ANGLOGOLD ASHANTI LTD
Form 6-K
April 05, 2019

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, DC 20549
FORM 6-K
REPORT OF FOREIGN PRIVATE ISSUER
PURSUANT TO RULE 13a-16 OR 15d-16 OF
THE SECURITIES EXCHANGE ACT OF 1934

Report on Form 6-K dated March 29, 2019
Commission File Number 1-14846
AngloGold Ashanti Limited
(Name of registrant)
76 Rahima Moosa Street
Newtown, 2001
(P.O. Box 62117, Marshalltown, 2107)
South Africa
(Address of principal executive offices)

Indicate by check mark whether the registrant files or will file annual reports under cover of Form 20-F or Form 40-F.
Form 20-F X
Form 40-F

Indicate by check mark if the registrant is submitting the Form 6-K in paper as permitted by Regulation S-T Rule 101(b)(1):
Yes
No X

Indicate by check mark if the registrant is submitting the Form 6-K in paper as permitted by Regulation S-T Rule 101(b)(7):
Yes
No X

Indicate by check mark whether the registrant by furnishing the information contained in this Form is also thereby furnishing the information to the Commission pursuant to Rule 12g3-2(b) under the Securities Exchange Act of 1934.
Yes
No X

Enclosure: Press release **ANGLOGOLD ASHANTI LIMITED – MINERAL RESOURCE AND ORE RESERVE REPORT FOR THE YEAR ENDED DECEMBER 31, 2018**

SUITE OF REPORTS
<IR>
<SDR>
<NOM>
<R&R>
<AFS>
MINERAL RESOURCE
AND ORE RESERVE
REPORT
2018

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AngloGold Ashanti publishes a suite of reports annually to record our overall performance. While the Integrated Report 2018 is our primary report, it should be read in conjunction with this report, the Mineral Resource and Ore Reserve Report 2018, as well as the other reports making up our full suite of reports for the year.

This document provides shareholders with the information required to enable them to make informed decisions regarding the resolutions to be voted on at the company's annual general meeting for shareholders. Details on these resolutions are also provided.

This document is distributed to all AngloGold Ashanti shareholders.

In compliance with the rules governing its listing on the New York Stock Exchange (NYSE), AngloGold Ashanti prepares a report on Form 20-F which is led annually with the United States Securities and Exchange Commission (SEC).

As this Notice of Annual General Meeting does not provide a holistic assessment of the group's business, performance, risks or prospects, it should be read in conjunction with other reports making up AngloGold Ashanti's 2018 annual reports. These are:

<IR>
Integrated Report

- The primary document in our suite of reports
- Provides a comprehensive

overview of our performance in relation to our strategic objectives and the outlook for the company

- Both financial and non-financial performance are reviewed
- Complies with the IIRC framework, King IV and the JSE and NYSE listings requirements

<NOM>
Notice of Annual General Meeting and Summarised Financial Information (Notice of Meeting)

- Notice of forthcoming annual general meeting
- Description of resolutions to be voted on
- Remuneration policy and implementation report
- Summarised financial information

<SDR>
Sustainable Development Report

- Describes commitment

to sustainable development

- Provides detail on socio-economic and environmental performance in relation to material issues
- Complies with GRI Standards and is aligned with the UN Global Compact and UN Sustainable Development Goals (SDGs)
- Independently assured

<R&R>
Mineral Resource and Ore Reserve Report

- Detailed breakdown of our Mineral Resource and Ore Reserve – at group and operational level
- Complies with SAMREC and JORC, as well as Section 12.11 of the JSE Listings Requirements
- Signed off by Competent Person

<AFS>
Annual Financial Statements

- Prepared in accordance with the International Financial

Reporting
Standards
(IFRS); the
requirements of
the South African
Companies Act,
no 71 of 2008,
as amended;
the JSE Listings
Requirements and
King IV
•
Audited in
accordance with
International
Standards on
Auditing
•
Includes the
Directors' report
<WWW>
Our dedicated annual
reporting website,
hosts PDFs of the
full suite of reports
to facilitate ease
of access by and
communication with
stakeholders.
Scan to visit the
mobile website
www.aga-reports.com
Houses the full suite
of 2018 reports
together with
supplementary
information
All these reports are available online at www.aga-reports.com
Printed copies of these reports are available on request from the company
SECTION 1 / INTRODUCTION

ABOUT THIS REPORT

The Mineral Resource and Ore Reserve for AngloGold Ashanti Limited (AngloGold Ashanti) are reported in accordance with the minimum standards prescribed by the South African Code for the Reporting of Exploration Results, Mineral Resources and Mineral Reserves (the SAMREC Code, 2016 edition), and also conform to the standards set out in the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (JORC Code, 2012 edition).

The reporting criteria, as outlined in the reporting codes, have been used in the preparation of internal Competent Person reports (CPR) for each operation, from which the numbers stated in this report have been drawn. Reporting is also in accordance with Section 12 of the Johannesburg Stock Exchange (JSE) Listings Requirements.

The Mineral Resource, as reported, is inclusive of the Ore Reserve component unless otherwise stated. Mineral Resource and Ore Reserve are reported as at 31 December 2018, net of 2018 production depletion.

Information is presented by operating region, country, mine and project. The following tables and graphs are used to illustrate details across AngloGold Ashanti's operations during 2018: infrastructure maps; legal aspects and tenure, inclusive Mineral Resource and Ore Reserve comparison by region, country, mine and project, details of average drill hole/sampling spacing and type, geological cross sections and Mineral Resource sensitivities, exclusive Mineral Resource, Mineral Resource below infrastructure, inclusive Mineral Resource and Ore Reserve by-products, year-on-year reconciliation of the Mineral Resource and Ore Reserve, Inferred Mineral Resource in business plan, Ore Reserve modifying factors, grade tonnage information on the Mineral Resource and details of appointed Competent Persons. Topics for brief discussion include regional overview, country overview, introduction, geology, exploration, projects and estimation.

PLEASE NOTE:

The following should be noted in respect of our report:

- All figures are expressed on an attributable basis unless otherwise indicated
- Unless otherwise stated, $ or dollar refers to US dollars throughout
- Locations on maps are indicative
- Group and company are used interchangeably
- Mine, operation and business unit are used interchangeably
- Rounding off of numbers may result in computational discrepancies
- To reflect that figures are not precise calculations and that there is uncertainty in their estimation, AngloGold Ashanti reports tonnage, content for gold, silver and uranium to two decimals and copper, sulphur and molydenum content with no decimals
- Metric tonnes are used throughout this report
-

For terminology used in this report, please refer to the glossary of terms on page 257

- All grade tonnage curves reflect the Mineral Resource and exclude stockpiles unless otherwise stated

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SECTION 1 / INTRODUCTION

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Ghana – Obuasi
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SECTION 1 / INTRODUCTION

GROUP PROFILE

LOCATION OF ANGLOGOLD ASHANTI'S
OPERATIONS AND PROJECTS

Our operations and projects are grouped regionally as follows:

SOUTH AFRICA

CONTINENTAL AFRICA

Democratic Republic of the Congo, Ghana, Guinea, Mali and Tanzania

AUSTRALASIA

Australia

AMERICAS

Argentina, Brazil, Colombia

Percentages indicate the ownership interest held by AngloGold Ashanti.
All operations are 100%-owned unless otherwise indicated.

Project

Operation

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SECTION 1 / INTRODUCTION

CORPORATE GOVERNANCE

AngloGold Ashanti reports its Mineral Resource and Ore Reserve in accordance with the minimum standards prescribed by the South African Code for the Reporting of Exploration Results, Mineral Resources and Mineral Reserves (the SAMREC Code, 2016 edition), and also conform to the standards set out in the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (JORC Code, 2012 edition).

AngloGold Ashanti achieves this through ensuring the principles of integrity, transparency and materiality are central to the compilation of this report and through using the reporting criteria and definitions as detailed in the SAMREC code. In complying with revisions to the SAMREC Code, the changes to AngloGold Ashanti's Mineral Resource and Ore Reserve have been reviewed and it was concluded that none of the changes are material to the overall valuation of the company. AngloGold Ashanti has therefore once again resolved not to provide the detailed reporting as defined in Table 1 of the code, apart from the maiden Ore Reserve declaration for Quebradona. The company will however continue to provide the high level of detail it has in previous years in order to comply with the transparency requirements of the code.

AngloGold Ashanti established a Mineral Resource and Ore Reserve Steering Committee (RRSC), which is responsible for setting and overseeing the company's Mineral Resource and Ore Reserve governance framework and for ensuring that it meets the company's goals and objectives while complying with all relevant regulatory codes. Its membership and terms of references are mandated under a policy document signed by the Chief Executive Officer.

For more than a decade, the company has developed and implemented a rigorous system of internal and external reviews aimed at providing assurance in respect of Ore Reserve and Mineral Resource estimates. The following operations were subject to an external review in line with the policy that each operation/project will be reviewed by an independent third party on average once every three years:

- Mineral Resource and Ore Reserve at Iduapriem
- Mineral Resource and Ore Reserve at Sunrise Dam
- Mineral Resource and Ore Reserve at Cerro Vanguardia
- Mineral Resource and Ore Reserve at Serra Grande
- Mineral Resource and Ore Reserve at Quebradona

The external reviews were conducted by Pivot Mining Consultants Pty (Limited), AMC Consultants Pty Limited, Golder Associates Pty Limited, Ausenco Engineering Canada Inc. and Optiro Pty Limited respectively. Certificates of sign-off have been received from the companies conducting the external reviews to state that the Mineral Resource and/or Ore Reserve comply with the SAMREC and JORC Codes.

In addition, numerous internal Mineral Resource and Ore Reserve process reviews were completed by suitably qualified Competent Persons from within AngloGold Ashanti and no significant deficiencies were identified. The Mineral Resource and Ore Reserve are underpinned by appropriate Mineral Resource management processes and protocols that ensure adequate corporate governance.

These procedures have been developed to be compliant with the guiding principles of the Sarbanes-Oxley Act of 2002.

AngloGold Ashanti makes use of a web-based group reporting database called the Resource and Reserve Reporting System (RCubed) for the compilation and authorisation of Mineral Resource and Ore Reserve reporting. It is a fully integrated system for the reporting and reconciliation of Mineral Resource and Ore Reserve that supports various regulatory reporting requirements including the SEC and the JSE under SAMREC. AngloGold Ashanti uses RCubed to ensure a documented chain of responsibility exists from the Competent Persons at the operations to the company's RRSC.

AngloGold Ashanti has also developed an enterprise-wide risk management tool that provides consistent and reliable data that allows for visibility of risks and actions across the group. This tool is used to facilitate, control and monitor material risks to the Mineral Resource and Ore Reserve, thus ensuring that the appropriate risk management and mitigation plans are in place.

COMPETENT PERSONS

The information in this report relating to exploration results, Mineral Resource and Ore Reserve, is based on information compiled by or under the supervision of the Competent Persons as defined in the SAMREC or JORC Codes. All Competent Persons are employed by AngloGold Ashanti, except for Kibali and Morila, and have sufficient experience relevant to the style of mineralisation and type of deposit under consideration and to the activity which they are undertaking. The legal tenure of each operation and project has been verified to the satisfaction of the accountable Competent Person and all their Ore Reserve have been confirmed to be covered by the required mining permits or there exists a realistic expectation that these permits will be issued. This information is detailed within this report. The Competent Persons consent to the inclusion of Exploration Results, Mineral Resource and Ore Reserve information in this report, in the form and context in which it appears.

Accordingly, the Chairman of the RRSC, VA Chamberlain, MSc (Mining Engineering), BSc (Hons) (Geology), MGSSA, FAusIMM, assumes responsibility for the Mineral Resource and Ore Reserve processes for AngloGold Ashanti and is satisfied that the Competent Persons have fulfilled their responsibilities. VA Chamberlain has 31 years' experience in exploration and mining and is employed full-time by AngloGold Ashanti and can be contacted at the following address: 76 Rahima Moosa Street, Newtown, 2001, South Africa.

Ghana – Obuasi

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SECTION 1 / INTRODUCTION

YEAR IN REVIEW

AngloGold Ashanti strives to actively create value by growing its major asset – the Mineral Resource and Ore Reserve. This drive is based on active, well-defined brownfields and greenfields exploration programmes, innovation in both geological modelling and mine planning and continual optimisation of the asset portfolio.

PRICE ASSUMPTIONS

The SAMREC code requires the use of reasonable economic assumptions. These include long-range commodity price and exchange rate forecasts. These are reviewed annually and are prepared in-house using a range of techniques including historic price averages.

The Mineral Resource sensitivities shown in the detail of this report use a base of $1,400/oz and a range of $200/oz, unless otherwise stated.

Gold price

The following local prices of gold were used as the basis for estimation:

	Gold price	Local prices of gold			
		South Africa	Australia	Brazil	Argentina
	US$/oz	ZAR/kg	AUD/oz	BRL/oz	ARS/oz
2018 Ore Reserve	1,100	501,150	1,509	3,565	45,443
2017 Ore Reserve	1,100	512,059	1,491	3,573	17,898
2018 Mineral Resource	1,400	563,331	1,778	4,501	51,564
2017 Mineral Resource	1,400	601,870	1,824	4,492	21,242

Copper price

The following copper prices were used as the basis for estimation:

Copper price	US$/lb
2018 Ore Reserve	2.65
2018 Mineral Resource	3.30
2017 Mineral Resource	3.16

MINERAL RESOURCE

Gold

The AngloGold Ashanti Mineral Resource reduced from 208.2Moz in December 2017 to 184.5Moz in December 2018. This gross annual decrease of 23.7Moz includes depletion of 4.0Moz and the disposal of assets of 20.1Moz. The balance of 0.4Moz results from increases due to exploration and modelling of 4.5Moz and other factors of 0.1Moz and reductions due to revised geotechnical design requirements of 4.0Moz and changes in cost of 0.2Moz. The Mineral Resource was estimated at a gold price of US$1,400/oz (2017: US$1,400/oz).

Year-on-year changes
Moz
Mineral Resource as at 31 December 2017
208.2
Disposals
Moab Khotsong
(16.2)
Kopanang
(3.0)
Vaal River Surface
(0.9)
Sub-total
188.1
Depletions
(4.0)
Sub-total
184.1
Additions
AGA Mineração
Increase due to exploration and modelling revisions
0.6
Kibali
Exploration success resulted in the increase in Mineral Resource
0.6
Cerro Vanguardia
The increase is due to a combination of reduced costs and revised estimation methodology
0.5
Other
Additions less than 0.5Moz
2.3
Sub-total
188.1
Reductions
Mponeng
The key reason for the reduction was the removal of the TauTona shaft pillars and increased costs. These reductions were countered in part by drilling success
(3.5)
Other
Reductions less than 0.5Moz
(0.1)
Mineral Resource as at 31 December 2018
184.5
Copper
The AngloGold Ashanti Mineral Resource reduced from 3.63Mt (8,000Mlbs) in December 2017 to 3.61Mt (7,954Mlbs) in December
2018. This gross annual decrease of 0.02Mt includes a reduction due to methodology of 0.09Mt offset by a change in ownership
of 0.05Mt and other factors which resulted in an increase of 0.02Mt. The Mineral Resource was estimated at a copper price of

US$3.30/lb (2017: US$3.16/lb).
Year-on-year changes
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YEAR IN REVIEW CONTINUED
Mt
Mlb
Mineral Resource as at 31 December 2017
3.63
8,000
Reductions
Quebradona
(0.02)
(46)
Mineral Resource as at 31 December 2018
3.61
7,954
ORE RESERVE
Gold
The AngloGold Ashanti Ore Reserve reduced from 49.5Moz in December 2017 to 44.1Moz in December 2018. This gross annual
decrease of 5.4Moz includes depletion of 3.6Moz. The loss after depletions of 1.8Moz, results from the disposal of assets in the
South African region of 6.1Moz, additions due to exploration and modelling changes of 4.3Moz, whilst other factors resulted in a
0.1Moz addition and changes in economic assumptions resulted in a 0.1Moz reduction. The Ore Reserve was estimated using a
gold price of US$1,100/oz (2017: US$1,100/oz).
Year-on-year changes
Moz
Ore Reserve as at 31 December 2017
49.5
Disposals
Moab Khotsong
(4.8)
Kopanang
(0.3)
Vaal River Surface
(0.9)
Sub-total
43.5
Depletions
(3.6)
Sub-total
39.9
Additions
Quebradona
Initial Ore Reserve publication post successful conclusion of the
prefeasibility study
2.2
Geita
Additions are primarily due to exploration success on underground
targets at Star and Comet and Nyankanga
0.5
CVSA

Reduced cost and exploration success led to the additions
0.4
Sunrise Dam
The increase is due to exploration success
0.3
Other
Additions less than 0.3Moz
1.1
Sub-total
44.4
Reductions
Other
Reductions less than 0.3Moz
(0.3)
Ore Reserve as at 31 December 2018
44.1
Copper
The maiden AngloGold Ashanti Ore Reserve for copper of 1.26Mt (2,769Mlbs) is based on exploration success and the completion
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SECTION 1 / INTRODUCTION

of the prefeasibility study (PFS) at Quebradona. The Ore Reserve was estimated at a copper price of US$2.65/lb.
Year-on-year changes
Mt
Mlb
Ore Reserve as at 31 December 2017
0.00
0
Additions
Quebradona
Exploration success and completion of the PFS
1.26
2,769
Ore Reserve as at 31 December 2018
1.26
2,769
SALE OF ASSETS
AngloGold Ashanti sold various assets in the Vaal River region of its South African operations. The sales processes were finalised
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YEAR IN REVIEW CONTINUED

on 28 February 2018. On conclusion of the sales and after depletions for that period of 2018, the final Mineral Resource and Ore
Reserve at the time of the sale are shown below:

Operation	Category	Moz
Kopanang	Mineral Resource	3.00
	Ore Reserve	0.35
Moab Khotsong	Mineral Resource	16.20
	Ore Reserve	4.83
Surface Operations	Mineral Resource	0.87
	Ore Reserve	0.87

BY-PRODUCTS

Several by-products will be recovered as a result of processing of the gold Ore Reserve and copper Ore Reserve. These include
0.37Mt of sulphur from Brazil, 32.68Moz of silver from Argentina and 23.58Moz of silver from Colombia.

Brazil – AGA Mineração – Cuiabá

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SECTION 1 / INTRODUCTION

Mineral Resource by country (attributable) inclusive of Ore Reserve: gold
as at 31 December 2018

Category	Tonnes million	Grade g/t	Contained gold tonnes	Moz
South Africa				
Measured	113.47	1.49	168.68	5.42
Indicated	614.07	1.91	1,170.36	37.63
Inferred	29.10	9.35	271.96	8.74
Total	756.64	2.13	1,611.00	51.79
Democratic Republic of the Congo				
Measured	9.17	4.60	42.16	1.36
Indicated	44.71	3.05	136.37	4.38
Inferred	23.77	2.50	59.40	1.91
Total	77.65	3.06	237.93	

7.65
Ghana
Measured
6.84
3.27
22.35
0.72
Indicated
184.26
4.08
750.93
24.14
Inferred
77.77
5.90
458.67
14.75
Total
268.87
4.58
1,231.95
39.61
Guinea
Measured
20.36
0.63
12.89
0.41
Indicated
164.46
0.87
143.58
4.62
Inferred
71.93
0.93
66.84
2.15
Total
256.75
0.87
223.30
7.18
Mali
Measured
4.86
0.54
2.62
0.08
Indicated
48.39

1.82
88.27
2.84
Inferred
7.23
1.68
12.19
0.39
Total
60.48
1.70
103.07
3.31
Tanzania
Measured
0.94
6.29
5.92
0.19
Indicated
28.11
3.22
90.57
2.91
Inferred
21.81
4.50
98.20
3.16
Total
50.86
3.83
194.69
6.26
Australia
Measured
59.03
1.48
87.32
2.81
Indicated
90.51
1.98
179.38
5.77
Inferred
29.79
2.77
82.52
2.65
Total

179.34
1.95
349.22
11.23
Argentina
Measured
9.37
2.14
20.00
0.64
Indicated
20.95
2.75
57.53
1.85
Inferred
4.61
2.45
11.31
0.36
Total
34.93
2.54
88.85
2.86
Brazil
Measured
20.97
6.45
135.29
4.35
Indicated
24.20
5.83
141.02
4.53
Inferred
45.59
5.86
267.05
8.59
Total
90.76
5.99
543.36
17.47
Colombia
Measured
–
–
–

–
Indicated
1,158.98
0.77
896.67
28.83
Inferred
607.13
0.43
258.50
8.31
Total
1,766.10
0.65
1,155.17
37.14
Total
Measured
245.01
2.03
497.23
15.99
Indicated
2,378.65
1.54
3,654.68
117.50
Inferred
918.73
1.73
1,586.64
51.02
Total
3,542.39
1.62
5,738.55
184.50
GROUP OVERVIEW
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GROUP OVERVIEW CONTINUED

Mineral Resource by country (attributable) exclusive of Ore Reserve: gold

as at 31 December 2018

Category	Tonnes million	Grade g/t	Contained gold tonnes	Moz
South Africa				
Measured	6.64	19.83	131.75	4.24
Indicated	30.97	17.42	539.39	17.34
Inferred	10.62	13.88	147.43	4.74
Total	48.24	16.97	818.56	26.32
Democratic Republic of the Congo				
Measured	1.42	2.68	3.81	0.12
Indicated	22.68	2.43	55.11	1.77
Inferred	23.77	2.50	59.40	1.91
Total	47.87	2.47		

118.32
3.80
Ghana
Measured
3.51
5.57
19.55
0.63
Indicated
131.17
3.95
517.50
16.64
Inferred
75.01
6.09
456.79
14.69
Total
209.69
4.74
993.84
31.95
Guinea
Measured
–
–
–
–
Indicated
97.67
0.87
85.03
2.73
Inferred
71.93
0.93
66.84
2.15
Total
169.60
0.90
151.87
4.88
Mali
Measured
–
–
–
–
Indicated

21.08
1.72
36.21
1.16
Inferred
7.23
1.68
12.19
0.39
Total
28.32
1.71
48.40
1.56
Tanzania
Measured
0.11
9.89
1.13
0.04
Indicated
19.45
2.77
53.85
1.73
Inferred
21.81
4.50
98.20
3.16
Total
41.37
3.70
153.19
4.93
Australia
Measured
32.57
1.65
53.73
1.73
Indicated
52.76
1.78
93.66
3.01
Inferred
27.46
2.70
74.14
2.38

Total
112.78
1.96
221.53
7.12
Argentina
Measured
1.58
1.27
2.01
0.06
Indicated
12.54
3.34
41.88
1.35
Inferred
3.28
2.97
9.75
0.31
Total
17.41
3.08
53.64
1.72
Brazil
Measured
15.71
6.50
102.11
3.28
Indicated
13.87
4.63
64.25
2.07
Inferred
44.14
5.92
261.47
8.41
Total
73.73
5.80
427.82
13.75
Colombia
Measured
–
–

–
–
Indicated
991.22
0.78
772.88
24.85
Inferred
607.13
0.43
258.50
8.31
Total
1,598.34
0.65
1,031.38
33.16
Total
Measured
61.56
5.10
314.09
10.10

Indicated
1,393.41
1.62
2,259.75
72.65

Inferred
892.38
1.62
1,444.71
46.45

Total
2,347.35
1.71
4,018.55
129.20
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SECTION 1 / INTRODUCTION

Mineral Resource by country (attributable) inclusive of Ore Reserve: copper
as at 31 December 2018

Category	Tonnes million	Grade %Cu	Contained copper tonnes million	Contained copper pounds million
Colombia				
Measured	–	–	–	–
Indicated	242.57	0.86	2.09	4,617
Inferred	325.40	0.47	1.51	3,337
Total	567.97	0.64	3.61	7,954
Total				
Measured	–	–	–	–
Indicated	242.57	0.86	2.09	4,617
Inferred	325.40	0.47	1.51	3,337
Total	567.97	0.64	3.61	7,954

Mineral Resource by country (attributable) exclusive of Ore Reserve: copper
as at 31 December 2018

	Category	Tonnes million	Grade %Cu	Contained copper tonnes million	Contained copper pounds million
Colombia	Measured	–	–	–	–
	Indicated	138.52	0.61	0.84	1,848
	Inferred	325.40	0.47	1.51	3,337
	Total	463.92	0.51	2.35	5,185
Total	Measured	–	–	–	–
	Indicated	138.52	0.61	0.84	1,848
	Inferred	325.40	0.47	1.51	3,337
	Total	463.92	0.51	2.35	5,185

Ghana – Iduapriem
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SECTION 1 / INTRODUCTION

Ore Reserve by country (attributable): gold
as at 31 December 2018

Category	Tonnes million	Grade g/t	Contained gold tonnes	Moz
South Africa				
Proved	107.67	0.31	33.89	1.09
Probable	564.02	0.87	488.59	15.71
Total	671.70	0.78	522.47	16.80
Democratic Republic of the Congo				
Proved	9.14	4.15	37.87	1.22
Probable	19.08	4.12	78.70	2.53
Total	28.22	4.13	116.57	3.75
Ghana				
Proved	2.74	0.88	2.41	0.08
Probable	56.66	4.07		

230.82
7.42
Total
59.40
3.93
233.23
7.50
Guinea
Proved
21.54
0.67
14.40
0.46
Probable
59.40
0.84
49.82
1.60
Total
80.94
0.79
64.22
2.06
Mali
Proved
2.50
0.65
1.62
0.05
Probable
26.27
1.94
50.86
1.64
Total
28.78
1.82
52.48
1.69
Tanzania
Proved
–
–
–
–
Probable
9.47
4.38
41.49
1.33
Total

9.47
4.38
41.49
1.33
Australia
Proved
26.43
1.27
33.50
1.08
Probable
37.63
2.27
85.26
2.74
Total
64.06
1.85
118.76
3.82
Argentina
Proved
7.72
2.32
17.88
0.57
Probable
8.14
1.89
15.41
0.50
Total
15.86
2.10
33.30
1.07
Brazil
Proved
3.52
3.70
13.01
0.42
Probable
11.04
4.71
51.94
1.67
Total
14.56
4.46
64.95

2.09
Colombia
Proved
–
–
–
–
Probable
167.76
0.74
123.79
3.98
Total
167.76
0.74
123.79
3.98
Total
Proved
181.26
0.85
154.60
4.97
Probable
959.49
1.27
1,216.69
39.12
Total
1,140.75
1.20
1,371.28
44.09
Ore Reserve by country (attributable): copper
as at 31 December 2018
Category
Tonnes
million
Grade
%Cu
Contained copper
tonnes million pounds million
Colombia
Proved
–
–
–
–
Probable
104.05
1.21

1.26
2,769
Total
104.05
1.21
1.26
2,769
Total
Proved
–
–
–
–
Probable
104.05
1.21
1.26
2,769
Total
104.05
1.21
1.26
2,769
GROUP OVERVIEW CONTINUED
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Australia – Tropicana
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SECTION 1 / INTRODUCTION

GROUP OVERVIEW CONTINUED

Reconciliation of inclusive Mineral Resource (gold content Moz)
as at 31 December 2018

	Previous year	Depletion	Exploration	Methodology	Gold price	Cost	Geotechnical	Metallurgical	Other	Acquisition/ disposal
South Africa region										
Kopanang	3.02	(0.02)	–	–	–	–	–	–	–	(3.01)
Moab Khotsong	16.30	(0.05)	–	–	–	–	–	–	–	(16.25)
Vaal River Surface	3.68	(0.19)	(0.00)	–	–	–	0.01			

–
0.18
(0.87)
Mine Waste Solutions
2.24
(0.07)
–
–
–
–
–
–
0.00
–
West Wits Surface
0.67
(0.04)
–
–
–
–
0.00
–
(0.01)
–
Mponeng
49.97
(0.32)
0.49
–
–
(0.43)
(3.31)
–
(0.22)
–
Total
75.89
(0.69)
0.49
–
–
(0.43)
(3.29)
–
(0.05)
(20.13)
Continental Africa region
Kibali
7.44
(0.36)

0.61
(0.00)
–
(0.01)
–
–
(0.04)
–
Iduapriem
5.54
(0.36)
0.04
–
–
0.34
–
–
(0.00)
–
Obuasi
34.05
–
–
–
–
–
–
–
–
–
Siguiri
7.27
(0.30)
0.06
0.01
–
0.13
–
0.02
–
–
Morila
0.11
(0.05)
0.03
(0.01)
–
–
–
–
(0.00)

–
Sadiola
3.29
(0.06)
–
–
–
–
–
–
(0.00)
–
Geita
6.42
(0.61)
0.22
0.20
–
0.01
–
–
0.02
–
Total
64.13
(1.75)
0.96
0.20
–
0.46
–
0.02
(0.02)
–
Australasia region
Sunrise Dam
5.98
(0.30)
0.69
0.39
–
(0.35)
(0.58)
–
–
–
Tropicana
5.22
(0.33)
0.91
(0.04)

–
(0.35)
–
–
(0.02)
–
Total
11.20
(0.62)
1.60
0.35
–
(0.70)
(0.58)
–
(0.02)
–
Americas region
Cerro Vanguardia
2.64
(0.29)
0.05
0.15
–
0.36
–
–
(0.07)
–
AGA Mineração
13.57
(0.52)
(0.10)
0.66
–
0.15
(0.13)
–
–
–
Serra Grande
3.66
(0.15)
0.16
0.20
–
(0.05)
–
–
0.01
–

Gramalote
3.07
–
–
–
–
–
–
–
–
–
La Colosa
28.33
–
–
–
–
–
–
–
–
–
Quebradona
5.66
–
–
(0.25)
–
–
–
–
0.24
0.08
Total
56.94
(0.95)
0.11
0.76
–
0.47
(0.13)
–
0.19
0.08
Grand total
208.16
(4.01)
3.16
1.31
–
(0.20)

(4.00)
0.02
0.10
(20.04)
Reconciliation of inclusive Mineral Resource (copper content Mlb)
as at 31 December 2018
Previous
year
Depletion
Explora-
tion
Metho-
dology
Gold
price
Cost
Geo-
technical
Metal-
lurgical
Other
Acquisition/
Disposal
Americas region
Quebradona
8,000
–
–
(205)
–
–
–
–
42
117
Total
8,000
–
–
(205)
–
–
–
–
42
117
Grand total
8,000
–
–
(205)

–
–
–
–
42
117
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SECTION 1 / INTRODUCTION

Current
year
Net diff
%
Comments
–
(3.02)
(100)
Asset sold to Village Main Reef (VMR) in February 2018.
–
(16.30)
(100)
Asset sold to Harmony Gold in February 2018.
2.81
(0.87)
(24)
Changes are mainly due to the Harmony sale of Mispah 1 and 2 tailing storage facilities (TSFs) and Kopanang Paydam.
Annual depletions from Sulphur Paydam, East TSF and South East Extension.
2.18
(0.07)
(3)
Normal depletions from Harties 1 & 2 TSFs. Evaluation model grade adjustment for Harties 1 done on remainder of material.
0.62
(0.05)
(7)
Normal depletions from Mponeng and Savuka low grade stockpiles and Old North TSF.
46.18
(3.79)
(8)
The TauTona and Savuka shaft pillars have been removed as they will not be included in the LOM plan. Further reductions
included depletions and an increase in the required mining grade based on the current cost of extraction.
51.79
(24.10)
(32)
7.65
0.21
3
Kibali was able to replace Mineral Resource ounces depleted as a result of the maiden reporting of the Kalimva and Ikamva
open pit Inferred Mineral Resource, as well as exploration extensions in KCD undergound.
5.56
0.02
0
Year-on-year changes include a decrease to the Mineral Resource as a result of depletion and increases as a result of exploration drilling and cost reductions.
34.05
–
–

The Mineral Resource remains the same as 2017 as no mining took place in 2018.
7.18
(0.10)
(1)
Depletion was offset by gains due to reduced cost which brought back Eureka North, and exploration infill drilling at Foulata,
Saraya and Silakoro and metallurgical improvements due to the introduction of the CIL option for Foulata and Saraya.
0.09
(0.02)
(22)
Depletions have been partially offset by the addition of Viper and Ntiola open pits from exploration.
3.23
(0.06)
(2)
Mainly due to mining depletions.
6.26
(0.16)
(3)
Depletion was offset by a gain largely from conversion of Inferred to Indicated Mineral Resource and exploration gain due to
new drilling information for underground projects and a slight impact from lower cut-off grades in comparison to the previous
year.
64.01
(0.12)
(0)
5.84
(0.14)
(2)
Exploration activities centred around the Vogue domain resulted in Mineral Resource additions. These were offset by
Mineral Resource write-off of unmineable pillars and skins of historic stopes. Increases in year-on-year costs resulted in a
further decrease.
5.39
0.17
3
Addition through exploration success at Boston Shaker underground offset by depletion. Havana South underground
Mineral Resource adjusted in-line with updated Mineral Resource shell optimisation.
11.23
0.03
0
2.86
0.21
8
Year-on-year changes are due to depletion offset by positive changes due to methodology and costs.
13.63
0.06
0
The Lamego Mineral Resource increased mainly due to the update of cut-off with the new exchange rate and costs offset
by depletion and methodology changes. The Cuiabá Mineral Resource increased mainly due to new sampling

information
and refining of the model to exclude internal waste offset by deletions. The CdS Mineral Resource reduced mainly due to
depletions, new information and an increase in costs for open pit mining offset by estimation methodology changes.
3.84
0.17
5
The depletion was replaced by exploration and revised methodology.
3.07
–
–
No change from 2017.
28.33
–
–
No material change from 2017.
5.74
0.08
1
Minor changes due to updated Mineable Shape Optimiser (MSO) analysis. Main changes to the Indicated/Inferred Mineral
Resource resulting from classification update using conditional simulation and kriging variance approach.
57.47
0.53
1
184.50
(23.66)
(11)
Current
year
Net diff
%
Comments
7,954
(46)
(1)
Minor changes due to updated MSO analysis. Main changes to the Indicated/Inferred Mineral Resource resulting
from classification update using conditional simulation and kriging variance approach.
7,954
(46)
(1)
7,954
(46)
(1)
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SECTION 1 / INTRODUCTION

GROUP OVERVIEW CONTINUED

Reconciliation of Ore Reserve (gold content Moz)
as at 31 December 2018

	Previous year	Depletion	Exploration	Methodology	Gold price	Cost	Geotechnical	Metallurgical	Revenue factor	Other
South Africa region										
Kopanang	0.36	(0.01)	–	–	–	–	–	–	–	–
Moab Khotsong	4.87	(0.04)	–	–	–	–	–	–	–	–
Vaal River Surface	3.68	(0.17)	(0.00)	–	–	–	0.01			

–
–
0.01
Mine Waste Solutions
2.24
(0.08)
0.01
–
–
–
–
–
–
0.00
West Wits Surface
0.19
(0.03)
–
0.16
–
–
0.00
(0.00)
–
(0.00)
Mponeng
12.16
(0.27)
0.26
(0.02)
–
–
(0.28)
–
–
(0.20)
Total
23.51
(0.60)
0.27
0.14
–
–
(0.26)
(0.00)
–
(0.19)
Continental Africa region
Kibali
3.91
(0.44)

0.20
–
–
0.02
–
–
–
0.06
Iduapriem
1.85
(0.33)
–
–
–
0.04
(0.01)
–
–
0.08
Obuasi
5.86
–
–
–
–
–
–
–
–
–
Siguiri
2.24
(0.24)
0.03
–
–
0.07
0.02
–
(0.00)
(0.06)
Morila
0.08
(0.04)
0.02
(0.00)
–
–
0.00
–
–

(0.00)
Sadiola
1.70
(0.05)
–
–
–
–
–
–
–
(0.02)
Geita
1.25
(0.44)
0.45
–
–
(0.00)
–
–
0.02
0.05
Total
16.89
(1.54)
0.71
(0.00)
–
0.13
0.01
–
0.02
0.11
Australasia region
Sunrise Dam
1.19
(0.33)
0.25
–
–
0.04
0.02
–
–
0.03
Tropicana
2.85
(0.31)
0.22
(0.00)

0.00
(0.47)
–
0.00
–
0.31
Total
4.05
(0.64)
0.47
(0.00)
0.00
(0.43)
0.02
0.00
–
0.34
Americas region
CVSA
0.91
(0.28)
0.19
0.19
–
0.12
(0.06)
–
–
–
AGA Mineração
2.06
(0.40)
(0.04)
(0.01)
0.00
0.02
0.04
0.00
–
0.03
Serra Grande
0.33
(0.14)
–
0.15
(0.00)
0.07
0.01
–
(0.01)
(0.02)

Gramalote
1.76
–
–
–
–
–
–
–
–
–
Quebradona
–
–
2.22
–
–
–
–
–
–
–
Total
5.06
(0.82)
2.37
0.33
0.00
0.21
(0.01)
0.00
(0.01)
0.01
Grand total
49.51
(3.60)
3.81
0.46
0.00
(0.08)
(0.24)
0.00
0.01
0.27
Reconciliation of Ore Reserve (copper content Mlb)
as at 31 December 2018
Previous
year
Depletion
Explora-
tion

Metho-
dology
Gold
price
Cost
Geo-
technical
Metal-
lurgical
Revenue
factor
Other
Americas region
Quebradona
–
–
2,769
–
–
–
–
–
–
–
Total
–
–
2,769
–
–
–
–
–
–
–
Grand total
–
–
2,769
–
–
–
–
–
–
–
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SECTION 1 / INTRODUCTION

Acquisition/
disposal
Current
year
Net diff
%
Comments
(0.35)
–
(0.36)
(100)
Asset sold to VMR mining company in February 2018.
(4.83)
–
(4.87)
(100)
Asset sold to Harmony Gold mining company in February 2018.
(0.87)
2.65
(1.03)
(28)
Significant portion sold to Harmony (Mispah 1 and Kopanang TSF as well as Moab Khotsong low grade stockpile). Normal depletion from tailings material as well as No. 5 low grade stockpile.
–
2.18
(0.07)
(3)
Normal depletions from tailings material through Mine Waste Solutions (MWS) plant.
–
0.33
0.13
69
Normal depletions from Mponeng and Savuka low grade stockpiles as well as Old North TSF.
–
11.65
(0.52)
(4)
Mponeng Ore Reserve decreased from the previous period mainly due to depletions and the removal of the TauTona shaft pillar Ore Reserve post the closure of the TauTona new technology project.
(6.06)
16.80
(6.71)
(29)

–
3.75
(0.16)
(4)
The Ore Reserve decreased year-on-year, mainly due to depletion, partially offset by exploration success in the underground and conversion drilling in the KCD open pit.
–

1.63
(0.22)
(12)
Minor cost improvements failed to replace dilution.
–
5.86
–
–
No mining or redesign occurred in 2018 as the mine remained on care and maintenance. The Ore Reserve figure remains as it was in 2017.
–
2.06
(0.18)
(8)
Positive model changes from infill drilling in Silakoro and Seguélén, decrease in costs mainly due to general and administration, increased slope angle in Bidini and Tubani (Sorofe) and changes in stockpile inventories failed to cover the depletion.
–
0.06
(0.02)
(26)
Depletions were partially offset by the addition of Viper and Ntiola open pits from exploration.
–
1.63
(0.07)
(4)
Mainly due to depletions and the exclusion of Tambali and FE3 pits.
–
1.33
0.08
7
Driven primarily by depletions offset by the introduction of Nyankanga Block 4 underground Ore Reserve.
–
16.33
(0.56)
(3)

–
1.20
0.01
1
The major change to the Ore Reserve was depletion, which was largely offset by additions in Vogue.
–
2.62
(0.24)
(8)
The majority of the Ore Reserve change for Tropicana gold mine is due to depletion. Other changes due to cost are balanced by exploration and the addition of Boston Shaker underground.
–
3.82

(0.23)
(6)

–
1.07
0.16
18
Exploration and changes to the estimation methodology more than replaced the depletion.
–
1.70
(0.36)
(17)
The Lamego Ore Reserve reduced mainly due to mining depletion offset by exploration success coming from the Carruagem and Queimada orebodies and costs. The Cuiabá Ore Reserve reduced mainly due to mining depletions. The CdS Ore Reserve reduced mainly due to depletions and the inclusion of transitional and sulphide material in the CdS Rosalino open pit as well as Mineral Resource conversions.
–
0.39
0.06
17
The main negative impacts were due to exchange ratio (lower gold price and higher cost). The main positive impacts were model change and scope change (geotechnical).
–
1.76
–
–
The Ore Reserve remains the same as 2017.
–
2.22
2.22
–
Maiden Ore Reserve declaration based on exploration success and the completion of the PFS.
–
7.14
2.08
41
(6.06)
44.09
(5.42)
(11)
Acquisition/
Disposal
Current
year
Net diff
%
Comments
–
2,769
2,769

100
Maiden Ore Reserve declaration based on exploration success and the completion of the PFS.
–
2,769
2,769
100
–
2,769
2,769
100
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SECTION 1 / INTRODUCTION

SOUTH AFRICA
CONTENTS

Pretoria
LEGEND
1
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Includes Mponeng
and West Wits Surface
Operations
2
Vaal River operations
Includes MWS and
Vaal River Surface
Operations
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Regional overview
21
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24
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SECTION 2 / SOUTH AFRICA

REGIONAL OVERVIEW

Key statistics	Units	2018	2017	2016
Operational performance				
Tonnes treated/milled	Mt	34.9	38.9	39.6
Recovered grade (1)	oz/t	0.219	0.202	0.219
	g/t	6.82	6.93	7.51
Gold production	000oz	487	903	967
Total cash costs	$/oz	1,033	1,085	896
Total production costs	$/oz	1,187	1,247	1,089
All-in sustaining costs (2)	$/oz	1,178	1,245	1,081
Capital expenditure	$m	73	150	182

(1) Refers to underground operations only

(2)

Excludes stockpile write-offs

As at December 2018, AngloGold Ashanti's operations in South Africa had a total Mineral Resource (inclusive of the Ore Reserve) of 51.8Moz (2017: 75.9Moz) and an Ore Reserve of 16.8Moz (2017: 23.5Moz).

