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HARMONY GOLD MINING COMPANY LIMITED

Technical Report Summary of the Mineral Resources and Mineral Reserves for Kusasalethu Mine Gauteng Province, South Africa

Effective Date: 30 June 2022
Final Report Date: 15 July 22

IMPORTANT NOTICE

This Technical Report Summary has been prepared for Harmony Gold Mining Company Limited in support of disclosure and filing requirements with the United States Securities and Exchange Commission's (SEC) under Regulation S-K 1300; 229.601(b)(96). The quality of information, estimates, and conclusions contained in this Technical Report Summary apply as of the effective date of this report. Subsequent events that may have occurred since that date may have resulted in material changes to such information, estimates and conclusions in this summary. No other party is entitled to rely on this report beyond its intended use and any reliance by a third party on this report is done so at that party's own risk.

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Effective Date: 30 June 2022
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List of Contents

List of Figures

List of Tables

Units of Measure and Abbreviations

Unit / Abbreviation	Description or Definition
°C	degrees Celsius
µm	Micrometres
2D	Two-dimensional
3D	Three-dimensional
AE	Abnormal expenditure
Ag	Silver
AAC	Anglo American Corporation
AMIS	African Mineral Standards
AngloGold Ashanti	AngloGold Ashanti Limited
Au	Gold
AuBIS	Harmony electronic database
Ave.	Average
BLR	Black Reef
BMD	Below mine datum
Bn	Billion
BP	Business plan
c.	Approximately
CIP	Carbon-In-Pulp
CLR	Carbon Leader Reef
cm	Centimetre
cmg/t	Centimetre-grams per tonne
CODM	Chief Operating Decision-Maker
Company	Harmony Gold Mining Company Limited
COP	Code of Practice
CRG	Central Rand Group
CRM	Certified Reference Material
CV	Coefficient of Variation
DMRE	Department of Mineral Resources and Energy
DWS	Department of Water and Sanitation
EIA	Environmental Impact Assessment
EMPR	Environmental Management Programme
EMS	Environmental Management System
EMTS	Electric Monorail Transport System
ESG	Environmental Social and Governance
Eskom	Eskom Holdings State Owned Company Limited
ETF	Exchange traded fund
EW-SX	Electro-wining solvent extraction
FX	Foreign Exchange rate
g	Gram
g/t	Grams per metric tonne
GDARD	Gauteng Department of Agriculture and Rural Development
GHG	Greenhouse gas
GISTM	Global Industry Standard on Tailings Management
ha	Hectare
Harmony	Harmony Gold Mining Company Limited
HPE	Hydro-powered
Kalgold	Kalahari Goldridge Mining Company Limited

kg	Kilogram
km	Kilometre
km2	Kilometre squared
Kusasalethu	Kusasalethu Gold Mine
kWh	Kilowatt-hour
LBMA	London Bullion Market Association
LDL	Lower detection limit
LIB	Long Inclined Borehole
LOM	Life of Mine
Ltd	Limited
m	Metre
M	Million
m3/hr	Cubic metres per hour
masl	Metres above sea level
MCC	Mining Charter Compliance
MCF	Mine Call Factor
Mineral Corporation	The Mineral Corporation (Pty) Limited
Mintek	Mintek SA - South Africa's national mineral research organisation
Moz	Million troy ounces
Mponeng	Mponeng Gold Mine
MPRDA	Mineral and Petroleum Resources Development Act, 28 of 2002
Mt	Million tonnes
Mtpa	Million tonnes per annum
Mtpm	Million tonnes per month
NEMA	National Environmental Management Act, 107 of 1998
No.	Number
NPV	Net present value
OK	Ordinary kriging
OTC	Over the counter
oz	Troy ounce
PFZ	Pretorius Fault Zone
PSD	Particle Size Distribution
Pty	Proprietary
QA/QC	Quality Assurance/Quality Control
QP	Qualified Person
ROM	Run-of-Mine
SACNASP	South African Council for Natural Scientific Professions
SAMREC	The South African Code for the Reporting of Exploration Results, Mineral Resources and Mineral Reserves
SANAS	South African National Accreditation System
Savuka	Savuka Gold Mine
SD	Standard Deviation
SEC	Securities and Exchange Commission
SGM	Sequential Grid Mining
SGS	SGS South Africa (Pty) Limited
SLP	Social Labour Plan
SMK	Simple macro kriging
t	Metric tonne
t/m3	Tonne per cubic metre
TauTona	TauTona Gold Mine
TRS	Technical Report Summary

