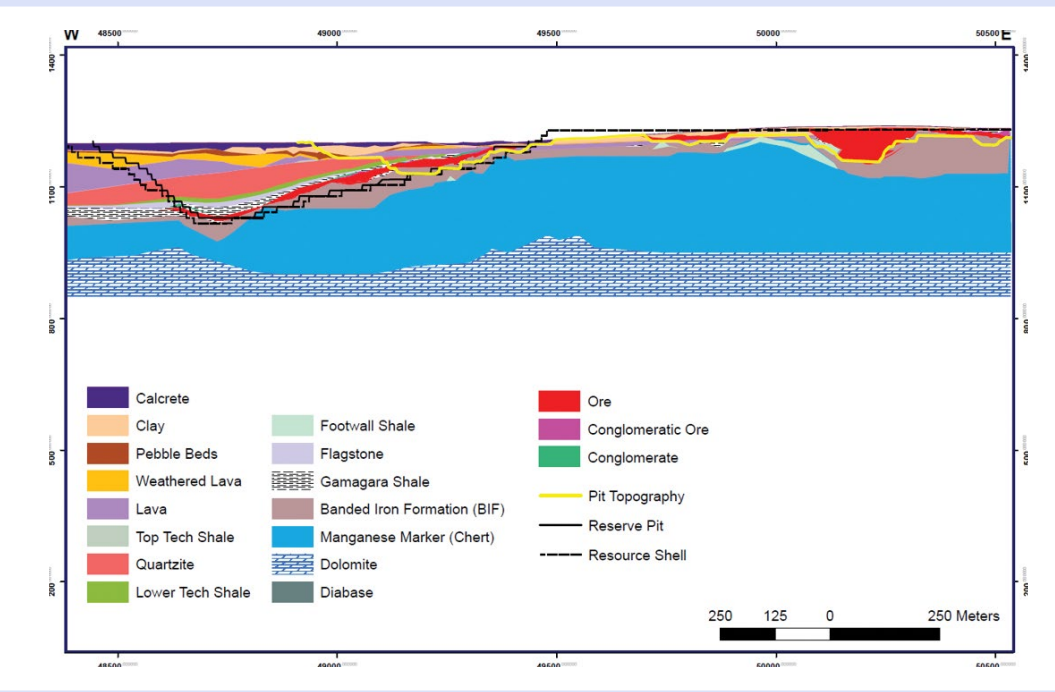


Figure 29: West-east cross-section depicting the local geology of the Sishen south mine area