This is equivalent to 28% and 38% of the group's Mineral Resource and Ore Reserve respectively. The South African operations produced 487koz of gold in 2018, or 14% of group production.

AngloGold Ashanti's South Africa operations comprise one deep level underground mine and three surface processing operations, collectively referred to as Surface Operations.

The underground mine, Mponeng is 100% owned by AngloGold Ashanti. Mponeng is situated near the town of Carletonville and is included as part of the West Wits operation. The primary reef being mined is the Ventersdorp Contact Reef (VCR). The Carbon Leader Reef (CLR) that was historically mined at the now closed TauTona mine, is planned to be mined in the Mponeng life of mine (LOM) extension project. A sequential grid mining method is employed to extract the gold from the deep, narrow, tabular orebody.

The grid is pre-developed through a series of haulages and crosscuts. Stoping takes place by means of breast mining using conventional hand held drill and blast techniques. The selective mining unit (SMU) is 100 x 100m.

REGIONAL OVERVIEW CONTINUED

The Surface Operations are located in both the Vaal River and West Wits Operations and include the Vaal River Surface, Mine Waste Solutions (MWS) and the West Wits Surface processing operations. They rework the low grade stockpiles and retreat the TSFs which resulted from the mining and processing of the primary and secondary reef horizons.

Sale of assets

AngloGold Ashanti sold various assets in the Vaal River region of its South African operations. The sales processes were finalised on 28 February 2018. On conclusion of the sales and after depletions for that period of 2018, the final Mineral Resource and Ore Reserve at the time of the sale are shown below:

Operation	Category	Moz
Kopanang	Mineral Resource	3.00
	Ore Reserve	0.36
Moab Khotsong	Mineral Resource	16.20
	Ore Reserve	4.87
Surface Operations	Mineral Resource	0.87
	Ore Reserve	0.87

Inclusive Mineral Resource as at 31 December 2018	Category	Tonnes million	Grade g/t	Contained gold tonnes	Moz
South Africa	Measured	113.47	1.49	168.68	5.42
	Indicated	614.07	1.91	1,170.36	37.63

Inferred
29.10
9.35
271.96
8.74
Total
756.64
2.13
1,611.00
51.79
Exclusive Mineral Resource
as at 31 December 2018
Category
Tonnes
million
Grade
g/t
Contained gold
tonnes
Moz
South Africa
Measured
6.64
19.83
131.75
4.24
Indicated
30.97
17.42
539.39
17.34
Inferred
10.62
13.88
147.43
4.74
Total
48.24
16.97
818.56
26.32
Ore Reserve
as at 31 December 2018
Category
Tonnes
million
Grade
g/t
Contained gold
tonnes
Moz

South Africa
Proved
107.67
0.31
33.89
1.09
Probable
564.02
0.87
488.59
15.71
Total
671.70
0.78
522.47
16.80
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South Africa – Mine Waste Solutions
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SECTION 2 / SOUTH AFRICA

MPONENG

INTRODUCTION

Property description

Mponeng Mine is a deep level gold mine operating between 3,160m and 3,740m below mine datum (BMD) and is currently the deepest mine in the world with development at 3,841m BMD. Future mining is planned to deepen the shaft bottom to 4,227m BMD. All production is currently from VCR with future expansion planned on both VCR and the CLR horizons.

Location

The West Wits operations are a combination of Mponeng and the West Wits surface operations. Mponeng is situated to the south of the town of Carletonville and is approximately 65km west of Johannesburg.

History

Mponeng was previously known as the Western Deep Levels South Shaft, or No.1 Shaft. The original twin shaft sinking from surface commenced in 1981 and was commissioned along with the gold plant complex in 1986 when mining began. Production started through the use of two hoisting shafts, a sub-shaft and two service shafts. The name changed to Mponeng Mine in 1999.

In 2017, Savuka and TauTona mines commenced orderly closure and the remaining TauTona Mineral Resource and Ore Reserve are published as part of Mponeng Mine.

Legal aspects and tenure

AngloGold Ashanti holds the following mining right in the Mponeng area which has been successfully converted, executed and registered as new order mining rights at the Mineral and Petroleum Resource Titles Office (MPRTO).

- GP30/5/1/2/2(01)MR valid from 14 February 2006 to 13 February 2036, covering 64.8km^2
- GP30/5/1/2/2(11)MR valid from 11 July 2006 to 1 July 2016, covering 0.3km^2 (application for extension pending)
- GP30/5/1/2/2(248)MR valid from 16 October 2012 to 15 October 2022, covering 1.96km^2

A S102 application was submitted in March 2017 to consolidate the 3 licences into a single mining right (GP30/5/1/2/2(01)MR).

Mining method

For the exploitation of the ever deepening Mineral Resource and the need for exibility on a mine of this nature, the sequential grid mining method was adopted. This has been proven as the best method suited to safe deep level gold mining often associated with seismicity.

Operational infrastructure

Mponeng has its own processing plant situated adjacent to the mine. Ore and waste material is hoisted separately with ore being delivered to the plant by means of a conveyor belt and the waste rock going to the low grade stockpile.

Mineral processing

Ore mined is treated and smelted at the Mponeng gold plant, which also processes low grade ore from the stockpile adjacent to the shaft.

The ore is initially ground down by means of semi-autogenous milling after which a conventional gold leach process incorporating liquid oxygen injection is applied. The gold is then extracted by means of carbon-in-pulp (CIP) technology.

The plant conducts electro-winning and smelting (induction furnaces).

Risks

Upgrading of the Mineral Resource confidence of the deeper parts of Mponeng continues to be challenging. Surface exploration and underground exploration targets are slowly being completed but access to ground ahead of the mining front is often limited. New information, once obtained, does have the potential to affect the future of Mponeng Mine. Exploration drilling on the VCR at

depth is indicating that there might be an evolution of the current geological understanding. This will be further quantified and understood as exploration work continues.
Seismicity, which is associated with ultra deep level mining, remains the most significant risk to the execution of the mine plan. The risk is managed through ongoing seismic risk management, which then informs the mining strategy and execution schedule.

Map showing Mponeng Mine infrastructure and licences
Refer to the map showing Mponeng Mine infrastructure and licences on page 38.
VCR West Wits underground workings
Competent Persons
Responsibility
Competent Person
Professional
organisation
Membership
number
Relevant
experience
Qualification
Mineral Resource
Gareth Flitton
SACNASP
400019/15
15 years
BSc Hons (Geology), GDE
(Mineral Economics)
Ore Reserve
William Olivier
SAGC
MS 0136
28 years
GDE (Mining Engineering)
Measured Mineral Resource
Indicated Mineral Resource
Inferred Mineral Resource
Drill hole
Mining Rights area boundary
Development tunnels
Stoping
0
1,000
2,000
metres
25
SECTION 2 / SOUTH AFRICA

MPONENG CONTINUED
26
SECTION 2 / SOUTH AFRICA

GEOLOGY

Deposit type

The VCR is the main reef horizon mined at Mponeng Mine. The VCR forms the base of the Ventersdorp Supergroup, which caps
the Witwatersrand Supergroup through an angular unconformity. The overlying Ventersdorp Lavas halted the deposition of the VCR,
preserving it in its current state.

The VCR consists of a quartz pebble conglomerate, which can be up to 3m thick in places. The footwall stratigraphy, following
periods of uplift and erosion, controlled the development and preservation of the VCR, which is characterised by a series of channel
terraces preserved at different relative elevations, and the highest gold values are preserved in these channel deposits.
The different channel terraces are divided by zones of thinner slope reef, which are of lower value and become more prevalent on
the higher terraces and on the harder footwall units.

CLR West Wits underground workings

Measured Mineral Resource

Indicated Mineral Resource

Inferred Mineral Resource

Drill hole

Mining Rights area boundary

Development tunnels

Stoping

0

1,000

2,000

metres

27

SECTION 2 / SOUTH AFRICA

MPONENG CONTINUED

The relatively argillaceous protoquartzites of the Kimberley Formation in the central portion of Mponeng are covered by the best preserved VCR conglomerates. The Elsburg Formation in the west is relatively more durable while the eastern side of the mine is dominated by shales and siltstones of the Booysens Formation. No VCR is preserved on the Krugersdorp Formation on the far eastern side of Mponeng.

The CLR is the other gold bearing reef reported as part of the total Mineral Resource for Mponeng. The CLR is located near the base of the Johannesburg Subgroup, which forms part of the Central Rand Group of the Witwatersrand Supergroup of rocks.

The CLR and VCR at Mponeng Mine are separated by approximately 900m of shales and quartzites. The CLR has historically been mined extensively at Savuka and TauTona mines and the remaining portions thereof have now been transferred to Mponeng Mine.

The CLR in the West Wits consists of, on average, a 20cm thick, tabular, auriferous quartz pebble conglomerate and three sedimentary facies. Economically, the most important facies is Unit 1, which overlies Unit 2. Unit 1 is a complex channel deposit that is only present along the eastern side of the West Wits lease area. Unit 2 can be up to 2m thick. Unit 3 is exposed in the southern edges of the lease area and is the oldest of the conglomerates.

Mineralisation style

Gold mineralisation followed an episode of deep burial, fracturing and alteration. A variant of Archean gold bearing hydrothermal fluid was introduced into the conglomerates and circulated throughout in hydrothermal cells. The fluids precipitated gold and other elements through reactions that took place at elevated temperatures along the reef horizon, which was the more favourable fluid conduit. In the case of the VCR, the resulting gold grades are mostly uniformly distributed throughout the reef package. In the CLR, solid hydrocarbon precipitated in thin, at veins, usually at the base of the Carbon Leader conglomerate, and this is where the majority of the gold is concentrated.

Mineralisation characteristics

The VCR displays strong alteration features, which can be explained by the hydrothermal fluids that infiltrated the reef and have overprinted on the original mineral assemblage. Portions of the reef contain authigenic sulphides such as pyrite, pyrrhotite, chalcopyrite, spahelerite and galena, incorporated in the conglomerate matrix. Gold associations with these mineral assemblages indicate a strong correlation of gold mobilisation and redistribution at the time of the hydrothermal fluid influx. There is also a strong association of gold with a chloritisation event focused along the reef horizon. The chlorite alteration gives a dark coloration to the reef.

Gold was precipitated by cooling and reactions between the fluids and wallrock, in this case pyritic conglomerates. Gold mineralisation was enhanced in certain areas of high fluid throughput, which were often the sites of high carbon precipitation and early alteration in the case of the CLR.

Both the VCR and the CLR have been subjected to faulting and are intruded by a series of igneous dykes and sills of various ages
that cross-cut the reefs. There is an inherent risk in mining through these faults and intrusives and a key objective of Mponeng Mine
geologists is to identify these geological features ahead of the working face to assist with deciding on the best way to approach and
mine through these structures.

EXPLORATION

Underground exploration in 2018 targeted the VCR areas to the west and down dip of the current mining on 123 and 126 Levels.
New reef intersections were achieved during 2018 and have been included in the evaluation of the geological model. No CLR
exploration was possible during 2018 due to the lack of suitable drill sites.
The new surface drill hole UD61A started delivering core in March 2018 and has reached a depth of 1,631m. The drill hole is
planned to intersect the VCR target at a depth of 3,850m. Progress on the UD63 surface drill hole was halted in 2018.

PROJECTS

The Phase 1 VCR project is in production on 123 Level and is still accessing reef on 126 Level. On reef development continues east
and west and total production is expected to ramp up to 12,000m^2 per month.
The Mponeng LOM extension project PFS was reviewed and approved to progress to feasibility study (FS) in February 2017.
The PFS determined that the best business case is achieved by accessing the CLR orebody as well as the VCR orebody below
current Mponeng infrastructure to 136 Level (4,138m BMD). The LOM extension project scope of work replaces the phased project
approach by combining the Phase 2 project with Phases 3 and 4 into one project to access 9.5Moz and to extend the LOM to
2048. The project infrastructure consists of a ramp to access the first three levels while the sub shafts are deepened to establish
permanent logistic infrastructure for the six new mining levels. The FS is in progress and the project proposal will be presented to
the Board in 2019.
MINERAL RESOURCEDETAIL OF AVERAGE DRILL HOLE SPACING AND TYPE IN RELATION TO MINERAL
RESOURCE CLASSIFICATION
Mineral Resource by-product: uranium
Legend
N-S Geological cross-section through Mponeng – SS1 shaft section, CLR deepening project
29
SECTION 2 / SOUTH AFRICA

MPONENG CONTINUED
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SECTION 2 / SOUTH AFRICA

Estimation

Gold values have been shown to be intimately related to conglomerate preservation of the VCR and form an integral part of the geological model, as does the footwall lithology.

Mixed support co-kriging is used in the estimation of the Mineral Resource. It is a technique that enables the use of data of mixed support, allowing both drill hole and underground sampling data to be used together. Estimation is performed on the VCR into large block sizes, generally >210 x 210m, which fully capture the within-block variance, allowing the co-kriging of data of different support sizes over long ranges. Estimation is done per geological homogeneous zone, in logarithmic space, because of the highly skewed gold distribution. The final gold estimates are then calculated by back transforming the estimates, using lognormal four parameter distribution models. Simple kriging is used for grade control and Measured Mineral Resource at a 30 x 30m block size and constrained by the weight of the mean value. A similar process is followed for the CLR estimation.

Exclusive Mineral Resource

as at 31 December 2018

Category	Tonnes million	Grade g/t	Contained gold tonnes	Moz
Mponeng				
Measured	6.64	19.83	131.75	4.24
Indicated	30.97	17.42	539.39	17.34
Inferred	10.62	13.88	147.43	4.74
Total	48.24	16.97	818.56	26.32

Current mining practice at the West Wits operations leaves behind a large portion of the Mineral Resource as stability pillars. Rock engineering design models require stability to minimise the effects of mining induced seismicity on the deep underground workings.

Bracket pillars are also placed around all major geological structures to improve regional stability and to minimise the structure associated risks. In future, the majority of the exclusive Mineral Resource will be taken up in stability pillars to reduce the impact of seismicity. Other areas of the Mineral Resource that do not form part of the LOM include the areas between the Mineral Resource and Ore Reserve cut-offs.

Mineral Resource below infrastructure
as at 31 December 2018

	Category	Tonnes million	Grade g/t	Contained gold tonnes	Moz
Mponeng	Measured	0.34	22.73	7.77	0.25
	Indicated	40.54	19.03	771.46	24.80
	Inferred	17.49	15.05	263.19	8.46
	Total	58.38	17.86	1,042.42	33.51

The portion of the Mineral Resource below infrastructure included those in the VCR WUDLs and the CLR Mineral Resource area.

Mponeng Mine infrastructure has only been developed to access the orebody up to 126 Level on the VCR and 120 Level on the CLR.

Grade tonnage curve

MPONENG CONTINUED

Year-on-year, Mponeng's published Mineral Resource has decreased. The Mineral Resource of the TauTona and Savuka shaft
pillars have been removed as they will not be included in the LOM plan due to geotechnical constraints. Further reductions included
depletions and an increase in the required mining grade based on the current cost of extraction. There was a slight increase in
estimated content due to updates of the model methodology on the back of data updates.

Year-on-year changes in Mineral Resource

ORE RESERVE

Ore Reserve

as at 31 December 2018

Category	Tonnes million	Grade g/t	Contained gold tonnes	Moz
VCR above 109 Level				
Proved	0.00	7.85	0.02	0.00
Probable	0.01	6.21	0.04	0.00
Total	0.01	6.76	0.06	0.00
VCR 109 to 120 Level				
Proved	0.27	7.47	1.99	0.06
Probable	0.51	8.07	4.12	0.13
Total	0.78	7.87	6.11	0.20
VCR below 120 Level				
Proved	0.57	10.09	5.73	0.18
Probable	5.85			

12.09
70.67
2.27
Total
6.41
11.91
76.39
2.46
VCR LOM extension project
Proved
–
–
–
–
Probable
1.69
9.69
16.41
0.53
Total
1.69
9.69
16.41
0.53
VCR WUDLs
Proved
–
–
–
–
Probable
6.10
10.46
63.81
2.05
Total
6.10
10.46
63.81
2.05
TauTona CLR Eastern block
Proved
0.58
5.45
3.17
0.10
Probable
1.23
9.09
11.21
0.36

Total
1.81
7.93
14.38
0.46
CLR LOM extension project
Proved
0.02
8.96
0.22
0.01
Probable
19.64
9.41
184.85
5.94
Total
19.66
9.41
185.07
5.95
Mponeng
Total
36.47
9.93
362.24
11.65
Estimation
The mine design process delineates the mining areas and supporting development for each mining level and section, usually
by extrapolating the existing mining design using the latest geological structure models and taking all relevant mine design
recommendations into consideration. The in situ Mineral Resource is scheduled monthly for the full LOM plan. The value estimates
for these schedules are derived from the Mineral Resource model.
Modifying factors are applied to the in situ Mineral Resource to arrive at an Ore Reserve estimate. These factors include a dilution
factor to accommodate the difference between the milling width and the stoping width, as well as the Mine Call Factor (MCF).
Ore Reserve modifying factors
As a deep underground mine, the Mineral Resource
at Mponeng is sensitive to a drop in gold price.
Inclusive Mineral Resource sensitivity
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SECTION 2 / SOUTH AFRICA

MPONENG CONTINUED
as at 31 December 2018

	Gold price ZAR/kg	Cut-off grade g/t Au	Cut-off value cm.g/t Au	Stoping width cm	Dilution %	MCF %	MetRF %
VCR above 109 Level	501,150	5.86	950	162.0	37.6	81.0	97.6
VCR 109 to 120 Level	501,150	6.03	950	157.5	38.0	81.0	97.6
VCR below 120 Level	501,150	7.27	950	130.7	41.1	81.0	97.9
VCR LOM extension project	501,150	7.08	950	134.2	47.7	83.1	

97.6
VCR WUDLs
501,150
7.18
950
132.4
44.7
82.9
97.9
TauTona CLR Eastern Block
501,150
8.26
950
115.0
55.9
76.0
97.1
CLR LOM extension project
501,150
8.64
950
110.0
48.0
81.0
97.1
MCF is based on historic performance with consideration for current and future mining conditions.
Inferred Mineral Resource in business plan
as at 31 December 2018
Tonnes
million
Grade
g/t
Contained gold
tonnes
Moz
VCR WUDLs
3.21
11.03
35.45
1.14
CLR LOM extension project
0.20
9.97
2.01
0.06
Total
3.42
10.97
37.45
1.20

The Inferred Mineral Resource is used for optimisation purposes and forms part of the business plan but is not included in the Ore Reserve. These portions of the Mineral Resource are located in the WUDLs area beyond current infrastructure on the VCR (LOM extension project and Phase 5) and also make up part of the CLR Mineral Resource which is included in the CLR LOM extension and Phase 6 project. This accounts for 9.4% of the business plan.

Ore Reserve below infrastructure

as at 31 December 2018

Category	Tonnes million	Grade g/t	Contained gold tonnes	Moz
Mponeng				
Proved	0.02	8.96	0.22	0.01
Probable	27.43	9.66	265.07	8.52
Total	27.46	9.66	265.29	8.53

The decrease of 4.2% in Ore Reserve is mainly due to the net effect of depletion, a revised estimation model for the VCR, the impact of the removal of Savuka shaft pillars as well as the removal of certain high risk areas in the TauTona mining front.

Year-on-year changes in Ore Reserve

INTRODUCTION

Property description

Surface Operations comprise Vaal River Surface, MWS and West Wits Surface operations. The operations produce gold by processing surface material such as low grade stockpiles and the retreatment of TSFs.

Location

The Vaal River Surface operations are located to the north of the Vaal river, close to the town of Orkney in the North West province. These operations extract gold from the low grade stockpile material emanating as a by-product of the reef mining activities within the mines in the Vaal River area. The MWS operations are located approximately 15km from the town of Klerksdorp near Stilfontein within 20km of the Vaal River Surface operations. The MWS feed sources (TSFs) are scattered over an area that stretches approximately 13.5km north-south and 14km east-west.
The West Wits Surface operations are located near the town of Carletonville, straddling the border between the North West and Gauteng provinces.

History

Gold from surface material has been produced routinely since 2002. AngloGold Ashanti acquired the MWS Mineral Resource and tailings retreatment operations in the Vaal River region in July 2012. The MWS uranium and flotation plants were commissioned in 2014. Changes were made to the configuration of the flotation and uranium processes after which the float plant was recommissioned in July 2016 and the uranium plant in October 2016. These plants were reconfigured into an even more efficient configuration during 2016. As part of the optimisation in 2017, the uranium and fiotation plants were decommissioned.

Legal aspects and tenure

The MWS license to mine is covered by the environmental authorisation under the National Environmental Management Act No. 107 of 1998. In terms of the current legislation, the Mineral and Petroleum Resources Development Act No. 28 of 2002 (the MPRDA), a mining right is not required to reclaim TSFs. MWS can prove ownership and tenure of the operations. There was pending legislation that, once passed, would require a mining right to be obtained in order to mine TSFs. This Amendment Bill has subsequently been withdrawn by the Minister of Mineral Resources until further notice.
Following the Sale of the Vaal River underground operations, the Vaal River mining rights were transferred to Harmony, who acquired the Moab Khotsong Operations and Village Main Reef, who acquired the Kopanang Operations. In terms of the Vaal River Surface operations, the appropriate authorisation is currently in the process of being applied for.
The current mining rights for the South African operations cover multiple horizons, i.e. both underground and surface for West Wits region. The TSFs falling outside the mining right are accommodated in the approved EMP and financial provision for rehabilitation for the West Wits Mining Rights, as well as under historic surface rights permits for West Wits, which are still valid. A S102 application was submitted in March 2017 to consolidate West Wits Surface into GP30/5/1/2/2(01)MR.

Mining method

Low grade stockpiles

Bulldozers are used to create safe loading faces. The material is then loaded from the face onto rail hoppers or trucks by means of front-end loaders and transported to the relevant gold plants for processing.

TSFs

The tailings are reclaimed using a number of hydraulic (high-pressure water) monitoring guns to deliver water at pressure, typically 27-30 bar, to the face. The tailings material is reclaimed by blasting the TSF face with the high-pressure water, resulting in the slurry gravitating towards pump stations. These monitoring guns can be positioned to selectively reclaim required areas from the TSFs. Bench heights are constrained by the force delivered from the monitoring gun nozzle and

safety constraints. With sufficient pressure, face lengths of up to 25m can be reclaimed.
The pump stations are located at the lowest point of the dams to ensure that the slurry from the dams will gravitate towards the pump station from where it will be pumped to the processing plants.

Operational infrastructure

Low grade stockpiles in the Vaal River area are processed through the Kopanang Gold Plant which is a dedicated surface sources metallurgical plant while all AGA owned tailings material in the Vaal River and MWS areas is processed through the three metallurgical streams at the MWS metallurgical operations. At West Wits, material from both low grade stockpiles and TSF is processed through the Savuka gold plant. Low grade stockpile material is processed through the Mponeng gold plant to fill the processing gap and to ensure adequate supply of backfill material to Mponeng shaft. Adequate deposition capacity for the Surface Operations exists in all areas.

Operational infrastructure road, rail, offices, security services, water and power supply is adequate, and is shared with the AngloGold Ashanti operations in the relevant areas.

Mineral processing

The mineral process is dependent on the source material: tailings material is pumped directly to a conventional carbon-in-leach (CIL) plant while hard rock material will go through comminution first, and then be processed through leach followed by CIP.

MWS comprises three separate streams namely Stream 1, Stream 2 and Stream 3. Hydraulically-reclaimed material from several TSF sites is pumped via the 3 pump stations to the MWS plant streams for gold extraction.

The West Wits Surface Operations process low grade stockpile material sourced from the mining of the CLR and the VCR that are mined by the West Wits mines in the Carletonville/Fochville area, as well as hydraulically-reclaimed material from the Old North TSF.

Within the Vaal River area, the Kopanang Gold plant is a dedicated surface operation plant. In the West Wits area, the Savuka gold plant is dedicated to process surface sources material while low grade stockpile material is processed through Mponeng gold plant to fill the processing gap.

Risks

There are no known unmanaged risks that may affect reclamation activities.

The increased recovery over MWS LOM is associated with the project to introduce Aachen Reactors in the 3 streams and is still being evaluated.

Map showing MWS and Vaal River Surface infrastructure and properties

Mine infrastructure

Plant

Stockpiles

TSF

Tailings pipeline

AGA property

Chemwes

Settlements

Towns

Villages

Roads

Main

River

MWS centroid co-ordinates

26°48’00”E, 26°50’05”S

2.5

0

2.5

5

7.5km

37

SECTION 2 / SOUTH AFRICA

SURFACE OPERATIONS CONTINUED
Map showing West Wits Surface and Mponeng Mine infrastructure and licences
Competent Persons
Responsibility
Competent Person
Professional
organisation
Membership
number
Relevant
experience
Qualification
Mineral Resource
Mmatseleng Maipushi
SACNASP
114 390
8 years
BSc Hons (Geology)
Ore Reserve
Mariaan Gagiano
SAIMM
705 920
34 years
Government Certificate of
Competency in Assaying (GCC)
GEOLOGY
The material contained in the TSFs and low grade stockpiles originates from the historic ore-bearing reefs mined by the West Wits,
Vaal River, Buffelsfontein, Hartebeestfontein and Stilfontein gold mines.
Low grade stockpiles
The low grade stockpiles consist of waste rock mined from underground workings, hoisted, transported and deposited via conveyor
belts. The gold contained within these dumps was sourced from three areas namely:

- Minor reef intersected while accessing the primary reef
- Gold-bearing reef that was contained within small fault blocks that were exposed by off-reef development
- Cross-tramming of gold-bearing reef material to the waste tips

Mponeng
plant centroid co-ordinates
27°26’06”E, 26°26’11”S
Licences
Mining
Surface property
Mine infrastructure
Mine area
Plant
Stockpiles
TSF
Tailings pipeline

Underground workings
Settlements
Towns
Villages
Roads
Main
Secondary
1
0
1
2km
38
SECTION 2 / SOUTH AFRICA

Tailings storage facilities

The TSFs consist of tailings material which originated from the processing of the underground ore from the various operations
in the Vaal River area (Vaal Reef Surface), the various operations in West Wits area (West Wits Surface) and Buffelsfontein,
Hartebeestfontein and Stilfontein gold mines (MWS). These gold mines are deep level gold mines, which predominantly extract the
tabular, conglomeratic Vaal Reef (VR), CLR and VCR. The VR has been predominantly mined for gold in the past although the reef
also contains uranium oxide. The same is true but, to a lesser extent, with the CLR and VCR. The material contained in the TSFs is
fine in nature. The footprints of the MWS TSFs and Vaal River Surface operations TSFs cover an area of approximately 1,100ha.

South East TSF grade model section view along the west to east direction

Gold Grade (g/t)

0

100

200

300

700

600

500

400

1:7,500

Gold Grade (g/t)

0 – 0.164

0.164 – 0.185

0.185 – 0.230

0.230 – 0.241

0.241 – 0.299

0.299 – 0.345

0.345 – 0.402

>= 0.402

PROJECTS

MWS plant deposition takes place on the Kareerand TSF. The existing Kareerand TSF was commissioned in 2011 with a design life
of 14 years to 2025 at a tailings throughput rate of 1.9 million tonnes per month (Mtpm). Since commissioning, MWS has ramped
up production and has targeted a total tailings throughput rate of 2.5 Mtpm until 2042.The increased deposition on the existing
facility means that the TSF will reach its limiting rate of rise sooner than 2025, with consequent loss of storage capacity. A PFS
has been concluded to establish the best option for expanding the capacity, and confirming the technical and financial viability of
the project. Work on applying for the permits required to construct the TSF extension has begun and the application process will
commence in 2019.

SURFACE OPERATIONS CONTINUED
MINERAL RESOURCE
Details of average drill hole spacing and type in relation to Mineral Resource classification
Category
Spacing m (-x-)
Type of drilling
Comments
Diamond
RC
Blasthole
Channel
Other
Vaal River Surface
Measured
50 x 50
–
–
–
–
√
Auger drilling
Indicated
100 x 100 to 150 x 150
–
–
–
–
√
Auger drilling
Inferred
–
–
–
–
–
–
–
Grade/ore control
50 x 50 to 100 x 100
–
–
–
–
√
Auger drilling
Mine Waste Solutions
Measured
100 x 100 to 320 x 250
–
–
–

–
√
Auger drilling
Indicated
100 x 100 to 300 x 375
–
–
–
–
√
Auger drilling
Inferred
–
–
–
–
–
–
–
Grade/ore control
50 x 50 to 100 x 100
–
–
–
–
√
Auger drilling
West Wits Surface
Measured
–
–
–
–
–
–
–
Indicated
150 x 150
–
–
–
–
√
Auger drilling
Inferred
–
–
–
–
–
–

–
Grade/ore control
150 x 150
–
–
–
–
√
Auger drilling
In the case of TSFs, additional sampling information is available in the form of residue sampling data collected during deposition on
the TSFs.

Inclusive Mineral Resource
as at 31 December 2018

Category	Tonnes million	Grade g/t	Contained gold tonnes	Moz
Vaal River Surface				
TSFs				
Measured	–	–	–	–
Indicated	323.63	0.25	82.42	2.65
Inferred	–	–	–	–
Total	323.63	0.25	82.42	2.65
Low grade stockpiles				
Measured	–	–	–	–
Indicated	–	–	–	–
Inferred	10.09	0.51	5.13	0.16
Total	10.09	0.51		

5.13
0.16
Mine Waste Solutions
TSFs
Measured
105.96
0.21
22.76
0.73
Indicated
172.57
0.26
44.94
1.44
Inferred
–
–
–
–
Total
278.53
0.24
67.71
2.18
West Wits Surface
TSFs
Measured
–
–
–
–
Indicated
55.10
0.30
16.31
0.52
Inferred
0.86
0.30
0.26
0.01
Total
55.96
0.30
16.57
0.53
Low grade stockpiles
Measured
–
–
–

–
Indicated
5.56
0.50
2.80
0.09
Inferred
–
–
–
–
Total
5.56
0.50
2.80
0.09
Surface Operations
Total
673.77
0.26
174.62
5.61
Inclusive Mineral Resource by-product: uranium
as at 31 December 2018
Category
Tonnes
million
Grade
kg/t
Contained uranium
tonnes pounds million
Vaal River Surface
Measured
–
–
–
–
Indicated
323.63
0.08
25,430
56.06
Inferred
–
–
–
–
Total
323.63
0.08
25,430

56.06
Mine Waste Solutions
Measured
105.96
0.07
7,228
15.94
Indicated
172.57
0.08
13,886
30.61
Inferred
–
–
–
–
Total
278.53
0.08
21,115
46.55
Surface Operations
Total
602.16
0.08
46,544
102.61
41
SECTION 2 / SOUTH AFRICA

SURFACE OPERATIONS CONTINUED

Estimation

TSFs

Prior to 2011 for the Vaal River operations, the grade estimations for the TSFs were based on the residue grades obtained from the different process plants, as well as various ad hoc sampling projects in selected areas. Most of the TSFs in Vaal River and MWS have since been re-sampled by means of an extensive drilling exercise which commenced in 2011. The remainder TSFs will be re-sampled once the TSFs become dormant. A stringent QA/QC process was applied to the sampling and assay processes to ensure a high level of confidence in the results. The auger drilling typically took place on a 150 x 150m grid (Mineral Resource model) as well as a minimum of a 50 x 50m grid (grade control model). The vertical sampling interval of 1.5m was implemented and where possible all drill holes were drilled into the underlying strata to allow the estimation of the base of the TSF. The estimation technique used is 3D ordinary kriging. The variograms used for the grade estimation consist of both horizontal and downhole variograms. The methodology used for the construction of the grade model constitutes well defined 3D wireframes which are constructed using the drill holes and the results from monthly surveys on currently reclaimed TSFs and aerial surveys carried out on an annual basis for TSFs which are planned to be reclaimed. These models are regularly updated during the grade control process.

In the West Wits Surface operations, all the grade estimations for the TSFs were based on the residue grades obtained from the different process plants as well as various ad hoc sampling projects in selected areas. For one of these areas, the Old North Complex, a drilling programme with the standard QA/QC programme was implemented in 2015. The drilling was completed in 2018 and the 3D estimate will be finalised in 2019.

Low grade stockpiles

In the West Wits and Vaal River operations, the grade estimation is based on grades obtained from reclaimed tonnages from the different stockpiles, grades obtained from rock deposited on these facilities and grades from various other sampling projects carried out on some of the stockpiles. These sampling exercises involved a pit being dug on a pre-determined grid on the low grade stockpiles from which samples were taken. These samples were then split into different size fractions and assayed to determine the gold distribution for the different size fractions. The profiles of the stockpiles are also updated by means of aerial surveys carried out on an annual basis. Sampling is done by means of mechanical stop belt samplers on the feed belts at the metallurgical plants.

Changes in the Mineral Resource are mainly due to Mispah 1, Kopanang Paydam TSFs and Moab Khotsong low grade stockpile being moved out of the Mineral Resource following the Harmony sale, the acquisition of new low grade stockpiles into Inferred Mineral Resource and normal depletion of the Mineral Resource.

Year-on-year changes in Mineral Resource

42

ORE RESERVE
Ore Reserve
as at 31 December 2018
Category
Tonnes
million
Grade
g/t
Contained gold
tonnes
Moz
Vaal River Surface
TSFs
Proved
–
–
–
–
Probable
324.23
0.25
82.42
2.65
Total
324.23
0.25
82.42
2.65
Mine Waste Solutions
TSFs
Proved
106.23
0.21
22.76
0.73
Probable
172.79
0.26
44.94
1.44
Total
279.02
0.24
67.71
2.18
West Wits Surface
TSFs
Proved
–
–
–

–
Probable
27.60
0.29
7.97
0.26
Total
27.60
0.29
7.97
0.26
Low grade stockpiles
Proved
–
–
–
–
Probable
4.37
0.49
2.14
0.07
Total
4.37
0.49
2.14
0.07
Surface Operations
Total
635.23
0.25
160.23
5.15
Surface Operations is not sensitive to changes in
gold price.
Inclusive Mineral Resource sensitivity
43
SECTION 2 / SOUTH AFRICA

SURFACE OPERATIONS CONTINUED

Estimation

TSFs

Mine design models delineate the areas to be reclaimed over the life of the operations, taking all relevant mine design recommendations into consideration. The in situ Mineral Resource is scheduled for the full LOM plan. The value estimates for these schedules are derived from the Mineral Resource block models where they exist. The benefit of the reclamation of the surface sources and subsequent rehabilitation of the relevant areas is included in the evaluation of the feasibility of the project.

Low grade stockpiles

Planned reclamation from the low grade stockpiles is scheduled out to ensure an average blend. The in situ Mineral Resource is scheduled for the full LOM plan. The value estimates for these schedules are derived from the Mineral Resource estimate with an 18 month reconciliation factor applied to the Mineral Resource.

Ore Reserve modifying factors

as at 31 December 2018

	Gold price ZAR/kg	Cut-off grade g/t Au	RMF % (based on tonnes)	RMF % (based on g/t)	MCF %	MetRF %
Vaal River Surface						
TSFs	501,150	0.23	100.0	100.0	100.0	52.8
Mine Waste Solutions						
TSFs	501,150	0.23	100.0	100.0	100.0	52.8
West Wits Surface						
TSFs						

501,150
0.29
100.0
100.0
100.0
45.0
Low grade stockpile
501,150
0.28
100.0
85.0
100.0
88.0
10% margin applied for cut-off grade calculations apart from Vaal River Surface low grade stockpiles which uses a 5% margin.
Minor dilution of the TSF tonnes occurs when reclamation of the floor area of the TSF is done. During reclamation it is also possible
that small quantities of basement material is included with the TSF floor material. A small dilution factor has been included to
account for them both. The metallurgical recovery factor (MetRF) for TSF material ranges between 42% and 60% depending on the
metallurgical plant and for low grade stockpile material processed ranges between 87% and 90%.
For the low grade stockpiles a Mineral Resource factor is applied which is based on an 18 month rolling average of the actual
evaluation factor.
Inferred Mineral Resource in business plan
as at 31 December 2018
Tonnes
million
Grade
g/t
Contained gold
tonnes
Moz
Vaal River Surface
Low grade stockpile
9.45
0.50
4.71
0.15
Total
9.45
0.50
4.71
0.15
44
SECTION 2 / SOUTH AFRICA

In addition to normal depletion's in all areas during 2018 Ore Reserve, the Moab Khotsong low grade stockpile and Kopanang TSF
were included in the sale to Harmony and thus excluded from the Ore Reserve estimate this year.

Year-on-year changes in Ore Reserve

CONTINENTAL AFRICA
LEGEND
1
Guinea Siguiri (85%)
2
Mali Morila (40%)/Sadiola (41%)
3
Ghana Iduapriem/Obuasi
4
DRC Kibali (45%)
5
Tanzania Geita
2,000km
Project
Operation
0
Tanzania – Geita
CONTENTS

REGIONAL OVERVIEW

Key statistics

	Units	2018	2017	2016
Operational performance				
Tonnes treated/milled	Mt	27.3	28.0	27.6
Recovered grade	oz/t	0.050	0.047	0.043
	g/t	1.72	1.61	1.49
Gold production (attributable)	000oz	1,512	1,453	1,321
Total cash costs	$/oz	773	720	717
Total production costs	$/oz	1,028	1,012	1,005
All-in sustaining costs (1)	$/oz	904	953	904
Capital expenditure (attributable)	$m	313	409	291

(1) Excludes stockpile write-offs

As at December 2018, the total attributable Mineral Resource (inclusive of the Ore Reserve) for the Continental Africa region was 64.1Moz (2017: 64.1Moz) and the attributable Ore Reserve 16.3Moz (2017: 16.9Moz).