TSF	Tailings Storage Facility
USD	United States Dollars
USD/oz	United States Dollar per troy ounce
VCR	Ventersdorp Contact Reef
West Wits	Harmony's West Rand operations
WRG	West Rand Group
WUL	Water Use Licence
XRD	X-ray diffraction
ZAR	South African Rand
ZAR/kg	South African Rand per kilogram

Glossary of Terms

Term	Definition
Co-kriging	A method that is used to predict the value of the point at unobserved locations by sample points that are known to be spatially interconnected by adding other variables that have a correlation with the main variable or can also be used to predict 2 or more variables simultaneously.
Cut-off grade	Cut-off grade is the grade (i.e. the concentration of metal or mineral in rock) that determines the destination of the material during mining. For purposes of establishing “prospects of economic extraction,” the cut-off grade is the grade that distinguishes material deemed to have no economic value (it will not be mined in underground mining or if mined in surface mining, its destination will be the waste dump) from material deemed to have economic value (its ultimate destination during mining will be a processing facility). Other terms used in similar fashion as cut-off grade include net smelter return, pay limit, and break-even stripping ratio.
Dilution	Unmineralized rock that is by necessity, removed along with ore during the mining process that effectively lowers the overall grade of the ore.
Economically viable	Economically viable, when used in the context of Mineral Reserve determination, means that the qualified person has determined, using a discounted cash flow analysis, or has otherwise analytically determined, that extraction of the Mineral Reserve is economically viable under reasonable investment and market assumptions.
Harvest mode	The operational stage where a mining operation is nearing the end of its operations and the LoM Plan consists of high grade and low volume material.
Head grade	The average grade of ore fed into the mill.
Indicated Mineral Resource	Indicated Mineral Resource is that part of a Mineral Resource for which quantity and grade or quality are estimated on the basis of adequate geological evidence and sampling. The level of geological certainty associated with an Indicated Mineral Resource is sufficient to allow a qualified person to apply modifying factors in sufficient detail to support mine planning and evaluation of the economic viability of the deposit. Because an Indicated Mineral Resource has a lower level of confidence than the level of confidence of a Measured Mineral Resource, an Indicated Mineral Resource may only be converted to a probable Mineral Reserve.
Inferred Mineral Resource	Inferred Mineral Resource is that part of a Mineral Resource for which quantity and grade or quality are estimated on the basis of limited geological evidence and sampling. The level of geological uncertainty associated with an Inferred Mineral Resource is too high to apply relevant technical and economic factors likely to influence the prospects of economic extraction in a manner useful for evaluation of economic viability. Because an Inferred Mineral Resource has the lowest level of geological confidence of all Mineral Resources, which prevents the application of the modifying factors in a manner useful for evaluation of economic viability, an Inferred Mineral Resource may not be considered when assessing the economic viability of a mining project, and may not be converted to a Mineral Reserve.
Kriging	A method of interpolation based on Gaussian process governed by prior covariances. It uses a limited set of sampled data points to estimate the value of a variable over a continuous spatial field
Measured Mineral Resource	Measured Mineral Resource is that part of a Mineral Resource for which quantity and grade or quality are estimated on the basis of conclusive geological evidence and sampling. The level of geological certainty associated with a Measured Mineral Resource is sufficient to allow a qualified person to apply modifying factors, as defined in this section, in sufficient detail to support detailed mine planning and final evaluation of the economic viability of the deposit. Because a Measured Mineral Resource has a higher level of confidence than the level of confidence of either an Indicated Mineral Resource or an Inferred Mineral Resource, a Measured Mineral Resource may be converted to a Proven Mineral Reserve or to a Probable Mineral Reserve.
Mine Call Factor	The ratio, expressed as a percentage, of the total quantity of recovered and unrecovered mineral product after processing with the amount estimated in the ore based on sampling.
Mineral Reserve	Mineral Reserve is an estimate of tonnage and grade or quality of Indicated and Measured Mineral Resources that, in the opinion of the qualified person, can be the basis of an economically viable project. More specifically, it is the economically mineable part of a Measured or Indicated Mineral Resource, which includes diluting materials and allowances for losses that may occur when the material is mined or extracted.
Mineral Resource	Mineral Resource is a concentration or occurrence of material of economic interest in or on the Earth’s crust in such form, grade or quality, and quantity that there are reasonable prospects for economic extraction. A Mineral Resource is a reasonable estimate of mineralization, taking into account relevant factors such as cut-off grade, likely mining dimensions, location or continuity, that, with the assumed and justifiable technical and economic conditions, is likely to, in whole or in part, become economically extractable. It is not merely an inventory of all mineralization drilled or sampled.