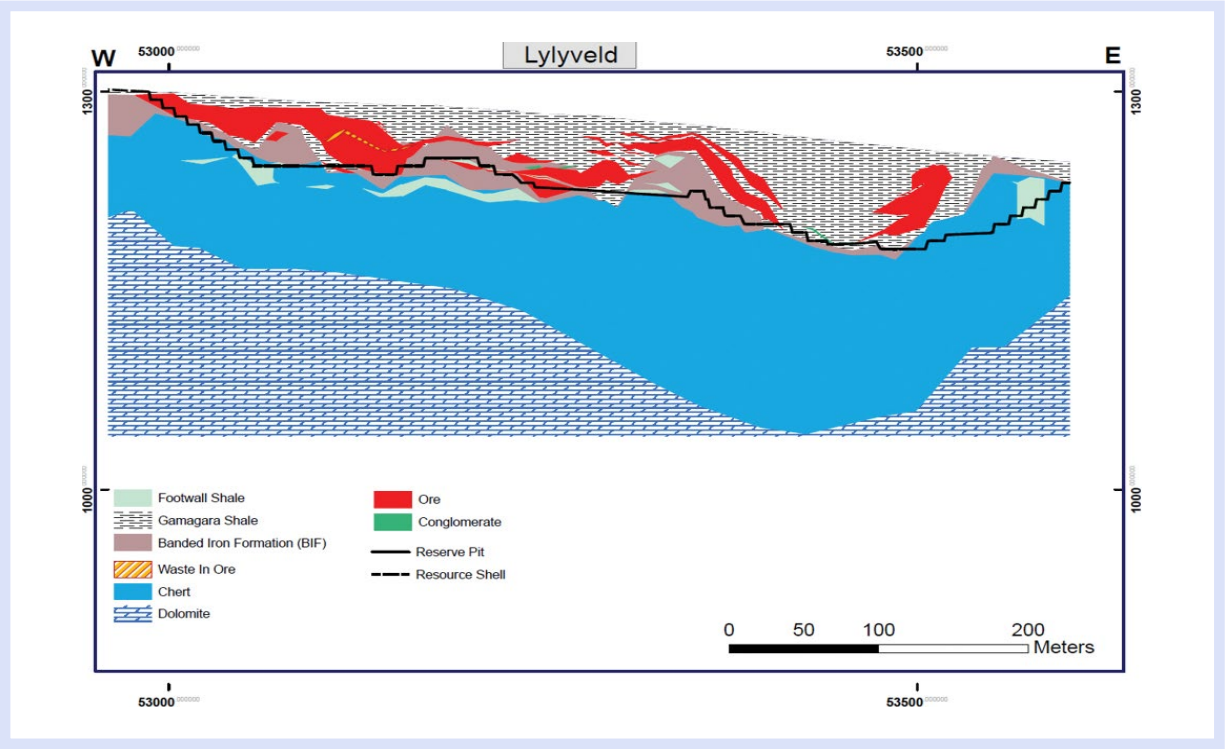


Figure 30: West-east cross-section depicting the local geology of the Sishen Lylyveld satellite mining area

Operational outline

Sishen mine currently comprises a conventional open-pit operation, processing run-of-mine through two primary processing facilities (DMS plant and Jig plant) with a combined operating capacity of 34.7 Mtpa Saleable Product. A small-scale UHDMS plant has been commissioned in 2017, which treats some of the Jig discard material.

The current mining process entails topsoil removal and stockpiling for later use during the waste dump rehabilitation process, followed by drilling and blasting of waste and ore. The waste material is in-pit dumped where such areas are available or hauled to waste rock dumps. The iron ore is loaded according to blend (grade) requirements and hauled to designated run-of-mine buffer stockpiles or the beneficiation plants, where it is crushed, screened and beneficiated. The screened ore size fractions are beneficiated through either:

- a ferro-silicon DMS plant, where most of the high-grade run-of-mine is treated, or
- a Jig plant where most of the medium-grade run-of-mine is treated, with two UHDMS modules treating some of the Jig discard to recover more Saleable Product.

Plant slimes are not beneficiated and are pumped to evaporation dams while the DMS and Jig (and UHDMS) discard material is stacked on a plant discard dump.

Four iron ore products (conforming to different chemical and physical specifications) are produced. The product is reclaimed from product beds and loaded into trains, to be transported either to local steel mills (domestic market) and Saldanha Bay (for export market), from where it is shipped together with Kolomela product and sold to international Clients under three KIO branded products referred to as premium Lump ore, standard Lump ore and standard Fines ore.

KIO has an agreement with ArcelorMittal to supply them domestically with a maximum of 6.25 Mtpa of Saleable Product. Recent off-take has however not matched the maximum contract levels and most of the Sishen production is exported via the Saldanha Port to various international steel markets.

The closure of the Saldanha Steel Works as announced by ArcelorMittal South Africa in Q4 of 2019, resulted in a material decrease in the domestic off-take of the Sishen Saleable Product. Considering the current rail and Saldanha harbour infrastructure and agreements between KIO and the applicable governmental institutes, it is not foreseen that KIO would be able to export the equivalent decrease in domestic off-take.