This is equivalent to 35% and 37% of the group's Mineral Resource and Ore Reserve respectively. Combined production from these operations totalled 1.512Moz of gold in 2018, or 45% of group production.

AngloGold Ashanti has seven mining operations within the Continental Africa region:

- Kibali in the Democratic Republic of the Congo (DRC), a joint venture (JV) with Barrick Gold Corporation (Barrick) and Société Minière de kilo-Moto (SOKIMO), the state-owned gold mining company
- Iduapriem in Ghana
- Obuasi in Ghana
- Siguiri in Guinea
- Morila in Mali, a JV with Barrick and the state of Mali
- Sadiola in Mali, a JV with IAMGOLD and the state of Mali
- Geita in Tanzania

Mining is from both open pit and underground, with Obuasi being an underground mine, Iduapriem, Siguiri and Sadiola being open pit mines and Kibali and Geita being a combination of open pit and underground mines. Morila is primarily a tailings retreatment operation.

REGIONAL OVERVIEW CONTINUED

Inclusive Mineral Resource
as at 31 December 2018

Category	Tonnes million	Grade g/t	Contained gold tonnes	Moz
Continental Africa				
Measured	42.17	2.04	85.94	2.76
Indicated	469.94	2.57	1,209.71	38.89
Inferred	202.51	3.43	695.30	22.35
Total	714.62	2.79	1,990.95	64.01

Exclusive Mineral Resource
as at 31 December 2018

Category	Tonnes million	Grade g/t	Contained gold tonnes	Moz
Continental Africa				
Measured	5.05	4.85	24.49	0.79
Indicated	292.05	2.56		

747.70
24.04
Inferred
199.75
3.47
693.42
22.29
Total
496.85
2.95
1,465.62
47.12
Ore Reserve
as at 31 December 2018
Category
Tonnes
million
Grade
g/t
Contained gold
tonnes
Moz
Continental Africa
Proved
35.92
1.57
56.31
1.81
Probable
170.89
2.64
451.70
14.52
Total
206.81
2.46
508.01
16.33
48
SECTION 3 / CONTINENTAL AFRICA

Guinea – Siguiri
49
SECTION 3 / CONTINENTAL AFRICA

DEMOCRATIC REPUBLIC OF THE CONGO

AngloGold Ashanti owns 45% of Kibali in the DRC.

The operation is a JV between three separate entities:

- AngloGold Ashanti
- Barrick, following its merger with Randgold Resources Limited
- Société Minière de kilo-Moto (SOKIMO), the state-owned gold mining company

The consolidated lease is made up of 10 mining concessions.

DRC – Kibali

Inclusive Mineral Resource
as at 31 December 2018

Category	Tonnes million	Grade g/t	Contained gold tonnes	Moz
Democratic Republic of the Congo				
Measured	9.17	4.60	42.16	1.36
Indicated	44.71	3.05	136.37	4.38
Inferred	23.77	2.50	59.40	1.91
Total	77.65	3.06	237.93	7.65

Exclusive Mineral Resource
as at 31 December 2018

Category	Tonnes million	Grade g/t	Contained gold tonnes	Moz
Democratic Republic of the Congo				
Measured	1.42	2.68	3.81	0.12
Indicated	22.68	2.43	55.11	

1.77
Inferred
23.77
2.50
59.40
1.91
Total
47.87
2.47
118.32
3.80
Ore Reserve
as at 31 December 2018
Category
Tonnes
million
Grade
g/t
Contained gold
tonnes
Moz
Democratic Republic of the Congo
Proved
9.14
4.15
37.87
1.22
Probable
19.08
4.12
78.70
2.53
Total
28.22
4.13
116.57
3.75
LEGEND
1
Kibali (45%)
Operation
300km
0
51
SECTION 3 / CONTINENTAL AFRICA

KIBALI

INTRODUCTION

Property description

Operations presently focus on open pit and underground mining. Development of the underground mine commenced in 2013 and production ramped up to 3.5Mt in 2018. Initial production was via a twin decline from surface. From 2018 the majority of ore is hoisted up the shaft. The decline to surface is used to haul some of the shallower zones and to supplement shaft haulage.

Location

Kibali is located in the north-eastern part of the DRC near the international borders with Uganda and South Sudan. The mine is located adjacent to the village of Doko, which is located to the west of the lease area. Kibali is approximately 210km by road from Arua and immediately north of the district capital of Watsa. The operations area falls within the administrative territory of Watsa in Haut-Uélé province.

History

On 15 October 2009, AngloGold Ashanti acquired a 50% indirect interest in Moto Goldmines Limited through a JV with Randgold, with Moto holding a 70% stake in Kibali and the balance (30%) being held by the DRC parastatal, SOKIMO. On 21 December 2009, Randgold and AngloGold Ashanti increased their JV interest in Kibali to 90%, while SOKIMO retained a 10% holding. On 2 January 2019, Randgold Resources Limited merged with Barrick Gold Corporation and the JV is now with the combined company, trading as Barrick Gold Corporation (Barrick).

First gold was poured in September 2013 from the open pit operations. Development of the underground mine commenced in 2013. The first underground development ore was mined in 2013 and stoping commenced in 2015. Underground production has since ramped up to 1.8Mt in 2017 and 3.5Mt in 2018. Initial production was truck hauled by a twin decline to surface. In 2017 the haulage shaft (740m deep) and materials handling system were commissioned.

Legal aspects and tenure

The total Ore Reserve is covered by exploitation permits (11447, 11467, 11468, 11469, 11470, 11471, 11472, 5052, 5073 and 5088) totalling 1,836km^2. Kibali gold mine has been granted the ten exploitation permits under the DRC mining code, seven of which are valid until 2029 and three are valid until 2030.

Mining method

The mine comprises both open pit and underground mining. The open pit Ore Reserve shell optimisations are conducted on the Mineral Resource models. Detailed mine designs are then completed for open pit mining. This incorporates the mining layout, operating factors, stripping ratio and relevant cut-off grades and modifying factors required for the reporting of Ore Reserve.

For the underground operation, longitudinal and transverse longitudinal stoping methods with paste backfill are the current underground mining methods.

Operational infrastructure

The mine site is located within 160km of the border with Uganda and all transport links take place through Uganda to Kenya or Tanzania. Surface infrastructure associated with the overall Kibali operation includes a processing plant, tailings storage facility, camp, hydro and thermal power stations, airstrip, workshops and offices.

All necessary government agreements and approvals required for the mine are in place.

Mineral processing

The current processing plant can treat both oxide and fresh sulphide material and is configured for otation and ultra-fine grind of the flotation concentrate, a treatment that is required for the sulphide ore type before leaching.

Risks

There are no known material risks that will impact on the Mineral Resource and Ore Reserve.

Competent Persons

Responsibility

Competent Person
Professional
organisation
Membership
number
Relevant
experience
Qualification
Mineral Resource and
Ore Reserve
Simon Bottoms*
Geological Society
of London
(FGS CGeol)
1 023 769
9 years
MGeol
* Employed by Barrick as SVP, Africa and Middle East Mineral Resource Manager, 3rd Floor, Unity Chambers, 28 Halkett Street, St. Helier, Jersey,
Channel Islands
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Map showing Kibali Mine infrastructure and licences with the total mining lease area insert shown in the top right-hand corner
Licences
Mining
Mine Infrastructure
Pits
Plant
Stockpiles
TSF
Waste dumps
Underground workings
Settlements
Towns
Villages
Roads
Main
Secondary
Airfield
Insert
Total mining lease area
Map zoomed in area
0
1
2
3km
Plant centroid co-ordinates
29°35’31”E, 3°6’50”N
0
10
20km
Total mining lease area
53
SECTION 3 / CONTINENTAL AFRICA

KIBALI CONTINUED
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SECTION 3 / CONTINENTAL AFRICA

GEOLOGY

Deposit type

Deposits of the Kibali district are located in the Archean Moto Greenstone Belt bounded to the north by the West Nile Gneiss and to the south by plutonic rocks of the Watsa district. The belt comprises three lithostratigraphically distinct blocks. Psammopelitic schists, amphibolite, banded iron formation, and gneissic granitoid sills metamorphosed under upper greenschist to low-mid-amphibolite facies conditions form the eastern part of the belt. Relative weakly foliated basalts, cherts, siliciclastic rocks, dacitic volcanoclastic rocks, and carbonaceous argillite metamorphosed under mid to upper greenschist facies conditions comprise the central and western-most parts of the belt. Granitoid plutons as old as ca. 2,640Ma intrude these rocks. A thick package of immature sandstone, gritstone, conglomerate, and probably acid tuffs forms much of the western part of the belt, including the host rocks to Karagba, Chauffeur and Durba (KCD), the largest deposit discovered to date within the belt. Radiometric dating indicates these siliclastic rocks were deposited during a belt-wide basin extension event between ca. 2,629Ma and 2,626Ma with much of the detritus derived from adjacent older parts of the belt.

Boundaries between these lithostratigraphic blocks represent important exploration targets.

The main Kibali deposit consists of the combination of the KCD deposit. Currently only the KCD deposit hosts an underground Ore Reserve and this constitutes 84% of the total KCD Ore Reserve.

Mineralisation style

Gold deposits of the Kibali district are classified as Archean orogenic gold deposits. At Kibali, the gold deposits are largely hosted in siliciclastic rocks, banded iron formations and chert that were metamorphosed under greenschist facies conditions. Ore-forming H_2O-CO_2-rich fluids migrated along a linked network of gently northeast-dipping shears and northeast to north-northeast plunging fold axes that is commonly referred to as the KZ Trend. The richly mineralised KZ Trend appears to have initiated as an extensional fault system along the boundary between the relatively young basin in the western part of the belt and older rocks to the east.

Mineralisation occurred during the later stages of subsequent regional contractional deformation, which resulted in inversion of the basin and the development of reverse faults and folds. Ongoing deformation during hydrothermal activity resulted in development of lodes in a variety of related structural settings within the KZ Trend. The source(s) of metal and fluids, which formed the deposits remain unknown, but metamorphic devolatilisation reactions within the supracrustal rocks of the Moto Greenstone Belt and/or deeper fluid and metal sources may have contributed.

Mineralisation characteristics

Gold deposits of the Kibali district are associated with halos of quartz, ankerite and sericite (ACSA-A alteration) that extend for 10s to 100s of metres into the adjacent rocks. This widespread ACSA-A alteration assemblage is superimposed on older greenschist facies metamorphic assemblages. Locally in the vicinity of the main mineralised zones ACSA-A alteration is overprinted by ankerite-siderite, pyrite alteration (ACSA-B) that hosts the ore. Gold is directly associated with the ACSA-B alteration assemblage. In smaller peripheral deposits a late chlorite, carbonate, pyrite assemblage is associated with the ore rather than the ACSA-B assemblage, implying a district-wide zonation of mineral assemblages along and across the mineralised KZ Trend. Zones of auriferous ACSA-B alteration are commonly developed along the margins of banded iron formation, or contacts between chert, carbonaceous phyllite, and banded iron formation. Mineralised rocks in the Kibali district typically lack significant infill quartz-rich veins, unlike many other orogenic gold deposits. Gold is instead associated with pyrite in zones of alteration that replaced the earlier mineralogy of the host rocks. Local remobilisation and upgrading of ACSA-B related ore occurred adjacent to the margins of some post-ore crosscutting chlorite, carbonate, pyrite, magnetite-altered diorite dykes.

The location of the individual lodes within the KCD deposit are intimately controlled by the position, shape, and orientation of a series of gently northeast-plunging tight to isoclinal folds. The ACSA-A alteration developed during the formation of these folds, and the sericite foliation which is an integral part of the ACSA-A assemblage formed parallel to their axial planes. Zones of later auriferous ACSA-B alteration developed along the axes, limbs, and more rarely the axial planes of these folds, locally wrapping around the hinges of the folds to form elongate northeast-plunging concave-shaped rods. ACSA-B alteration is also commonly focused along the margins of more extensive banded iron formations, indicating a stratigraphic as well as structural control on the distribution of ore, both within KCD, and other parts of the wider KZ Trend. Shear zones that were active during folding are a third key structural control on the location of ore within KCD and the wider KZ Trend. At KCD a folded carbonaceous shear in the core of the deposit juxtaposes stratigraphically distinct blocks. The 3,000 lodes above this shear are hosted by locally ferruginous cherts, carbonaceous argillites, and minor greywacke, whereas the 5,000 and 9,000 lodes below are hosted by siliciclastic rocks and banded iron formation. Fold shapes and wavelength differ between the two blocks reflecting their different rheologies during folding, and this is reflected in the scale, shape, and continuity of lodes in each block. At Pakaka and Kalimva chlorite, carbonate, pyrrhotite, pyrite-altered shear zones rather than folds are the principal controls on gold distribution.

KIBALI CONTINUED

NW-SE Geological cross-section through the KCD orebody, elevation in metres relative to average mean sea level

0

50km

Younging direction

Inferred major fault

Fold axial plane

Chert

BIF

Carbonaceous phyllite

ACSA-A alteration

Disseminated magnetite cubes and/or relic BiF

Disseminated magnetite cubes and/or
relic BiF in ACSA-B (altered BIF rocks)

ACSA-B alteration

Late carbonaceous shear

Mafic dyke

Mineralisation

KCD current pit outline

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SECTION 3 / CONTINENTAL AFRICA

EXPLORATION

In 2018, exploration focused on the down plunge and up plunge extensions of the KCD 3000, 5000 and 9000 lodes. The 3000 lode
was drilled from surface to upgrade and convert Inferred Mineral Resource to Indicated Mineral Resource and allow for conversion
to open pit Ore Reserve, while drilling was conducted from underground to test the down plunge extents. The down plunge extent
of the 5000 lode above the haulage level was targeted to test for continuity of the 5101 and 5102 lodes a further 250m down
plunge from the known Mineral Resource. The drilling on the 3000 and 5000 lodes was conducted from a dedicated underground
exploration drill drive on the 290 Level. On the 9000 lode, the gap between the Sessenge Pit and 9000 lode underground was drill
tested from surface on a 100 x 100m spacing to determine continuity and grade distribution.

Alongside this, 2018 regional exploration focused on new discoveries, near mine opportunities, and Mineral Resource additions.

The most notable result was the definition of an Inferred Mineral Resource at Kalimva and Ikamva, which replaced the 2018 annual
depletion of Kibali Mineral Resource. In addition, first pass Reverse Circulation (RC) drilling was performed at Oere, successfully
identifying a 2km shear zone.

The 2019 regional exploration will continue to focus on the identification of new opportunities and the testing of gaps between
known Mineral Resource such as the Gorumbwa-Sessenge Gap. Further Mineral Resource extension exploration is scheduled
to target the down plunge extensions of the KCD 5000 lode focussing above the bottom level of the shaft, with drilling from a
dedicated underground exploration drill drive. In addition, a PFS will be completed with the target of upgrading of Kalimva and
Ikamva Inferred Mineral Resource to an Indicated Mineral Resource, and defining appropriate modifying factors such that they can
be incorporated into an Ore Reserve.

PROJECTS

Underground ore production more than doubled from 2017, with 3,465kt mined during the first year of full vertical shaft operation.

During 2019 the evaluation of a new Waste Pass system in KCD underground will be completed, with the potential of reducing
backfill costs and enabling the use of local contractors for haulage from surface waste dumps. In addition the Newtrax RFID tracking
system is planned to be implemented for underground equipment and personnel, providing cost benefits through automation of
secondary ventilation and improved equipment utilisation.

MINERAL RESOURCE

Details of average drill hole spacing and type in relation to Mineral Resource classification

Category

Spacing m (-x-)

Type of drilling

Diamond

RC

Blasthole

Channel

Other
Measured
5 x 10, 15 x 20
√
√
√
√
√
√
√
√
–
–
–
Indicated
40 x 40
–
–
–
Inferred
80 x 80
–
–
–
Grade/ore control
5 x 10, 15 x 20
–
–
–
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SECTION 3 / CONTINENTAL AFRICA

KIBALI

CONTINUED

Inclusive Mineral Resource

as at 31 December 2018	Category	Tonnes million	Grade g/t	Contained gold tonnes	Moz
Open pit	Measured	4.87	2.51	12.21	0.39
	Indicated	14.53	2.12	30.81	0.99
	Inferred	13.41	1.99	26.68	0.86
	Total	32.80	2.13	69.70	2.24
Underground	Measured	3.27	8.44	27.58	0.89
	Indicated	30.18	3.50	105.56	3.39
	Inferred	10.36	3.16	32.72	1.05
	Total	43.81			

3.79
165.85
5.33
Stockpile
Measured
1.04
2.29
2.37
0.08
Indicated
–
–
–
–
Inferred
–
–
–
–
Total
1.04
2.29
2.37
0.08
Kibali
Total
77.65
3.06
237.93
7.65
Estimation
Mineral Resource estimation is undertaken by Barrick in-house Competent Persons or by approved external consultants. The results
of both DD and of RC drilling are used in the estimation process. 3D mineralised envelopes are established using grade and geology
and these are then statistically verified to confirm their validity for use in grade estimation.
Appropriate domaining of homogeneous zones is conducted whereby high-grade central core areas are modelled separately from
the lower-grade surrounding halos. Volumes are then filled with block model cells and these are then interpolated for density, rock
type and grade, the latter using ordinary kriging. Grade top cuts are applied to drill hole data to prevent the spread of high grades
during the estimation process. Drill hole spacing is used to guide the Mineral Resource classification. The open pit Mineral Resource
is quoted within a limiting shell. The underground Mineral Resource is constrained by the application of optimised mineable Mineral
Resource shapes, which applies reasonable mineability constraints including a minimum mining width, a reasonable distance from
current or planned development, and a measure of assumed profitability at the related Mineral Resource cut-off grade.
Grade tonnage curves
The grade tonnage curves do not include stockpiles.

Exclusive Mineral Resource
as at 31 December 2018

Category	Tonnes million	Grade g/t	Contained gold tonnes	Moz
Kibali				
Measured	1.42	2.68	3.81	0.12
Indicated	22.68	2.43	55.11	1.77
Inferred	23.77	2.50	59.40	1.91
Total	47.87	2.47	118.32	3.80

The exclusive Mineral Resource for the open pits largely comprise of Inferred Mineral Resource and tonnages that occur below the Ore Reserve cut-off grade (due to gold price difference). At the KCD deposit it is also partially due to the selection of a fixed interface between the open pit and the underground mining areas. Both the open pit Mineral Resource and underground material below the Ore Reserve mining cut-off form a significant part of this material.

KIBALI CONTINUED

ORE RESERVE

Ore Reserve
as at 31 December 2018

	Category	Tonnes million	Grade g/t	Contained gold tonnes	Moz
Open pit	Proved	3.66	2.57	9.40	0.30
	Probable	5.10	2.30	11.72	0.38
	Total	8.75	2.41	21.12	0.68
Underground	Proved	5.48	5.20	28.48	0.92
	Probable	13.99	4.79	66.98	2.15
	Total	19.47	4.90	95.46	3.07
Kibali	Total	28.22	4.13	116.57	3.75

Estimation

The open pit Ore Reserve shell optimisations were completed on the Mineral Resource models. This incorporated the mining
layout, operating factors, stripping ratio and relevant cut-off grade and modifying factors for reporting the Ore Reserve. An open pit
underground interface was set at 5,685mRL between the KCD open pit and underground mine.

Kibali is very sensitive to a decrease in gold price
due to the nature of the underground mineralisation.

Year-on-year changes in Mineral Resource

Kibali was able to replace Mineral Resource ounces depleted as a result of the maiden reporting of the Kalimva and Ikamva open pit
Inferred Mineral Resource, as well as exploration extensions in KCD undergound.

Inclusive Mineral Resource sensitivity

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A cut-off grade analysis at $1,000/oz was used to determine a cut-off grade of 2.5g/t for the underground mine. Longitudinal and transverse longhole open stoping methods with paste backfill are the current preferred mining methods. Underground stope designs were updated from the previously reported Ore Reserve using the latest Mineral Resource models. Modifying factors for planned and unplanned rock dilution, backfill dilution and ore loss were applied to obtain the reported Ore Reserve.

Metallurgical, environmental, social, legal, marketing and economic factors were adequately considered in the Kibali FS and have been updated as the project has developed.

Ore Reserve modifying factors
as at 31 December 2018

	Gold price US$/oz	Cut-off grade g/t Au	Dilution %	Dilution g/t	MCF %	MetRF %
Open pit	1,000	1.53	10.0	–	103.0	84.5
Underground	1,000	2.41	4.0	1.0	103.0	88.9

$1,000/oz Ore Reserve price used by Barrick (operating partner), apart from KCD PB3 open pit which is at $1,100/oz

Open pit modifying factors include 10% ore dilution and 97% mining recovery.

Underground dilution was applied based on the proposed mining method and accounts for planned dilution, from internal waste, within designed mining shapes. Additional dilution is incorporated to account for paste filling and unplanned dilution from mining (1% to 13%). Ore loss of 4% is accounted for in the estimation of the final Ore Reserve.

Metallurgical recovery is applied to individual production sources and material types based on metallurgical testwork and historical performance with recoveries ranging from 75% to 90% (2018 average recovery achieved was 88.7%).

The gold price applied to Ore Reserve estimation was $1,000/oz across all open pits and underground sources with the exception
of KCD PB3 open pit which was based on a gold price of $1,100/oz. A 4.5% royalty was netted off the assumed gold price.

Inferred Mineral Resource in business plan

There is no Inferred Mineral Resource included in the reported Ore Reserve for Kibali. The current mine plan does not have any
reliance on the Inferred Mineral Resource to support the economic viability of the project for the main KCD deposit.

The Ore Reserve decreased year-on-year mainly due to depletion, partially offset by exploration success in the underground and
conversion drilling in the KCD open pit.

Year-on-year changes in Ore Reserve

GHANA

AngloGold Ashanti has two mines in Ghana. Obuasi, currently in a redevelopment phase, is an underground mine operating at depths of up to 1,500m with a continuous history of mining dating back to the 1890s and Iduapriem, an open pit mine.

Obuasi underground development is scheduled to start in Q1 2019 with first gold forecast for the end of 2019.

Obuasi and Iduapriem are both wholly owned by AngloGold Ashanti. Obuasi is located in the Ashanti region of southern Ghana, approximately 80km south of Kumasi. Mining was temporarily suspended at the end of 2014 while a series of economic studies progressed. Iduapriem is located in western Ghana, some 85km from the coast and south of Obuasi near the town of Tarkwa.

Ghana – Iduapriem

Inclusive Mineral Resource
as at 31 December 2018

Category	Tonnes million	Grade g/t	Contained gold tonnes	Moz
Ghana				
Measured	6.84	3.27	22.35	0.72
Indicated	184.26	4.08	750.93	24.14
Inferred	77.77	5.90	458.67	14.75
Total	268.87	4.58	1,231.95	39.61

Exclusive Mineral Resource
as at 31 December 2018

Category	Tonnes million	Grade g/t	Contained gold tonnes	Moz
Ghana				
Measured	3.51	5.57	19.55	0.63
Indicated	131.17	3.95	517.50	

16.64
Inferred
75.01
6.09
456.79
14.69
Total
209.69
4.74
993.84
31.95
Ore Reserve
as at 31 December 2018
Category
Tonnes
million
Grade
g/t
Contained gold
tonnes
Moz
Ghana
Proved
2.74
0.88
2.41
0.08
Probable
56.66
4.07
230.82
7.42
Total
59.40
3.93
233.23
7.50
Project
Operation
LEGEND
1
Obuasi
2
Iduapriem
63
SECTION 3 / CONTINENTAL AFRICA

IDUAPRIEM

INTRODUCTION

Property description

Iduapriem Mine is wholly owned by AngloGold Ashanti. It is a multiple open pit operation that currently sources ore from the Ajopa, Block 7 and Block 8 pits.

Location

Iduapriem Mine is located in the western region of Ghana, some 70km north of the coastal city of Takoradi and approximately 10km southwest of the town of Tarkwa. The mine is bordered in the north by Gold Fields Ghana Limited (Tarkwa Mine) and to the east by the Ghana Manganese Company Limited (a manganese mine in existence since the 1920s).

History

A FS was completed in 1990 and in October 1991 Golden Shamrock Limited began construction of a 1.36Mtpa semi-autogenous milling circuit and CIP plant. Mining commenced in August 1992 with the first gold pour achieved in September of that year. Golden Shamrock was acquired by Ashanti Goldfields Company Limited in 1996. In 2000, a portion of the non-operational Teberebie Goldfields Limited (a subsidiary of Pioneer Goldfields Limited) was purchased resulting in increased Ore Reserve and extended LOM. In 2002, Ashanti upgraded the plant capacity to 4Mtpa and in 2009 the plant capacity was further extended to the current 5Mtpa.

Legal aspects and tenure

Iduapriem comprises the following mining leases:

- Iduapriem LVB1539/89 covering 31km^2 and expiring on 18 April 2019
- Ajopa North LVB/WR326/09 covering 48.34km^2 and expiring on the 5 January 2019
- Teberebie LVB3722H/92 covering 25.83km^2 and expired on 1 February 2018

All renewals had been suspended by the Regulator (the Minerals Commission), due to the ban on small scale mining. The Minerals Commission will resume working through the backlog and renew licence applications during the course of this year given that the ban was recently lifted.

A new Environmental Management Plan (EMP) has been submitted for the mining leases.

Mining method

Iduapriem is an open pit mine which makes use of contract miners. It uses conventional drill and blast, with truck and excavator load and haul.

Operational infrastructure

Surface infrastructure associated with Iduapriem's operation includes a primary crusher, overland conveyor, CIP processing plant next to the main office building, tailings storage facility and two camp areas for contractors and company employees. Tarkwa town is also adjacent to the tenement. Power is obtained from the national grid.

Mineral processing

The current processing plant treats free-milling material from open-cast mining, by a conventional crush-semi-autogenous ball milling circuit and leaching. Iduapriem operates a two stage crushing circuit consisting of a 54-75 primary gyratory crusher and two GP550 gyratory crushers for secondary crushing. The Iduapriem treatment plant has two semi-autogeneous grinding mills (SAG mills) and two ball mills which run in two parallel circuits, each with a SAG mill and a ball mill.

Risks

Power reliability and stability, slope/high wall stability (rockfall potential) and inrush/inundation (flooding of pits, tailing dams and infrastructure) are considered potential risks. Mitigation plans are in place to manage these risks.

An independent external Mineral Resource and Ore Reserve audit was undertaken in 2018 and found no fatal aws in process or output.

Competent Persons

Responsibility
Competent Person
Professional
organisation
Membership
number
Relevant
experience
Qualification
Mineral Resource
Charles Kusi-Manu
MAusIMM
205 238
28 years
BEng (Geological Engineering),
Postgraduate Certificate in
Geostatistics, MBA
Ore Reserve
Stephen Asante Yamoah MAusIMM
304 095
14 years
BSc Hons (Mining Engineering),
MSc (Mining Engineering)
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Map showing Iduapriem Mine infrastructure and licences with the total mining lease area shown in the top right-hand corner
Licences
Mining
Mine Infrastructure
Pits
Plant
ROM pad
Crusher
Stockpiles
Leach pad
TSF
Waste dumps
Settlements
Towns
Villages
Roads
Main
Secondary
Insert
Total mining lease area
Map zoomed in area
Plant centroid co-ordinates
2°02’38”W, 5°14’44”N
Total mining lease area
0
1
2
3km
0
2
4km
65
SECTION 3 / CONTINENTAL AFRICA

IDUAPRIEM CONTINUED

GEOLOGY

Iduapriem Mine is located within the Tarkwaian Group which forms part of the West African Craton that is covered to a large extent by metavolcanics and metasediments of the Birimian Supergroup. In Ghana, the Birimian terrane consists of northeast-southwest trending volcanic belts separated by basins and the Tarkwaian Group was deposited in these basins as shallow water deltaic sediments. The Tarkwaian lithologies are considered to represent the erosion products that accumulated following the erosion of the uplifted and deformed underlying Birimian rocks during the Eburnean orogeny. The basins (grabens) are believed to have formed as a result of rifting, preferentially in the central parts of the Birimian volcanic belts. The Tarkwaian Group consists of a thick sequence of clastic metasedimentary rocks which have undergone low grade regional metamorphism.

Deposit type

At Tarkwa, the entire Tarkwaian Group has been folded into a broad syncline and is locally referred to as the Tarkwa Syncline. The Banket Series Formation comprises a sequence of individual quartz pebble conglomerates (Banket beds), breccia conglomerates and metasandstones (also called quartzites and grits). All known gold mineralisation within the Banket Formation is associated with the conglomerates and is found within the matrix that binds the pebbles together. Gold content is a function of the size and amount (packing) of quartz pebbles present within a conglomeratic unit – the bigger and/or more pebbles present, the higher the gold grade. The upper stratigraphic limit of the Banket Series Formation is marked by the hangingwall quartzite, siliceous and metamorphosed sandstone of buff colour, which exhibits well-developed and characteristic trough- and cross-bedded haematitic black sand banding. The hangingwall quartzite also contains thin discontinuous grit interbeds. Dykes and sills of doleritic composition intrude the sedimentary sequence and frequently occur adjacent to complex structural zones. All gold mineralisation generally occurs within four specific zones or reefs.

Mineralisation style

There are four recognised conglomerate reefs namely A, B, C and D which are equivalent to the Tarkwaian Sub-Basal, Basal (or Main), Middle (or West) and Breccia Reefs respectively. The B and C reefs are oligomictic, and consist of well sorted conglomerates and have been mined underground in some areas for over a century. The A and D reefs have a lower gold tenor and are polymictic containing both well rounded and angular fragments.

Mineralisation characteristics

The gold is fine-grained, free milling and not associated with sulphides.

EXPLORATION

Exploration during 2018 focused on Mineral Resource conversion drilling at Block 7 and 8, Ajopa and Block 5 extension with exploration target drilling at Mile 5W and traverse drilling at the TSF target. A total of 12,775m was drilled, comprising 9,988m DD and 2,787m RC.

Geochemical results from lease-wide samples collected at Teberebie and Ajopa Leases were received with encouraging results.

A new mining lease, Ajopa South West, was traced to be in the name of Ghanaian Australian Goldfields (GAG). The change of name was effected at the Mineral Commissions office to AngloGold Ashanti Iduapriem Limited and the renewal application was added to the three existing mining leases awaiting final approval from the government.

Drilling in Block 5 extension intersected conglomerate reefs both along strike and down dip. Drill holes completed from the drilling programme confirm the strike extension of the mineralisation. In all, 371m RC and 1,577m DD was drilled. Further to the north-eastern portion of the target, drilling showed a reduction in the number of reefs along strike i.e. full reef packages A,B,C and D from Block 5 pit margin gradually reduced to only one reef package along the 600m strike of the target.

A typical Geological section of Block 7 and 8, elevation in metres relative to average mean sea level

At Ajopa, sixteen holes were drilled totalling 819m RC and 3,029m DD. A total of 2,806 samples were generated from the drilling,
including duplicates and were submitted to SGS and Intertek laboratories. Two of the holes completed in the area at the start of
the drilling programme were for grade control to test reef duplications as well as down-dip extension of modelled reefs. Four of
the Mineral Resource drill holes were also attributed to sterilization and backfill projects. Sedimentological logs revealed well-packed
and well-sorted conglomerate reefs of C and B with sub- to well-rounded quartz pebbles with gold association beneath the planned
backfill pit limit.

The PFS drilling over the Block 7 and 8 area was undertaken during first half of the year, yielding 1,117m of samples by RC drilling
and 3,521m by DD. In all, 1,578 samples were submitted to the lab for gold analysis. All holes intersected the full conglomerate reef
package.

The Mile 5W drilling campaign yielded a total of 1,861m diamond drilling with 1,354 samples submitted for gold analysis. Some
interesting observations from the core include pink altered quartzite units with quartz veins and veinlets, disseminated pyrite
and sporadic euhedral shaped pyrrotites. The veins occur along the bedding with very few cross cut veins, all characterised by
tourmaline. The veins themselves rarely contain sulphides, showing only trace amounts of carbonates and sericite.

The TSF exploration drilling ended with a 10 hole RC drilling programme, totalling 480m. Some significant assays were reported.

The lithological units are mainly quartzites, with intercalated conglomeratic units.

Geochemical results from lease-wide soil samples collected at Teberebie and Ajopa Leases were received with encouraging results.

These will be reviewed and followed up with trenches in 2019.

The East Limb of Block 7 and 8 (near Johnson Mining) was inspected and may be tested for further exploration extensions.

PROJECTS

No major projects have recently been completed or are planned at Iduapriem. Geology projects planned include mine-wide
geochemical sampling, Mineral Resource drilling at Block 7 and 8, Ajopa and Block 5 extension.

Legend
D mineralised reef
C mineralised reef
B mineralised reef
A mineralised reef
Depleted pit
+1425
+1425
+1500
+1500
+1575
+1575
w
E
0

25
50
75
67
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IDUAPRIEM CONTINUED
MINERAL RESOURCE
Details of average drill hole spacing and type in relation to Mineral Resource classification
Category
Spacing m (-x-)
Type of drilling
Diamond
RC
Blasthole
Channel
Other
Measured
20 x 15
–
√
√
√
√
√
√
–
–
–
Indicated
50 x 75
–
–
–
Inferred
100 x 100
–
–
–
Grade/ore control
20 x 15
–
–
–
–

In general 200 x 200m drill hole spacing is used to define the extent and geometry of an anomaly. The majority of the Mineral
Resource area has been drill tested at a spacing of a 100 x 100m with the spacing closed up to 50 x 50m for the shallower,
Indicated Mineral Resource.
The appropriate grid for each phase is optimised for each project based on the geometry of the mineralisation and the geological
and grade continuity (using variogram modelling) and mining experience from the pits.
In some cases, the data spacing may be reduced where structural complexity is encountered. Apart from the major fault structures,
geological continuity is considered to be very good with the conglomerate reefs being laterally consistent and continuous.

Inclusive Mineral Resource
as at 31 December 2018

	Category	Tonnes million	Grade g/t	Contained gold tonnes	Moz
Ajopa	Measured	–	–	–	–
	Indicated	3.95	1.80	7.11	0.23
	Inferred	0.49	2.31	1.14	0.04
	Total	4.45	1.86	8.25	0.27
Block 1	Measured	–	–	–	–
	Indicated	–	–	–	–
	Inferred	0.23	1.69	0.39	0.01
	Total	0.23	1.69	0.39	

0.01
Block 3W
Measured
–
–
–
–
Indicated
6.83
1.17
7.99
0.26
Inferred
4.67
1.26
5.89
0.19
Total
11.50
1.21
13.88
0.45
Block 5
Measured
–
–
–
–
Indicated
5.15
1.19
6.10
0.20
Inferred
2.15
1.26
2.71
0.09
Total
7.30
1.21
8.82
0.28
Block 7 and 8 (other)
Measured
–
–
–
–
Indicated
34.26

1.61
55.03
1.77
Inferred
21.20
1.64
34.69
1.12
Total
55.46
1.62
89.72
2.88
Block 7 and 8 East cutback
Measured
–
–
–
–
Indicated
21.60
1.70
36.74
1.18
Inferred
0.12
1.29
0.15
0.00
Total
21.72
1.70
36.90
1.19
Stockpile (full grade ore)
Measured
2.74
0.88
2.41
0.08
Indicated
–
–
–
–
Inferred
–
–
–
–
Total

2.74
0.88
2.41
0.08
Stockpile (other)
Measured
–
–
–
–
Indicated
10.80
0.57
6.16
0.20
Inferred
2.76
0.68
1.88
0.06
Total
13.56
0.59
8.03
0.26
Stockpile (marginal ore)
Measured
0.59
0.66
0.39
0.01
Indicated
6.23
0.67
4.17
0.13
Inferred
–
–
–
–
Total
6.82
0.67
4.56
0.15
Iduapriem
Total
123.78
1.40
172.96

5.56
No geological discounts have been applied in the model. Dykes which sterilise mineralisation and faults which may offset
mineralisation are explicitly modelled.
Estimation
Geostatistical techniques are employed in the estimation of the Mineral Resource. 3D wireframes are built from all geological
information obtained from drill hole data, mapping of pits and geophysical data interpretations. Where appropriate these wireframes
are subdivided into the individual reef units that occur within a broad conglomerate package. Estimation is by ordinary kriging into
block sizes that range from 5 to 25m in the X and Y directions and between 6m and 12m in the Z direction depending on the reef
width and data spacing. Densities are allocated from appropriate test work conducted on drill hole samples. Grade and tonnages
are computed from these block models that are constrained within an optimised pit shell at the Mineral Resource reporting gold price.
Full grade ore and marginal stockpiles as well as Run of Mine (ROM) material are surveyed on a monthly basis to validate tonnage
measurements. Grade measurements on these stockpiles are based on RC grade control drilling from the individual pits mined.
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IDUAPRIEM CONTINUED

During recent years, historic stockpiles were drilled and estimated using geostatistical techniques. These stockpiles were reported as part of the Mineral Resource if material occurred above the economic cut-off grade at the Mineral Resource gold price.

The grade tonnage curve does not include stockpiles.

Exclusive Mineral Resource

as at 31 December 2018

Category	Tonnes million	Grade g/t	Contained gold tonnes	Moz
Iduapriem				
Measured	–	–	–	–
Indicated	52.41	1.38	72.22	2.32
Inferred	28.86	1.56	44.98	1.45
Total	81.27	1.44	117.20	3.77

The exclusive Mineral Resource is the part of the Mineral Resource that was not converted to Ore Reserve. It is defined as the Mineral Resource that is outside the current Ore Reserve designs, but inside the Mineral Resource shells and includes the Inferred Mineral Resource within the Ore Reserve design. The exclusive Mineral Resource gives an indication of the future potential of the deposit. This material could be converted to Ore Reserve with an increase in the gold price and favorable costs. Exclusive Mineral Resource also includes material within the pit between the Mineral Resource and Ore Reserve cut-offs.

Year-on-year changes include a decrease to the Mineral Resource as a result of depletion and increases as a result of cost and exploration drilling reductions.