Modifying Factors	Modifying factors are the factors that a qualified person must apply to Indicated and Measured Mineral Resources and then evaluate in order to establish the economic viability of Mineral Reserves. A qualified person must apply and evaluate modifying factors to convert Measured and Indicated Mineral Resources to Proven and Probable Mineral Reserves. These factors include, but are not restricted to: mining; processing; metallurgical; infrastructure; economic; marketing; legal; environmental compliance; plans, negotiations, or agreements with local individuals or groups; and governmental factors. The number, type and specific characteristics of the modifying factors applied will necessarily be a function of and depend upon the mineral, mine, property, or project.
Pre-Feasibility Study	A pre-feasibility study (or preliminary feasibility study) is a comprehensive study of a range of options for the technical and economic viability of a mineral project that has advanced to a stage where a qualified person has determined (in the case of underground mining) a preferred mining method, or (in the case of surface mining) a pit configuration, and in all cases has determined an effective method of mineral processing and an effective plan to sell the product.
	(1) A pre-feasibility study includes a financial analysis based on reasonable assumptions, based on appropriate testing, about the modifying factors and the evaluation of any other relevant factors that are sufficient for a qualified person to determine if all or part of the Indicated and Measured Mineral Resources may be converted to Mineral Reserves at the time of reporting. The financial analysis must have the level of detail necessary to demonstrate, at the time of reporting, that extraction is economically viable.
	(2) A pre-feasibility study is less comprehensive and results in a lower confidence level than a feasibility study. A pre-feasibility study is more comprehensive and results in a higher confidence level than an initial assessment.
Probable Mineral Reserve	Probable Mineral Reserve is the economically mineable part of an Indicated and, in some cases, a Measured Mineral Resource.
Proven Mineral Reserve	Proven Mineral Reserve is the economically mineable part of a Measured Mineral Resource and can only result from conversion of a Measured Mineral Resource.
Qualified Person	A qualified person is:
	(1) A mineral industry professional with at least five years of relevant experience in the type of mineralization and type of deposit under consideration and in the specific type of activity that person is undertaking on behalf of the registrant; and
	(2) An eligible member or licensee in good standing of a recognized professional organization at the time the technical report is prepared. For an organization to be a recognized professional organization, it must:
	(i) Be either:
	(A) An organization recognized within the mining industry as a reputable professional association; or
	(B) A board authorized by U.S. federal, state or foreign statute to regulate professionals in the mining, geoscience or related field;
	(ii) Admit eligible members primarily on the basis of their academic qualifications and experience;
	(iii) Establish and require compliance with professional standards of competence and ethics;
	(iv) Require or encourage continuing professional development;
	(v) Have and apply disciplinary powers, including the power to suspend or expel a member regardless of where the member practices or resides; and
	(vi) Provide a public list of members in good standing.
Tailings	Finely ground rock of low residual value from which valuable minerals have been extracted is discarded and stored in a designed dam facility.
Tailings Freeboard	The vertical height between the beached tailings against the embankment crest and the crest itself.

1 Executive Summary

Section 229.601(b)(96) (1)

The Qualified Person(s) ("QP") of Harmony Gold Mining Company Limited ("Harmony" or the "Company") have prepared this Technical Report Summary ("TRS") to disclose the Mineral Resource and Mineral Reserve estimates for the Company's Kusasalethu Mine ("Kusasalethu"). The TRS has been prepared in accordance with the U.S. Securities and Exchange Commission ("SEC") property disclosure regulations, S-K 1300, with an effective date as at 30 June 2022. No material changes have occurred between the effective date and the date of signature of this TRS.