Ancillary Reserve and Resource information per operation continued

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

Table 11: Sishen mine operational outline summary

Key details	**2021 9+3 forecast**	2020 9+3 forecast (actual)
% Ownership (AA plc)	53.2	
% Ownership (Kumba Iron Ore)	76.3	
Commodity	Iron ore	
Country	Republic of South Africa	
Mining method(s)	Open-pit – conventional	
Beneficiation method(s)	DMS and Jigging	
Reserve life* (years)	18	15
Estimated Saleable Product Lump : Fine ratio	70 : 30	
Saleable Product design capacity (Mt)	34.7	
Estimated run-of-mine production (Mt) including modified Inferred Mineral Resources	37.9 (including 0.6 Mt modified Inferred Mineral Resources)	36.2
Estimated Saleable Product (Mt) including modified beneficiated Inferred Mineral Resources	28.1 (including 0.4 Mt modified beneficiated Inferred Mineral Resources)	26.6 forecasted (25.4 actual)
Estimated waste production (Mt)	154	155.0 forecasted (148.5 actual)
Overall planned stripping ratio	3.3 : 1	3.8 : 1
Estimation of sold product (Mt)	27	27
Product types	In total, four Lump and one Fines product types of varying grade are produced on-site but sold as three products under the Kumba branding together with Kolomela product as Kumba premium Lump, Kumba standard Lump and Kumba standard Fines	In total, four Lump and one Fines product types of varying grade are produced on-site
Mining right expiry date	10 November 2039	

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

It is estimated at the time of reporting (9+3 forecast) that the 191.5 Mt (154.0 Mt ex-pit waste and 37.5 Mt ex-pit ore) extracted from the pit at Sishen mine in 2021 increased by 10.1% compared the 2020 figure of 173.9 Mt. The ex-pit waste to ex-pit ore ratio has decreased from 5.8 : 1 in 2020 to 4.1 : 1 in 2021. The total run-of-mine production at Sishen mine for 2021 is estimated at 37.9 Mt (32.8 Mt Ore Reserves plus 0.7 Mt modified Inferred Mineral Resources plus 4.4 Mt of run-of-mine in sourced from third parties).

The resulting 2021 Saleable Product is estimated (9+3 forecast) at 28.1 Mt at an average annual yield of 74.3%. The forecasted sales for 2021 are 27.0 Mt.

Production history

The historical production (actual depletion of Saleable Product tonnes) of Sishen mine is summarised in Figure 31.

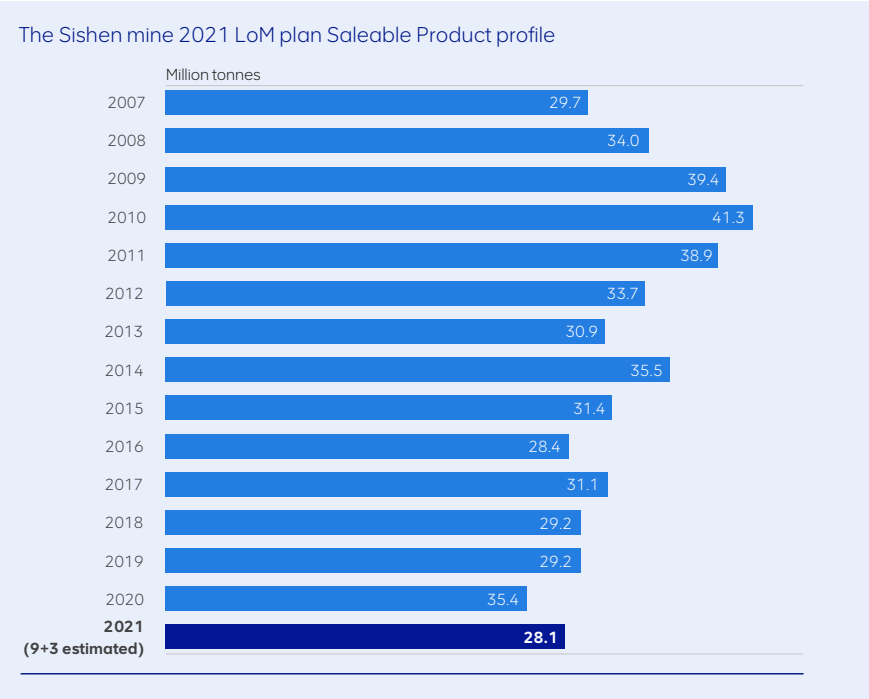


Figure 31: Sishen mine production history

LoM plan Saleable Product profile

The Sishen mine 2021 LoM plan Saleable Product profile is depicted in Figure 32.