Year-on-year changes in Mineral Resource

Grade tonnage curve

ORE RESERVE
Ore Reserve
as at 31 December 2018
Category
Tonnes
million
Grade
g/t
Contained gold
tonnes
Moz
Ajopa
Proved
–
–
–
–
Probable
0.61
2.04
1.24
0.04
Total
0.61
2.04
1.24
0.04
Block 5
Proved
–
–
–
–
Probable
2.15
1.23
2.65
0.09
Total
2.15
1.23
2.65
0.09
Block 7 and 8 East cutback
Proved
–
–
–
–
Probable
21.48

1.68
36.03
1.16
Total
21.48
1.68
36.03
1.16
Stockpile (full grade ore)
Proved
2.74
0.88
2.41
0.08
Probable
–
–
–
–
Total
2.74
0.88
2.41
0.08
Stockpile (other)
Proved
–
–
–
–
Probable
5.26
0.74
3.88
0.12
Total
5.26
0.74
3.88
0.12
Stockpile (marginal ore)
Proved
–
–
–
–
Probable
6.89
0.67
4.62
0.15

Total
6.89
0.67
4.62
0.15
Iduapriem
Total
39.13
1.30
50.83
1.63
Estimation
The 3D Mineral Resource models are used as the basis for the Ore Reserve. A mineralisation envelope is developed using the
Mineral Resource block model, geological information and the relevant cut-off grade, which is then used for mine design. An
appropriate mining layout is designed that incorporates mining extraction losses and dilution factors.
The Ore Reserve is estimated within mine designs, based on modifying factors, based on actual mining and detailed analysis of cut-
off grade, geotechnical, environmental, productivity considerations and the requirements of the mining eet. The upper portions of
the Ajopa deposit have been discounted for the estimated depletion by artisanal miners. This discount factor has been derived from
observation and estimates based on the Mineral Resource model.
The Mineral Resource is highly sensitive to changes
in gold price due to the high stripping cost and
capital intensive cutbacks required to access the
deeper portions of the orebody.
Inclusive Mineral Resource sensitivity
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Ore Reserve modifying factors
as at 31 December 2018

	Gold price US$/oz	Cut-off grade g/t Au	RMF % (based on tonnes)	RMF % (based on g/t)	MRF % (based on tonnes)	MRF % (based on g/t)	MCF %	MetRF %
Ajopa	1,100	0.90	100.0	100.0	100.0	96.0	100.0	95.9
Block 5	1,100	0.85	100.0	100.0	100.0	96.0	100.0	95.9
Block 7 and 8 East cutback	1,100	0.85	100.0	100.0	100.0	96.0	100.0	95.9

Stockpile (full grade ore)
1,100
0.75
100.0
100.0
100.0
100.0
100.0
93.0
Stockpile (marginal ore)
1,100
0.55
100.0
100.0
100.0
100.0
100.0
93.0
Stockpile (other)
1,100
0.60
100.0
100.0
100.0
100.0
100.0
93.0
A mining recovery factor (MRF) of 96.0% was applied to the standard orebody models by reducing all block grades by 4.0% and
100% mining tonnage factor, which are based on reconciliation over a three-year period.
Inferred Mineral Resource in business plan
as at 31 December 2018
Tonnes
million
Grade
g/t
Contained gold
tonnes
Moz
Ajopa
0.02
2.30
0.04
0.00
Block 5
0.03
1.45
0.05
0.00
Block 7 and 8 East cutback
0.12

1.25
0.15
0.00
Total
0.17
1.39
0.24
0.01

Inferred Mineral Resource is included in the business plan. The overall Inferred Mineral Resource allowed for in the plan is around 9%. However, only Measured and Indicated Mineral Resource within the design of the selected pit shells are converted to Ore Reserve.

Year-on-year, the Ore Reserve was down as minor cost improvements failed to replace dilution.

IDUAPRIEM CONTINUED

Year-on-year changes in Ore Reserve

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SECTION 3 / CONTINENTAL AFRICA

OBUASI

INTRODUCTION

Property description

Obuasi Gold Mine is owned and operated by AngloGold Ashanti Ghana Limited (AGAG). AGAG was established following the merger of the former AngloGold Limited of South Africa and Ashanti Goldfields Company Limited of Ghana in April 2004.

Production started in 1897 and stopped in the last quarter of 2014. Some aspects of the mine continued under limited operational conditions, including the development of the underground decline. A favourable FS was completed in 2017 and indicated a strong technical and economical case with an anticipated 20-year mine life. In 2018 approval was received from the AngloGold Ashanti board to proceed with the project with first gold planned for Q4 2019.

Location

Obuasi Gold Mine is located in the municipality of Obuasi, in the Ashanti region of Ghana, some 260km northwest of the capital Accra and 60km south of Kumasi.

History

Underground production was continuous from 1897 to 2014. A phase of open pit mining was conducted from 1988 to 2000 with small intermittent open pit mining beyond that period. Total historic production is ~33Moz gold, including ~5Moz gold from open pits.

Legal aspects and tenure

Obuasi gold mine concession previously covered an area of approximately 475km^2 and had 80 communities within a 30km radius of the mine. This was reduced to 201.46km^2 on 3 March 2016. The majority of the reduced concession area falls in the Obuasi municipality.

Minor portions of the new concession fall in the Adansi North, Adansi South and Amansie Central districts.

The Obuasi Gold Mine Mineral Resource and Ore Reserve is covered by a number of mining leases, namely:

- Obuasi Concession comprising 152.6km^2
- Binsere Concession parts 1, 2 and 3 comprising 48.86km^2

The duration of the mining concessions, which expire on 5 March 2054, are covered by a stability agreement with the government of Ghana.

Mining method

Mine designs are done to delineate development layouts and production stopes by taking into consideration economic cut-off grade and geotechnical design parameters for each mining block, mining level and section. The underground development extends to a depth of 1,500m from surface. Mining levels lie between 15m and 20m intervals with major levels between 30m and 60m intervals. Underground production was by open-stope mining (both longitudinal and transverse), and sub-level caving method, with future designed production by longhole open-stope mining methods with paste ll. Ore is transported to surface via shafts or trucked up the decline.

Operational infrastructure

Existing infrastructure includes a 2.4Mtpa processing plant with flotation and bacterial oxidation (BIOX), underground development, hoisting shafts and associated infrastructure, power and water reticulation, office complexes, workshops and company housing estates.

Mineral processing

The plant is configured for flotation and BIOX treatment that is required for the underground refractory sulphide ore type.

Risks

The Obuasi Mine is currently embarking on a Redevelopment Project that aims to establish Obuasi as a modern, efficient, mechanised, underground operation. This work is on-going with first gold scheduled for the end of 2019.

The current Ore Reserve has been estimated based partially on the 2014/2015 Mineral Resource and partially on the 2016/2017 Mineral Resource. Therefore, some of the significant changes to the Mineral Resource resulting from the revised geological model and extensive data validation have not yet rolled through to all parts of the Ore Reserve. This is seen as a small risk but is more likely to represent a potential upside to the Ore Reserve.

Licences
Mining
Mine infrastructure
Pits
Plant
TSF
Waste dumps
Underground access
Ponds and dams
Consolidated operations footprint
Settlements
Towns
Villages
Roads
Main
Secondary
Airfield
0
2
4
6km
Plant centroid co-ordinates
1°41’16”W, 6°10’11”N
Map showing Obuasi Gold Mine infrastructure and licences

OBUASI CONTINUED
Competent Persons
Responsibility
Competent Person
Professional
organisation
Membership
number
Relevant
experience
Qualification
Mineral Resource
Richard Peattie
MAusIMM
301 029
18 years
BSc Hons (Geology), MSc (Mineral
Resource Evaluation)
Ore Reserve
Wayne Emslie
MAusIMM
211 371
23 years
BEng Hons (Mining)
GEOLOGY
Deposit type
The mine is located within the Obuasi concession area in south-western Ghana along the north-easterly-striking Ashanti volcanic
belt. The deposit is one of the most significant Proterozoic gold belts discovered to date. The Ashanti belt predominantly comprises
sedimentary and mafic volcanic rocks, and is the most prominent of the ve Birimian Supergroup gold belts found in Ghana.
The Birimian was deformed, metamorphosed and intruded by syn- and post-tectonic granitoids during the Eburnean tectonothermal
event around two billion years ago. Folding trends are dominantly north-northeast to north-east. Elongate syn-Birimian basins
developed between the ridges of the Birimian system and these were filled with the Tarkwaian molasse sediments made up primarily
of conglomerates, quartzose and arkosic sandstones and minor shale units. Major faulting has taken place along the same trends.
The Lower Birimian metasediments and metavolcanics are characterised and defined by argillaceous and fine to intermediate
arenaceous rocks. These rocks are represented by phyllites, metasiltstones, metagreywackes, tuffaceous sediments, ash tuffs
and hornstones in order of decreasing importance. Adjacent to the shear zones, these rocks are replaced by sericitic, chloritic and
carbonaceous schists, which may be graphitic in places. Multiple lodes are a common feature in the mine.
Granites outcrop in the west and north-west of the concession area and intrude the Birimian rocks only. Two types of granite are
present; one is more resistant to weathering than the other, with less-resistant granite being prospective for gold mineralisation.

Mineralised shears are found in close proximity to the contact with harder metamorphosed and metasomatically-altered intermediate to basic Upper Birimian volcanics. The competency contrast between the harder metavolcanic rocks to the east and the more argillaceous rocks to the west is thought to have formed a plane of weakness. During crustal movement, this plane became a zone of shearing and thrusting coeval with the compressional phases.

Mineralisation style

Gold mineralisation is associated with, and occurs within, graphite-chlorite-sericite fault zones. These shear zones are commonly associated with pervasive silica, carbonate and sulphide hydrothermal alteration and occur in tightly folded Lower Birimian schists, phyllites metagreywackes, and tuffs, along the eastern limb of the Kumasi anticlinorium.

Mineralisation characteristics

Two main ore types are present, namely quartz vein and sulphide ore. The quartz vein type consists mainly of quartz with free gold in association with lesser amounts of various metal sulphides containing iron, zinc, lead and copper. This ore type is generally non-refractory. Sulphide ore is characterised by the inclusion of gold in the crystal structure of arsenopyrite minerals. Higher gold grades tend to be associated with finer grain arsenopyrite crystals. Sulphide ore is generally refractory.

EXPLORATION

No exploration was done during the year.

PROJECTS

In 2014, a detailed FS began that considered the optimum mining methodology and schedules for the underground mine, based on modern mechanised mining methods and refurbishment of underground, surface and process plant infrastructure. It was recognised that a significant rationalisation and/or replacement of current infrastructure will enable the delivery of high utilisation and productivity metrics.

During this time Obuasi operated in a limited operating phase with underground activities essentially restricted to continued development of the Obuasi deeps decline and underground infill drilling. The limited operating phase was brought to a halt after an incursion by illegal miners on Obuasi’s concession in February 2016. The mine has been under care and maintenance ever since.

N-S Geological cross-section through Obuasi Block 8, elevation in mRL
Legend
Mineralised lodes
Footwall lode 6 (FW06)
Footwall lode 7 (FW07)
Hangingwall lode 1 (HW01)
Obuasi ssure (OF05)
Geology
Graphitic Schist
Metavolcanics
Shear Vein Quartz
HW/FW shears
Sulphide Ore Zone
11222N
11022N
10822N
-800RL
-600RL
-400RL
-200RL
0RL
200RL
10622N
10822N
11022N
11222N
200RL
0RL
-200RL
-400RL
-600RL
-800RL
N
S
0m
100m
Scale: 1:3,000
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SECTION 3 / CONTINENTAL AFRICA

OBUASI CONTINUED

The FS was finalised in March 2016, with a schedule for the potential restart of underground production. The FS was followed up
with an optimised FS that looked at reducing capital spend upfront. This was finalised at the end of 2017. In 2018 approval was
received from the AngloGold Ashanti board for project commencement.

Obuasi is currently embarking on the process of rebuilding the mine in all its aspects to deliver a modern, efficient, mechanised,
underground operation.

Underground development is scheduled to start in Q1 2019 with first gold forecast for the end of 2019.

MINERAL RESOURCE

Details of average drill hole spacing and type in relation to Mineral Resource classification

Category
Spacing m (-x-)
Type of drilling
Comments
Diamond
RC
Blasthole
Channel
Other
Measured
20 x 20
√
√
√
√
–
√
√
√
√
–
–
–
Indicated
60 x 60
–
–
–
–
Inferred
90 x 90, 120 x 120
–
–
√
–
–
Grade/ore control
10 x 10
–

–
Channel sampling of
cross-cuts
78
SECTION 3 / CONTINENTAL AFRICA

Inclusive Mineral Resource
as at 31 December 2018
Category
Tonnes
million
Grade
g/t
Contained gold
tonnes
Moz
Anyankyirem
Measured
–
–
–
–
Indicated
5.52
2.38
13.10
0.42
Inferred
0.09
2.71
0.24
0.01
Total
5.61
2.38
13.35
0.43
Anyinam
Measured
0.00
2.50
0.01
0.00
Indicated
0.45
3.54
1.59
0.05
Inferred
1.02
4.23
4.32
0.14
Total
1.47
4.02
5.92

0.19
Gyabunsu – Sibi
Measured
0.05
4.00
0.21
0.01
Indicated
0.05
3.48
0.16
0.01
Inferred
0.28
3.97
1.13
0.04
Total
0.38
3.92
1.50
0.05
Above 50 Level – Block 1
Measured
–
–
–
–
Indicated
10.29
5.16
53.10
1.71
Inferred
2.04
5.08
10.36
0.33
Total
12.33
5.15
63.46
2.04
Above 50 Level – Block 2
Measured
–
–
–
–
Indicated
8.69

5.94
51.61
1.66
Inferred
2.83
5.91
16.72
0.54
Total
11.52
5.93
68.32
2.20
Above 50 Level – Block 8
Measured
1.83
4.46
8.14
0.26
Indicated
29.72
5.65
168.02
5.40
Inferred
3.78
5.75
21.69
0.70
Total
35.32
5.60
197.86
6.36
Above 50 Level – Block 10
Measured
–
–
–
–
Indicated
21.20
6.09
129.08
4.15
Inferred
5.06
5.82
29.49
0.95
Total

26.26
6.04
158.57
5.10
Above 50 Level – Adansi
Measured
–
–
–
–
Indicated
5.48
14.52
79.59
2.56
Inferred
1.81
14.31
25.89
0.83
Total
7.29
14.47
105.49
3.39
Above 50 Level – Côte d’Or
Measured
–
–
–
–
Indicated
0.01
18.03
0.19
0.01
Inferred
13.85
10.75
148.84
4.79
Total
13.86
10.76
149.03
4.79
Above 50 Level – Sansu
Measured
1.63
6.87
11.18

0.36
Indicated
9.27
5.29
49.04
1.58
Inferred
2.61
5.41
14.09
0.45
Total
13.51
5.50
74.31
2.39
Below 50 Level – Block 11
Measured
–
–
–
–
Indicated
3.26
21.51
70.19
2.26
Inferred
4.48
17.15
76.84
2.47
Total
7.74
18.99
147.03
4.73
Below 50 Level – Block 14
Measured
–
–
–
–
Indicated
1.50
7.95
11.96
0.38
Inferred
8.30
7.50

62.20
2.00
Total
9.80
7.56
74.16
2.38
Obuasi
Total
145.10
7.30
1,058.99
34.05
ESTIMATION
From 2016 to 2018, an exhaustive process of data review and validation took place, as well as capture of historic geological
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SECTION 3 / CONTINENTAL AFRICA

OBUASI CONTINUED

information. Together, this has considerably increased the confidence of the input data and supported a refinement of the Mineral Resource models. The geological interpretation is based on DD, cross-cut sampling and underground mapping information. Block models are estimated within the delineated mineralised ore zones using ordinary kriging. Estimates at Obuasi are based on a block model comprised of 20 x 5 x 15m blocks, which approximates the minimum SMU for underground mining.

The open pit Mineral Resource at Obuasi was estimated by geostatistical techniques within 3D wireframe models of the mineralisation. These models are based on geological information and cut-off boundaries defined by sampling results. Geological interpretation is based on trench sampling and RC and/or DD. Estimation is by ordinary kriging into 30 x 30 x 10m blocks for Obuasi open pits.

Obuasi uses the 15% rule with 90% confidence to classify its Mineral Resource into Measured, Indicated and Inferred Mineral Resource.

Exclusive Mineral Resource
as at 31 December 2018

Category	Tonnes million	Grade g/t	Contained gold tonnes	Moz
Obuasi				
Measured	3.51	5.57	19.55	0.63
Indicated	78.76	5.65	445.28	14.32
Inferred	46.14	8.93	411.82	13.24

The exclusive Mineral Resource is made up of Mineral Resource from underground and open pit. The bulk of the exclusive Mineral Resource is from underground, and is spread across the entire deposit, where further study and design, change in costs and/or gold price is required to develop economic extraction plans.

37% of the exclusive Mineral Resource is Inferred Mineral Resource and will require upgrading of its confidence to be able to report as an Ore Reserve.

Mineral Resource below infrastructure
as at 31 December 2018

Category	Tonnes million	Grade g/t	Contained gold tonnes	Moz
Obuasi				
Measured	–	–	–	–
Indicated	4.77	17.23	82.15	2.64
Inferred	12.78	10.88	139.04	4.47
Total	17.55	12.61	221.19	7.11

Mineral Resource below infrastructure is from those areas below 50 Level. These areas have been extensively drilled but no infrastructure is currently in place to exploit.

Grade tonnage curves

With no new mining or geological information collected during the year the Mineral Resource has remained constant from
year to year.

Obuasi is very sensitive to changes in gold price, especially to a lower gold price, due to the lower grade sulphide mineralisation on the flanks of the high grade quartz.

Year-on-year changes in Mineral Resource

Inclusive Mineral Resource sensitivity

OBUASI CONTINUED
ORE RESERVE
Ore Reserve
as at 31 December 2018
Category
Tonnes
million
Grade
g/t
Contained gold
tonnes
Moz
Above 50 Level – Block 1
Proved
–
–
–
–
Probable
0.91
6.49
5.91
0.19
Total
0.91
6.49
5.91
0.19
Above 50 Level – Block 2
Proved
–
–
–
–
Probable
1.35
6.08
8.22
0.26
Total
1.35
6.08
8.22
0.26
Above 50 Level – Block 8
Proved
–
–
–
–
Probable

7.24
8.16
59.04
1.90
Total
7.24
8.16
59.04
1.90
Above 50 Level – Block 10
Proved
–
–
–
–
Probable
6.42
7.28
46.73
1.50
Total
6.42
7.28
46.73
1.50
Above 50 Level – Adansi
Proved
–
–
–
–
Probable
0.74
16.60
12.36
0.40
Total
0.74
16.60
12.36
0.40
Above 50 Level – Côte d’Or
Proved
–
–
–
–
Probable
0.01
16.47
0.10

0.00
Total
0.01
16.47
0.10
0.00
Above 50 Level – Sansu
Proved
–
–
–
–
Probable
1.91
7.80
14.89
0.48
Total
1.91
7.80
14.89
0.48
Below 50 Level – Block 11
Proved
–
–
–
–
Probable
1.70
20.68
35.15
1.13
Total
1.70
20.68
35.15
1.13
Obuasi
Total
20.28
9.00
182.40
5.86
Estimation
3D Mineral Resource models are used as the basis for the Ore Reserve evaluation. Using the Mineral Resource block model, a
mineralisation envelope is developed by applying the relevant cut-off grade, which is then used for a mine design. An appropriate
mining layout is designed that incorporates mining extraction losses and dilution factors.

All mine designs are done to delineate stopes by taking into consideration cut-off grade, geotechnical design parameters for
each mining block, ventilation and backfill requirement, mining level and section, usually leading to an optimisation of the existing
infrastructure, mining sequence, and corresponding development layouts. The underground operation runs to a depth of 1,500m
from surface. Mining levels are between 15m and 20m intervals with major levels between 30m and 60m intervals. Underground
production mining methods include both longitudinal and transverse open stoping.

The current Ore Reserve has been estimated based partially on the 2014/2015 Mineral Resource and partially on the 2016 Mineral
Resource. The significant changes to the Mineral Resource, resulting from the revised geological model and extensive data
validation, have not impacted the entire Ore Reserve with only the southern blocks re-designed to the 2016 Mineral Resource.

The blocks re-designed during 2017 include: Sansu, Block 8 and Block 10 (includes Block 9). The remaining blocks will be
redesigned during 2019.

Ore Reserve modifying factors

as at 31 December 2018	Gold price US$/oz	Cut-off grade g/t Au	Dilution %	MRF % (based on tonnes)	MRF % (based on g/t)	MCF %	MetRF %
Above 50 Level – Adansi	1,100	5.20	14.0	98.0	100.0	100.0	87.0
Above 50 Level – Block 1	1,100	4.20	16.0	96.0	100.0	100.0	87.0
Above 50 Level – Block 2	1,100	4.30	15.0	96.0	100.0	100.0	87.0
Above 50 Level – Block 8	1,100	4.10	15.0	96.0	100.0	100.0	87.0

Above 50 Level – Block 10
1,100
4.25
10.0
96.0
100.0
100.0
87.0
Above 50 Level – Côte d'Or
1,100
5.00
5.0
100.0
100.0
100.0
87.0
Above 50 Level – Sansu
1,100
4.10
15.0
95.0
100.0
100.0
87.0
Below 50 Level – Block 11
1,100
5.20
16.0
96.0
100.0
100.0
87.0
Several factors are used for the modifying of the Ore Reserve and include mining recovery, dilution and processing recovery. These
are applied based on the mining method employed. A weighted average dilution factor equal to 15.5% is for all of the Ore Reserve.
Inferred Mineral Resource in business plan
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OBUASI CONTINUED
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as at 31 December 2018	Tonnes million	Grade g/t	Contained gold tonnes	Moz
Above 50 Level – Block 1	0.01	6.36	0.09	0.00
Above 50 Level – Block 2	0.67	6.70	4.49	0.14
Above 50 Level – Block 8	0.54	5.96	3.23	0.10
Above 50 Level – Block 10	0.20	8.08	1.58	0.05
Above 50 Level – Adansi	0.09	8.01	0.72	0.02
Above 50 Level – Côte d’Or	2.55	6.66	17.01	0.55
Below 50 Level – Block 11	1.01	14.84	15.02	0.48
Total	5.08	8.30	42.13	1.35

With appropriate caution, a portion of the Inferred Mineral Resource was included in the business plan during the optimisation process. This accounts for 20% of the business plan. The planned mining of Inferred Mineral Resource in the business plan is mainly at the end of the LOM and has an exploration programme attached to it to ensure the upgrade to Indicated Mineral Resource. This conversion of Inferred to Indicated Mineral Resource has taken into consideration historic conversion outcomes.

Ore Reserve below infrastructure

as at 31 December 2018

Category	Tonnes million	Grade g/t	Contained gold tonnes	Moz
Obuasi				
Proved	–	–	–	–
Probable	1.70	20.68	35.15	1.13
Total	1.70	20.68	35.15	1.13

Ore Reserve below infrastructure is restricted to the ground below 50 Level that requires a decline to access and is located between 50 and 60 Level below the Kwesi Mensah Shaft (KMS).

No mining or redesign occurred in 2018 as the mine remained on care and maintenance. The Ore Reserve figure remains as it was in 2017.

Year-on-year changes in Ore Reserve

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SECTION 3 / CONTINENTAL AFRICA

GUINEA

Siguiri Gold Mine is AngloGold Ashanti's only operation in the Republic of Guinea. The mine is 85% owned by AngloGold Ashanti and 15% by the government of Guinea. The mine is a conventional open pit operation situated in the Siguiri-district in the north-east of Guinea. It lies about 850km north-northeast from the capital city of Conakry and 109km west of the border with Mali by road.

Gold-bearing ore is mined from several pits (generally three pits at any one time). The plant upgrade has been completed and will ramp up during 2019.

Guinea – Siguiri

Inclusive Mineral Resource
as at 31 December 2018

Category	Tonnes million	Grade g/t	Contained gold tonnes	Moz
Guinea				
Measured	20.36	0.63	12.89	0.41
Indicated	164.46	0.87	143.58	4.62
Inferred	71.93	0.93	66.84	2.15
Total	256.75	0.87	223.30	7.18

Exclusive Mineral Resource
as at 31 December 2018

Category	Tonnes million	Grade g/t	Contained gold tonnes	Moz
Guinea				
Measured	–	–	–	–
Indicated	97.67	0.87	85.03	

2.73
Inferred
71.93
0.93
66.84
2.15
Total
169.60
0.90
151.87
4.88
Ore Reserve
as at 31 December 2018
Category
Tonnes
million
Grade
g/t
Contained gold
tonnes
Moz
Guinea
Proved
21.54
0.67
14.40
0.46
Probable
59.40
0.84
49.82
1.60
Total
80.94
0.79
64.22
2.06
0
200km
LEGEND
1
Siguiri (85%)
Operation
87
SECTION 3 / CONTINENTAL AFRICA

SIGUIRI

INTRODUCTION

Property description

Siguiri in Guinea is 85% owned by AngloGold Ashanti and 15% by the government of Guinea. It is an open pit operation.

Location

The mine is located approximately 850km north-northeast of Conakry, 25km northwest of the town of Siguiri and 190km southeast of the Malian capital Bamako, near the Mali border.

History

Gold mining in the district can be traced back for centuries, but there are no reliable records of pre-western production. The French became involved in the area in the late-19th and early-20th centuries. Between 1931 and 1951, the French reported gold coming out of Siguiri, with figures varying between 1t and 3.8t annually, however, little exploration work was completed.

There was a phase of Russian exploration in the area between 1960 and 1963 which focused on the placer deposits along the major river channels.

In 1980, Société Minière Internationale du Quebéc (SOMIQ) gained the exploration rights for Siguiri and Mandiana. SOMIQ focused its work on the Koron and Didi areas. The Chevaning Mining Company Limited was then created to undertake a detailed economic evaluation of the prospect, with more intensive work beginning in the late 1980s.

Société Aurifere de Guinea took over from its predecessors and continued work on the placer deposits. Production on the Koron placer reached a peak in 1992 with 1.1t of gold being produced. Due to a number of dif culties, the mine was shut down later that year. Golden Shamrock started a FS in 1995 after which Ashanti Goldfields invested in the deposit and Siguiri mine started production in 1998 as Société Ashanti Goldfields de Guinea (SAG).

The metallurgical plant is currently being upgraded to process hard rock and this is planned for completion in Q1 2019.

Legal aspects and tenure

Siguiri is mined under licence from the government of Guinea. The published Mineral Resource and Ore Reserve are covered by SAG mining concession D/97/171/PRG/SGG, totalling 1,494.5km^2.

The original SAG concession was granted under the Convention de Base between the Republique de Guinea and SAG signed on 4 August 1997. The concession is to be explored and mined exclusively for gold, silver and diamonds by SAG for 25 years from the date of the agreement, until 4 August 2022. An updated concession was negotiated with the government in 2016.

The Convention de Base will guide the renewal of the mining concession in 2022. The SAG concession was granted under a new amended Convention de Base between the Republique de Guinea and SAG signed on 28 June 2016 and ratified by the Guinean parliament on 13 December 2016. The Convention de Base has been ratified by the constitutional court and published in the Journal Officiel of the Republic of Guinea on 24 January 2017. Dependent on the submission of the necessary renewal documentation on, or before, 4 March 2022 the concession is to be explored and mined exclusively for gold, silver and diamonds by SAG for 25 years from the date of agreement to 13 December 2041.

Mining method

Siguiri is currently a multi-pit oxide gold mining operation, operated by a contract miner. The mining method is selective conventional techniques using excavators and trucks on 3m high itches. Three Caterpillar 6020B excavators are the main loading equipment matched with CAT 777G dump trucks. A SMU suitable for selective mining and nominated mining equipment of 5 x 5 x 3m based on historical grade control areas are used to simulate the expected mining dilution and ore losses.

Operational infrastructure

The Siguiri Gold Mine includes a processing plant, a TSF and other infrastructure such as a mine village, water supply system, roads, power supply by on site generators and communications systems. Additional infrastructure includes on site offices, accommodation and workshops to

support remote mining.
Siguiri can be accessed via a small airfield and a well-paved road connects Siguiri to Bamako in the north and Kouroussa in the south. Access to the mine via roads and to Siguiri is easily passable through most of the year, although some secondary roads are seasonal with limited access during wet season.

Mineral processing

Processing of the ore is done by a CIP processing plant that has been successfully optimised to reach an average throughput of 11.8Mt per annum. Ore has historically been derived from a number of oxide pits in the Block 1 concession area with the primary future ore supply provided by existing stockpiles (oxide ore), Kami and Bidini (both fresh rock ore).

The original processing facility was designed for the processing of soft ore only and can only introduce a small percentage of fresh rock ore in the mill feed. A new ball mill and 3 stage crushing plant capable of treating 50% hard ores was added to the circuit in 2018. The leach circuit has also been converted to a hybrid CIL circuit.

Risks

Risks associated with the validity of the Siguiri mining concession and mining convention post 2018, have been addressed by the favourable conclusion of the Convention de Base negotiation during 2016 and its ratification in 2017 by parliament. The current mining concession is confirmed to be valid until 4 August 2022, with high likelihood of renewal until 2041.

The favourable conclusion of the Convention de Base negotiation during 2016 and its ratification in 2017 by parliament has significantly reduced the risk of the remaining Mineral Resource and Ore Reserve not being covered by a valid mining concession. The current mining concession is now confirmed to be valid until 4 August 2022, with high likelihood of renewal until 2041.

Map showing Siguiri Gold Mine infrastructure, concession and exploration licences, Block 1 to Block 4

Licences

Mining

Exploration

Mine Infrastructure

Pits

Plant

ROM pad

Stockpiles

Leach pad

TSF

Waste dumps

Settlements

Towns

Villages

Deposit

Roads

Main

Secondary

0

10

20

30km

Plant centroid co-ordinates

9°23’27”W, 11°33’54”N

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SECTION 3 / CONTINENTAL AFRICA

SIGUIRI CONTINUED
Competent Persons

Responsibility	Competent Person	Professional organisation	Membership number	Relevant experience	Qualification
Mineral Resource	Steven Robins	MAusIMM	222 533	22 years	BSc Hons (Geology), MSc (Mineral Resource Evaluation), MBA
Ore Reserve	Desiderius Kamugisha	MAusIMM	227 181	17 years	BSc (Mining Engineering)

GEOLOGY

The Siguiri Gold Mine is situated in the northern part of the Siguiri Basin of Guinea, and is underlain by Lower Proterozoic rocks of the Birimian metasedimentary and volcano-sedimentary formations. Where exposed, the sediments consist of a well-bedded turbiditic sequence of greenschist facies siltstones, sandstones, greywackes and minor conglomerates, with some brecciated and possibly volcanic members. Stratigraphic relationships in the area are however, poorly understood due to poor exposure and a thick lateritic duricrust.

The typical regolith or laterite residual profile at Siguiri consists of four main sub-horizontal layers:

- Lateritic duricrust: a hard ferruginous (and aluminous) crust
- Mottled zone: a bauxite clay zone, produced by isovolumetric weathering, containing lateritic and gibbsitic nodules and accumulations which impart a mottled appearance
- Saprolite: a generally clay rich zone of weathered rock, composed of mixtures of kaolinite, hematite and/or goethite and/or gibbsite. Although more than 20% of weatherable minerals are altered, primary fabrics are often preserved
- Saprock/transition zone: slightly weathered rock with less than 20% of weatherable minerals altered

Map showing Siguiri Gold Mine infrastructure, concession and exploration licences, Block 1
0
2
4

8km
Plant centroid co-ordinates
9°23’27”W, 11°33’54”N
Licences
Mining
Exploration
Mine Infrastructure
Pits
Plant
ROM pad
Stockpiles
Leach pad
TSF
Waste dumps
90
SECTION 3 / CONTINENTAL AFRICA

The main structural and lithological trend in the current mining area of Block 1, changes from a roughly north-south orientation in the south to northwest-southeast in the north.

The mineralisation at Siguiri occurs as a secondary gold in alluvial or colluvial gravel in lateritic cover and a primary vein hosted mineralisation. The veins are quartz dominant and display a variety of styles and orientations, with a sub-vertical northeast-trending conjugate quartz vein set predominating in most of the open pits, irrespective of the orientation of the bedding. Auriferous quartz veins show a strong lithological control and are best developed in the sandstone/greywacke units.

The geology of Block 2 differs from Block 1 in that the block is mostly underlain by metavolcanics and volcanoclastics. Mineralisation styles appear to be similar to those in Block 1, with Saraya appearing to be located on a north-south orientated structure.

Deposit type

The Siguiri orebodies are early Proterozoic (Birimian) orogenic quartz-vein hosted deposits located in the Siguiri Basin of West Africa. Generally poorly exposed, the basin sediments have been subject to greenschist facies metamorphism and consist of a well-bedded turbiditic sedimentary sequence with some brecciated and possibly volcanic members. Mineralisation also occurs as secondary gold in alluvial and colluvial gravels in laterite cover.

Three main sedimentary packages are recognised in the Siguiri district, the Balato, Fatoya and Kintinian Formations. The Balato Formation is dominated by centimetre scale alternations of shale-siltstone and greywacke. The overlying Fatoya Formation consists of metre scale beds of greywacke ning towards the west.

The Kintinian Formation is a thick package of shale and sandstone with a basal clast-supported conglomerate.

The orebodies are structurally controlled and the area has undergone at least three distinct phases of deformation, with initial north-south compression developing minor folds, the second and largest deformation event is associated with east-west to east-northeast-west-southwest directed compression leading to north-south structural architecture, and the third event was a northwest-southeast compression that led to refolding of existing structures.

A deep oxidation (weathering) profile is developed in the region, varying between 50 to 150m. The mineralised saprolite currently provides the main oxide feedstock for the CIP processing plant although a new treatment option is nearing completion to process the fresh rock extensions of the ore deposits.

Mineralisation style

Primary gold mineralisation occurs in all three lithostratigraphic units of the Siguiri region although most of the known mineralisation is found in the central and more competent Fatoya Formation. In some deposits, the mineralisation shows strong lithological control and is preferentially developed in coarser-grained units that have higher fracture/vein densities relative to fine-grained rocks.

The mineralisation dominantly follows sub-vertical north-south thrusts, northeast-southwest dextral shear zones, and west-northwest to east-southeast sinistral faults associated with the main (D2) deformation event. The mineralised veins are remarkable

for the relative consistency of their orientation (northeast), despite the highly variable orientation of bedding and major structures.
Mineralised veins are more intensely developed along major structural trends with quartz-carbonate-sulphide veining developed along structures. Some of these structures have developed as incipient faults and are represented by discrete stockworks of mineralised quartz-carbonate veins occurring along a trend, instead of being clearly defined continuous structures.
Mineralisation characteristics
Two styles of primary mineralisation have been recognised at Siguiri. The first is characterised by precipitation of gold-bearing pyrite associated with proximal albite and distal carbon alteration, and opening of carbonate-pyrite veins. The second style corresponds to east-northeast to west-southwest trending native gold bearing quartz veins with carbonate selvages which crosscut carbonate-pyrite veins and show arsenopyrite (pyrite) halos.

SIGUIRI CONTINUED

EXPLORATION

Exploration at Siguiri was historically focused on nding new oxide Mineral Resource in the saprolite and upgrading the confidence in the existing oxide Mineral Resource. This was achieved using geophysics, soil geochemistry and drill hole sampling in the context of the regional and pit-scale geological models. Following the completion of an asset strategy optimisation project in 2012, which indicated the potential economic viability of the fresh rock material, the aim of the exploration has expanded and the objectives are two-fold. Firstly, to explore for replacement and additional oxide material for short-term mining requirements. Secondly, to increase the level of confidence in the ve major fresh rock targets below the existing oxide pits at Kami, Bidini, Tubani, Ségulén, Sokunu and Sintroko.

1,504 drill holes totalling 87,013m were completed in 2018 and primarily focused (51%) on increasing confidence in the Saraya, and Foulata Mineral Resource to generate Indicated Mineral Resource in support of the Remote Lease PFS project at Block 2.

Infill drilling comprising 23% of the total drilling occurred on Block 1 over various deposits (Kami, Tubani, Silakoro, Sintroko, Kozan North Bidini West and Eureka North). Reconnaissance drilling comprised 19% of the total metres and was focused on depth extensions at Seguélén, Sokunu, and Kosise, while new oxide targets were drilled at Foulata East (Block 2) and the Saraya West, Corridor and TSF Exploration Licences. The remaining 7% of total metres comprised sterilisation drilling at Silakoro.

Target generation and evaluation of Block 4, was completed during 2018 and an AC reconnaissance drill programme initiated in December 2018.

W-E Geological cross-section of the Kami deposit, elevation in metres relative to average mean sea level

PROJECTS

A FS to allow the exploitation of the fresh rock material was completed in December 2015. Called the combination plant project, it will upgrade the current plant and enable processing of a combination of oxides and fresh rock material. The plant throughput will remain at 12Mtpa with a exible design allowing up to 6Mtpa fresh rock material to be processed. Targeted fresh rock pits include Kami, Bidini, Tubani, Sintroko, Seguélén and Sokuno. The FS was approved by the board of AngloGold Ashanti following successful negotiations with the government of Guinea regarding the Convention de Base and having obtained access to Seguélén Area 1.

Construction of the combination plant commenced in 2017 and will be completed during Q1 of 2019.