Property Description

Kusasalethu is a deep underground gold producing mine located in the West Wits mining district southwest of Johannesburg in Gauteng Province. The mine is currently operating at depths ranging between 2,900m and 3,300m below mine datum ("BMD") and extracting the Ventersdorp Contact Reef ("VCR").

Kusasalethu holds a mining right that was successfully converted, executed, and registered as a new order mining right at the Mineral and Petroleum Resources Titles Office. The mining right, GP30/5/1/2/2/07 MR is valid from 18 December 2007 to 17 December 2037. Kusasalethu has, in terms of section 102 of the Mineral and Petroleum Resources Development Act ("MPRDA") successfully combined the contiguous farms Buffelsdoorn 143IQ and Deelkraal 142IQ into the mining right which increased the extent from 5,100 hectares ("ha") to 7,000ha.

All relevant underground mining and surface right permits, and any other permit related to the work conducted on the property have been obtained and are valid. There are no known legal proceedings (including violations or fines) against Harmony, which threaten its mineral rights, tenure, or operations.

Ownership

Kusasalethu is wholly owned by Harmony, including the associated mineral rights. Harmony acquired the mine from AngloGold Ashanti Limited ("AngloGold") in 2001.

Geology and Mineralisation

Kusasalethu is located on the north-western margin of the Archean Witwatersrand Basin, one of the prominent gold provinces in the world. There are seven gold-bearing conglomerates within the mining right area, of which only the VCR is economically viable.

The VCR is a tabular, inclined, gold-bearing quartz pebble conglomerate of intermediate to high grade. It forms the base of the Ventersdorp Supergroup, which caps the Central Rand Group ("CRG") of the Witwatersrand Supergroup via an angular unconformity. This reef is characterised by its palaeomorphology, where a thick reef is preserved in the form of terraces separated stratigraphically by a thin inter-terrace slope reef.

The Kusasalethu mining right area is also intruded by dolerite sills and syenite dykes of different ages (Manzi et al., 2015). Many of these dykes strike north to north–northeast with thicknesses that vary from 1m to 90m.

Status of Exploration, Development and Operation

Kusasalethu is a mature mine which has been in operation for over 40 years. The mine can be described as being in harvest mode or nearing the end of its life.

Exploration work on the Kusasalethu mining right area commenced in the early 1940s as part of the Western Deep Levels evaluation programme. The work was initially limited to surface platforms, where an extensive surface exploration programme was conducted across the Western Deep Levels leases by Anglo American Corporation Limited ("AAC").

As the underground areas were accessed, platforms were generated for underground drilling.

Kusasalethu has been allocated a capital amount of ZAR3.96m for exploration drilling of which ZAR1.40m will be carried over to the 2023 financial year ("FY"). For the purpose of this report, the exploration holes drilled in 2022FY have not been included in the geological modelling and Mineral Resource estimation, as the interpretations will only be finalised after completion of the project.

The drilling of exploration holes is limited by the availability of sufficient drilling platforms or development ends. This however has a marginal effect on estimation, due to the limited amount of development being done on the mine.

Mineral Resource Estimate

The current Mineral Resource estimate for Kusasalethu was generated using Datamine™ Studio 3 modelling software. The QP validated the Kusasalethu Mineral Resource model using visual comparisons with the raw drill hole data, comparisons of the raw drill hole data statistics with the model statistics, model volume, and visual assessment of the block model with drill hole intersections to ensure that the grades are locally honoured by the model. The QP did not identify any critical errors in the block model.

The QP compiling the Mineral Resource estimates is Mr J Ackermann, Ore Reserve Manager at Kusasalethu, who is employed by Harmony.

The Mineral Resources were originally prepared, classified and reported according to SAMREC, 2016. For the purposes of this TRS, the Mineral Resources have been classified in accordance with § 229.1302(d)(1)(iii)(A) (Item 1302(d)(1)(iii)(A) of Regulation S-K). The Mineral Resource estimate, as at 30 June 2022, exclusive of the reported Mineral Reserves is summarised in Table 1-1.