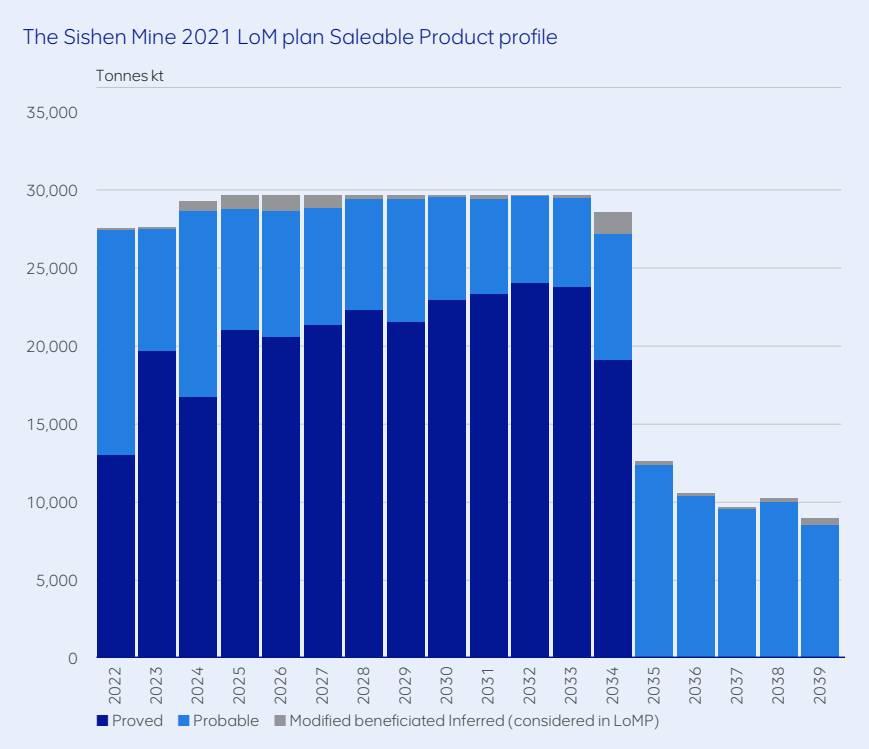


Figure 32: Sishen mine's 2021 LoM plan annual Saleable Product profile (including modified beneficiated Inferred Mineral Resources)

Ancillary Reserve and Resource information per operation continued

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).

Table 12A: Sishen mine's 2021 versus 2020 Ore Reserve background information

Sishen mine	**2021**	2020
Location		
Country	Republic of South Africa	
Province	Northern Cape	
Ownership		
Sishen Iron Ore Company Proprietary Limited	100%	
Kumba Iron Ore Limited	76.3%	
AA plc	53.2%	
Operational status		
Operation status	Steady-state	
Mining method	Open-pit (conventional drilling and blasting and truck and shovel operation)	
Beneficiation method	DMS, Jig beneficiation combined with UHDMS	
Annual Saleable Product (Mtpa)	29.7	29.2
Annual supply to domestic market (Mtpa)	0.5	1.1
Annual supply to export market (Mtpa)	29.2	29.2
Number of products	Three final Saleable Products from Saldanha: premium Lump, standard Lump, and standard Fines, but with more intermediate products produced at Sishen	
Governance		
Code	THE SAMREC CODE – 2016 EDITION	
AA plc group policy	Anglo American group policy for reporting of Ore Reserves and Mineral Resources	
AA plc group technical standard	AA_GTS_22 (Reporting of exploration results, Mineral Resources and Ore Reserves in Anglo American)	
AA plc requirements document	AA_RD_22-25 - Version 12 [2021] - (Exploration results, Mineral Resources and Ore Reserves reporting requirements document)	AA_RD_22-25 - Version 11 [2020] - (Exploration results, Mineral Resources and Ore Reserves reporting requirements document)
Kumba Iron Ore reporting policy	https://www.angloamericankumba.com/~/media/Files/A/Anglo-American-Group/Kumba/sustainability/approach-and-policies/kumba-mineral-resource-and-ore-reserve-reporting-policy.pdf	
Kumba Iron Ore reporting protocols	Kumba Iron Ore Reserve classification guideline (Version 1)	
Kumba Iron Ore reporting template	Ore Reserve (and Saleable Product) reporting template (2021)	Ore Reserve (and Saleable Product) reporting template (2020)

Table 12A (continued): Sishen mine's 2021 versus 2020 Ore Reserve background information