Fatoya Formation – coarse/medium
grained greywacke dominant
Fatoya Formation – fine grained
siltstone dominated
Balato Formation –
ne grained siltstone, shale, black shale
Orebody
Fault
Fold axis

Oxide – fresh rock transition
Legend
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SECTION 3 / CONTINENTAL AFRICA

Conceptual studies were initiated to evaluate the potential of mining in Block 2 and Block 3 with priority placed on the higher value
Block 2 deposits. Infill drilling, aimed to convert Inferred to Indicated Mineral Resource was completed at Foulata and Saraya in
2018, culminating in the start of a PFS in the second half of 2018 and completion in early 2019.
MINERAL RESOURCE
Details of average drill hole spacing and type in relation to Mineral Resource classification
Category
Spacing m (-x-)
Type of drilling
Comments
Diamond
RC
Blasthole
Channel
Other
Measured
–
√
√
√
√
√
√
√
–
–
–
–
Indicated
25 x 25 (square or
staggered) and 50 x 25
(Kami and Bidini)
–
–
–
–
Inferred
20 x 40, 50 x 25, 50 x 50
–
–
–
–
Grade/ore control
5 x 10, 5 x 12, 10 x 5,
10 x 10, 13 x 7, 13 x 8
–
–
–
Variable
dependent

on the deposit
and continuity of
mineralisation
In general, 100 x 200m drill hole spacing is used to define the extent and geometry of anomalies.
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SECTION 3 / CONTINENTAL AFRICA

SIGUIRI CONTINUED

Inclusive Mineral Resource
as at 31 December 2018

Category	Tonnes million	Grade g/t	Contained gold tonnes	Moz
Bidini (fresh rock)				
Measured	–	–	–	–
Indicated	8.02	1.44	11.57	0.37
Inferred	1.95	1.39	2.70	0.09
Total	9.97	1.43	14.27	0.46
Bidini (oxide)				
Measured	–	–	–	–
Indicated	3.15	0.90	2.84	0.09
Inferred	7.30	0.82	6.00	0.19
Total	10.45	0.85		

8.83
0.28
Bidini (transitional)
Measured
–
–
–
–
Indicated
3.63
1.48
5.37
0.17
Inferred
0.76
1.46
1.10
0.04
Total
4.39
1.47
6.47
0.21
Eureka East
Measured
–
–
–
–
Indicated
0.69
0.92
0.63
0.02
Inferred
0.23
0.77
0.18
0.01
Total
0.92
0.88
0.81
0.03
Eureka North
Measured
–
–
–
–
Indicated

1.63
0.85
1.38
0.04
Inferred
0.97
1.06
1.03
0.03
Total
2.60
0.93
2.41
0.08
Foulata
Measured
–
–
–
–
Indicated
3.83
1.31
5.02
0.16
Inferred
0.59
1.50
0.88
0.03
Total
4.42
1.34
5.90
0.19
Kalamagna
Measured
–
–
–
–
Indicated
5.90
0.71
4.17
0.13
Inferred
2.66
0.68
1.79
0.06

Total
8.56
0.70
5.96
0.19
Kami (fresh rock)
Measured
–
–
–
–
Indicated
35.21
0.96
33.63
1.08
Inferred
4.42
0.86
3.79
0.12
Total
39.62
0.94
37.42
1.20
Kami (oxide)
Measured
–
–
–
–
Indicated
14.60
0.61
8.87
0.29
Inferred
3.00
0.66
1.98
0.06
Total
17.60
0.62
10.85
0.35
Kami (transitional)
Measured
–
–

–
–
Indicated
2.59
0.97
2.53
0.08
Inferred
0.31
0.79
0.24
0.01
Total
2.90
0.96
2.77
0.09
Kosise
Measured
–
–
–
–
Indicated
4.55
0.70
3.19
0.10
Inferred
3.37
0.62
2.10
0.07
Total
7.93
0.67
5.30
0.17
Kounkoun
Measured
–
–
–
–
Indicated
–
–
–
–
Inferred
9.53

1.28
12.19
0.39
Total
9.53
1.28
12.19
0.39
Kozan North
Measured
–
–
–
–
Indicated
5.10
0.67
3.42
0.11
Inferred
0.57
0.69
0.39
0.01
94
SECTION 3 / CONTINENTAL AFRICA

Inclusive Mineral Resource continued
as at 31 December 2018
Category
Tonnes
million
Grade
g/t
Contained gold
tonnes
Moz
Total
5.67
0.67
3.81
0.12
Kozan South
Measured
–
–
–
–
Indicated
6.53
0.63
4.14
0.13
Inferred
0.34
0.92
0.31
0.01
Total
6.87
0.65
4.45
0.14
Seguélén (oxide)
Measured
–
–
–
–
Indicated
6.01
0.84
5.05
0.16
Inferred
2.09
0.76
1.59

0.05
Total
8.11
0.82
6.64
0.21
Seguélén (sulphide)
Measured
–
–
–
–
Indicated
1.56
1.08
1.70
0.05
Inferred
1.95
1.06
2.08
0.07
Total
3.52
1.07
3.77
0.12
Seguélén (transitional)
Measured
–
–
–
–
Indicated
0.72
0.95
0.68
0.02
Inferred
0.48
1.03
0.49
0.02
Total
1.19
0.98
1.17
0.04
Saraya (sulphide)
Measured
–

–
–
–
Indicated
3.43
1.93
6.61
0.21
Inferred
1.18
2.29
2.69
0.09
Total
4.61
2.02
9.31
0.30
Saraya (oxide)
Measured
–
–
–
–
Indicated
2.02
1.54
3.12
0.10
Inferred
0.50
1.65
0.82
0.03
Total
2.52
1.56
3.94
0.13
Saraya (transitional)
Measured
–
–
–
–
Indicated
0.24
2.07
0.49
0.02
Inferred

0.03
1.88
0.07
0.00
Total
0.27
2.05
0.56
0.02
Sintroko South
Measured
–
–
–
–
Indicated
2.70
1.19
3.21
0.10
Inferred
0.34
1.85
0.63
0.02
Total
3.04
1.26
3.84
0.12
Silakoro
Measured
–
–
–
–
Indicated
1.25
1.73
2.16
0.07
Inferred
0.03
1.03
0.03
0.00
Total
1.27
1.72
2.19
0.07

Sokunu
Measured
–
–
–
–
Indicated
7.78
0.75
5.86
0.19
Inferred
5.84
0.88
5.11
0.16
Total
13.62
0.81
10.98
0.35
Soloni
Measured
–
–
–
–
Indicated
4.32
0.56
2.44
0.08
Inferred
3.94
0.67
2.64
0.08
Total
8.26
0.62
5.08
0.16
Sorofe (fresh rock)
Measured
–
–
–
–
Indicated
2.06
1.19

2.45
0.08
Inferred
1.39
1.38
1.92
0.06
Total
3.46
1.26
4.37
0.14
Sorofe (oxide)
Measured
–
–
–
–
Indicated
4.14
1.15
4.78
0.15
95
SECTION 3 / CONTINENTAL AFRICA

SIGUIRI CONTINUED
Inclusive Mineral Resource continued
as at 31 December 2018
Category
Tonnes
million
Grade
g/t
Contained gold
tonnes
Moz
Inferred
3.26
1.20
3.92
0.13
Total
7.40
1.18
8.70
0.28
Sorofe (transitional)
Measured
–
–
–
–
Indicated
0.83
1.18
0.98
0.03
Inferred
1.53
1.66
2.54
0.08
Total
2.36
1.49
3.52
0.11
Stockpile (full grade ore)
Measured
6.74
0.90
6.06
0.19
Indicated
–
–

–
–
Inferred
–
–
–
–
Total
6.74
0.90
6.06
0.19
Stockpile (marginal ore)
Measured
13.62
0.50
6.83
0.22
Indicated
–
–
–
–
Inferred
–
–
–
–
Total
13.62
0.50
6.83
0.22
Stockpile (spent heap leach)
Measured
–
–
–
–
Indicated
31.95
0.54
17.29
0.56
Inferred
13.40
0.57
7.61
0.24
Total
45.35

0.55
24.90
0.80
Siguiri
Total
256.75
0.87
223.30
7.18
The Siguiri inclusive Mineral Resource is reported above the mineralised waste cut-off within economic pit shells, based on a gold
price of $1,400/oz and considering mining, processing and operational costs.
Estimation
Mineral Resource definition drilling is done with aircore drilling (AC), RC and DD. All available geological drill hole information is
validated for use in the Mineral Resource models and together with the local geology of the deposit, an understanding of grade
variability is used to categorise the drill hole information into appropriate estimation domains. Detailed statistical analyses are
conducted on each of these domains and this allows for the identification of high-grade outlier values.
The Mineral Resource model is estimated using ordinary kriging into a 3D block model. Geological interpretation is based on
geological drill hole data. The dimensions of these Mineral Resource blocks range from 10 x 10 x 2.5m to 50 x 25 x 6m block sizes,
guided by the shape of the deposit and the drilling density. The Mineral Resource is declared within an optimised Mineral Resource
pit shell using a gold price of $1,400/oz.
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SECTION 3 / CONTINENTAL AFRICA

The grade tonnage curve does not include stockpiles.

Exclusive Mineral Resource
as at 31 December 2018

Category	Tonnes million	Grade g/t	Contained gold tonnes	Moz
Siguiri				
Measured	–	–	–	–
Indicated	97.67	0.87	85.03	2.73
Inferred	71.93	0.93	66.84	2.15
Total	169.60	0.90	151.87	4.88

The exclusive Mineral Resource at Siguiri includes:

- Indicated Mineral Resource that is economic at the Mineral Resource gold price of US$1,400/oz but not at the Ore Reserve price (this material forms approximately one third of the exclusive Mineral Resource)
- Inferred Mineral Resource not included in the current pit designs (selected parts of these areas will be included in infill drilling programmes during 2019 to meet LOM planning requirements)
- Inferred Mineral Resource located within the Ore Reserve optimised pit shell (this material forms an insignificant proportion of the exclusive Mineral Resource)

Grade tonnage curve

The Mineral Resource has remained relatively stable over the past year with only a 1% decrease on that reported in 2017. Depletion at Seguélén, Silakoro, Kozan and stockpiles were offset by gains due to reduced cost which brought back Eureka North, exploration

infill drilling at Foulata, Saraya and Silakoro and metallurgical improvements due to the introduction of the CIL option for Foulata
and Saraya.
Year-on-year changes in Mineral Resource
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SECTION 3 / CONTINENTAL AFRICA

SIGUIRI CONTINUED

As a low grade deposit, Siguiri is very sensitive to gold price changes.

Inclusive Mineral Resource sensitivity

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SECTION 3 / CONTINENTAL AFRICA

ORE RESERVE

Ore Reserve
as at 31 December 2018

Category	Tonnes million	Grade g/t	Contained gold tonnes	Moz
Bidini (fresh rock)				
Proved	–	–	–	–
Probable	4.74	1.43	6.78	0.22
Total	4.74	1.43	6.78	0.22
Bidini (oxide)				
Proved	–	–	–	–
Probable	1.92	0.84	1.61	0.05
Total	1.92	0.84	1.61	0.05
Bidini (transitional)				
Proved	–	–	–	–
Probable	1.82			

1.39
2.53
0.08
Total
1.82
1.39
2.53
0.08
Kami (fresh rock)
Proved
–
–
–
–
Probable
15.41
1.14
17.55
0.56
Total
15.41
1.14
17.55
0.56
Kami (oxide)
Proved
–
–
–
–
Probable
0.73
0.78
0.57
0.02
Total
0.73
0.78
0.57
0.02
Kami (transitional)
Proved
–
–
–
–
Probable
1.21
1.14
1.38
0.04

Total
1.21
1.14
1.38
0.04
Seguélén (sulphide)
Proved
–
–
–
–
Probable
0.50
1.11
0.56
0.02
Total
0.50
1.11
0.56
0.02
Seguélén (transitional)
Proved
–
–
–
–
Probable
0.00
0.76
0.00
0.00
Total
0.00
0.76
0.00
0.00
Silakoro
Proved
–
–
–
–
Probable
0.40
2.04
0.81
0.03
Total
0.40
2.04

0.81
0.03
Sorofe (fresh rock)
Proved
1.18
1.28
1.51
0.05
Probable
–
–
–
–
Total
1.18
1.28
1.51
0.05
Sorofe (oxide)
Proved
–
–
–
–
Probable
0.46
0.99
0.45
0.01
Total
0.46
0.99
0.45
0.01
Sorofe (transitional)
Proved
–
–
–
–
Probable
0.24
1.18
0.29
0.01
Total
0.24
1.18
0.29
0.01
Stockpile (full grade ore)

Proved
6.74
0.90
6.06
0.19
Probable
–
–
–
–
Total
6.74
0.90
6.06
0.19
Stockpile (marginal ore)
Proved
13.62
0.50
6.83
0.22
Probable
–
–
–
–
Total
13.62
0.50
6.83
0.22
Stockpile (spent heap leach)
Proved
–
–
–
–
Probable
31.95
0.54
17.29
0.56
Total
31.95
0.54
17.29
0.56
Siguiri
Total
80.94
0.79

64.22
2.06
99
SECTION 3 / CONTINENTAL AFRICA

SIGUIRI CONTINUED

Estimation

The Mineral Resource models for each pit are depleted to the current mined-out surface. Costs are assigned on a pit-by-pit basis,
reflecting the existing cost structure of the operation. The relevant dilution and ore-loss factors are applied and pit optimisation
is then performed. The relevant modifying factors such as metallurgical recoveries, geotechnical parameters, cut-off grades and
economics are applied to generate the mine designs that are used to estimate the final Ore Reserve.

Ore Reserve modifying factors
as at 31 December 2018
Gold
price
US$/oz
Cut-off
grade
g/t Au
Dilution
%
Dilution
g/t
RMF
% (based
on tonnes)
RMF
% (based
on g/t)
MRF
% (based
on tonnes)
MRF
% (based
on g/t
MCF
%
MetRF
%
Bidini (oxide)
1,100
0.6
28.1
0.2
100.0
100.0
80.6
88.0
100.0
93.0
Bidini (fresh rock)
1,100
0.7

17.6
0.1
100.0
100.0
85.5
91.3
100.0
93.0
Bidini (transitional)
1,100
0.7
18.1
0.1
100.0
100.0
83.1
89.6
100.0
93.0
Kami (oxide)
1,100
0.6
1.0
0.4
100.0
100.0
80.9
78.9
100.0
93.0
Kami (fresh rock)
1,100
0.7
1.5
0.5
100.0
100.0
99.0
99.3
100.0
93.0
Kami (transitional)
1,100
0.7
2.6
0.5
100.0
100.0
88.5
89.3
100.0

93.0
Seguélén (sulphide)
1,100
0.7
14.6
0.3
100.0
100.0
99.4
99.7
100.0
93.0
Seguélén (transitional)
1,100
0.7
14.6
0.3
100.0
100.0
92.8
95.8
100.0
93.0
Silakoro
1,100
0.6
2.4
0.4
100.0
100.0
76.5
74.3
100.0
91.0
Sorofe (oxide)
1,100
0.6
37.3
0.1
100.0
100.0
75.5
86.4
100.0
93.0
Sorofe (fresh rock)
1,100
0.7
12.6
0.1
100.0

100.0
86.7
92.1
100.0
93.0
Sorofe (transitional)
1,100
0.7
22.9
0.1
100.0
100.0
76.1
84.8
100.0
93.0
Stockpile (full grade ore)
1,100
–
–
–
100.0
100.0
100.0
100.0
100.0
91.0
Stockpile (marginal ore)
1,100
–
–
–
100.0
100.0
100.0
100.0
100.0
88.0
Stockpile (spent heap
leach)
1,100
–
–
–
100.0
100.0
100.0
100.0
100.0
90.0

The Mineral Resource models were modified to include the expected mining dilution and ore losses. These are built into the Mineral
Resource block model prior to pit optimisation. Additional modifying factors based on historical information were also applied prior
to estimation of Ore Reserve.

Positive model changes in the Ore Reserve from infill drilling in Silakoro and Seguélén, a decrease in costs mainly due to general and administration, increased slope angle in Bidini and Tubani (Sorofe) and changes in stockpile inventories failed to cover the depletion.

Year-on-year changes in Ore Reserve

Inferred Mineral Resource in business plan

as at 31 December 2018	Tonnes million	Grade g/t	Contained gold tonnes	Moz
Bidini (fresh rock)	0.81	1.28	1.04	0.03
Bidini (oxide)	0.83	0.95	0.79	0.03
Bidini (transitional)	0.20	1.26	0.25	0.01
Kami (fresh rock)	0.27	0.87	0.24	0.01
Kami (oxide)	0.00	0.45	0.00	0.00
Kami (transitional)	0.00	0.64	0.00	0.00
Seguélén (sulphide)	0.03	1.81	0.05	0.00
Silakoro	0.03			

0.70
0.02
0.00
Sorofe (fresh rock)
0.37
1.38
0.51
0.02
Sorofe (oxide)
0.07
0.83
0.06
0.00
Sorofe (transitional)
0.01
0.83
0.01
0.00
Total
2.63
1.13
2.97
0.10
Ore Reserve does not include Inferred Mineral Resource, but within the pit design, Inferred Mineral Resource is included. For the
optimisation, the impact of excluding Inferred Mineral Resource is tested to determine if the pit sizes will still generate a positive cash
flow at $1,100/oz gold price.
The Inferred Mineral Resource within the Ore Reserve design is 4% of the total ore scheduled. The major contributor of Inferred
Mineral Resource material is Bidini. Inferred Mineral Resource exists as pockets located within the Bidini stage 1 design and will be
converted to Indicated and Measured once the access is provided (conversion costs are covered in the 2019/2020 exploration and
grade control budgets).
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SECTION 3 / CONTINENTAL AFRICA

MALI

AngloGold Ashanti has interests in three mines in the West African country of Mali, with Morila being operational, Sadiola being in a limited operating phase and Yatela undergoing closure. Sadiola and Yatela are JV operations with IAMGOLD and the state of Mali, while Morila is a JV with Barrick and the state of Mali. For Yatela, a sale agreement has been entered into with the state of Mali which is subject to several conditions precedent being fulfilled. Sadiola is currently considering a major pushback to access hard rock and Morila is a mature operation focusing on tailings reclamation and small satellite deposits.

The Sadiola operation is managed by AngloGold Ashanti while Barrick manages Morila. There is no Mineral Resource or Ore Reserve reported for Yatela.

Mali – Sadiola

Inclusive Mineral Resource
as at 31 December 2018

Category	Tonnes million	Grade g/t	Contained gold tonnes	Moz
Mali				
Measured	4.86	0.54	2.62	0.08
Indicated	48.39	1.82	88.27	2.84
Inferred	7.23	1.68	12.19	0.39
Total	60.48	1.70	103.07	3.31

Exclusive Mineral Resource
as at 31 December 2018

Category	Tonnes million	Grade g/t	Contained gold tonnes	Moz
Mali				
Measured	–	–	–	–
Indicated	21.08	1.72	36.21	

1.16
Inferred
7.23
1.68
12.19
0.39
Total
28.32
1.71
48.40
1.56
Ore Reserve
as at 31 December 2018
Category
Tonnes
million
Grade
g/t
Contained gold
tonnes
Moz
Mali
Proved
2.50
0.65
1.62
0.05
Probable
26.27
1.94
50.86
1.64
Total
28.78
1.82
52.48
1.69
LEGEND
1
Sadiola (41%)
2
Morila (40%)
3
Yatela
(1)
(40%)
0
400km
(1)
Yatela is currently in closure mode.
Operation

MORILA

INTRODUCTION

Property description

The mine is operated by Morila SA, a JV company incorporating Barrick (previously Randgold) (40%), AngloGold Ashanti (40%) and the state of Mali (20%). Randgold took over the operation of Morila mine from AngloGold Ashanti in February 2008. In 2009, Morila was converted to a stockpile treatment operation. Closure of the operation was originally scheduled for 2013 but a pit pushback and a tailings treatment project has extended its life to 2019.

Location

The Morila mine is situated some 280km south-east of Bamako, the capital city of Mali.

History

In 1996, Morila was discovered by Randgold. A PFS in 1998 supported the fast tracking of the mine and, by August 1998, a bankable FS was underway. In 2000, a JV partner was sought and AngloGold purchased 40% of the mine and became the operator of the mine. In February 2001, the Malian president officially opened the mine.

During 2003, a capital expansion programme was completed and increased the production level to 350,000t per month by year-end. In 2008, AngloGold Ashanti considered Morila to be non-strategic and Randgold took over the operational responsibility for Morila.

In 2009 Morila started its transition to a stockpile and tailings retreatment operation.

Legal aspects and tenure

Morila’s exploitation permit PE 99/15 (Decree No 99-217/PM-RM) covers 199.8km^2 and was issued on 4 August 1999 for 30 years. An agreement between Birimian Gold Mali SARL (Birimian) and Morila was signed on 24 October 2016 for the Morila team to undertake a six-month feasibility study on the Viper target. The agreement to exercise the option from Birimian was taken after six months on 24 April 2017. The permit was transferred to Morila on 17 May 2018 with the Decret No 99-361/PM-RM. Birimian retain a 22% Royalty and 11% option on the Viper deposit.

Mining method

Production of the Viper satellite pit is via conventional open pit mining methods. All other production is from retreatment of tailings and stockpiles.

Operational infrastructure

All operational infrastructures are in place to support a mining operation including a processing plant, power generation, village and TSF.

Mineral processing

Satellite pit ore together with tailing materials are being processed. The metallurgical plant utilises a conventional CIL process with an upfront gravity section to extract the free gold and has annual throughput capacity of 4.3Mt.

Risks

No material risks have been identified.

Licences
Mining
Mine infrastructure
Pits
Plant
ROM pad
TSF
Waste dumps
Settlements
Villages
Roads
Main
Secondary
Airfield
Plant centroid co-ordinates
06°50’23”W, 11°40’43”N
1.5
0
1.5
3km
Planned
Waste dump and pit
Map showing Morila Mine infrastructure and licences

MORILA CONTINUED
Competent Persons
Responsibility
Competent Person
Professional organisation
Membership
number
Relevant
experience
Qualification
Mineral Resource and
Ore Reserve
Simon Bottoms*
Geological Society of
London (FGS CGeol)
1 023 769
9 years
MGeol
* Employed by Barrick as SVP, Africa and Middle East Mineral Resource Manager, 3rd Floor, Unity Chambers, 28
Halkett Street, St. Helier, Jersey,
Channel Islands
GEOLOGY
The Morila deposit occurs within a sequence of amphibolite facies Birimian metasediments. The economic
mineralisation is located
in these metasediments within a broad north-northwest trending corridor of shearing. This shear zone has near-vertical
and at-
lying components and is interpreted as being a second-order shear off the main Banafin shear, approximately 25km to
the east. The
Doubalakoro granite pluton borders the metasediments to the west and the Massigui granites lie to the east. Gold
mineralisation is
associated with silica-feldspar alteration and the sulphide minerals arsenopyrite, pyrrhotite and pyrite (with minor
chalcopyrite).
EXPLORATION
Recent exploration at Morila has been limited to reviews of potential targets, including the Samacline area and drilling
at the satellite
pits in support of the production from Viper and Ntiola.
PROJECTS
Birimian option agreement
In 2016, Morila signed an option agreement with Birimian, which provides Morila access to Birimians' Ntiola and
Viper projects
which are adjacent to the existing Morila permit.
MINERAL RESOURCE
Details of average drill hole spacing and type in relation to Mineral Resource classification
Category
Spacing m (-x-)
Type of drilling
Comments
Diamond
RC
Blasthole
Channel

Other
Measured
10 x 5, 50 x 100
–
√
√
√
√
–
–
Auger drilling
Indicated
10 x 20
–
√
–
–
√
–
–
Inferred
20 x 40
–
–
–
–
Grade/ore control
10 x 5
–
–
–
–
–
Inclusive Mineral Resource
as at 31 December 2018
Category
Tonnes
million
Grade
g/t
Contained gold
tonnes
Moz
Satellite pit
Measured
–
–
–
–
Indicated
0.16

1.44
0.22
0.01
Inferred
–
–
–
–
Total
0.16
1.44
0.22
0.01
Stockpile (full grade ore)
Measured
0.03
1.47
0.05
0.00
Indicated
–
–
–
–
Inferred
–
–
–
–
Total
0.03
1.47
0.05
0.00
TSFs
Measured
4.78
0.52
2.49
0.08
Indicated
–
–
–
–
Inferred
–
–
–
–
Total

4.78
0.52
2.49
0.08
Morila
Total
4.97
0.56
2.76
0.09
Estimation
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SECTION 3 / CONTINENTAL AFRICA

The grade tonnage curve does not include stockpiles.
Morila is not sensitive to an increase in gold price
and insensitive on the downside as it is a mature
operation at the end of its life with very little
additional opportunity.
Depletions have been partially offset by the addition of Viper and Ntiola open pits from exploration.
Year-on-year changes in Mineral Resource
Inclusive Mineral Resource sensitivity
Grade tonnage curve
The Mineral Resource consists of material from TSF and Domba pit as marginal and mineralised waste stockpiles are depleted. The
TSF forms the bulk of the Mineral Resource and was drilled on a spacing of 50 x 50m and estimated using ordinary kriging methods
into a 50 x 50m block size.

MORILA CONTINUED

ORE RESERVE

Ore Reserve

as at 31 December 2018

Category	Tonnes million	Grade g/t	Contained gold tonnes	Moz
Satellite pit				
Proved	–	–	–	–
Probable	0.17	1.31	0.22	0.01
Total	0.17	1.31	0.22	0.01
Stockpile (full grade ore)				
Proved	0.03	1.47	0.05	0.00
Probable	–	–	–	–
Total	0.03	1.47	0.05	0.00
TSF				
Proved	2.42	0.62	1.50	0.05
Probable				

–
–
–
–
Total
2.42
0.62
1.50
0.05
Morila
Total
2.62
0.67
1.76
0.06
Estimation
The Mineral Resource models are used as the basis for the Ore Reserve. All appropriate costs, metallurgical recovery factors and
geotechnical parameters are applied to generate the mine designs that are used to estimate the final Ore Reserve.
Ore Reserve modifying factors
as at 31 December 2018
Gold
price
US$/oz
Cut-off
grade
g/t Au
Dilution
%
MRF
% (based
on tonnes)
MCF
%
MetRF
%
Satellite pit
1,000
0.79
10.0
97.0
98.0
91.0
TSF
1,000
0.49
5.0
–
100.0
57.0
$1,000/oz Ore Reserve price used by Barrick (operating partner)

Inferred Mineral Resource in business plan
There is no Inferred Mineral Resource included in the business plan.
Depletions were partially offset by the addition of Viper and Ntiola open pits from exploration.
Year-on-year changes in Ore Reserve
108
SECTION 3 / CONTINENTAL AFRICA

SADIOLA

INTRODUCTION

Property description

The Sadiola gold deposit is mined by the Société d'Exploration des Mines d'Or de Sadiola S.A. (SEMOS) that is a JV agreement between AngloGold Ashanti (41%), IAMGOLD Corporation (41%) and the state of Mali (18%).

Location

Sadiola is situated in western Mali, 77km to the south of the regional capital of Kayes and about 440km north-west of the capital city of Bamako. The property lies within the Galam Bambouk gold area, which straddles the Mali-Senegal border close to the border with Guinea.

History

Sadiola has a history of alluvial gold working dating back to the 11th century. In 1991/1992 IAMGOLD acquired the rights to the concession and explored the area, and in 1993 Anglo American entered into an earn-in option to the property. In 1994, a FS was completed on the property and accepted by the Mali government.

Construction started in 1995 and on 20 December 1996 the first gold was poured.

In November 2009, IAMGOLD and AngloGold Ashanti announced that they were acquiring the International Finance Corporation's 6% interest for a total of $14.5 million.

A FS, Sadiola Sulphide Project (SSP), looking at mining and processing the sulphide ore was completed in 2016. However, a decision to proceed remains on hold while awaiting the conclusion of negotiations with the government. The oxide mining activities were completed in early 2018. While awaiting the decision, the operation continues to process oxide stockpiled material.

Legal aspects and tenure

SEMOS is bound by the original prospecting and exploitation agreement (including its subsequent legal modifications) entered into on 5 April 1990 between AGEM Limited. (AGEM) and the state of Mali, valid for the original mineral commodities until 5 April 2020. The identity number of the current exploitation area, DECRET No 00-080/PM-RM DU 06 MARS 2000 is a modification of all previous exploitation areas. Sadiola is operated under the license DECRET No 00-080/PM-RM DU 06 MARS 2000 valid from 1 August 1994 to 1 August 2024 covering a total area of 303km^2. The SSP project will extend operations beyond 2024. Dialogue with the government of Mali has been ongoing throughout the project study phase and, as such, there are no foreseeable reasons why the amended ESIA and associated approvals should not be approved.

Mining method

Open pit mining operations ceased at Sadiola in 2018. The operation is currently based around stockpile re-claim with ore feed scheduled until Q3 of 2019.

The SSP is currently in care and maintenance. The ore re-claim is undertaken using a mining eet consisting of a loader and rear dump trucks. The planned mining method for the SSP is conventional open pit mining, using a combination of hydraulic face shovels and rear dump trucks working on 10m benches.

Operational infrastructure

Sadiola includes a main pit and several smaller satellite pits, a processing plant, a TSF and other infrastructure such as a mine village, water supply system, roads, airstrip and communications systems. Since the beginning of the operation mining activities have been outsourced. All mining occurs within the mining licence boundaries.

Mineral processing

Ore is treated in a 4.9Mtpa CIP processing plant. The plant was originally designed to treat only soft oxide ore, but has been progressively adapted to include a blend of hard oxides as well as batch feeding of a sulphide ore blend. Any hard material making up the blend currently undergoes preconditioning through separate primary crushers.

The SSP aims to mine the underlying sulphide material in the Sadiola main pit and modify the existing oxide plant to process the sulphide ore. The modified plant will treat both sulphide stockpiles and the

ROM sulphide material. This project will extend the life of Sadiola and leverage any further sulphide exploration successes in the region.

Risks
The oxide ore from pits was finished in March 2018. Since then, only oxide stockpiles are available and can feed the processing plant until Q3 2019.
The SSP project has been re-evaluated based on the current economic climate. As part of the revision, an amended ESIA was completed in 2017 and approved by the government of Mali.
With the current LOM schedule, the oxide ore from pits was finished in 2018. Since then, low grade stockpiles are being fed to the process plant, and will form the feed supply until Q3 of 2019.
The project is paused pending favourable conclusion of discussions with the government of Mali on fiscal agreements.
SADIOLA CONTINUED
Competent Persons

Responsibility	Competent Person	Professional organisation	Membership number	Relevant experience	Qualification
Mineral Resource	Geoffrey Gushee	FAusIMM	207 957	30 years	BA (Geology), GDE (Mining Engineering), MEng (Mineral Resource Management), MDP
Ore Reserve	Andrew Bridges	MAusIMM	300 976	20 years	BSc Hons (Mining Engineering)

GEOLOGY
The Sadiola gold deposits are located within the Malian portion of the Kenieba-Kedougou Inlier, a major early Paleoproterozoic-Birimian window along the northeast margin of the Kenema-Man shield. The deposits are in the north of the inlier and positioned in the Ko Formation, just east of the Senegalo-Malian Shear Zone terrane boundary. Greenschist facies regional metamorphism with amphibolite facies metamorphism is observed in the contact aureoles around major intrusions.
Deposit type
The Sadiola deposit is considered a mesothermal shear-hosted gold deposit and can be correlated with an Ashanti-type orogenic gold model.
Mineralisation style
The Sadiola gold system displays the Sadiola Hill-style Au-As-Sb mineralisation. Within the Sadiola main pit, the bulk of the ore is hosted within the brittle-ductile Sadiola Fracture Zone (SFZ) and impure footwall carbonates. Mineralisation also occurs along the

array of NNE-trending shears although gold grade decreases with increasing distance from the SFZ.
Mineralisation is shear-hosted and associated with a polyphase hydrothermal alteration history comprising an early calc-silicate
phase followed by a potassic alteration stage. The metal associations of the ore typically comprise As-Au-Sb and minor to trace
amounts of Cu-W-Mo-Ag-Bi-Zn-Pb-Te-Fe-bearing mineral species.
Structural controls on primary mineralisation in the FE satellite pits are similar to that of Sadiola but later karstification and protracted
weathering resulted in the formation of a gold residuum.
Lithostratigraphic contacts also appear to have been an efficient interface for channeling fluids.

Oxide mineralisation

The geometry of the extensive, soft, oxide deposit and its supergene enrichment of gold relates almost exclusively to the weathering
history of the primary mineralisation. Intense tropical weathering has produced deep troughs of white to grey, decarbonated, kaolin-
rich saprolite, locally abundant nontronite and relative gold enrichment. Penetration of groundwater has caused oxidation of the
primary sulphides and the formation of acidic groundwaters, further promoting deeper argillisation of the bedrock.

Sulphide mineralisation

Drilling of the (unweathered) primary mineralisation has allowed detailed investigation of major and minor hydrothermal alteration
processes that were active during the formation of the deposit. Primary gold is fine grained, dominantly less than 15 microns,
with rare grains approaching 50 microns. Visible gold is rare. Gold mineralisation is associated with both arsenic and antimony
dominated sulphide assemblages of arsenopyrite, pyrrhotite, pyrite, stibnite and gudmuntite as well as potassic, calc-silicate,
propylitic alteration and silicification.

Licences
Mining
Mine Infrastructure
Pits
Plant
ROM pad
TSF
Return water dam
Raw water dam
Waste dumps
Settlements
Towns
Mine village
Villages
Roads
Main
Secondary
Airfield
0
2
4
6km
Plant centroid co-ordinates
11°40'09"W, 13°53'27"N
Map showing Sadiola Mine infrastructure and licences

SADIOLA CONTINUED
W
-100m
-
200m
-300m
-400m
100m
Ductile shear zone with mixed protolith
Brittle shear zone – carbonate breccia
Quartz-feldspar-phyric felsic metadyke
Metadiorite
Hangingwall metagreywacke
Footwall impure metalimestone
Orebody – Sadiola fracture zone (SFZ)
Section definition boundary
Elevation
E
Legend

Mineralisation characteristics

The gold mineralisation in the Sadiola main pit is related to the interaction of the north-striking SFZ and a north-northeast-striking fault array. The SFZ follows the competency contrast between the brittle hangingwall greywacke and the ductile footwall marbles and is mineralised over a drilled strike length of approximately 2,500m. The stratigraphy is intruded by discontinuous diorite and quartz-feldspar porphyry dykes. Mineralisation occurs in all four rock types although most of the mineralisation is hosted in the footwall carbonates adjacent to the SFZ. The deposit has been intensely weathered to a maximum depth of 200m.

At the FE pits, located about 7km to the southeast of the Sadiola main pit, mineralisation is hosted in marbles adjacent to the upper contact with carbon-rich pelites. Gold is associated with north-northeast to north-east striking faults and lens-shaped breccia zones that are broadly parallel to the north-west-trending stratigraphy. The FE4 deposit is located in an interbedded sandstone and pelite sequence with mineralisation predominantly hosted in breccia along a north-east striking regional shear and several subsidiary north-northeast-trending faults.

At Tambali, located 2km to the south of the Sadiola main pit, the mineralisation is associated with two sets of structures, orientated north-northeasterly (dipping steeply south-east) and north-westerly (dipping south-west). These structures are often related to thin tourmaline-quartz-rich shears/veins or zones of (mostly north-northeast trending) quartz-feldspar porphyry intrusions that have undergone later shearing. A north-west trending graphite-rich brecciated boundary between southwesterly-dipping sandstones (in the east) and metapelites (in the west) is also evident. Bedding parallel shearing is also indicated in some areas, possibly accounting for some of the westerly-dipping mineralised structures. Tambali mineralisation is similar in style to the Sadiola main pit and it is subjected to similar structural controls.

W-E Geological cross-section through the Sadiola pit, elevation in metres relative to average mean sea level

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SECTION 3 / CONTINENTAL AFRICA

EXPLORATION
Exploration activities wound down in early 2018 as the mine was heading into restricted operations, pending the outcome of the
SSP project.
PROJECTS
The SSP remains the only major AngloGold Ashanti project in Mali and is the focus for extension of the LOM. The project has been
re-evaluated and optimised in light of the current economic and political climate. The project consists of a new pushback in the
Sadiola main pit in order to mine the underlying sulphide ore, and an expansion and upgrade of the existing processing plant to be
able to treat the sulphide ore. The revised project extends operations beyond 2024. As part of the revision, an amended ESIA was
completed in 2017 and approved by the government of Mali. Dialogue with the government of Mali has been ongoing throughout
the project study phase. The project is paused pending favourable conclusion of discussions with the government of Mali on scal
agreements.
MINERAL RESOURCE
Details of average drill hole spacing and type in relation to Mineral Resource classification
Category
Spacing m (-x-)
Type of drilling
Diamond
RC
Blasthole
Channel
Other
Measured
6.25 x 12.5, 25 x 25
√
√
√
√
–
–
–
Indicated
25 x 25, 50 x 25
√
√
√
√
–
–
–
Inferred
50 x 50
–
–
–

Grade/ore control
5 x 10, 6.25 x 12.5
–
–
–
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SECTION 3 / CONTINENTAL AFRICA

SADIOLA CONTINUED

Inclusive Mineral Resource
as at 31 December 2018

Category	Tonnes million	Grade g/t	Contained gold tonnes	Moz
FE2				
Measured	–	–	–	–
Indicated	0.14	1.48	0.20	0.01
Inferred	0.00	1.30	0.00	0.00
Total	0.14	1.48	0.20	0.01
FE3				
Measured	–	–	–	–
Indicated	1.02	1.88	1.93	0.06
Inferred	0.03	2.13	0.07	0.00
Total	1.06	1.89		

2.00
0.06
FE4
Measured
–
–
–
–
Indicated
0.03
2.25
0.06
0.00
Inferred
0.01
2.84
0.03
0.00
Total
0.04
2.39
0.09
0.00
FN
Measured
–
–
–
–
Indicated
2.44
1.35
3.29
0.11
Inferred
0.30
1.19
0.36
0.01
Total
2.74
1.33
3.65
0.12
Tabakoto (Sekokoto)
Measured
–
–
–
–
Indicated

0.33
1.23
0.41
0.01
Inferred
0.05
1.12
0.05
0.00
Total
0.38
1.22
0.46
0.01
Tambali
Measured
–
–
–
–
Indicated
1.70
1.04
1.77
0.06
Inferred
0.50
1.19
0.59
0.02
Total
2.20
1.08
2.36
0.08
SSP (oxide)
Measured
–
–
–
–
Indicated
1.71
1.30
2.24
0.07
Inferred
0.19
1.05
0.20
0.01

Total
1.91
1.28
2.44
0.08
SSP (transitional)
Measured
–
–
–
–
Indicated
1.18
1.89
2.22
0.07
Inferred
0.14
1.57
0.22
0.01
Total
1.32
1.85
2.44
0.08
SSP (sulphide)
Measured
–
–
–
–
Indicated
36.75
1.94
71.44
2.30
Inferred
6.02
1.77
10.67
0.34
Total
42.77
1.92
82.11
2.64
Total stockpiles
Measured
0.05
1.66

0.08
0.00
Indicated
2.93
1.53
4.48
0.14
Inferred
–
–
–
–
Total
2.98
1.53
4.56
0.15
Sadiola
Total
55.52
1.81
100.31
3.23
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SECTION 3 / CONTINENTAL AFRICA

Estimation

The Mineral Resource is taken as the material that falls within the $1,400/oz economic pit shell optimised for each individual deposit. A 3D surface is generated to create the outline of the geological model within which grades are estimated. Block sizes are between 25 x 25 x 10m and 30 x 30 x 10m and, where appropriate, selective sub-celling is used for definition on the geological and mineralisation boundaries. All the deposits are estimated by ordinary kriging. Where deemed appropriate, a geostatistical technique called uniform conditioning (UC) or localised uniform conditioning (LUC) is used to estimate the proportion of material that occurs above the cut-off, hence forming a recoverable Mineral Resource model at a specific SMU.

Grade tonnage curve

The grade tonnage curve does not include stockpiles.

Exclusive Mineral Resource

as at 31 December 2018

Category	Tonnes million	Grade g/t	Contained gold tonnes	Moz
Sadiola				
Measured	–	–	–	–
Indicated	21.08	1.72	36.21	1.16
Inferred	7.23	1.68	12.19	0.39
Total	28.32	1.71	48.40	1.56

The exclusive Mineral Resource is the part of the Mineral Resource that was not converted to Ore Reserve. It is defined as the Mineral Resource that is outside the current Ore Reserve designs, but inside the Mineral Resource shells and includes the Inferred Mineral Resource within the Ore Reserve design.

The exclusive Mineral Resource gives an indication of the future potential of the deposit. This material could be converted to Ore
Reserve with an increase in the gold price and favourable costs. The Inferred Mineral Resource portion of the Mineral Resource
within the Ore Reserve pit design will be converted to the Ore Reserve through grade control drilling.

SADIOLA CONTINUED
The Mineral Resource models and inputs used to tabulate the Mineral Resource were the same as the previous year. The main
change is due to depletion.
Year-on-year changes in Mineral Resource
Sadiola is very sensitive to a drop in gold price due
to the low grade nature of the stockpiles.
Inclusive Mineral Resource sensitivity
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SECTION 3 / CONTINENTAL AFRICA

ORE RESERVE
Ore Reserve
as at 31 December 2018
Category
Tonnes
million
Grade
g/t
Contained gold
tonnes
Moz
FN
Proved
–
–
–
–
Probable
0.78
1.48
1.15
0.04
Total
0.78
1.48
1.15
0.04
SSP (oxide)
Proved
–
–
–
–
Probable
0.66
1.56
1.03
0.03
Total
0.66
1.56
1.03
0.03
SSP (transitional)
Proved
–
–
–
–
Probable
0.70

2.10
1.47
0.05
Total
0.70
2.10
1.47
0.05
SSP (sulphide)
Proved
–
–
–
–
Probable
21.03
2.02
42.51
1.37
Total
21.03
2.02
42.51
1.37
Total stockpiles
Proved
0.05
1.66
0.08
0.00
Probable
2.93
1.53
4.48
0.14
Total
2.98
1.53
4.56
0.15
Sadiola
Total
26.15
1.94
50.72
1.63
Estimation
The Mineral Resource models are used as the basis for the Ore Reserve. Optimisations are run on the Measured, Indicated and
Inferred Mineral Resource. All appropriate costs, metallurgical recovery factors and geotechnical parameters are applied to generate

the mine designs that are used to estimate the final Ore Reserve.