Table 1-1: Summary of the Kusasalethu Mineral Resources as at 30 June 2022 (exclusive of Mineral Reserves) [1-8]

METRIC

Mineral Resource Category	Tonnes (Mt)	Gold Grade (g/t)	Gold Content (kg)
Measured	0.990	13.03	12,906
Indicated	8.545	9.28	79,333
Total / Ave. Measured + Indicated	**9.535**	**9.67**	**92,239**
Inferred	2.025	8.85	17,927

IMPERIAL

Mineral Resource Category	Tonnes (Mt)	Gold Grade (oz/t)	Gold Content (Moz)
Measured	1.091	0.380	0.415
Indicated	9.419	0.271	2.551
Total / Ave. Measured + Indicated	**10.511**	**0.282**	**2.966**
Inferred	2.232	0.258	0.576

Notes:

1. Mineral Resources are reported with an effective date of 30 June 2022 were originally prepared, classified and reported according to SAMREC, 2016. For the purposes of this TRS, the Mineral Resources have been classified in accordance with § 229.1302(d)(1)(iii)(A) (Item 1302(d)(1)(iii)(A) of Regulation S-K). The Qualified Person responsible for the estimate is Mr J Ackerman, who is Ore Reserve Manager at Kusasalethu, and a Harmony employee.
2. The Mineral Resource tonnes are reported as in-situ with reasonable prospects for economic extraction.
3. No modifying factors or dilution sources have been included to in-situ Mineral Reserve which was subtracted from the SAMREC Resource in order to obtain the S-K 1300 Resource.
4. The Mineral Resources are reported using a cut-off value of 1,042cmg/t determined at a 90% profit guidance, and a gold price of USD1,723/oz.
5. Tonnes are reported rounded to three decimal places. Gold values are rounded to zero decimal places.
6. Mineral Resources are exclusive of Mineral Reserves. Mineral Resources are not Mineral Reserves and do not necessarily demonstrate economic viability.
7. Rounding as required by reporting guidelines may result in apparent summation differences.
8. The Mineral Resource estimate is for Harmony's 100% interest.

Mineral Reserve Estimate

The Mineral Reserves for Kusasalethu were originally prepared, classified and reported according to SAMREC, 2016. For the purposes of this TRS, the Mineral Reserves have been classified in accordance with § 229.1302(d)(1)(iii)(A) (Item 1302(d)(1)(iii)(A) of Regulation S-K).

The Mineral Reserve estimate is derived from the estimated Mineral Resources, a detailed business plan, and the monthly mine planning process at the operation. The mine planning process considers strategic plan directives, analysis of previous performance, as well as realistic productivity, and cost parameters.

The conversion of Mineral Resources to Mineral Reserves considers Modifying Factors which include dilution, ore losses, minimum mining widths, and the planned mined call factor. Mineral Reserves include the VCR only and are declared as ore delivered to the mills. The Mineral Reserve estimate, as at 30 June 2022, is summarised in Table 1-2.

The QP compiling the Mineral Resource estimates is Mr J Ackermann, Ore Reserve Manager at Kusasalethu, who is employed by Harmony.

Table 1-2: Summary of the Kusasalethu Mineral Reserves as at 30 June 2022 [1-5]

METRIC

Mineral Reserve Category	Milled Tonnes (Mt)	Gold Grade (g/t)	Gold Content (kg)
Proved	1.313	6.97	9,153
Probable	0.031	6.84	210
Total (Proved + Probable)	**1.343**	**6.97**	**9,363**

IMPERIAL

Mineral Reserve Category	Milled Tonnes (Mt)	Gold Grade (oz/t)	Gold Content (Moz)
Proved	1.447	0.203	0.294
Probable	0.034	0.199	0.007
Total (Proved + Probable)	**1.481**	**0.203**	**0.301**

Notes:

1. The Mineral Reserves were originally prepared, classified and reported according to SAMREC, 2016. For the purposes of this TRS, the Mineral Reserves have been classified in accordance with § 229.1302(d)(1)(iii)(A) (Item 1302(d)(1)(iii)(A) of Regulation S-K). The Qualified Person responsible for the estimate is Mr J Ackerman, who is the Kusasalethu Ore Reserve Manager, and who is a Harmony employee.
2. Tonnes, grade, and gold content (oz) are declared as net delivered to the mills.
3. Figures are fully inclusive of all mining dilutions, gold losses and are reported as mill delivered tonnes and head grades. Metallurgical recovery factors have not been applied to the Mineral Reserve figures.
4. Gold content is recovered gold content after taking into consideration the modifying factors.
5. Mineral Reserves are reported using a cut-off grade of 1,100cmg/t determined using a gold price of USD1,546/oz gold.