Sishen mine	**2021**	2020
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 KIO'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 Lerchs-Grosmann 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.	
Scheduled run-of-mine metric tonnes (dry/wet)	Dry	
Tonnage calculation	Tonnages are calculated from the LoM 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" material and take into account all applicable modifying factors.	
Cut-off grade (Fe)	40%	
Ore type	Haematite ore	
Optimised pit shell revenue factor	1.0	
LoM scheduling		
Software	OPMS	
Method	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, w	
Reserve life years	18	15
LoM plan run-of-mine tonnes (including modified Inferred) (expressed in million tonnes)	664.5	583.1
Overall average stripping ratio (including Inferred Mineral Resources)	3.3 : 1	3.8 : 1
Production data cut-off date (date where after 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 August 2021	30 August 2020
Topography and pit progression assigned	31 December 2021	31 December 2020
Reserve schedule ID	2021_Sishen_LOM_Scenario3_Koketso_s3.5 (Preliminary_Reserves)	2020_LOM_Scen4m
Reserve schedule completion date	30 October 2021	30 October 2020

Ancillary Reserve and Resource information per operation continued

Table 12B: Sishen mine's 2021 versus 2020 main pit Ore Reserves estimation parameters (a similar table is available for the Lylyveld satellite pit mining area)

Main Pit	**2021**	2020
Estimation		
Mining block model name	north2021_smu_new_v2.dm; south2021_ smu_new_v2	north_smu_reduced.dm; south_smu.dm; pb39_smu_reduced.dm; pb19_smu_ reduced2.dm; pb21_smu_reduced2.dm
Smallest mining unit	20 m(X) x 20 m(Y) x 12.5 m(Z)	
Practical mining parameters		
Bench height	12.5 m	
Ramp gradient	8% (1 in 12.5)	
Road width	30 m to 56 m	
Minimum mining width	80m (rope shovel and truck mining)	
Geohydrology	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%	
Pit optimisation		
Software	*Whittle 4X*	
Method	Lerchs-Grosmann (primary LoM maximisation, secondary NPV maximisation)	
Modifying factors		
Geological loss (%)	-1	0
Dilution (%)	16	12
Mining loss (%)	-10	-4
Mining recovery efficiency (%)	92	96
Design recovery efficiency (%)	99	100
Ore Reserves reallocated to Mineral Resources (%)	0	-1
Metallurgical yield (%) to convert to Saleable Product	65.0	75.1
Estimator		
Reserve estimator	Izak Moolman	Alfred April
Reserve estimator status	Internal Technical Specialist	
Estimator employer	Sishen Iron Ore Company (Pty) Ltd / Anglo American (Pty) Ltd	

Mineral Resource ancillary information

The Sishen mine Mineral Resource ancillary information is summarised in Table 13A (background information) and Table 13B [nn1(a to c) geological models' Mineral Resource estimation parameters – as an example].

Table 13A: Sishen mine's 2021 versus 2020 Mineral Resource background information

Sishen mine	**2021**	2020
Location		
Country	Republic of South Africa	Republic of South Africa
Province	Northern Cape	Northern Cape
Ownership (%)		
Sishen Iron Ore Company Proprietary Limited	100	100
Kumba Iron Ore Limited	76.3	76.3
Anglo American plc	53.2	53.2
Security of tenure		
Number of applicable mining rights	1	1
Mining right status	Registered (amendments registered)	Registered (amendments executed)
Mining right expiry date(s)	10 November 2039	10 November 2039
Exploration status		
Exploration type	Geological confidence (on-mine)	Geological confidence (on-mine)
Exploration phase	In execution	In execution
Ore type	Haematite ore	Haematite ore
Governance		
Code	THE SAMREC CODE – 2016 EDITION	
AA plc group policy	Anglo American group policy for reporting of Ore Reserves and Mineral Resources	
AA plc requirements document	AA_RD_22-25 - Version 12 [2021] - (Exploration results, Mineral Resources and Ore Reserves reporting requirements document)	AA_RD_22-25 - Version 11 [2020] - (Exploration results, Mineral Resources and Ore Reserves reporting requirements document)
Kumba Iron Ore reporting policy	https://www.angloamericankumba.com/~/media/Files/A/Anglo-American-Group/Kumba/sustainability/approach-and-policies/kumba-mineral-resource-and-ore-reserve-reporting-policy.pdf	
Kumba Iron Ore reporting protocols	Kumba Iron Ore Resource classification guideline (Version 4)	Kumba Iron Ore Resource classification guideline (Version 2)
Kumba Iron Ore reporting template	Mineral Resource (and Additional Mineralisation) reporting template (2021)	Mineral Resource (and Mineral Inventory) reporting template (2020)
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 model 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 model 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 RPEEE resource shell	
RPEEE		
Cut-off grade	40% Fe	40% Fe
Resource shell revenue factor	1.6	1.6