Ore Reserve modifying factors
as at 31 December 2018

	Gold price US$/oz	Cut-off grade g/t Au	Dilution %	RMF % (based on g/t)	MCF %	MetRF %
FN	1,200	0.77	17.6	85.0	100.0	76.0
SSP (oxide)	1,200	0.51	0.0	0.0	100.0	94.0
SSP (transitional)	1,200	0.78	0.0	0.0	100.0	75.0
SSP (sulphide)	1,200	0.77	0.0	0.0	100.0	76.0
Total stockpiles	1,200	0.68	–	–		

100.0
78.0
MetRF varies according to ore type (laterite, saprolite, siliceous oxide, saprolitic sulphide, hard sulphide, intermediate oxide,
intermediate sulphide, transitional and graphitic). A $1,200/oz Ore Reserve price is used for the SSP project and short term oxide
pits.
The modifying factors applied to the Ore Reserve for Sadiola are ore loss and dilution. For the satellite pits, due to the nature of the
mineralisation, the ore loss and dilution are different from the SSP main pit.
The SSP main pit utilises ore loss incorporated into the modelling process. The other satellite pits have variable ore loss and dilution
applied dependent on mining method. The satellite pits that are to be mined as part of the SSP have 15% ore loss and 17.6%
dilution applied. The latter is to allow for mining by a face shovel rather than an excavator.
Inferred Mineral Resource in business plan
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SADIOLA CONTINUED
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as at 31 December 2018
Tonnes
million
Grade
g/t
Contained gold
tonnes
Moz
FN
0.02
1.24
0.03
0.00
SSP (oxide)
0.04
1.16
0.05
0.00
SSP (transitional)
0.05
1.12
0.06
0.00
SSP (sulphide)
0.52
1.16
0.60
0.02
Total
0.64
1.16
0.74
0.02
Inferred Mineral Resource has been included in the business plan as incidental material when the pit is mined. Several of the satellite
pits that are included in the SSP contain Inferred Mineral Resource with the overall Inferred Mineral Resource included in the total
business plan totalling approximately 2%.
Mainly due to depletion and the exclusion of Tambali and FE3 pits.
Year-on-year changes in Ore Reserve
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SECTION 3 / CONTINENTAL AFRICA

TANZANIA

Geita is AngloGold Ashanti's only operation in Tanzania and one of the largest open pit gold mines in Africa. Prior to April 2004, Geita was managed under a JV agreement between Ashanti and AngloGold. Since the merger, Geita is a wholly owned subsidiary of AngloGold Ashanti.

In 2016, underground mining successfully started at Star and Comet to provide ore to the processing plant. Underground ore is now a significant part of the feed to the plant with underground operations also having commenced at Nyankanga.

Tanzania – Geita

Exclusive Mineral Resource
as at 31 December 2018

Category	Tonnes million	Grade g/t	Contained gold tonnes	Moz
Tanzania				
Total	41.37	3.70	153.19	4.93

Ore Reserve
as at 31 December 2018

Category	Tonnes million	Grade g/t	Contained gold tonnes	Moz
Tanzania				
Total	9.47	4.38	41.49	1.33

LEGEND
1
Geita
0
200km
Operation
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GEITA

INTRODUCTION

Property description

Geita is wholly owned by AngloGold Ashanti and currently sources ore from the Nyankanga open pit and three underground sections (Star and Comet Cut 2, Star and Comet Cut 3 and Nyankanga Block 5). Underground mining commenced at Star and Comet in 2016 and at Nyankanga in 2017.

Location

Geita Gold Mine (GGM) is located approximately 910km from the Tanzanian capital city of Dar es Salaam. It falls within the Lake Zone of northern-western Tanzania, approximately 120km west of Mwanza and 4km away from the town of Geita. The mining lease area falls within the Archean Sukumaland Greenstone Belt of the Lake Victoria goldfields.

History

In 1936, the Geita deposits were first discovered and by 1966, three mines had produced almost 1Moz. Ashanti acquired the project through acquisition of Cluff Resources in 1996 and in early December 2000, Ashanti reached an agreement to sell AngloGold a 50% interest in Geita for $324 million. AngloGold added its neighbouring Nyamulilima Hill deposits into the JV company. In 2004, the merger of AngloGold and Ashanti resulted in the operation being run by AngloGold Ashanti.
The decision was taken to go underground at Star and Comet in 2015 and the underground development started in 2016. In 2017 the Nyankanga underground operation was started.

Legal aspects and tenure

The special mining licence (SML45/99) covers approximately 196.17km^2 and expires on 26 August 2024. There are a further 120km^2 of prospecting licences in the immediate vicinity to the SML. However, these do not contain any Ore Reserve.

Mining method

Mining at Geita is by both open pit and underground methods. The open pit mining is currently undertaken by conventional truck-and-shovel open pit mining method on one active pit (Nyankanga). The open pit mining is conducted using Geita owned, operated and maintained eet. A contractor provides drilling and blasting services. Underground mining commenced at Star and Comet in 2016 and subsequently at Nyankanga in 2017 using the services of an underground mining contractor. Ore is hauled from the Star and Comet operation to the central ROM pad by the Geita surface mining eet.

Operational infrastructure

Geita has an established 5.2Mtpa CIL processing plant capable of processing hard ore. It also has an established TSF with sufficient area to construct wall raises every three years to accommodate planned future production. A full workshop facility is in place to support the maintenance of heavy mining equipment and all light support equipment. Contractor infrastructure supported on the mine site includes workshops for the production and exploration drilling contractor, workshops for the underground mining contractor, as well as a plant for the explosives supplier. Geita has further support infrastructure in place including a mine village, medical clinic, mine store, administration buildings and an airstrip.

Mineral processing

Geita’s ore processing method is via conventional CIL process. The CIL plant has a throughput capacity of 5.2Mtpa. The circuit contains a primary gyratory crusher, secondary and tertiary crushers, a semi-autogenous mill, ball mill and 12 leach tanks. This is coupled with a gravity circuit through two knelson concentrators. In planning the plant feed blend material hardness, grade and sulphide content are considered in order to optimise throughput and recovery.

Risks

There are regular artisanal and small scale miners activities and illegal intrusions into the mine, but there is a holistic mitigation plan in process to manage this.
The primary risk remains the changing Ore Reserve profile from open pit to underground. The mitigating actions put in place focus on optimising the exploration and project plans to convert

both surface and underground Mineral Resource to Ore Reserve. The other risks include, reduced underground production efficiencies when transitioning to owner mining in selected areas, ball mill and crusher plant integrity, Mineral Resource to Ore Reserve conversion, open pit and underground blasting interaction for Nyankanga Cut 8 and Nyankanga Block 3 underground and the aging eet for open pit.

Competent Persons
Map showing Geita Mine infrastructure and licences
0
1.5
3
4.5km
Plant centroid co-ordinates
32°11’12”W, 2°51’53”N
Licences
Mining
Exploration
Underground access
Active
Planned
Mine infrastructure
Pits
Plant
ROM pad
Stockpiles
TSF
Waste dumps
Raw water dam
Deposit
Settlements
Towns
Villages
Roads
Main
Secondary
Airfield

GEOLOGY

Deposit type

The Geita Greenstone Belt (GGB) hosts several world-class shear-hosted Archean lode gold deposits and forms the northern portion of the regional Sukumaland Greenstone Belt, itself one of several belts that comprise the Lake Victoria goldfields. Other gold mines hosted in the Lake Victoria Goldfields include Golden Pride, Bulyanhulu, Tulawaka, Buzwagi and North Mara.

The east-west oriented GGB is 60km in length, up to 15km wide. The Geita terrain is comprised of upper- to mid-Nyanzian greenschist facies units, made up of clastic sediments, black shales, banded iron formation (BIF), volcanoclastics and metabasalts. These have been intruded by a variety of felsic to mafic intrusive bodies, dykes and sills. Gabbro dykes accommodated by regional north-northeasterly structures are also prominent geological features in the area.

North-west trending deformation corridors divide the GGB into three distinct sub-terrains, namely the Nyamulilima Terrain in the west (hosting the Star and Comet, Ridge 8 and Roberts deposits), the Central Terrain in the central part (hosting the Nyankanga, Geita Hill, Lone Cone and Chipaka deposits) and the Kukuluma Terrain to the north-east (hosting the Matandani, Kukuluma and Area 3 West deposits).

GEITA CONTINUED
Mineralisation style
Geita's gold mineralisation is preferentially hosted in BIF, cherts and ironstones that have been affected by both ductile and dominant brittle deformation associated with shear zones. The shears preferentially exploit fold axial planes as well as the contacts between the supracrustal and intrusive rocks.
The GGB has been through a protracted history of deformation, which resulted in a large-scale synformal configuration in the Central Terrain, with west-northwest trending limbs connected by a north-east trending hinge zone. The deposits of the Central Terrain are mainly located within the relatively low-strain hinge zone.
The Nyankanga deposit is hosted in a BIF-dominated supracrustal package that is extensively intruded by, and locally form a roof-pendant within the dioritic Nyankanga Intrusive Complex. At Geita Hill, dioritic rocks are present as sills and dykes intruded into a supracrustal sequence that has been subject to extensive polyphase folding.
To the west, the Nyamulilima Terrain comprises a semi-circular structure surrounding intrusive centers, which internally encompasses structural systems of variable scale that locally control gold mineralisation. At Star and Comet, a folded sedimentary package of BIF intercalated with clastic and tuffaceous metasediments is intruded by a tonalitic complex.
The Kukuluma Terrain trends west-northwesterly, with sub-vertical limbs being dominant over compressed, multiphase folded zones.
The three major deposits in the area (Kukuluma, Matandani and Area 3) are located along a 5km long east-southeast mineralisation trend. The geology of the deposits is dominated by volcano-sedimentary rocks that are polydeformed and intruded by syn- to late-folding diorite bodies. Host rocks for mineralisation are fine-grained iron-rich clastic sediments, cherts, BIF and tuffaceous rocks, with local intercalated carbonaceous shales.
Mineralisation characteristics
Gold mineralisation at Nyankanga occurs within a northeast trending and northwest dipping anastomosing shear system, typically along the lowermost shears, with higher grade mineralisation mainly proximal to the basal contact of BIF packages. Mineralisation is associated with chlorite-carbonate-silica alteration and pyrite-dominant sulphide in the damage zones surrounding the shear surfaces as veins, veinlets, local breccias and sulphide replacement of magnetite layers. At Geita Hill, mineralisation at the deposit scale is controlled by a narrow northeast trending and northwest dipping shear zone that exploits the axial surfaces of F3 folds.
The bulk of the ore is also carried by damage zones adjacent to the main shear.
At Star and Comet, a major mineralised shear zone runs north-northwest to south-southeast through the deposit where it is localised along the contact of BIF and tonalite. An envelope of mostly brittle deformation up to 10m thick (which affects both lithologies) occurs either side of the shear zone and controls distribution of mineralisation. Most of the gold mineralisation is hosted in pyrrhotite patches associated with strong silicification together with carbonate alteration.

Within the Kukuluma Terrain, steeply dipping ductile/brittle gold-fertile shear zones are developed along, or close to, the edges of
an elongate diorite body, hosted in iron-rich host rocks and locally exploiting axial surfaces of tight folds. Gold mineralisation in the
Kukuluma terrain is strongly associated with pyrrhotite, pyrite and arsenopyrite concentrations, accompanied by strong carbonate
and silica alteration of host rocks. Gold is present in gold minerals and sulphides, dominantly in arsenopyrite.

Geita Hill, Lone Cone, Nyankanga Long Section: potential down-plunge ore shoots (view looking SE)

Indicated and Inferred Mineral Resource @ Au>2g/t

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EXPLORATION

A total of 68,313m surface and underground exploration drilling was completed during the year consisting of 64,050m of DD and
4,263m at Star and Comet underground, Nyamulilima, Nyankanaga underground, Selous and Geita Hill West underground.

Mineral Resource conversion drilling at Star and Comet Cut 2 and Cut 3 improved the understanding of the geological and
mineralisation controls of the deposits which led to the redesigning of mining stopes and underground infrastructure as well as
improving Mineral Resource confidence. Several intersections reported from Cut 2 exploration drilling confirmed the down plunge
extension of the main mineralised zone below the 1000mRL (LOM extent). Further drilling is proposed in 2019 to continue defining
the extension of mineralisation as well as confirming the geology and geometry of the deposit above and below the intrusive body
which appears to truncate mineralisation. Several exploration holes at Cut 3 were also planned to test the down plunge high grade
zone to 650mRL from the current 1000mRL (LOM extent). These holes confirmed the down-plunge continuity of gold mineralisation
which remains open at depth. The 2019 work plan motivates further drilling to continue defining the down-plunge extension of Star
and Comet Cut 3 as well as converting exploration targets into Inferred/Indicated Mineral Resource.

Drill results from Nyankanga Block 5 lower, 4 and 3 lower were used to update the Mineral Resource model in these areas and the
associated mining designs. The mineralisation at Block 3 lower continues towards Block 2, suggesting that the designed mining
stopes, (upper and lower) are linking up/down-dip and down-plunge. These results warrant further drilling in 2019. At Nyankanga
Block 4 the drilling results in the north east most section indicate open-ended potential downdip towards Block 3, suggesting that
the two Blocks are connected. Further drilling is required to follow up on these results. Drill results from Nyankanga Block 5 confirm
that mineralisation is controlled by the intersection of the Iyoda shear/faults and the Nyankanga Shear zone. Two exploration holes
were also drilled from surface to test the potential down-plunge continuity of gold mineralisation at Nyankanga Block 5 Lower.
The geological features that formed the basis of the targeting were not intersected, suggesting that the mineralisation has been
displaced. Detailed geological and structural studies are ongoing before planning for additional drilling.

E-W Geological cross-section through Star and Comet, elevation in mRL

Structure

LEGEND

Section definition boundary

Shear zone

BIF

Brecciated BIF (zone)

Dolerite

Felsite

Lamphrophyre

Lithology

Tonalite

0 12.5 25 50m
1,100
1,100
1,300
1,300
1,500
0
100
200
300
400
500
600
700
0
100
200
300
400
500
600
700
1,500
125
SECTION 3 / CONTINENTAL AFRICA

GEITA CONTINUED

At Geita Hill West, a drilling campaign was completed in November 2017. While this programme was successful, a second phase of drilling was required which commenced in October 2018 with the intention of upgrading the Mineral Resource currently within the underground mine designs/stopes at Block 1 and 2 to Indicated Mineral Resource ahead of underground mining development and is expected to be completed in January 2019.

Expensed reconnaissance drilling programmes were conducted at satellite targets Selous and Mabe. Several of the drill holes from Selous and Mabe reported encouraging intersections that warranted follow-up and consequently a conceptual mineralisation model was created for Selous. The current conceptual model suggests economic viability of the project, and will require further drilling in 2019.

A single phase of drilling was completed at Star and Comet NW Extension aimed at testing two potential mineralised zones away from the intrusive unit. Drill hole SCDD0039 intersected two structures as expected, characterised by semi massive sulphides (mainly pyrrhotite) in a breccia matrix. Significant gold assays were intercepted, associated with the first structure and remain open-ended downdip.

One drill hole was drilled from underground at Block 5 targeting a 3D Seismic target (Target 1) at Nyankanga. The hole was targeting a strong seismic reflector located immediately south of the Nyankanga pit. The drill hole encountered diorite and there was no economic intersection reported from this drill hole.

Non-drilling programmes included a Down-Hole Electromagnetic (DHEM) survey at Star and Comet, Selous and Nyankanga to delineate and identify relatively deeply seated or dislocated orebodies away from the main mineralisation. Several conductors were identified during the survey and will be followed up in 2019. Detailed surface geological mapping and interpretation at Nyamulilima, Kalondwa Hill, Samena-Fikiri-Jumanne, Prospect 30, Prospect 5 and Nyamonge Hill also occurred during the year.

An exploration workshop was also conducted on site in October 2018. The aim of the workshop was to review exploration targets within the GGM mining and exploration concessions, identify new targets, re-rank existing and new targets and reevaluate the endowment potential of the district.

PROJECTS

GGM's exploration strategy is focused in three key areas. The first was to increase the Mineral Resource/Ore Reserve base of the main producing deposits while transitioning to underground. The second key area was aggressive exploration of the satellite targets within GGM's tenement holdings to bring into production and the third was exploration activities to support major long lead projects.

Underground mining successfully started at Star and Comet Cut 2 in 2016. Development at Star and Comet Cut 3 was initiated from the Cut 2 platform and was ramped up as planned in 2017. Detailed mine design, planning and permitting for Nyankanga

underground was completed in 2016 and underground development commenced at Blocks 4 and 5 in 2017. Underground exploration drilling has successfully converted exploration targets and Inferred Mineral Resource to Indicated Mineral Resource in these deposits. Following the successful implementation of underground operations at Star and Comet and Nyankanga underground, exploration and development will be expanded to include Geita Hill and Ridge 8 deposits in 2019.
There are approximately 50 conceptual exploration targets within GGM's leases. Resourcing this exploration programme, termed the satellite target exploration programme, has lagged following the gold price decline in 2013 and reduction in spending. The programme was re-planned and re-evaluated in 2017 and dedicated work plans have been put in place to support a more aggressive exploration programme. Consistent with previous years, the targets that have the potential to provide near term value in the LOM plan have been prioritised.
The Refractory Ore project which encompasses, Matandani, Kukuluma, Area 3W and Area 3CS was postponed due to high capital costs related to plant modifications to treat the refractory ore and the transition to underground mining. Drilling was completed in 2015 within the Matandani pit, which contains the largest Mineral Resource potential. Metallurgical scoping test work was successfully concluded in 2016 and the PFS that was planned to commence in 2017 was put on hold.

MINERAL RESOURCE
Details of average drill hole spacing and type in relation to Mineral Resource classification
Category
Spacing m (-x-)
Type of drilling
Comments
Diamond
RC
Blasthole
Channel
Other
Measured
–
–
√
√
√
–
√
√
√
–
–
–
–
Indicated
10 x 10, 20 x 20, 25 x 15,
25 x 25, 40 x 20, 40 x 40
–
–
–
–
Inferred
40 x 40, 50 x 50, 80 x 40
–
–
–
–
Grade/ore control
5 x 10, 10 x 5, 10 x 10,
10 x 15
–
–
–
Underground: diamond
fan drilling
Open pit: RC grid
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GEITA CONTINUED

Inclusive Mineral Resource as at 31 December 2018

Category	Tonnes million	Grade g/t	Contained gold tonnes	Moz
Area 3 West (oxide)				
Measured	–	–	–	–
Indicated	0.21	2.71	0.58	0.02
Inferred	0.00	2.41	0.00	0.00
Total	0.21	2.70	0.58	0.02
Chipaka				
Measured	–	–	–	–
Indicated	0.28	2.29	0.65	0.02
Inferred	0.45	2.45	1.10	0.04
Total	0.73	2.39		

1.75
0.06
Geita Hill (open pit)
Measured
–
–
–
–
Indicated
0.01
3.15
0.03
0.00
Inferred
0.04
1.84
0.07
0.00
Total
0.05
2.11
0.10
0.00
Kalondwa Hill
Measured
–
–
–
–
Indicated
–
–
–
–
Inferred
0.63
3.83
2.41
0.08
Total
0.63
3.83
2.41
0.08
Kukuluma (oxide)
Measured
–
–
–
–
Indicated

0.02
3.82
0.08
0.00
Inferred
0.00
2.68
0.01
0.00
Total
0.03
3.67
0.09
0.00
Kukuluma (transitional)
Measured
–
–
–
–
Indicated
0.08
4.89
0.39
0.01
Inferred
0.02
4.97
0.10
0.00
Total
0.10
4.91
0.49
0.02
Kukuluma (sulphide)
Measured
–
–
–
–
Indicated
0.02
5.08
0.12
0.00
Inferred
0.29
4.20
1.23
0.04

Total
0.32
4.26
1.35
0.04
Lone Cone
Measured
–
–
–
–
Indicated
0.64
3.07
1.96
0.06
Inferred
0.62
3.29
2.05
0.07
Total
1.26
3.18
4.01
0.13
Matandani (oxide)
Measured
–
–
–
–
Indicated
1.37
2.26
3.09
0.10
Inferred
0.70
2.27
1.60
0.05
Total
2.07
2.26
4.69
0.15
Matandani (transitional)
Measured
–
–

–
–
Indicated
0.09
3.77
0.33
0.01
Inferred
0.09
4.50
0.42
0.01
Total
0.18
4.15
0.74
0.02
Matandani (sulphide)
Measured
–
–
–
–
Indicated
0.04
4.79
0.21
0.01
Inferred
2.37
4.65
11.02
0.35
Total
2.42
4.65
11.23
0.36
Nyankanga (open pit) Cut 8
Measured
–
–
–
–
Indicated
4.39
5.23
22.95
0.74
Inferred
0.49

1.38
0.67
0.02
Total
4.88
4.84
23.62
0.76
Ridge 8 (open pit)
Measured
–
–
–
–
Indicated
0.92
2.26
2.07
0.07
Inferred
0.00
1.20
0.00
0.00
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SECTION 3 / CONTINENTAL AFRICA

Inclusive Mineral Resource continued
as at 31 December 2018
Category
Tonnes
million
Grade
g/t
Contained gold
tonnes
Moz
Total
0.92
2.26
2.08
0.07
Roberts
Measured
–
–
–
–
Indicated
2.77
1.89
5.22
0.17
Inferred
0.09
4.00
0.37
0.01
Total
2.86
1.96
5.59
0.18
Star and Comet (open pit)
Measured
–
–
–
–
Indicated
0.24
2.44
0.58
0.02
Inferred
0.02
2.10
0.05

0.00
Total
0.26
2.41
0.63
0.02
Stockpile (full grade ore)
Measured
0.27
3.16
0.86
0.03
Indicated
–
–
–
–
Inferred
–
–
–
–
Total
0.27
3.16
0.86
0.03
Stockpile (marginal ore)
Measured
–
–
–
–
Indicated
8.87
0.97
8.56
0.28
Inferred
–
–
–
–
Total
8.87
0.97
8.56
0.28
Stockpile (refractory ore)
Measured
–

–
–
–
Indicated
0.56
2.80
1.57
0.05
Inferred
–
–
–
–
Total
0.56
2.80
1.57
0.05
Geita Hill (underground)
Measured
–
–
–
–
Indicated
1.97
4.10
8.09
0.26
Inferred
9.52
4.21
40.04
1.29
Total
11.49
4.19
48.13
1.55
Nyankanga (underground) – Block 1
Measured
–
–
–
–
Indicated
0.61
8.39
5.13
0.16
Inferred

0.41
7.43
3.03
0.10
Total
1.02
8.01
8.15
0.26
Nyankanga (underground) – Block 2
Measured
–
–
–
–
Indicated
0.31
6.38
1.99
0.06
Inferred
1.01
6.16
6.25
0.20
Total
1.33
6.21
8.24
0.26
Nyankanga (underground) – Block 3
Measured
–
–
–
–
Indicated
0.21
5.10
1.07
0.03
Inferred
2.02
5.41
10.91
0.35
Total
2.23
5.38
11.98
0.39

Nyankanga (underground) – Block 4
Measured
0.67
7.56
5.06
0.16
Indicated
0.32
6.99
2.21
0.07
Inferred
0.41
4.39
1.78
0.06
Total
1.39
6.51
9.04
0.29
Nyankanga (underground) – Block 5
Measured
–
–
–
–
Indicated
1.44
7.05
10.16
0.33
Inferred
0.19
7.35
1.36
0.04
Total
1.63
7.08
11.52
0.37
Ridge 8 (underground)
Measured
–
–
–
–
Indicated
0.49
5.45

2.69
0.09
Inferred
1.48
5.92
8.75
0.28
Total
1.97
5.80
11.44
0.37
Star and Comet (underground) Cut 2
Measured
–
–
–
–
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SECTION 3 / CONTINENTAL AFRICA

GEITA CONTINUED
Inclusive Mineral Resource continued
as at 31 December 2018

Category	Tonnes million	Grade g/t	Contained gold tonnes	Moz
Indicated	0.97	4.71	4.55	0.15
Inferred	0.38	5.38	2.07	0.07
Total	1.35	4.90	6.62	0.21
Star and Comet (underground) Cut 3				
Measured	–	–	–	–
Indicated	1.28	4.92	6.29	0.20
Inferred	0.57	5.11	2.91	0.09
Total	1.85	4.98	9.20	0.30
Geita Total	50.86	3.83		

194.69
6.26
Estimation
For the open pits, the mineralisation boundaries for the individual deposits are defined from the detailed logging of all geological
drill holes. This information is validated and then used to create a 3D model. The geological model is subsequently populated with
an appropriately dimensioned block model. Ordinary kriging is used to interpolate values into the blocks. UC is used to generate
a recoverable Mineral Resource model which estimates the proportion of ore that occurs above the Mineral Resource cut-off
grade assuming a specified SMU. The open pit Mineral Resource is reported within a $1,400/oz optimised pit shell and above the
calculated mineralised waste cut-off grade per pit. Stockpiled material above mineralised waste cut-off grade is included in the
Mineral Resource.
For the underground Mineral Resource, the geological model and the mineralised boundary are generated in the same way as for
the open pits. However, a high grade wireframe is delineated within the broader, lower grade mineralised envelope. In this instance,
all geological controls are adhered to when determining this domain. Ordinary kriging models are then constructed within the low
and high grade domains and numerous validation exercises are completed to ensure robust estimates are achieved. The ultimate
open pit designs are used as the limiting boundaries between open pit and underground during the model compilation. The
underground Mineral Resource is reported inside a mineable shape optimiser (MSO) shape generated using a given underground
cut-off grade for each deposit. The underground stopes and development are evaluated using the ordinary kriging models and the
open pit designs are evaluated using the UC models.
The grade tonnage curve does not include stockpiles.
Grade tonnage curves
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Exclusive Mineral Resource
as at 31 December 2018

Category	Tonnes million	Grade g/t	Contained gold tonnes	Moz
Geita				
Measured	0.11	9.89	1.13	0.04
Indicated	19.45	2.77	53.85	1.73
Inferred	21.81	4.50	98.20	3.16
Total	41.37	3.70	153.19	4.93

The exclusive Mineral Resource at Geita consists of:

- The underground Mineral Resource (with the exception of Indicated Mineral Resource within the Nyankanga Block 5 and Star and Comet cuts 2 and 3 mine designs where an underground Ore Reserve has been declared)
- All open pit Mineral Resource that is located between the Ore Reserve pit shell (at a gold price of $1,100/oz) and the Mineral Resource pit shell (at a gold price of $1,400/oz)
- Material within the Ore Reserve pit shell that is Inferred Mineral Resource or falls below the Ore Reserve cut-off grade and above the Mineral Resource cut-off grade material within the Nyankanga Block 5 and Star and Comet Cuts 2 and 3 underground mine designs that is Inferred Mineral Resource

This material forms potential extensions to the current LOM if it can be converted to Ore Reserve. A significant portion of this material is in the Inferred Mineral Resource category and infill drilling programmes are planned to upgrade potentially economical areas to Indicated Mineral Resource.

Mineral Resource below infrastructure
as at 31 December 2018

Category	Tonnes million	Grade g/t	Contained gold tonnes	Moz
Geita				
Measured	–	–	–	–
Indicated	3.60	5.27	18.97	0.61
Inferred	14.43	4.78	68.97	2.22
Total	18.03	4.88	87.94	2.83

Any underground Mineral Resource for which there is neither an established portal nor significant underground infrastructure to access the Mineral Resource is reported as Mineral Resource below infrastructure. As such, all underground Mineral Resource with the exception of Nyankanga Block 5 and Star and Comet cuts 2 and 3 (which have established portals and significant development in place as at 31 December 2017) have been separately categorised as Mineral Resource below infrastructure.

Year-on-year changes in Mineral Resource

As at 31 December 2018, there is a decrease in comparison to the previous year’s declaration. The significant movements are due to depletion and a loss due to a change in methodology for reporting material in the crown pillar. Previously, all material above the open pit cut-off grade in the crown pillar was reported as open pit Mineral Resource whereas, in 2017, only the material within an

GEITA CONTINUED

Geita is sensitive to a drop in gold price as it is transitioning from an open pit to an underground operation.

ORE RESERVE

Ore Reserve
as at 31 December 2018
Category
Tonnes
million
Grade
g/t
Contained gold
tonnes
Moz
Nyankanga (open pit) Cut 8
Proved
–
–
–
–
Probable
4.27
5.28
22.55
0.72
Total
4.27
5.28
22.55
0.72
Stockpile (full grade ore)
Proved
–
–
–
–
Probable
0.27
3.03
0.82
0.03
Total
0.27
3.03
0.82
0.03
Stockpile (marginal ore)
Proved
–
–

–
–
Probable
2.45
1.10
2.68
0.09
Total
2.45
1.10
2.68
0.09
Nyankanga (underground) Block 4
Proved
–
–
–
–
Probable
0.52
7.57
3.92
0.13
Total
0.52
7.57
3.92
0.13
Nyankanga (underground) Block 5
Proved
–
–
–
–
Probable
0.79
6.81
5.40
0.17
Total
0.79
6.81
5.40
0.17
Star and Comet (underground) Cut 2
Proved
–
–
–
–
Probable

0.41
5.78
2.35
0.08
Total
0.41
5.78
2.35
0.08
Star and Comet (underground) Cut 3
Proved
–
–
–
–
Probable
0.76
4.93
3.76
0.12
Total
0.76
4.93
3.76
0.12
Geita
Total
9.47
4.38
41.49
1.33
Inclusive Mineral Resource sensitivity
MSO shape, derived using higher underground cut-off grades, is reported as underground Mineral Resource. This was offset by a
small gain by including Inferred Mineral Resource previously excluded from the open pit optimisation at Matandani.

Estimation
The Mineral Resource models are used as the basis for Ore Reserve estimation. Input parameters for the estimation of the Ore
Reserve include gold price, mining dilution and recovery, geotechnical information, stay in business capital, operating costs,
metallurgical recovery, processing capacity and mining equipment capacities.
Appropriate Ore Reserve cut-off grades are applied and optimised pit shells are generated for the open pit sources. Pit designs are
then done on selected shells and signed off by all relevant parties to ensure compliance to specifications. Underground designs are
completed and evaluated. These designs are incorporated into the production and treatment scheduling stages to yield ore tonnes
and grades. Financial evaluations are completed for production and treatment schedules to check cash flow analysis from the
estimated Ore Reserve.
The Ore Reserve for Geita operating, prospective pits and underground mine areas were estimated using updated economic
factors, latest Mineral Resource models, geological, geotechnical, mining engineering and metallurgical parameters. The
environmental, socio-political, legal and regulatory factors are also considered.
Ore Reserve modifying factors
as at 31 December 2018

	Gold price US$/oz	Cut-off grade g/t Au	RMF % (based on tonnes)	RMF % (based on g/t)	MRF % (based on tonnes)	MRF % (based on g/t)	MCF %	MetRF %
Geita Hill (open pit)	1,100	1.50	90.0	100.0	103.0	77.0		

96.0
89.3
Nyankanga (open pit) Cut 7 and 8
1,100
1.45
95.0
100.0
105.0
95.0
96.0
92.7
Nyankanga (underground) Block 4
1,100
3.43
100.0
100.0
95.0
95.0
96.0
90.0
Nyankanga (underground) Block 5
1,100
2.72
100.0
100.0
95.0
95.0
96.0
90.0
Star and Comet (underground) Cut 2
1,100
2.54
100.0
100.0
95.0
95.0
96.0
86.6
Star and Comet (underground) Cut 3
1,100
1.85
100.0
100.0
95.0
95.0
96.0
77.8
Modifying factors are applied during the production scheduling stage with the aim of closely estimating the tonnes, grade and metal
that would be delivered to the ROM pad (i.e. Ore Reserve). The aim is to be able to fully account for all variance along the chain from

the Mineral Resource model to process plant received and gold produced. Dilution is included in MRF and a MCF of 96% is used.
During the year, Geita continued to implement various elements of mine to mill improvements supported with blast movement
tracking technology. The modifying factors considered are based on reconciliation, which is ongoing between Mineral Resource
models, grade control models, mine design perimeters, actual mining and plant feed, specifically on the open pits. Limited historic
data is available for the underground mine and the factors are based on recent drilling results from geology and from similar type
underground deposits and mining methods as suggested by underground planning experts in the group.
For the open pits, the MRF is applied during the production scheduling stage. Dilution is included in MRF. These factors are also
applied in the optimisation process, in the software package, to ensure the optimal selected shell reflects the impact of these factors.
The underground mines have the dilution and mining recovery losses separately applied during the production scheduling stage.
The MRF is estimated to cater for recovery losses from pillars and a further factor might be applied to cater for these pillars,
depending on if they are mined-out at a later stage or not during detailed pit designs and scheduling process.
The MCF is applied after the production scheduling stage for both open pit and underground in the treatment schedule. The
aim is to be able to fully account for all variance along the chain from the Mineral Resource model to process plant received and
gold produced.

Inferred Mineral Resource in business plan

No Inferred Mineral Resource is included in the final Ore Reserve reporting. However, Inferred Mineral Resource within the Ore Reserve pit shell is included in the business plan. This material forms potential extensions to the current LOM if it is converted to Ore Reserve and infill drilling programmes are planned to upgrade potentially economic areas to Indicated Mineral Resource. This accounts for not more than 10% of the business plan.

For Nyankanga, the Inferred Mineral Resource is not included in the pit optimisation and therefore does not contribute to the
economic assessment of the optimised pit. The Inferred Mineral Resource in business plan is present within the final pit shell as
exclusive Mineral Resource.

Inferred Mineral Resource is included in the Star and Comet underground mine design however is not included in the Ore Reserve
estimation process and therefore it does not contribute to the economic assessment of the underground Ore Reserve.

GEITA CONTINUED

As at 31 December 2018, there is a increase in comparison to the previous year's declaration. Driven primarily by depletions offset
by the introduction of Nyankanga Block 4 underground Ore Reserve.

Year-on-year changes in Ore Reserve

AUSTRALASIA

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LEGEND

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Sunrise Dam
2
Tropicana (70%)
Operation
1,000km
0

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Key statistics	Units	2018	2017	2016
Operational performance				
Tonnes treated/milled	Mt	9.5	9.4	8.9
Recovered grade	oz/t	0.065	0.061	0.058
	g/t	2.01	1.89	1.82
Gold production (attributable)	000oz	625	559	520
Total cash costs	$/oz	762	743	793
Total production costs	$/oz	1,010	991	1,056
All-in sustaining costs (1)	$/oz	1,038	1,062	1,067
Capital expenditure (attributable)	$m	156	153	109

(1) Excludes stockpile write-offs

As at 31 December 2018, the total attributable Mineral Resource (inclusive of the Ore Reserve) for the Australasia region was 11.2Moz (2017: 11.2Moz) and the attributable Ore Reserve was 3.8Moz (2017: 4.0Moz).

This is equivalent to 6% and 9% of the group’s Mineral Resource and Ore Reserve. Production from Australasia was steady at
625koz in 2018, equivalent to 18% of group production. AngloGold Ashanti operates two mines in Western Australia: Sunrise Dam,
which is wholly owned, and Tropicana gold mine, a JV with Independence Group NL, which holds a 30% stake.

Inclusive Mineral Resource as at 31 December 2018

Category	Tonnes million	Grade g/t	Contained gold tonnes	Moz
Australasia				
Measured	59.03	1.48	87.32	2.81
Indicated	90.51	1.98	179.38	5.77
Inferred	29.79	2.77	82.52	2.65
Total	179.34	1.95	349.22	11.23

Exclusive Mineral Resource as at 31 December 2018

Category	Tonnes million	Grade g/t	Contained gold tonnes	Moz
Australasia				
Measured	32.57	1.65	53.73	1.73
Indicated	52.76	1.78	93.66	

3.01
Inferred
27.46
2.70
74.14
2.38
Total
112.78
1.96
221.53
7.12
Ore Reserve
as at 31 December 2018
Category
Tonnes
million
Grade
g/t
Contained gold
tonnes
Moz
Australasia
Proved
26.43
1.27
33.50
1.08
Probable
37.63
2.27
85.26
2.74
Total
64.06
1.85
118.76
3.82
REGIONAL OVERVIEW CONTINUED
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SUNRISE DAM
INTRODUCTION
Property description
Sunrise Dam is an underground mine that is wholly owned by AngloGold Ashanti.
Location
Sunrise Dam is approximately 220km north-northeast of Kalgoorlie and 55km south of Laverton in Western Australia.
History
Open pit production began in 1997 and has now been completed at a final depth of 500m below surface. Underground mining commenced in 2003 with a number of different mining methods being applied, depending on the style of mineralisation and grade of the geological domain. By 2014, the mine was wholly an underground mining operation supplemented with stockpile processing.
Legal aspects and tenure
Sunrise Dam operates within two mining leases covering over 7,800ha, which are in good standing with the expiry dates in 2038. The Mineral Resource and Ore Reserve for the Sunrise Dam underground mine is contained within M39/1116. The Golden Delicious Mineral Resource is also contained within the M39/1116 mining lease. The lease M39/1116 also contains mine infrastructure, tailings stage facilities and stockpiles. There is a smaller mining lease M39/1117, which hosts water extraction infrastructure, and is used to supply the operation with water.
Mining method
Mining is carried out by underground mining contractors and productivity improvements over the past few years has seen total underground tonnages mined reach a steady state of around 3Mtpa. This has been possible by the use of bulk mechanised sub-level open stoping using stabilising pillars and waste back fill where possible. Paste fill will be re-introduced in selected areas from 2019 to improve ore recovery in the higher grade parts of the Vogue ore zone.
Operational infrastructure
All required surface infrastructure is in place including a fully functional camp, plant, power plant and reticulation, offices and road system. The underground mining infrastructure has been undergoing continuous upgrades with an extra power feed to the underground mine completed during 2017 and a major ventilation fan upgrade was completed in 2018.
Mineral processing
Ore is treated in a conventional gravity and CIL process plant. Installation of a new fine grind and otation circuit was completed in 2018.
Risks
The complexity of the Sunrise Dam mineralisation means that the largest risk associated with the calculation of the Ore Reserve is linked to the accuracy of the Mineral Resource. Design risk is low as the mining method has been practiced at Sunrise Dam for the past 10 years.
An independent external Mineral Resource and Ore Reserve audit was undertaken in 2018 and found no fatal flaws in process or output.
Competent Persons
Responsibility
Competent Person
Professional
organisation
Membership
number
Relevant
experience
Qualification
Mineral Resource
Fraser Clark

MAusIMM
226 390
17 years
BSc Hons (Geology), Postgraduate
Certificate in Geostatistics
Ore Reserve
Peter Merry
MAusIMM
306 163
16 years
BEng (Mining), GDE (Mining
Engineering)

Map showing Sunrise Dam infrastructure and licences
Plant centroid co-ordinates
122°26'18"E, 29°05'35"S
1
0
1
2km
Licences
Mining
Exploration
Exploration application
Mine infrastructure
Pits
Plant
ROM pad
TSF
Waste dumps
Underground access
Prospects
Golden Delicious
Roads
Main
Secondary
Lake Carey
Airfield
Village
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SECTION 4 / AUSTRALASIA

GEOLOGY

Deposit type

Sunrise Dam is considered to be a mesothermal gold deposit, typical of many orebodies found in the Archean greenstone belts of Western Australia.

Mineralisation style

At Sunrise Dam, gold mineralisation is structurally controlled and vein hosted. The style of mineralisation can be differentiated depending on the structure or environment in which it is hosted. There are three dominant styles recognised:

- Shear-related and high strain e.g. Sunrise Shear Zone
- Stockwork development in planar faults with brittle characteristics (these occur in all rock types and are commonly concentrated at contacts within the volcanic stratigraphy or the porphyry margin and within hinge positions within the magnetite shales) e.g. Cosmo, Dolly and Vogue orebodies
- Placer-style mineralisation hosted within the uvial sediments

Mineralisation characteristics

Mineralisation is typically hosted in quartz-carbonate veins and breccias with varying quantities of pyrite and arsenopyrite. Gold occurs as free gold and is also occulded in the sulphides. The gold mineralisation is often associated with strongly altered country rocks proximal to the shear and fracture network that the hydrothermal fluids have passed through.

N-S Long section of Sunrise Dam looking east, elevation in mRL

500 metres

Waste dump

EXPLORATION

During 2018, the exploration plan was focused on Mineral Resource expansion and infill drilling. The Mineral Resource expansion drilling focused on drill testing the under explored portions of the mine at depth and along strike to supply additional Mineral Resource into the LOM plan.