Ancillary Reserve and Resource information per operation continued

Table 13B: Sishen mine's 2021 versus 2020 NN1 (A to C) geological models' Mineral Resources estimation parameters – as an example (similar tables exist for the NN2 (A to C), NN3 (A to C), NN4 (A to C), MM1 (A to C), SS1 (A to C), SS2 (A to C), SS3 (A to C), LVD (A to C) and DNV (A to C) geological models but are not stated in this report)

NN1 (A to C) geological models	**2021**	2020
Estimation		
Input data		
Borehole type	Core and percussion borehole lithological logs and associated chemical analyses	
Relative density measurement	Minidense (pre-2010) and Picnometer analyses on pulp samples (2010 to present)	
Kumba Iron Ore QA/QC protocol	Kumba Iron Ore QC Protocol for exploration drilling sampling and Sub-sampling (version 10)	Kumba Iron Ore QC Protocol for exploration drilling sampling and Sub-sampling (version 9)
Primary laboratory	TECHNICAL SOLUTIONS Division of Anglo Operations Limited CHEMISTRY LABORATORY (Company registration number: 1921/006730/07)	TECHNICAL SOLUTIONS Division of Anglo Operations Limited CHEMISTRY LABORATORY (Company registration number: 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 until 30 April 2026)	Accredited under International Standard ISO/IEC 17025:2005 by the South African National Accreditation System (SANAS) under the Facility Accreditation Number T0051 (valid from 1 May 2016 to 30 April 2021)
Borehole database software	*acQuire*	*acQuire*
Borehole database update cut-off date	29 January 2020	30 September 2017
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	3m	3m
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, % P, % Mn and % S as well as relative density	% Fe, % SiO_2, % Al_2O_3, % K_2O, and % P as well as relative density
Variography updated in current year	Yes	No
Search parameters updated in current year	Yes	No
Solids modelling		
Solids modelling software	Surpac	Surpac
Input	Updated solids models	Updated solids models
Method	Digital wireframe modelling for ore segments and some waste segments (waste in contact with ore zones) Digital terrain models for other waste segments	Digital wireframe modelling for ore segments and some waste segments (waste in contact with ore zones) Digital terrain models for other waste segments
Domaining	Primary lithological domains are subdomained based on structural discontinuities, and distinguishable variation in grade, i.e. K_2O as well as where volumes have been informed predominantly by core or percussion borehole data, i.e. different data populations	Primary lithological domains are subdomained based on structural discontinuities, and distinguishable variation in grade, i.e. K_2O as well as where volumes have been informed predominantly by core or percussion borehole data, i.e. different data populations
Topography and pit progression assigned	31 December 2021 (planned boundary)	31 December 2020 (planned boundary)
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)

Table 13B (continued): Sishen mine's 2021 versus 2020 NN1 (A to C) geological models' Mineral Resources estimation parameters – as an example (similar tables exist for the NN2 (A to C), NN3 (A to C), NN4 (A to C), MM1 (A to C), SS1 (A to C), SS2 (A to C), SS3 (A to C), LVD (A to C) and DNV (A to C) geological models but are not stated in this report)