Significant drill platforms have been established at the southern end of the mine to access the strike and depth extensions of the Vogue orebody. Strategic drill platforms have also been established to facilitate systematic exploration of the middle and northern regions of the property. The exploration drilling focused on the strike and down dip extensions of Vogue and also testing the southern extensions of the Carey Shear Zone. The Vogue drilling campaign has proven that the Mineral Resource continues to the south along strike and at depth. The Carey Shear remains open along strike and down-dip, providing significant upside potential as the exploration proceeds.

Mineral Resource development drilling took place concurrently and focused on infilling the lower part of the Vogue orebody to an Indicated Mineral Resource. In total the exploration activities added 690koz of gold to the Mineral Resource during the year.

MINERAL RESOURCE

Details of average drill hole spacing and type in relation to Mineral Resource classification

Category
Spacing m (-x-)
Type of drilling
Diamond
RC
Blasthole
Channel
Other
Measured
10 x 10, 25 x 25
√
√
√
√
√
√
√
–
–
–
Indicated
40 x 20, 40 x 40
–
–
–
Inferred
40 x 40, 100 x 100
–

–
–
Grade/ore control
6 x 8, 10 x 10
–
–
–
–

The Measured Mineral Resource is drilled out to a 10 x 10m spacing. Indicated Mineral Resource is drilled out to a 20 x 40m spacing. The Inferred Mineral Resource is drilled out to 40 x 40m spacing.

The inclusive Mineral Resource includes measured stockpiles and all in-situ Measured, Indicated and Inferred Mineral Resource which meet the cut-off grade.

Estimation

Estimation of the underground Mineral Resource uses the geological model boundaries to subdivide all drill hole data into appropriate domains. The geostatistical method of ordinary block kriging is used to estimate the Mineral Resource. High-grade restraining is used to limit the effects of outlier grade values. Dense patterns of underground RC drilling are completed prior to the final mine design, upon which, grade control models are created using conditional simulation. This allows for the probabilistic determination of the optimal mining stope configuration.

Mining of the open pit Mineral Resource was completed during 2012 and mining of the crown pillar at the base of the pit finished in early 2014. Remaining stockpiled material is estimated based on detailed grade control drilling completed prior to mining. Grades were estimated by means of the conditional simulation geostatistical method.

The Golden Delicious deposit has been estimated using UC. All available geological drill hole information is validated for use in the models and the local geology of the deposit is used to classify the drill hole information into appropriate estimation domains.

Detailed statistical analyses are conducted on each of these domains and this allows for the identification of high-grade outliers.

If these values are anomalous to the characteristics of the general population they are then cutback to an appropriate upper limit for the population.

Inclusive Mineral Resource
as at 31 December 2018

Category	Tonnes million	Grade g/t	Contained gold tonnes	Moz
Golden Delicious				
Measured	0.66	1.47	0.97	0.03
Indicated	2.40	1.24	2.98	0.10
Inferred	0.02	0.89		

0.02
0.00
Total
3.09
1.29
3.97
0.13
Stockpile (open pit)
Measured
9.54
0.94
8.95
0.29
Indicated
–
–
–
–
Inferred
–
–
–
–
Total
9.54
0.94
8.95
0.29
Underground
Measured
24.72
2.26
55.80
1.79
Indicated
29.32
2.48
72.81
2.34
Inferred
17.21
2.30
39.67
1.28
Total
71.25
2.36
168.27
5.41
Stockpile (underground)
Measured

0.13
3.22
0.41
0.01
Indicated
–
–
–
–
Inferred
–
–
–
–
Total
0.13
3.22
0.41
0.01
Sunrise Dam
Total
84.00
2.16
181.60
5.84
145
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The grade tonnage curves do not include stockpiles.

Exclusive Mineral Resource
as at 31 December 2018

Category	Tonnes million	Grade g/t	Contained gold tonnes	Moz
Sunrise Dam				
Measured	22.42	2.16	48.45	1.56
Indicated	26.10	2.13	55.56	1.79
Inferred	14.90	2.10	31.31	1.01
Total	63.42	2.13	135.32	4.35

The exclusive Mineral Resource includes a large portion of the underground Measured and Indicated Mineral Resource as the material is of a lower-grade and therefore fails to meet Ore Reserve cut-off grade requirements, as well a small amount of Golden Delicious. The entire Inferred Mineral Resource in the underground mine is included in the exclusive Mineral Resource. Much of this Inferred Mineral Resource is located in the deeper parts of the underground mine where the drill density is not yet adequate for the Mineral Resource to be considered in the Ore Reserve estimation process.

SUNRISE DAM CONTINUED

Grade tonnage curves

The increase in Mineral Resource was largely due to successful exploration, as well a methodology changes in the estimation approach by calibrating the Mineral Resource estimate to the grade control estimates. The increase was offset by Mineral Resource depletion and sterilisation of material which cannot be accessed and mined around old stopes and pillars.

As a low grade underground mine, Sunrise Dam is sensitive to changes in gold price.

Year-on-year changes in Mineral Resource

Inclusive Mineral Resource sensitivity

Mineral Resource below infrastructure

as at 31 December 2018

Category	Tonnes million	Grade g/t	Contained gold tonnes	Moz
Sunrise Dam				
Measured	–	–	–	–
Indicated	5.17	3.12	16.13	0.52
Inferred	9.64	2.37	22.89	0.74
Total	14.82	2.63	39.02	1.25

The Mineral Resource below infrastructure occurs below the 1,500mRL.

SUNRISE DAM CONTINUED

ORE RESERVE

Ore Reserve

as at 31 December 2018

Category	Tonnes million	Grade g/t	Contained gold tonnes	Moz
Stockpile (open pit)				
Proved	9.54	0.94	8.95	0.29
Probable	–	–	–	–
Total	9.54	0.94	8.95	0.29
Underground				
Proved	2.93	2.81	8.24	0.26
Probable	5.49	3.60	19.76	0.64
Total	8.42	3.32	27.99	0.90
Stockpile (underground)				
Proved	0.13	3.22	0.41	0.01
Probable				

–
–
–
–
Total
0.13
3.22
0.41
0.01
Sunrise Dam
Total
18.09
2.06
37.35
1.20
Estimation
The underground Ore Reserve is based on portions of the Mineral Resource model which were projected to be mineable based on
price, mining factors and mill recovery assumptions. The mining shapes are based on Indicated Mineral Resource materials that are
projected to provide a 15% margin on total cost, based on the reference assumptions. Mine layout and designs have been created
within mining shapes for each geological domain to calculate the Ore Reserve directly from the Mineral Resource model. The Proved
and Probable Ore Reserve was then defined by applying the Mineral Resource classification for each estimation domain.
Ore Reserve modifying factors
as at
31 December 2018
Gold
price
AUD/oz
Cut-off
grade
g/t Au
Dilution
%
Dilution
g/t
RMF
% (based
on tonnes)
RMF
% (based
on g/t)
MRF
% (based
on tonnes)
MRF
% (based
on g/t)

MCF
%
MetRF
%
Stockpile (open pit)
1,507
0.68
0.0
0.0
100.0
100.0
100.0
100.0
100.0
86.0
Stockpile
(underground)
1,507
2.71
7.0
0.3
100.0
100.0
99.0
99.0
100.0
87.0
Underground
1,507
2.71
7.0
0.3
100.0
100.0
99.0
99.0
100.0
87.0
There are no significant changes in the modifying factors used in the Ore Reserve as gold price, costs and mining performance were
fairly constant year-on-year.
Inferred Mineral Resource in business plan
as at 31 December 2018
Tonnes
million
Grade
g/t
Contained gold
tonnes
Moz
Underground

2.34
3.58
8.38
0.27
Total
2.34
3.58
8.38
0.27
The Inferred Mineral Resource in the business plan includes extensions of all geological domains. This accounts for 6% of the
business plan. Further exploratory drilling during 2019 is planned with the aim of increasing confidence in these areas to bring them
into the Ore Reserve.
Ore Reserve below infrastructure
as at 31 December 2018
Category
Tonnes
million
Grade
g/t
Contained gold
tonnes
Moz
Sunrise Dam
Proved
–
–
–
–
Probable
1.29
3.85
4.95
0.16
Total
1.29
3.85
4.95
0.16
The Ore Reserve below infrastructure occurs below the 1,500mRL.
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Year-on-year changes in Ore Reserve are due mainly to depletions offset by exploration activities.

Year-on-year changes in Ore Reserve

TROPICANA
INTRODUCTION
Property description
Tropicana is comprised of a number of open pits that are operated as a JV between AngloGold Ashanti (70%), which manages the operation and Independence Group NL (30%).
Location
Tropicana is located 200km east of Sunrise Dam and 330km east-northeast of Kalgoorlie, Western Australia. Tropicana is the first deposit discovered in this remote portion of the Great Victoria Desert.
History
Open pit mining began during 2012 with first gold production occurring during September 2013. Tropicana reached the 2Moz produced milestone during the Q1 2018.
Legal aspects and tenure
Tropicana has security of tenure for all current exploration licences and the mining lease that covers its future Ore Reserve. This lease is M39/1096 which is valid from 11 March 2015 to 10 March 2036 covering a total area of 27,228ha.
The previous 31 mining leases comprising the 27,228ha (including M39/980, M39/981, M39/982 and M39/1052), were conditionally surrendered in favour of the grant of the single mining lease M39/1096 on 11 March 2015 for 21 years with all existing rights and obligations preserved. This process was completed with the co-operation of the Department of Mines and Petroleum.
Mining method
Mining activities are undertaken by Macmahon in an alliance partnership with AngloGold Ashanti. Mining is conventional open cut, drill and blast, followed by truck and excavator operation to develop the deposits (Havana, Havana South, Tropicana and Boston Shaker). The total annual movement of ore and waste is approximately 95Mtpa.
Operational infrastructure
All infrastructure facilities are in place and operational. The processing plant and TSF are operating well, consistent with design specifications. The infrastructure includes, but is not limited to, a dedicated gas and diesel power station, water supply, processing plant, mine, dewatering infrastructure, tailing dump facility, workshops, camp facilities and airstrips.
Mineral processing
The processing plant comprises crushing, high pressure grinding rolls, one stage grinding and CIL recovery and a capacity of 7.6 to 8.1Mtpa.
Risks
No material risks identified.
Competent Persons

Responsibility	Competent Person	Professional organisation	Membership number	Relevant experience	Qualification
Mineral Resource	Damon Elder	MAusIMM	208 240	22 years	BSc Hons (Geology)
Ore Reserve (surface)					

Steven Hulme
MAusIMM
220 946
8 years
BSc (Mining), Graduate Diploma
(Mining)
Ore Reserve (underground) Jeff Dang
MAusIMM
307 499
11 years
BEng Hons (Mining)

GEOLOGY

Deposit type

The Tropicana Gold Project area lies east of a north-east trending magnetic feature, interpreted to be the major tectonic suture between the Yilgarn Craton and the Proterozoic Albany-Fraser Orogen that extends over 700km. The gold deposit is hosted in Archean gneissic metamorphic rocks (ca. 2,640Ma) with cover sequences generally 10 to 30m thick resulting in the mineral deposit not being exposed at surface.

Together, the Tropicana, Havana, Havana South and Boston Shaker deposits define a north-east trending mineralised corridor, approximately 1.2km wide and 5km long, that has been tested to a vertical depth of more than 1,200m. The Mineral Resource remains open down-dip from the Tropicana, Havana and Boston Shaker deposits and has the potential to be extended to the north and south. Neither the immediate metamorphic host rocks nor the mineralised zones are exposed at surface due to the presence of widespread younger cover sequences of between 0.5m and 15m thick.

Mineralisation style

The Tropicana deposit comprises a mineralised zone up to 50m thick, hosted predominantly in quartzo-feldspathic gneiss with a garnet-gneiss dominated hangingwall package. The mineralisation is comprised of subordinate thin (3 to 5m), discontinuous mineralised lenses that typically return intercepts of >0.5g/t gold. The Havana deposit comprises a lower, laterally continuous, higher-grade lode up to 50m thick that is overlain, in the central and southern parts of the proposed pit, by stacked, typically lower-grade and thinner (up to 25m thick) mineralised zones. Havana is also dominantly hosted in quartzo-feldspathic gneiss, again with a garnet gneiss dominated hangingwall.

Map showing Tropicana Mine infrastructure and licences with the total mining lease area insert shown in the top right-hand corner
1
0
1
2km
Licences
Mining
Exploration
Mine infrastructure
Pits
Plant
ROM pad
Stockpiles
TSF
Waste dumps
Settlements
Villages
Roads
Main
Secondary
Airfield
Insert
Total mining lease area
Map zoomed in area
Plant centroid co-ordinates
124°32’25”E, 29°14’25”S
Total mining lease area
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TROPICANA CONTINUED

S-N View of the both open pit and underground Mineral Resource over the strike length of Tropicana

0.3g/t Wireframe

2.8g/t Grade shell

Mineralisation characteristics

Mineralisation is accompanied by pyrite (2% to 8%) with accessory pyrrhotite, chalcopyrite and other minor sulphides and tellurides.

The gold mineralisation is related to shear planes that postdate the main gneissic fabric developed during peak granulite-facies metamorphism.

1km

NW-SE Geological cross-section through Havana pit, elevation in metres relative to average mean sea level

EXPLORATION

During 2018, Tropicana JV brownfields exploration programmes included Mineral Resource development drilling and near mine
exploration drilling. Mineral Resource development drilling completed infill drilling at Boston Shaker, Havana, Havana South and
Tropicana was designed to increase Mineral Resource confidence. Following extensional drilling at Boston Shaker which identified
underground mining potential in 2017, underground extensional drilling programmes continued in 2018 defining an underground
Mineral Resource.

Near mine exploration programmes explored for potential open pit satellite Mineral Resource, within 60km of the mine. They
comprised a mix of advanced and early stage exploration using DD, RC and AC drilling. The programmes are testing prospects
such as Madras, New Zebra, Angel Eyes and Southern Traverses following a comprehensive target generation exercise in through
2017. The results of the 2018 exploration drilling and ongoing targeting work provide a comprehensive pipeline of exploration
targets with focus on near mine exploration going forward into 2019.

PROJECTS

The Tropicana JV has implemented a cutback staging strategy, effectively increasing production from the mine in the medium term
and extending the mine life.

The installation of a second ball mill in the Tropicana processing plant grinding circuit was completed and commissioned in late
2018. The 6MW ball mill will enable the annual throughput rate to be lifted to approximately 8.2Mtpa and deliver an expected
increase in gold metallurgical recovery of up to 3% through a reduction in grind size. The increased throughput will efficiently match
processing capacity to the increased mining rate (~95Mtpa), and effectively bring forward gold production delivering the best
production profile for the operation.

Through 2018, the Boston Shaker underground Mineral Resource was evaluated in the Boston Shaker underground PFS,
progressed to a FS in late 2018, which will be concluded in early 2019.

Legend

500m

TROPICANA CONTINUED
MINERAL RESOURCE
Details of average drill hole spacing and type in relation to Mineral Resource classification
Category
Spacing m (-x-)
Type of drilling
Diamond
RC
Blasthole
Channel
Other
Measured
25 x 25
√
√
√
√
–
–
–
Indicated
20 x 50, 50 x 50
–
–
–
Inferred
100 x 100
–
–
–
Grade/ore control
12 x 12
√
√
√
–
–
–
–
Inclusive Mineral Resource
as at 31 December 2018
Category
Tonnes
million
Grade
g/t
Contained gold
tonnes
Moz
Boston Shaker Stage 4 – BS04
Measured

0.00
0.93
0.00
0.00
Indicated
2.45
1.86
4.55
0.15
Inferred
0.00
0.39
0.00
0.00
Total
2.45
1.86
4.55
0.15
Boston Shaker Stage 3 – BS03
Measured
0.42
1.66
0.70
0.02
Indicated
2.18
1.98
4.34
0.14
Inferred
–
–
–
–
Total
2.61
1.93
5.04
0.16
Havana Stage 3 – HA03
Measured
0.59
2.47
1.45
0.05
Indicated
4.12
1.80
7.42
0.24

Inferred
–
–
–
–
Total
4.71
1.89
8.87
0.29
Havana Stage 4 – HA04
Measured
0.04
1.14
0.05
0.00
Indicated
6.42
1.68
10.77
0.35
Inferred
–
–
–
–
Total
6.46
1.67
10.82
0.35
Havana Stage 5 – HA05
Measured
–
–
–
–
Indicated
6.68
1.76
11.78
0.38
Inferred
–
–
–
–
Total
6.68
1.76
11.78

0.38
Havana Stage 6 – HA06
Measured
–
–
–
–
Indicated
8.45
1.66
14.05
0.45
Inferred
–
–
–
–
Total
8.45
1.66
14.05
0.45
Havana South Stage 1 – HS01
Measured
3.48
1.05
3.64
0.12
Indicated
8.39
1.18
9.87
0.32
Inferred
–
–
–
–
Total
11.86
1.14
13.51
0.43
Havana South Shell
Measured
–
–
–
–
Indicated
13.51

1.12
15.10
0.49
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Inclusive Mineral Resource continued
as at 31 December 2018

Category	Tonnes million	Grade g/t	Contained gold tonnes	Moz
Inferred	3.91	1.31	5.13	0.16
Total	17.42	1.16	20.23	0.65
Tropicana Stage 2 – TP02				
Measured	–	–	–	–
Indicated	0.67	2.03	1.36	0.04
Inferred	–	–	–	–
Total	0.67	2.03	1.36	0.04
Tropicana stockpile (open pit)				
Measured	19.45	0.79	15.34	0.49
Indicated	–	–	–	

–
Inferred
–
–
–
–
Total
19.45
0.79
15.34
0.49
Boston Shaker (underground)
Measured
–
–
–
–
Indicated
3.55
4.08
14.50
0.47
Inferred
5.23
4.35
22.73
0.73
Total
8.78
4.24
37.23
1.20
Tropicana (underground)
Measured
–
–
–
–
Indicated
1.16
3.59
4.16
0.13
Inferred
0.21
3.66
0.78
0.03
Total
1.37
3.60

4.94
0.16
Havana (underground)
Measured
–
–
–
–
Indicated
1.07
4.64
4.97
0.16
Inferred
2.76
4.30
11.88
0.38
Total
3.83
4.40
16.85
0.54
Havana South (underground)
Measured
–
–
–
–
Indicated
0.14
5.06
0.73
0.02
Inferred
0.45
5.15
2.32
0.07
Total
0.59
5.12
3.04
0.10
Tropicana
Total
95.34
1.76
167.62
5.39
Estimation

All available geological drill hole information is validated for use in the models and the local geology of the deposit is used to classify the drill hole information into appropriate geostatistical domains. Detailed statistical analyses are conducted on each of these domains. The recoverable gold Mineral Resource for the open pit is estimated by LUC. Conventional UC which estimates the proportion of material recovered by mining above a cut-off grade, assuming a specified SMU, LUC goes a step further to position the SMU block within the estimated panel based on the most likely position of the higher grade SMU blocks relative to the lower grades SMU blocks.

The underground Mineral Resource estimate uses all available drilling targeting the down plunge and along strike extents of the mineralisation, outside the current open pits and open pit Mineral Resource shells, and is estimated by LUC.

The grade tonnage curves do not include stockpiles.

Exclusive Mineral Resource
as at 31 December 2018

Category	Tonnes million	Grade g/t	Contained gold tonnes	Moz
Tropicana				
Measured	10.15	0.52	5.28	0.17
Indicated	26.66	1.43	38.10	1.22
Inferred	12.56	3.41	42.83	1.38
Total	49.37	1.75	86.21	2.77

The exclusive Mineral Resource includes Inferred Mineral Resource at depth in the designed pits and Mineral Resource shells, as well as the portions of underground Mineral Resource, which are not yet drilled to a level of confidence to support an Ore Reserve.

Mineral Resource below infrastructure
as at 31 December 2018

Category	Tonnes million	Grade g/t	Contained gold tonnes	Moz
Tropicana				
Measured	–	–	–	

–
Indicated
5.93
4.11
24.35
0.78
Inferred
8.65
4.36
37.71
1.21
Total
14.58
4.26
62.06
2.00
All of the underground Mineral Resource is below infrastructure as no development has yet taken place or is currently planned.
TROPICANA CONTINUED
Year-on-year changes in Mineral Resource
Grade tonnage curves
Addition through exploration success at Boston Shaker underground offset depletion. The Havana South underground Mineral
Resource was adjusted in-line with updated Mineral Resource shell optimisation.
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The open pit Mineral Resource is sensitive to gold
price changes in Havana South. In other areas,
the pit designs are fixed based on the current
business plan.
ORE RESERVE
Ore Reserve
as at 31 December 2018
Category
Tonnes
million
Grade
g/t
Contained gold
tonnes
Moz
Boston Shaker Stage 4 – BS04
Proved
0.00
1.62
0.00
0.00
Probable
1.84
2.29
4.22
0.14
Total
1.84
2.29
4.22
0.14
Boston Shaker Stage 3 – BS03
Proved
0.33
1.97
0.65
0.02
Probable
1.83
2.25
4.12
0.13
Total
2.16
2.21
4.77
0.15
Havana Stage 3 – HA03
Proved
0.53
2.69

1.42
0.05
Probable
3.45
2.03
7.00
0.22
Total
3.98
2.11
8.41
0.27
Havana Stage 4 – HA04
Proved
0.03
1.29
0.04
0.00
Probable
5.05
1.97
9.93
0.32
Total
5.08
1.96
9.97
0.32
Havana Stage 5 – HA05
Proved
–
–
–
–
Probable
5.49
2.00
10.99
0.35
Total
5.49
2.00
10.99
0.35
Havana Stage 6 – HA06
Proved
–
–
–
–
Probable

6.49
1.98
12.87
0.41
Total
6.49
1.98
12.87
0.41
Havana South Stage 1 – HS01
Proved
2.07
1.38
2.85
0.09
Probable
5.47
1.49
8.16
0.26
Total
7.54
1.46
11.00
0.35
Stage 2 – TP02
Proved
–
–
–
–
Probable
0.62
2.13
1.33
0.04
Total
0.62
2.13
1.33
0.04
Stockpile (open pit)
Proved
10.87
1.01
10.95
0.35
Probable
–
–
–

–
Total
10.87
1.01
10.95
0.35
Boston Shaker (underground)
Proved
–
–
–
–
Probable
1.89
3.65
6.89
0.22
Total
1.89
3.65
6.89
0.22
Tropicana
Total
45.97
1.77
81.41
2.62
Inclusive Mineral Resource sensitivity
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TROPICANA CONTINUED

Estimation

The Ore Reserve for Tropicana is based on an operating LOM plan and a PFS. For the operating LOM plan, a FS was completed in 2010, which determined a technically achievable and financially economic mine plan. The pits that make up the operating LOM plan are Tropicana, Havana, Boston Shaker and Havana South. The PFS studies were based on an expansion of Havana and the Boston Shaker underground project. All Ore Reserve is estimated by reporting physicals (volumes, tonnes, grades, material types, etc) against the Mineral Resource model within detailed staged pit designs. Ore Reserve physicals are then scheduled and put through a financial model for economic evaluation.

Ore Reserve modifying factors
as at 31 December 2018

	Gold price AUD/oz	Cut-off grade g/t Au	MCF %	MetRF %
Surface	1,509	0.70	100.0	90.0
Stockpile (open pit)	1,509	0.70	100.0	90.0
Underground	1,509	3.17	100.0	89.9

The metallurgical recovery is based upon historic performance of the process plant to date. This is the only factor applied in the Ore Reserve estimation process. Mining selectivity was accounted for during the Mineral Resource estimation process, which produced a diluted Mineral Resource model. Consequently, no further adjustment was made and 100% mining recovery and no grade dilution were assumed during the Ore Reserve estimation process. The diluted Mineral Resource model is regularly reconciled against operating performance.

Changes in the Ore Reserve are mainly due to the addition of the Boston Shaker underground project and depletion during 2018
operations. Through optimisation of the business plan a scope change from strip mining to conventional cutbacks extraction
method returns the plan to well under-stood costs and methodology minimising any potential risks whilst focussing on bulk
mining methods.

Year-on-year changes in Ore Reserve

Inferred Mineral Resource in business plan
as at 31 December 2018

	Tonnes million	Grade g/t	Contained gold tonnes	Moz
Boston Shaker (underground)	2.69	4.03	10.85	0.35
Total	2.69	4.03	10.85	0.35

All Mineral Resource categories, including the Inferred Mineral Resource, were included in the business plan but the Inferred Mineral
Resource was excluded from the Ore Reserve. It is noted that there is an insignificant percentage of Inferred Mineral Resource
(approximately 0.1% by tonnage) within the pit designs used.

Ore Reserve below infrastructure
as at 31 December 2018

	Category	Tonnes million	Grade g/t	Contained gold tonnes	Moz
Tropicana	Proved	–	–	–	–
	Probable	1.89	3.65		

6.89
0.22
Total
1.89
3.65
6.89
0.22
All the underground Boston Shaker Ore Reserve is below infrastructure as no development has yet taken place or is currently
planned.
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0
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Brazil – AGA Mineração Córrego do Sítio

REGIONAL OVERVIEW

Key statistics

	Units	2018	2017	2016
Operational performance				
Tonnes treated/milled	Mt	6.8	7.5	7.0
Recovered grade	oz/t	0.103	0.102	0.106
	g/t	3.55	3.49	3.64
Gold production (attributable)	000oz	776	840	820
Total cash costs	$/oz	624	638	578
Total production costs	$/oz	875	973	909
All-in sustaining costs (1)	$/oz	855	943	875
Capital expenditure	$m	176	234	225

(1) Excludes stockpile write-offs

The Americas region incorporates two mining jurisdictions, Brazil and Argentina, and advanced project development programmes

in Colombia. As at 31 December 2018, the total attributable Mineral Resource (inclusive of the Ore Reserve) for the Americas region
was 57.5Moz (2017: 56.9Moz) and the attributable Ore Reserve was 7.1Moz (2017: 5.1Moz).
This is equivalent to 31% and 16% of the group's Mineral Resource and Ore Reserve respectively. Combined production for the
Americas was 776koz in 2018, equivalent to 23% of group production.
AngloGold Ashanti has three operations in the Americas, the Cerro Vanguardia Mine in Argentina (AngloGold Ashanti 92.5% and
Formicruz 7.5%), AngloGold Ashanti Córrego do Sítio Mineração operations (referred to as AGA Mineração) which includes the Cuiabá,
Lamego and Córrego do Sítio (CdS) Mines and Serra Grande, both in Brazil, and advanced project development programmes in Colombia.
The projects in Colombia form a significant contribution to AngloGold Ashanti's Mineral Resource with the three projects, La Colosa,
Quebradona (AngloGold Ashanti 94.876% and B2Gold 5.124%) and Gramalote (AngloGold Ashanti 51% and B2Gold 49%)
contributing 37.1Moz.
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REGIONAL OVERVIEW CONTINUED

Gold

Inclusive Mineral Resource
as at 31 December 2018

Category	Tonnes million	Grade g/t	Contained gold tonnes	Moz
Americas				
Measured	30.33	5.12	155.29	4.99
Indicated	1,204.13	0.91	1,095.22	35.21
Inferred	657.33	0.82	536.86	17.26
Total	1,891.79	0.94	1,787.38	57.47

Exclusive Mineral Resource
as at 31 December 2018

Category	Tonnes million	Grade g/t	Contained gold tonnes	Moz
Americas				
Measured	17.29	6.02	104.12	3.35
Indicated	1,017.63			

0.86
879.00
28.26
Inferred
654.55
0.81
529.73
17.03
Total
1,689.48
0.90
1,512.85
48.64
Ore Reserve
as at 31 December 2018
Category
Tonnes
million
Grade
g/t
Contained gold
tonnes
Moz
Americas
Proved
11.24
2.75
30.90
0.99
Probable
186.94
1.02
191.14
6.15
Total
198.18
1.12
222.04
7.14
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Copper
Inclusive Mineral Resource
as at 31 December 2018
Category
Tonnes
million
Grade
%Cu
Contained copper
tonnes million pounds million
Americas
Measured
–
–
–
–
Indicated
242.57
0.86
2.09
4,617
Inferred
325.40
0.47
1.51
3,337
Total
567.97
0.64
3.61
7,954
Exclusive Mineral Resource
as at 31 December 2018
Category
Tonnes
million
Grade
%Cu
Contained copper
tonnes million pounds million
Americas
Measured
–
–
–
–
Indicated
138.52
0.61
0.84
1,848

Inferred
325.40
0.47
1.51
3,337
Total
463.92
0.51
2.35
5,185
Ore Reserve
as at 31 December 2018
Category
Tonnes
million
Grade
%Cu
Contained copper
tonnes million pounds million
Americas
Proved
–
–
–
–
Probable
104.05
1.21
1.26
2,769
Total
104.05
1.21
1.26
2,769
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ARGENTINA

AngloGold Ashanti has a single operation in Argentina, the Cerro Vanguardia Mine, which is a JV with Formicruz (a state company operating in the province of Santa Cruz). Formicruz holds a 7.5% interest in the mine, with the remaining 92.5% belonging to AngloGold Ashanti. Production is from both underground and open pit mining and is fed either into a Merrill Crowe plant or onto a heap-leach.

Argentina – Cerro Vanguardia

Inclusive Mineral Resource
as at 31 December 2018

Category	Tonnes million	Grade g/t	Contained gold tonnes	Moz
Argentina				
Measured	9.37	2.14	20.00	0.64
Indicated	20.95	2.75	57.53	1.85
Inferred	4.61	2.45	11.31	0.36
Total	34.93	2.54	88.85	2.86

Exclusive Mineral Resource
as at 31 December 2018

Category	Tonnes million	Grade g/t	Contained gold tonnes	Moz
Argentina				
Measured	1.58	1.27	2.01	0.06
Indicated	12.54	3.34	41.88	

1.35
Inferred
3.28
2.97
9.75
0.31
Total
17.41
3.08
53.64
1.72
Ore Reserve
as at 31 December 2018
Category
Tonnes
million
Grade
g/t
Contained gold
tonnes
Moz
Argentina
Proved
7.72
2.32
17.88
0.57
Probable
8.14
1.89
15.41
0.50
Total
15.86
2.10
33.30
1.07
LEGEND
1
Cerro Vanguardia (92.5%)
Operation
1,000km
0
165
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CERRO VANGUARDIA

INTRODUCTION

Property description

Cerro Vanguardia is a gold-silver mine with multiple open pit and underground mines, located within the property but mined simultaneously. AngloGold Ashanti has a 92.5% stake in Cerro Vanguardia, the company's sole operation in Argentina, with Fomicruz, a state company operating in the province of Santa Cruz, owning the remaining 7.5%. The climate is semi-arid and although snow is not rare, winter is mild and exploration activities are normally possible all year round.

Location

Cerro Vanguardia is located in Santa Cruz province, southern Patagonia, Argentina, approximately 110km north-northwest of the coastal town of Puerto San Julian. Access to the area is by aircraft from Buenos Aires to Comodoro Rivadavia (380km) or Rio Gallegos (510km) and then by road to the mine site.

History

Gold exploration at the site was started in late 1980s by the state owned Fomicruz and Minera Mincorp (JV between Anglo American Argentina Holdings Limited and a local private company Perez Companc). Cerro Vanguardia commenced as an open pit operation in 1998 and this was supplemented in 2010 with the start of shallow underground mining to access high-grade material. To complement the already existing gold plant, a heap-leaching operation was started in 2012. The mine has been operated by AngloGold Ashanti since 1998.

Legal aspects and tenure

The mining lease encompasses an area of approximately 543km^2. The licence 402642/CV/97 covers the full Ore Reserve and was issued on 27 December 1996 and expires on 26 December 2036.

Mining method

Cerro Vanguardia uses a conventional open pit mining method with a doubled bench height of 20m and in the underground, longhole stoping. Open pit mining is distributed between multiple operating pits, typically 5 to 10 at any one time, depending on the plant feed requirements. Currently, there are four underground mines which are operated at the same time, located at the Fortuna, Osvaldo 8, Veronica and Zorro veins. Three more are in development (Liliana, Serena and Cuncuna). The underground workings, which began production in 2010, account for around 30% of total production, a percentage that will increase in the next few years. Low-grade material is stockpiled and processed by heap-leaching.

Operational infrastructure

Most of the infrastructure is located on site. It includes a camp site with capacity for more than 1,000 people, Merrill Crowe plant, heap-leaching facilities, cyanide recycling plant, mine laboratory, maintenance facilities, warehouses and sewage processing plant. Four natural gas power generators fed by a 40km long pipeline provide electricity to the operation.

Natural gas is also used for heating. Mine office facilities are conveniently located in the main mining area. Dewatering supplies water for use both as processing water and camp consumption. Due to the particular features of the mine, and in order to optimise hauling, all pits have local single or multiple waste dumps. The tailings dam is located in, and is contained by a natural depression.

Mineral processing

Waste dumps and heap-leach stockpiles are located adjacent to each pit. Plant grade ore feed is trucked to either the long-range or the short-range stockpiles in order to smooth out the head grades and avoid recovery losses due to higher than planned silver grades.

The metallurgical plant has a daily capacity of 3,000t and includes a cyanide recovery facility. Production capacity of the heap-leach facility, which was commissioned in Q4 2012 and processes lower-grade material, is around 2.0Mtpa at gold and silver grades of around 0.65g/t and 17g/t respectively.

Risks

The Mineral Resource and Ore Reserve is sensitive to gold and silver prices as well as to local exchange rate fluctuations. The low grades from the open pits and dif cult hydrogeological and geotechnical conditions for underground are on-going risks that are managed on a day-to-day basis. An independent external Mineral Resource and Ore Reserve audit was undertaken in 2018 and found no fatal aws in process or output.

Competent Persons

Responsibility	Competent Person	Professional organisation	Membership number	Relevant experience	Qualification
Mineral Resource	Juan Paredes	MAusIMM	227 738	22 years	PhD (Geology)
Ore Reserve	Javier Santillan	MAusIMM	319 366	15 years	BSc (Mining Engineering)

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Map showing Cerro Vanguardia Mine infrastructure and licences with the total mining lease area insert shown in the top right-hand corner
0
1.5
3km
Licences
Mining
Exploration
Mine infrastructure
Pits
Plant
ROM pad
Stockpiles
Leach pad
TSF
Waste dumps
Underground access
Roads
Main
Secondary
Airfield
Insert
Total mining lease area
Map zoomed in area
Plant centroid co-ordinates
68°15’46”W, 48°23’08”S
Total mining lease area
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CERRO VANGUARDIA CONTINUED

GEOLOGY

The Cerro Vanguardia district is located within the southern Deseado Massif in the Santa Cruz province of Patagonia, Argentina.

The Deseado Massif is an extensive rhyolite province of Middle to Upper Jurassic age. The most important geological feature
in the Deseado Massif is an extended plateau formed by pyroclastic, epiclastic and extrusive rocks which were part of a strong
explosive volcanic event associated with regional extensional tectonics developed during the Middle Upper Jurassic and related to
the opening of the Atlantic Ocean. The rocks representing this magmatism are termed the Bajo Pobre Formation and Bahia Laura
Group. The Bajo Pobre Formation comprises andesites, basalts and mafic volcanic agglomerates. The Bahia Laura Group includes
both the Chon Aike Formation (ignimbrites, tuffs, volcanic breccias, agglomerates, lavas and domes) and the La Matilde Formation
(tuffs and epiclastic volcanics interlayered with ignimbrites).

Deposit type

The Middle-Upper Jurassic ignimbrites and volcanic rocks from Chon Aike Formation host the low-sulphidation epithermal gold and
silver deposit. The thickness of the ignimbrite sequence is estimated to have exceeded 1,000m but some lateral variations have
been identified across the district. Epithermal Au-Ag bearing structures cut across all Jurassic rocks in the stratigraphy. The two
main ignimbrite units, the Masiva-Lajosa and Granosa, host the majority of the mineralised veins.

The Masiva-Lajosa ignimbrite occurs at the top of the sequence while the Granosa ignimbrite occurs towards the bottom. These
two ignimbrites are separated by two thinner, polymictic ignimbrite units (Brechosa and Brechosa Base) and a sequence of stratified
crystal to ash-rich tuffs (Estratificada unit). The base of the sequence is a mixed unit of stratified ignimbrite intercalated with fine-
grained tuffs (Estratificada Inferior ignimbrite).

Mineralisation style

Cerro Vanguardia is located in the core of the 60,000km
2
Deseado Massif, one of the most extensive volcanic complexes in
southern Patagonia. The Deseado Massif is an extensive rhyolite province of Middle to Upper Jurassic age deposited over Paleozoic
low-grade metamorphic basement rocks. These rocks are exposed in erosional windows through overlying Cretaceous sediments
and Tertiary to Quaternary basalts. The orebodies comprise a series of low-sulphidation epithermal vein deposits containing gold
and large quantities of silver which is produced as a by-product.

Mineralisation characteristics

The mineralisation is concentrated in steeply-dipping quartz veins that cut the at-lying ignimbrites and volcanoclastic rocks.

The Cerro Vanguardia district contains around 100 gold and silver-bearing epithermal veins for a cumulative exposed vein strike
extension of more than 240km, of which 57 veins are currently known to contain economic gold and silver mineralisation.

The veins at Cerro Vanguardia consist mainly of quartz and adularia and contain minor electrum, native gold, silver sulphides and native silver as fine-grained disseminations. Vein textures are mainly characterised by colloform-crustiform banding, pseudomorphic quartz-lattice textures, massive-to-vuggy quartz veins and vein breccias. $^{40}Ar/^{39}Ar$ dating on adularia from the Osvaldo Diez vein yielded ages of around 153Ma while the age of the thick sequence of ignimbrites hosting the veins has been dated between 166Ma to 150Ma.

EXPLORATION

The annual diamond drilling programme totaled 8,617m, yielding 0.155M new gold ounces (Veins + Stockworks) and 4.2M new silver ounces in veins such as Atila 2, Atila Sur, Concepcin, Jani, Joana, Osvaldo Diez, Oveja, Potrero, Sandra, Teresa and Vanguardia 3. An extensive trenching programme was carried out mainly in the north and south parts of the district, excavating 309 new trenches totalling 21,788m. 355 channels were cut in trenches and outcrops of 33 different veins, with a total length of 9,683m. 56km of ground magnetics were surveyed, covering the geologically more interesting sectors of the south, southwest and the northern district, in areas such as Atila, Cuncuna, Dora, El Lazo, Molino-Vbora, Norma, Teresa, El Trio Norte, over the gravels in the south and over the eastern boundary of the Cerro El Uno basaltic plateau in the southwest. 3.19km of Horizontal Loop Electromagnetic (HLEM) surveys were carried out over Carmela, Osvaldo Diez Sur and Teresa veins, and also in the new Condor area located nearby, several kilometres northwest NW of the Cerro Vanguardia district.

PROJECTS

An exploration project has been initiated focusing on the generation of new Mineral Resource to replace mining depletion. This will
be achieved through the identification and delineation of high grade orebodies at depth and along strike of known mineralisation
and generative exploration work using geophysics and geochemistry looking for new ore shoots in the veins of the central, north
and south.

During 2018, 1,200ha were added in a new mining property from Fomicruz in the northwest portion of the Cerro Vanguardia mining
properties. This is an exploration agreement between Fomicruz and Cerro Vanguardia.

W-E Geological cross-section of the Atila vein at Cerro Vanguardia, elevation in metres relative to sea level

E

W

Legend

Masiva Lajosa Ignimbrite

Brechosa Ignimbrite

Estratificada Sup Ignimbrite

Granosa Ignimbrite

Vein

200 Elev

200 Elev

100 Elev

100 Elev

0 Elev

0 Elev

100m

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MINERAL RESOURCE
Details of average drill hole spacing and type in relation to Mineral Resource classification
Category
Spacing m (-x-)
Type of drilling
Diamond
RC
Blasthole
Channel
Other
Measured
6 x 20, 12 x 5
–
–
Indicated
40 x 40
–
–
Inferred
80 x 80
–
–
Grade/ore control
6 x 10, 12 x 5
–
–
Inclusive Mineral Resource
as at 31 December 2018
Category
Tonnes
million
Grade
g/t
Contained gold
tonnes
Moz
Vein (open pit)
Measured
1.13
4.15
4.68
0.15
Indicated
7.49
4.47
33.51
1.08
Inferred
2.09
3.52
7.35

0.24
Total
10.71
4.25
45.54
1.46
In situ heap leach stockwork material
Measured
2.55
0.66
1.68
0.05
Indicated
10.86
0.61
6.63
0.21
Inferred
2.15
0.73
1.57
0.05
Total
15.57
0.63
9.88
0.32
Heap leach stockpiles
Measured
3.57
0.51
1.83
0.06
Indicated
–
–
–
–
Inferred
–
–
–
–
Total
3.57
0.51
1.83
0.06
Vein (underground)
Measured
2.11

5.58
11.81
0.38
Indicated
2.60
6.70
17.39
0.56
Inferred
0.37
6.39
2.39
0.08
Total
5.08
6.21
31.59
1.02
Cerro Vanguardia
Total
34.93
2.54
88.85
2.86
Inclusive Mineral Resource by-product: silver
as at 31 December 2018
Category
Tonnes
million
Grade
g/t
Contained silver
tonnes
Moz
Cerro Vanguardia
Measured
9.37
47.30
443
14.24
Indicated
20.95
67.70
1,419
45.61
Inferred
4.61
111.73
516
16.58
Total

34.93
68.05
2,377
76.43
Estimation
The mineralisation boundaries for each geological entity (veins, stockwork and wall rock) are defined from the detailed logging of
all geological drill holes. This data is validated and the information used to create a 3D model with cell sizes of 5 x 25 x 5m block.
Volumetric measurements of the deposit are then determined using relevant block dimensions. Ordinary kriging is used to perform
grade interpolation and field tests are conducted to determine appropriate in situ densities.
Conditional simulations are performed in the main deposits for uncertainty assessment and the Mineral Resource is then classified
into Measured, Indicated and Inferred Mineral Resource categories according to the internal AngloGold Ashanti guidelines. For the
veins where simulations are not done, drill density is used to classify the Mineral Resource.
CERRO VANGUARDIA
CONTINUED
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Grade tonnage curves

The grade tonnage curves do not include stockpiles.

Exclusive Mineral Resource

as at 31 December 2018

Category	Tonnes million	Grade g/t	Contained gold tonnes	Moz
Cerro Vanguardia				
Measured	1.58	1.27	2.01	0.06
Indicated	12.54	3.34	41.88	1.35
Inferred	3.28	2.97	9.75	0.31
Total	17.41	3.08	53.64	1.72

The exclusive Mineral Resource is primarily located between the pit design and the Mineral Resource shell and exists due to the difference in the economic parameters that have been used.

Where the grades of gold and silver are above the Mineral Resource cut-off but below the Ore Reserve cut-off, significant zones of exclusive Mineral Resource will be generated. Very deep Mineral Resource will not be converted in the near term to Ore Reserve and is therefore listed as exclusive Mineral Resource.

CERRO VANGUARDIA

CONTINUED

The Mineral Resource is highly sensitive to changes in gold price on the upside. A great deal of low-grade material is present in the deposit which is reflected in the large tonnage increase and grade decrease at elevated gold prices.

Inclusive Mineral Resource sensitivity

Year-on-year changes are due to depletion offset by positive changes due to methodology and costs.

Year-on year-changes in Mineral Resource

Mineral Resource below infrastructure

as at 31 December 2018

Category	Tonnes million	Grade g/t	Contained gold tonnes	Moz
Cerro Vanguardia				
Measured	–	–	–	–
Indicated	–	–	–	–
Inferred	0.37	6.39	2.39	0.08
Total	0.37	6.39	2.39	0.08

All the Inferred Mineral Resource that has no ramp designed as yet is considered to be below infrastructure.

ORE RESERVE
Ore Reserve
as at 31 December 2018
Category
Tonnes
million
Grade
g/t
Contained gold
tonnes
Moz
Vein (open pit)
Proved
1.05
3.56
3.75
0.12
Probable
2.78
4.65
12.91
0.42
Total
3.83
4.35
16.66
0.54
In situ heap leach stockwork material
Proved
0.98
0.51
0.49
0.02
Probable
5.34
0.44
2.36
0.08
Total
6.32
0.45
2.85
0.09
Heap leach stockpiles
Proved
3.57
0.51
1.83
0.06
Probable
–

–
–
–
Total
3.57
0.51
1.83
0.06
Vein (underground)
Proved
2.11
5.58
11.81
0.38
Probable
0.02
6.93
0.15
0.00
Total
2.14
5.60
11.95
0.38
Cerro Vanguardia
Total
15.86
2.10
33.30
1.07
Ore Reserve by-product: silver
as at 31 December 2018
Category
Tonnes
million
Grade
g/t
Contained silver
tonnes
Moz
Cerro Vanguardia
Proved
7.72
61.92
478
15.36
Probable
8.14
66.12
538
17.31

Total
15.86
64.08
1,016
32.68
Estimation
The appropriate Mineral Resource models are used as the basis for estimating the Ore Reserve. All relevant modifying factors
such as mining dilution and costs are used in the Ore Reserve conversion process. This is based on the original block grades and
tonnage and includes waste material (both internal and external). Appropriate Ore Reserve cut-off grades are applied and all blocks
above this cut-off are reported.
It is important to emphasise the importance of silver during the optimisation of the pits, since silver is a significant by-product at
Cerro Vanguardia. The ratio of silver to gold commonly ranges from 20g/t to 30g/t of silver per 1g/t of gold.
Ore Reserve depletion includes material that comes from the operational dilution, which constitutes an additional low grade tonnage
that is mined as part of the ongoing operation. Mineral Resource is estimated in situ and thus does not include this dilution.
Ore Reserve modifying factors
as at 31 December 2018
Gold
price
US$/oz
Cut-off
grade
g/t Au
Dilution
%
MRF
% (based
on tonnes)
MRF
% (based
on g/t)
MCF
%
MetRF
%
Heap leach stockpiles
1,100
0.51
–
97.0
96.0
93.0
66.3
In situ
heap leach stockwork material
1,100

0.45
35.0
97.0
96.0
93.0
66.3
Vein (open pit)
1,100
4.35
35.0
97.0
96.0
93.0
96.3
Vein (underground)
1,100
5.51
45.0
97.0
96.0
93.0
96.3
A detailed reconciliation process compares estimated versus mined ore, including comparison between predicted grades and
tonnes produced in the processing plant. These comparisons are used in determining which modifying factors to use in the
Ore Reserve calculations.
Inferred Mineral Resource in business plan
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CERRO VANGUARDIA
CONTINUED

as at 31 December 2018	Tonnes million	Grade g/t	Contained gold tonnes	Contained gold Moz
In situ heap leach stockwork material	1.26	0.29	0.37	0.01
Total	1.26	0.29	0.37	0.01

The Inferred Mineral Resource is normally located in the deeper parts of the orebody, such as the bottom of the open pits and deeper portions of the underground Mineral Resource. It is considered in the business plan in order to delineate the final designs of the open pits, improving efficiency in Mineral Resource utilisation.

In the current business plan, around 5% of the open pits and 16% of the underground designs contain Inferred Mineral Resource.

The Inferred Mineral Resource is excluded for Ore Reserve reporting.

Exploration and changes to the estimation methodology and re-categorisation more than replaced the depletion.

Year-on-year changes in Ore Reserve

BRAZIL

AngloGold Ashanti's operations in Brazil comprise AngloGold Ashanti Córrego do Sítio Mineração (AGA Mineração) in the Quadrilátero Ferrífero, Minas Gerais state and Mineração Serra Grande in Goiás state. AGA Mineração consists of several operations, namely Cuiabá, Lamego and Córrego do Sítio.

Brazil – AGA Mineração Cuiabá

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Inclusive Mineral Resource
as at 31 December 2018

Category	Tonnes million	Grade g/t	Contained gold tonnes	Moz
Brazil				
Measured	20.97	6.45	135.29	4.35
Indicated	24.20	5.83	141.02	4.53
Inferred	45.59	5.86	267.05	8.59
Total	90.76	5.99	543.36	17.47

Exclusive Mineral Resource
as at 31 December 2018

Category	Tonnes million	Grade g/t	Contained gold tonnes	Moz
Brazil				
Measured	15.71	6.50	102.11	3.28
Indicated	13.87	4.63	64.25	

2.07
Inferred
44.14
5.92
261.47
8.41
Total
73.73
5.80
427.82
13.75
Ore Reserve
as at 31 December 2018
Category
Tonnes
million
Grade
g/t
Contained gold
tonnes
Moz
Brazil
Proved
3.52
3.70
13.01
0.42
Probable
11.04
4.71
51.94
1.67
Total
14.56
4.46
64.95
2.09
LEGEND
1
Serra Grande
2
AGA Mineração
Operation
1,000km
0
BRAZIL CONTINUED
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AGA MINERAÇÃO

INTRODUCTION

Property description

AGA Mineração encompasses mining operations at Cuiabá, Lamego and Córrego do Sítio. The Nova Lima Sul project is currently in care and maintenance pending a decision around its future.

Location

The AGA Mineração mining complex is located in south-eastern Brazil in the state of Minas Gerais. Operations are 30km from the capital of the state (Belo Horizonte) in the case of Cuiabá and Lamego, and about 100km in the case of Córrego do Sítio, in the municipalities of Nova Lima, Sabará and Santa Bárbara respectively.

Legal aspects and tenure

Under the current Brazilian mining code and pertinent complementary legislation, mining concessions and mining "manifests" are valid up to the depletion of the Ore Reserve and Mineral Resource, provided that all obligations and the required periodic reporting to the federal government are met.

MINERAL RESOURCE

Inclusive Mineral Resource
as at 31 December 2018

Category	Tonnes million	Grade g/t	Contained gold tonnes	Moz
AGA Mineração				
Measured	13.94	7.51	104.75	3.37
Indicated	18.04	6.29	113.41	3.65
Inferred	31.35	6.57	205.89	6.62
Total	63.33	6.70	424.05	13.63

The inclusive Mineral Resource is made up of 34% Córrego do Sítio, 49% Cuiabá, 12% Lamego and 4% Nova Lima Sul.

Inclusive Mineral Resource by-product: sulphur
as at 31 December 2018
Category

Tonnes
million
Grade
%S
Contained sulphur
tonnes million pounds million
AGA Mineração
Measured
10.12
6.5
0.66
1,446
Indicated
9.99
5.9
0.59
1,309
Inferred
13.39
5.7
0.77
1,691
Total
33.51
6.0
2.02
4,445
Sulphur is a by-product of the Cuiabá and Lamego mining operations (68% Cuiabá and 32% from Lamego).
LEGEND
AGA Mineração
Cuiabá complex
1
Cuiabá
2
Lamego
3
Queiroz plant refinery
Córrego do Sítio complex
4
CdS I
5
CdS II
Nova Lima Sul
6
Raposos
Operation
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Exclusive Mineral Resource
as at 31 December 2018

Category	Tonnes million	Grade g/t	Contained gold tonnes	Moz
AGA Mineração				
Measured	11.72	7.30	85.49	2.75
Indicated	10.86	4.67	50.67	1.63
Inferred	31.31	6.57	205.79	6.62
Total	53.89	6.35	341.94	10.99

The exclusive Mineral Resource is made up of 37% Córrego do Sítio, 45% Cuiabá, 13% Lamego and 5% Nova Lima Sul.

Mineral Resource below infrastructure
as at 31 December 2018

Category	Tonnes million	Grade g/t	Contained gold tonnes	Moz
AGA Mineração				
Measured	0.15	4.69	0.70	0.02
Indicated	7.84			

6.73
52.78
1.70
Inferred
22.69
7.19
163.20
5.25
Total
30.68
7.06
216.68
6.97
The Mineral Resource below infrastructure is made up of 35% Córrego do Sítio, 48% Cuiabá, 9% Lamego and 8% from Nova
Lima Sul.
Year-on-year changes in Mineral Resource
The Lamego Mineral Resource increased mainly due to the update of cut-off with the new exchange rate and costs offset by
depletion and methodology changes. The Cuiabá Mineral Resource increased mainly due to new sampling information and refining
of the model to exclude internal waste offset by depletions. The CdS Mineral Resource reduced mainly due to depletions, new
information and an increase in costs for open pit mining offset by estimation methodology changes.
AGA MINERAÇÃO CONTINUED
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Year-on-year changes in Ore Reserve
The Lamego Ore Reserve reduced mainly due to mining depletion offset by exploration success coming from the Carruagem and Queimada orebodies and costs. The Cuiabá Ore Reserve reduced mainly due to mining depletions. The CdS Ore Reserve reduced mainly due to depletions and the inclusion of transitional and sulphide material in the CdS Rosalino open pit as well as Mineral Resource conversions.

ORE RESERVE

Ore Reserve
as at 31 December 2018

Category	Tonnes million	Grade g/t	Contained gold tonnes	Moz
AGA Mineração				
Proved	1.94	4.35	8.43	0.27
Probable	8.79	5.06	44.47	1.43
Total	10.73	4.93	52.89	1.70

The Ore Reserve is made up of 14% Córrego do Sítio, 76% Cuiabá and 9% Lamego.

Ore Reserve by-product: sulphur
as at 31 December 2018

Category	Tonnes million	Grade %S	Contained sulphur tonnes million	pounds million
AGA Mineração				
Proved	1.76	4.0	0.07	156

Probable	7.00	4.3	0.30	661
Total	8.76	4.2	0.37	817

Sulphur is a by-product of the Cuiabá and Lamego mining operations (90% Cuiabá and 10% Lamego).

Ore Reserve below infrastructure
as at 31 December 2018

Category	Tonnes million	Grade g/t	Contained gold tonnes	Moz
AGA Mineração				
Proved	0.42	4.24	1.79	0.06
Probable	6.31	5.53	34.86	1.12
Total	6.73	5.45	36.64	1.18

The Ore Reserve below infrastructure is made up of 91% Cuiabá and 9% Lamego.

AGA MINERAÇÃO – CÓRREGO DO SíTIO

INTRODUCTION

Property description

Córrego do Sítio (CdS) is wholly owned by AngloGold Ashanti Córrego do Sítio Mineração (AGACSM). The CdS gold complex has been in operation since 1989 and consists of two operations: an oxide open pit mine (ore treated by a 600ktpa heap leach operation producing about 25kozpa) and two sulphide underground mines known as CdS I and CdS II (ore treated at a 700ktpa pressure leaching sulphide plant producing about 80kozpa). The haulage distance from the main underground mine, CdS I, to the metallurgical plant is around 15km. The annual production capacity of CdS is 1.2Mt. CdS I underground uses the sub-level stoping mining method. Since 2014, the mining sequence at CdS I underground has been changing from bottom-up to top-down in order to provide earlier access to high grade stoping areas. Gold produced from the CdS operations is transported by road to the company's own refinery at the Queiroz plant, about 140km away.

Location

CdS is located in the municipality of Santa Bárbara, 100km east of the city of Belo Horizonte, the capital of Minas Gerais state.

History

Exploration across the CdS area by AngloGold Ashanti began in the 1980s. A FS for the oxide Ore Reserve, to be mined by open pit and treated in a heap-leach plant, was approved in 1987. The CdS open pit operations started in the 1990s with the first phase of production between 1990 and 1998. From 2002, development of underground exploration drifts began, and a FS for the sulphide Ore Reserve, to be mined underground and treated in a sulphide plant, was concluded in 2010. Implementation followed from 2010, and the ramp-up was concluded in 2012. In 2011, there were major renovations to the structure of São Bento metallurgical plant which were finished in 2012. In 2013, the crushing circuit was improved in order to optimise the throughput.

Legal aspects and tenure

The CdS mining operation, its facilities as well as its presently delineated Mineral Resource and Ore Reserve is hosted by four DNPM concessions; DNPM Mining Concessions titles 930.556/2000; 930.181/2008; 830.129/1982; 833.472/2003 and 830.943/1979, which belong to the local company AGACSM covering 6,017.44ha. These permits are active and in good legal standing and free of liabilities. Brazilian mining concessions remain valid up to the depletion of the Ore Reserve and Mineral Resource.

DNPM Mining Concession 830.943/1979 hosts the deepest portion of the former São Bento mine and has been granted a temporary mining suspension. New documentation, based on a revised mine plan has to be submitted to the DNPM, if and when AGA Mineração decides to resume the underground operation on this concession area.

The Rosalino open pit and its waste dump area have been environmentally permitted while the application for Pinta Bem open pit is pending approval.

Mining concessions are granted to the holders of exploration licenses that manage to prove the existence of a Mineral Resource and have been licensed by the environmental authority. AGACSM is within the Brazilian Atlantic Forest biome, which is a sensitive area controlled by environmental agencies. A new Brazilian mining code is currently under discussion. However, it is not anticipated to change the company's rights, which are already established.

Mining method

The underground mining method for CdS is sub-level stoping. Each panel consists of three levels with secondary development drives being some 300m along strike in the north-east/south-west direction and cross-cuts, 300m in a southwest direction. The stopes are 15m in height. The mining sequence is bottom-up, though all of CdS I is being converted to a top-down sequence. According to geotechnical guidance, a sill pillar of 4m in height is designed between panels, and 4m rib pillars are used every 30m along the strike. The stope drilling is executed via up and down fan drilling. The loading and hauling operations are performed by 8t front-end loaders and 30t articulated trucks, at an approximate rate of 1,500tpd.

Operational infrastructure

CdS infrastructure consists of two treatment plants, namely, the sulphides plant for the underground mines at CdS II and the heap-leach plant for the oxide ore mined by open pit mine at CdS I, as well as a tailings dam for the sulphide plant, the neutralised tailings deposit for the oxide material and numerous waste dumps for the open pit mines at CdS I.

Ancillary facilities comprise a water treatment facility, ef uent treatment facilities, equipment workshops, laboratory, warehouses, explosives and accessories magazines, fuel stations, electric substations as well as offices, medical clinic, cafeteria, dressing rooms, bathrooms, storerooms, garage, fuel stations, a centre of environmental studies, nursery and other facilities required to operate the mine.

The mine power is supplied from the state grid. Water is primarily sourced from recycling the underground mine water and supplementary water catchment wells.

Good communication infrastructure is available in the area.

Mineral processing

There are two metallurgical plants in CdS: the heap-leach plant for the oxide ore and the sulphide plant. The sulphide process consists of crushing, grinding and gravity concentration, flotation, thickening, acidulation, pressure oxidation (POX autoclave), counter current decantation, CIL extraction, elution, neutralisation, electro-winning and tailings disposal. The plant and POX circuit have a capacity of 600ktpa.

The heap-leaching process consists of crushing, agglomeration, stacking, leaching, adsorption, elution and electro-winning.

Risks

The major risk to the operation is the lack of Ore Reserve exibility. This risk is controlled and mitigated by integrated planning with the exploration team and monitoring the execution of the plan.

Competent Persons

Responsibility	Competent Person	Professional organisation	Membership number	Relevant experience	Qualification
Mineral Resource	Apolo Bhering	MAusIMM	327 966	12 years	BSc (Geology), MSc (Geological Engineering), MBA
Ore Reserve					

Roberto Lima
MAusIMM
326 307
14 years
BSc (Mining Engineering), MSc
(Mining Engineering), MBA
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AGA MINERAÇÃO – CÓRREGO DO SíTIO CONTINUED
0
1
2
3km
Licences
Mining
Mining application
Exploration
Exploration application
Mine infrastructure
Pits
Plant
Leach pad
TSF
Waste dumps
Underground access
Settlements
Towns
Villages
Roads
Main
Secondary
Insert
Total mining lease area
Map zoomed in area
Plant centroid co-ordinates
43°31’11”W, 20°0’58”S
Total mining lease area
Map showing the AGA Mineração CdS Mine infrastructure and licences with the total mining lease area insert shown in the top left-hand corner
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GEOLOGY
The CdS gold deposit is located in the eastern part of the Rio das Velhas Archean greenstone belt, in the Quadrilatero Ferrero
region, on the southern margin of the São Francisco Craton in Brazil.
Deposit type
CdS is an orogenic gold deposit hosted in intensely deformed clastic, volcanoclastic, carbonaceous schists and metagraywackes in
an approximately 30km northeast/south-west striking shear zone.
Hydrothermal alteration phases associated with the mineralisation are dominated by sericite and carbonate.
Mineralisation style
CdS is located in the eastern part of the lower to middle greenschist facies, Archean, Rio das Velhas greenstone belt. The CdS I,
II and III gold deposits and associated targets are located in a gold trend that extends for about 14km in a north-easterly direction,
from Grota Funda (CdS I) in the south to Jambeiro (CdS III) in the north and which developed in a compressional tectonic regime.
Gold is associated with quartz and fine grained acicular arsenopyrite. The main gold targets and deposits are distributed over three
trends, namely the CdS Trend, the Donana Trend and the Cristina Trend. At CdS I, the main ore-bodies are Rosalino, Cachorro Bravo,
Laranjeiras and Carvoaria, which constitute the current production sources and most of the Mineral Resource.
At CdS II, the main orebodies are São Bento, Pinta Bem (both BIF hosted) and Sangue de Boi (metapellite hosted). At CdS III where
exploration has been limited, the Anomalia I orebodies are the best understood and have the highest potential.
Mineralisation characteristics
The CdS deposits consist of narrow north-east/south-west elongated and folded lenses of mineralisation, parallel to main regional
deformational structure (S2), dipping 60° to 70° to the south-east and plunging 20° to 30° to the north-east. The orebodies are
consistently folded, boudinaged and locally disrupted by younger structures. CdS is an orogenic type deposit and comprises many
hydrothermal lodes with quartz veins and low grade sulphide disseminated in the wall rocks. In general, the mineralisation consists
of sericitic zones and quartz veinlets hosted in metapellite and BIF. The sedimentary sequence, and consequently the mineralised
deposits, are cross-cut by a swarm of basic dykes of uncertain age, with a general orientation north-north-east/south-south-west
dipping to south-east, with thickness varying from 20cm to 20m.
The gold occurs as native gold in smoky-quartz veins and as microscopic or sub-microscopic inclusions in arsenopyrite (the main
mineralisation style). It may also occasionally be associated with berthierite ($FeSb_2S_4$). Other typical sulphide minerals are pyrrhotite,
pyrite, stibnite, sphalerite and chalcopyrite.
SE-NW Simplified view across the AGA Mineração – Córrego do Sítio deposits, elevation in metres
Mineral Resource
Exploration target
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SECTION 5 / AMERICAS

AGA MINERAÇÃO – CÓRREGO DO SíTIO
CONTINUED

EXPLORATION

During 2018, 55,810m were drilled along the CdS trends with the exploration focused on:

- Mineral Resource conversion in support of the production plan for the open pit and underground mines (mainly CdS I) as part of the risk amelioration programme
- Assessing high grade targets
- Evaluating the potential of near-mine and broader lease targets

Drilling at CdS was executed as part of the company's operational excellence plan. The intent was to decrease risk in the production plan by removing projected exploration targets within the first ve years of the plan as well as having 240m of depth below current mining proved up to Indicated Mineral Resource. As a result of this strategy, there were large exploration programmes in 2018.

Surface drilling focused on Mine I and CdS III Mineral Resource addition and conversion, testing the down-dip continuity of Rosalino, Cachorro Bravo and Anomalia orebodies for long-term underground and surface mining. In support of the underground production plan for the next three years at CdS I, the underground drilling concentrated on Mineral Resource conversion using a 50 x 25m drilling grid for the three main orebodies: Cachorro Bravo, Laranjeiras and Carvoaria. Results confirmed the mineralisation along the structures, improving the model quality and spatial reliability. Mineral Resource addition from underground also occurred as a result of drilling secondary lenses.

MINERAL RESOURCE

Details of average drill hole spacing and type in relation to Mineral Resource classification

Category
Spacing m (-x-)
Type of drilling
Diamond
RC
Blasthole
Channel
Other
Measured
25 x 25
–
–
–
Indicated
25 x 40, 30 x 25, 50 x 30,
50 x 50
–
–
–
Inferred

40 x 100, 100 x 50,
100 x 100, 200 x 200
–
–
Grade/ore control
3 x 3, 5 x 5
–
–
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Inclusive Mineral Resource
as at 31 December 2018

Category	Tonnes million	Grade g/t	Contained gold tonnes	Moz
CdS I (sulphide) Rosalino underground				
Measured	–	–	–	–
Indicated	0.64	3.88	2.49	0.08
Inferred	3.39	3.55	12.04	0.39
Total	4.03	3.60	14.53	0.47
CdS I (sulphide) Secondary underground				
Measured	–	–	–	–
Indicated	0.11	6.15	0.66	0.02
Inferred	0.75	4.84	3.64	0.12
Total	0.86	5.00	4.30	

0.14
CdS I (sulphide) Cachorro Bravo underground
Measured
1.39
6.74
9.35
0.30
Indicated
0.63
5.97
3.77
0.12
Inferred
0.52
6.01
3.11
0.10
Total
2.54
6.40
16.23
0.52
CdS I (sulphide) Laranjeiras underground
Measured
1.49
5.68
8.48
0.27
Indicated
1.05
5.78
6.07
0.20
Inferred
1.00
6.88
6.91
0.22
Total
3.55
6.05
21.45
0.69
CdS I (sulphide) Carvoaria underground
Measured
0.41
8.17
3.35
0.11
Indicated
0.75

5.76
4.30
0.14
Inferred
0.73
8.92
6.50
0.21
Total
1.89
7.50
14.15
0.45
CdS II (sulphide) Sangue de Boi underground
Measured
0.05
9.72
0.52
0.02
Indicated
0.37
8.54
3.19
0.10
Inferred
1.48
6.94
10.26
0.33
Total
1.91
7.33
13.97
0.45
CdS II (sulphide) São Bento Mine underground
Measured
–
–
–
–
Indicated
0.44
8.04
3.56
0.11
Inferred
4.63
6.35
29.41
0.95
Total

5.07
6.50
32.96
1.06
CdS II (sulphide) Pinta Bem underground
Measured
–
–
–
–
Indicated
0.01
5.17
0.05
0.00
Inferred
0.13
5.08
0.68
0.02
Total
0.14
5.09
0.73
0.02
CdS II (sulphide) Secondary underground
Measured
–
–
–
–
Indicated
–
–
–
–
Inferred
0.71
7.84
5.56
0.18
Total
0.71
7.84
5.56
0.18
CdS I (transitional) Rosalino underground
Measured
0.00
2.62
0.00

0.00
Indicated
0.16
3.67
0.60
0.02
Inferred
0.10
3.42
0.34
0.01
Total
0.26
3.58
0.95
0.03
CdS I (sulphide) Rosalino open pit
Measured
–
–
–
–
Indicated
1.33
4.01
5.32
0.17
Inferred
0.13
4.30
0.56
0.02
Total
1.46
4.03
5.88
0.19
CdS I (oxide) Rosalino open pit
Measured
0.13
1.83
0.23
0.01
Indicated
0.67
2.22
1.49
0.05
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AGA MINERAÇÃO – CÓRREGO DO SíTIO CONTINUED
Inclusive Mineral Resource
as at 31 December 2018
Category
Tonnes
million
Grade
g/t
Contained gold
tonnes
Moz
Inferred
0.47
1.15
0.54
0.02
Total
1.26
1.79
2.26
0.07
CdS I (oxide) Secondary open pit
Measured
0.06
6.09
0.39
0.01
Indicated
0.16
6.60
1.09
0.03
Inferred
0.44
3.83
1.68
0.05
Total
0.67
4.73
3.15
0.10
CdS I (transitional) Rosalino open pit
Measured
0.06
2.15
0.13
0.00
Indicated
0.33
2.28

0.75
0.02
Inferred
0.12
1.80
0.21
0.01
Total
0.50
2.16
1.08
0.03
CdS I (transitional)
Measured
0.04
7.34
0.30
0.01
Indicated
0.23
8.23
1.88
0.06
Inferred
0.28
5.48
1.54
0.05
Total
0.55
6.76
3.72
0.12
CdS II (oxide)
Measured
–
–
–
–
Indicated
0.74
3.03
2.23
0.07
Inferred
0.73
2.60
1.91
0.06
Total
1.47

2.81
4.14
0.13
CdS II (transitional)
Measured
–
–
–
–
Indicated
0.01
5.03
0.04
0.00
Inferred
0.09
5.44
0.50
0.02
Total
0.10
5.41
0.54
0.02
AGA Mineração – Córrego do Sítio
Total
26.97
5.40
145.61
4.68
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Estimation

Orebodies are domained into lenses based on geological criteria. These are then estimated using kriging. Kriging is also used to estimate density and sulphur when enough samples are available, alternatively a calculated mean density will be used. Mineral Resource classification uses conditional simulation or drill hole spacing.

Exclusive Mineral Resource
as at 31 December 2018

Category	Tonnes million	Grade g/t	Contained gold tonnes	Moz
AGA Mineração – Córrego do Sítio				
Measured	3.50	6.24	21.87	0.70
Indicated	6.41	4.61	29.54	0.95
Inferred	15.67	5.44	85.28	2.74
Total	25.58	5.34	136.69	4.39

The exclusive Mineral Resource is the part of the Mineral Resource that was not converted to Ore Reserve. It is defined as the Mineral Resource that is outside the current Ore Reserve designs, but inside the Mineral Resource shells and includes the Inferred Mineral Resource within the Ore Reserve design.

Mineral Resource below infrastructure
as at 31 December 2018

Category
Tonnes
million
Grade
g/t
Contained gold
tonnes

Moz
AGA Mineração – Córrego do Sítio
Measured
0.05
7.31
0.35
0.01
Indicated
2.13
5.63
12.02
0.39
Inferred
11.11
5.62
62.50
2.01
Total
13.29
5.63
74.86
2.41
The Mineral Resource below infrastructure is the Mineral Resource that cannot be accessed from the primary access development,
based on the expected position of the access at the end of 2018.
Grade tonnage curves
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AGA MINERAÇÃO – CÓRREGO DO SíTIO CONTINUED
CdS is very sensitive to changes in gold price by up
to 10%.
Inclusive Mineral Resource sensitivity
The Mineral Resource reduced mainly due to depletions, new information and an increase in costs for open pit mining offset in part
by estimation methodology changes.
Year-on-year changes in Mineral Resource
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ORE RESERVE
Ore Reserve
as at 31 December 2018
Category
Tonnes
million
Grade
g/t
Contained gold
tonnes
Moz
CdS I (sulphide) Cachorro Bravo underground
Proved
0.04
4.17
0.18
0.01
Probable
0.13
3.94
0.52
0.02
Total
0.18
3.99
0.70
0.02
CdS I (sulphide) Laranjeiras underground
Proved
0.06
4.16
0.25
0.01
Probable
0.31
4.88
1.53
0.05
Total
0.37
4.76
1.77
0.06
CdS I (sulphide) Carvoaria underground
Proved
0.04
4.30
0.18
0.01
Probable
0.43

3.66
1.56
0.05
Total
0.47
3.72
1.74
0.06
CdS II (sulphide) Sangue de Boi underground
Proved
0.03
5.43
0.18
0.01
Probable
0.43
5.10
2.19
0.07
Total
0.46
5.12
2.37
0.08
CdS II (sulphide) São Bento Mine underground
Proved
–
–
–
–
Probable
0.04
3.99
0.16
0.01
Total
0.04
3.99
0.16
0.01
CdS I (oxide) Rosalino open pit
Proved
0.01
1.18
0.01
0.00
Probable
0.07
2.74
0.18
0.01

Total
0.07
2.62
0.19
0.01
CdS I (transitional) Rosalino open pit
Proved
0.00
1.48
0.00
0.00
Probable
0.00
3.63
0.01
0.00
Total
0.00
3.31
0.01
0.00
CdS II (oxide)
Proved
–
–
–
–
Probable
0.38
1.73
0.66
0.02
Total
0.38
1.73
0.66
0.02
AGA Mineração – Córrego do Sítio
Total
1.97
3.85
7.60
0.24
Estimation
The gold price, projected operational performance and costs as well as metallurgical recoveries are taken into consideration in
determining the Ore Reserve. Mining parameters such as the mining method, minimum mining width, MCF, dilution and recovery are
all applied in the process.
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AGA MINERAÇÃO – CÓRREGO DO SíTIO CONTINUED

Ore Reserve modifying factors

as at 31 December 2018

	Gold price BRL/oz	Cut-off grade g/t Au	Stoping width cm	Dilution %	RMF % (based on tonnes)	RMF % (based on g/t)	MRF % (based on tonnes)	MRF % (based on g/t)	MCF %	MetRF %
CdS I (oxide) Rosalino open pit	3,565	0.61	–	–	100.0	100.0	100.0	100.0	100.0	79.0*
CdS I (sulphide) Rosalino open pit	3,565	1.28	–	–	100.0	100.0	100.0			

100.0
100.0
94.0*
CdS I (transitional) Rosalino
open pit
3,565
0.95
–
–
100.0
100.0
100.0
100.0
100.0
50.0*
CdS I (sulphide) Cachorro
Bravo underground
3,565
3.49
408.6
48.6
97.4
102.5
107.0
96.5
90.0
93.8**
CdS I (sulphide) Carvoaria
underground
3,565
3.49
221.1
52.4
97.4
102.5
107.0
96.5
90.0
93.8**
CdS I (sulphide) Laranjeiras
underground
3,565
3.49
279.5
50.2
97.4
102.5
107.0
96.5
90.0
93.8**

CdS II (oxide)
3,565
0.79
–
–
100.0
100.0
100.0
100.0
100.0
75.0*
CdS II (sulphide) Sangue de
Boi underground
3,565
4.77
275.2
43.2
97.4
102.5
107.0
96.5
90.0
93.8**
CdS II (sulphide) São Bento
Mine underground
3,565
4.77
264.4
48.7
97.4
102.5
107.0
96.5
90.0
93.8**
* Not considering dilution or mining recovery because Ore Reserve is calculated based on a regularised model
** The gold reported represents the total Ore Reserve without MetRF however, it was considered in the cut-off grade calculation
The percentage grade dilution and the MCF are already included in the Ore Reserve reported.
As the CdS underground mines have been in operation since 2011, the technical and economic modifying factors are derived from
historic data and reasonable levels of certainty exist on CdS projections.
A minimum thickness is applied for stope design Ore Reserve estimates. Other factors derived from historic data, such as the
dilution, ore loss and the MCF as well as the MetRF, are applied in the estimates.
Inferred Mineral Resource in business plan
as at 31 December 2018
Tonnes
million
Grade
g/t

Contained gold
tonnes
Moz
CdS I (sulphide) Cachorro Bravo underground
0.05
4.57
0.25
0.01
CdS I (sulphide) Laranjeiras underground
0.45
4.94
2.23
0.07
CdS I (sulphide) Carvoaria underground
0.55
5.94
3.24
0.10
CdS II (sulphide) Sangue de Boi underground
0.53
6.21
3.28
0.11
CdS II (sulphide) São Bento Mine underground
0.00
3.62
0.01
0.00
CdS I (transitional) Rosalino open pit
0.01
1.77
0.02
0.00
CdS II (oxide)
0.05
1.44
0.07
0.00
Total
1.65
5.53
9.12
0.29

The Inferred Mineral Resource is located in the mining panels in the lower areas of some sulphide deposits such as Cachorro Bravo, Laranjeiras and Carvoaria underground mines in CdS I and the Sangue de Boi underground mine in CdS II. Rosolino also contains some Inferred Mineral Resource in the business plans. In all cases the Inferred Mineral Resource is removed for both the financial modelling and the reporting of the Ore Reserve. This accounts for 36% of the business plan for the first three years.

The strategy is that the production plan should not include Inferred Mineral Resource for the first three years and the
ve year
production plan should not contain any projected exploration targets.

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Year-on-year decrease in the Ore Reserve, driven by the inclusion of transitional and sulphide material in the CdS Rosalino open pit
as well as new drilling information resulted in exploration losses.
Year-on-year changes in Ore Reserve
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AGA MINERAÇÃO – CUIABÁ CONTINUED

INTRODUCTION

Property description

An underground operation that is wholly-owned by AngloGold Ashanti.

Location

The Cuiabá Mine is located near Sabara, southeast of the city of Belo Horizonte within the mining district referred to as the Iron Quadrangle. This region is the largest producer of iron ore and gold in Brazil.

History

In 1740, Artisanal miners carried out the first mining in the area. Saint John Del Rey Mining Company Ltd acquired the mine in 1834. Exploration and development were resumed in 1977, culminating with the reopening of the mine in 1985. In 1996, the company became a wholly owned subsidiary of the Anglo American Group, and in 1999, ownership was transferred to the holding company AngloGold (now AngloGold Ashanti), where it remains to date.

Legal aspects and tenure

The Cuiabá Mineral Resource and Ore Reserve are fully hosted by a single concession granted by the DNPM, the Mine Manifest DNPM title 000.323/1973 held by AGA Mineração, covering a total area of 3,662ha. Brazilian mining concessions remain valid up to the depletion of the Ore Reserve and Mineral Resource. A new Brazilian mining code is currently under discussion. However, it is not anticipated to change the company’s rights, which are already established.

Mining method

Cuiabá Mine utilises two mining methods: cut and fill and longhole stoping. To improve the safety and productivity of the operation, the mining method was changed in 2011 from predominately cut and fill to longhole stoping (sub-level stoping and variations). In stopes with lower inclination, Cuiabá has a longhole method that reduces planned dilution to make the mining of some narrow veins economic.

Operational infrastructure

The two plants (Cuiabá gold plant and Queiroz plant) are connected by an aerial ropeway and power is supplied by a set of small hydropower plants (Rio de Peixe).

Cuiabá Mine has a shaft system (846m deep) for production and personal transport. The current nominal airflow capacity is 1,035m^3/s, of which 320m^3/s are refrigerated.

Tailings deposition is at one of the four sites located at Cuiabá, Calcinado, Rapaunha and Cocuruto.

The Rio de Peixe hydroelectric complex is a set of seven small hydropower plants that generate energy from three dams (Ingleses, Miguelo and Codorna), connecting directly to the Queiroz plant.

Mineral processing

Cuiabá and Lamego Mines feed the Cuiabá Gold (flotation) and Queiroz (roaster, carbon circuit and refinery) plants, currently at 1.7Mtpa for a metallurgical recovery of 93.5%. At Cuiabá gold plant, crushing and milling of the ore is followed by flotation and filtration in order to produce a concentrate, which is transported by aerial ropeway to Queiroz for further treatment. Approximately 25% – 30% of gold is recovered through a gravity circuit at the Cuiabá plant. The backfill plant is also located at Cuiabá. The Queiroz plant is located in Nova Lima and comprises two different circuits for refractory ore (from Cuiabá) and non-refractory ore (used for the Raposos mine production in the past) with facilities for pyrometallurgy and hydrometallurgy. The concentrate is roasted, and the calcine proceeds to a carbon circuit for further refining. The sulphide gas is captured for processing through the acid plant. Approximately 230ktpa of sulphuric acid is produced as a by-product.

Risks

No legal or environmental risks identified. Strategic studies in place are managing some possible risks such as low level of Ore Reserve and the reliance on Inferred Mineral Resource in the production plan

and rock engineering constraints at depth.
Competent Persons
Responsibility
Competent Person
Professional
organisation
Membership
number
Relevant
experience
Qualification
Mineral Resource
Reuber Cota
MAusIMM
329 257
11 years
BSc (Geology), MSc (Geological
Engineering)
Ore Reserve
Rodrigo Fideles
MAusIMM
326 102
8 years
BSc (Mining Engineering)
192
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0
0.5
1
1.5km
Licences
Mining