NN1 (A to C) geological models	**2021**	2020
Grade estimation methodology		
Ore segments	Ordinary (Co-) Kriging	Ordinary (Co-) Kriging
Waste segments	Global estimate	Global estimate
Geological block modelling		
Block modelling software	Datamine/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	5 m(X) x 5 m(Y) x 3.125 m(Z)	5 m(X) x 5 m(Y) x 3.125 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	28 February 2021	28 February 2019
Geological confidence classification		
Method summary	Scorecard/CP over-ride	Scorecard/CP over-ride
Grade continuity parameters (and associated weighting)	Fe estimate Slope-of-Regression (33.3%); Sample Representivity Index (33.3%), Actual vs Default Assays (33.3%)	Fe estimate Slope-of-Regression (33.3%); Sample Representivity Index (33.3%), Actual vs Default Assays (33.3%)
Geometry continuity parameters (and associated weighting)	Distance to Closest Sample (50%), Geological Complex areas (50%)	Distance to Closest Sample (50%), Geological Complex areas (50%)
Geological confidence		
– Grade continuity weighting (%)	60	60
– Geometry continuity weighting (%)	40	40
Confidence index cut-offs within 1 to 9 range		
– Measured	≥7	≥7
– Indicated	5 to <7	5 to <7
– Inferred	1 to <5	1 to <5
CP over-ride		
– Measured to Indicated (Mt)	40.5	41.3
– Indicated to Inferred (Mt)	None	None
Estimator		
Resource estimator	Fanie Nel, Tshele Sekoere, Obed Nkuna, Jacques Deacon	Jacques Deacon/Marianne van den Heever/ Johan van Zyl
Resource estimator status	Internal technical specialists	Internal technical Specialist/Internal Technical Specialist/External Technical Specialist
Estimator employer	Sishen Iron Ore Company (Pty) Ltd	Sishen Iron Ore Company (Pty) Ltd/SIOC/Z Star Resource Estimation Consultants

Endorsement

The persons that accept overall responsibility (Lead CPs) and accountability (Chief Executive) for the declaration of the 2021 Kumba Ore Reserve and Mineral Resource estimates.

The persons at KIO who are designated to take respective "corporate responsibility" for Mineral Resources and Ore Reserves are Jean Britz and Theunis Otto. They have extensively reviewed the Mineral Resource and Ore Reserve estimates reported for 2021 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 29 years of experience as a mining and exploration geologist in coal and iron ore, of which 17 are specific to iron ore Mineral Resource estimation and evaluation.

Jean Britz
Principal, Mineral Resources and Geometallurgy – KIO Geosciences

Dr Theunis Otto is an ECSA-registered Mining Engineer (990072), has a Ph.D. in Mining Engineering and has 26 years of experience as a mining engineer in production management and technical roles in coal and iron ore mining, of which 17 years are specific to iron ore Mineral Reserve estimation and evaluation.

Theunis Otto
Head, KIO Mining Engineering

KIO's Chief Executive and board member for 2021, Mr Themba Mkhwanazi, endorses the Mineral Resource and Ore Reserve estimates presented in this document, and acknowledges that the KIO policy which governs Mineral Resource and Ore Reserve reporting has been adhered to.

Themba Mkhwanazi
Chief Executive, Kumba Iron Ore

Glossary of terms and acronyms

AA plc	Anglo American plc
BIF	Banded iron formation
Covid-19	Coronavirus (SARS-CoV2) disease of 2019
CP	Competent Person
DMRE	Department of Mineral Resources and Energy
DMS	Dense media separation
DSO	Direct shipping ore
ECSA	Engineering Council of South Africa
EMPr	Environmental management programme
ESG	Environmental, social and governance
FOB	Free-on-board
JSE	Johannesburg Stock Exchange
KIO	Kumba Iron Ore
Kumba	Kumba Iron Ore
LoM	Life-of-mine
MPRDA	Mineral and Petroleum Resources Development Act No 28 of 2002
Mt	Million tonnes
Mtpa	Million tonnes per annum
NPV	Net present value
ORMR	Ore Reserve (and Saleable Product) and Mineral Resources report
QA/QC	Quality assurance and quality control
RC	Reverse circulation drilling
R&R	Reserve and Resource
RPEEE	Reasonable prospects for eventual economic extraction
SACNASP	South African Council for Natural Scientific Professions
SAMESG	South African guideline for the reporting of environmental, social and governance parameters
SAMREC Code	The South African Code for the reporting of Exploration Results, Mineral Resources and Mineral Reserves (2016 Edition)
SANAS	South African National Accreditation System
SIOC	Sishen Iron Ore Company Proprietary Limited
SMU	Selective mining unit
TS of AA plc	Anglo American plc Technical Solutions division
UHDMS	Ultra-high density media separation

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