In the QP's opinion, Kusasalethu is an established operation, and the Modifying Factors used in the Mineral Reserve estimate have a reasonable basis and, at a minimum, would satisfy the confidence levels for a Pre-Feasibility Study.

The estimated Mineral Reserves were depleted to generate the Kusasalethu cash flows. The economic analysis of the cash flows displays positive results and are deemed both technically and economically achievable.

Capital and Operating Cost Estimates

The capital and operating cost estimates for Kusasalethu are reported in South African Rands ("ZAR") terms, on a real basis. The capital cost estimate for Kusasalethu is determined at corporate level, using the business plan as a basis. The capital cost elements are abnormal expenditure ("AE"), infrastructure, and operating capital. The capital cost estimate is shown in Table 1-3.

Table 1-3: Summary of Capital Cost Estimate for Kusasalethu

Capital Cost Element (ZAR'000s)	Total LOM (FY2023 - FY2024)
Abnormal Expenditure	**62,419**
Shaft Projects	**9,710**
Total	**72,129**

The operating cost estimate for Kusasalethu is categorised into direct and total costs. A summary of the Kusasalethu operating cost estimate is presented in Table 1-4.

Table 1-4: Summary of Operating Cost for Kusasalethu

Operating Cost Element (ZAR'000)	Total LOM (FY2023 - FY2024)
Mining	**3,002,706**
Services	**544,547**
Medical Hub / Station	**104,208**
Engineering	**2,645,345**
Workshops	**24,398**
Total Direct Costs	**6,321,204**
Mine Overheads	**219,556**
Royalties	**34,111**
Ongoing Capex	**68,877**
Total Cost	**6,643,748**

The capital and operating cost estimates are accounted for in the economic analysis for Kusasalethu.

Permitting Requirements

Kusasalethu has valid permits, administered and managed by various departments, and does not require any additional permits to continue with their mining operations, including the applications which have been submitted to amend the existing Environmental Management Programme ("EMPR") and Water Use Licence ("WUL"). These have been approved by the regulator at the effective date of this TRS. The permits and licences are summarised in Table 1-5.

Table 1-5: Status of Environmental Permits and Licences

Permit / Licence	Reference No.	Issued By	Date Granted	Validity
EMPR	GP30/5/1/2/3/2/1(07) EM	DMRE	2018	LOM
Mining Right	GP30/5/1/2/2 (07)MR	DMRE	2018	LOM
Water Use License	08/C23J/AJFG/1019	DWS	2018	2040

Note: LOM - Life of mine

Conclusions

Kusasalethu is a deep level gold mine in harvest mode and has three years remaining in its life of mine ("LOM"). Under the assumptions in this TRS, Kusasalethu's cash flow shows a negative result for year 1, however the aggregate results of the economic analysis for the mine life are positive. This overall positive cash flow over the LOM supports the Mineral Resource and Mineral Reserve estimates. The mine plan is achievable under the set of assumptions and parameters used.

Recommendations

No recommendations are in place due to the short LOM remaining at Kusasalethu.

2 Introduction

Section 229.601(b)(96) (2) (i-v)

This TRS on Kusasalethu has been prepared for the registrant, Harmony. The TRS has been prepared in accordance with the U.S. SEC Disclosure by Registrants Engaged in Mining Operations (disclosure regulations S-K 1300). It has been prepared to meet the requirements of Section 229.601(b)96 - Technical Report Summary. The purpose of this TRS is to provide open and transparent disclosure of all material, exploration activities, Mineral Resource and Mineral Reserve information to enable the investor to understand Kusasalethu, which forms part of Harmony's activities.

This TRS has been prepared from the following sources of information:

- Competent Persons Report (Ore Reserve Statement for period ended 30 June 2022, Technical Report for Kusasalethu Gold Mine) (prepared by Mr J Ackermann) dated 30 June 2022;
- the 2021 and 2022 Harmony Corporate Business Plan; and
- published Harmony 2022 Mineral Resources and Mineral Reserves Report as at 30 June 2022 ("HAR-RR22").

The TRS was prepared by Qualified Persons ("QPs") employed on a full-time basis by the registrant. The QPs qualifications, areas of responsibility and personal inspection of the property are summarised in Table 2-1.

Table 2-1: QP Qualification, Section responsibilities and Personal Inspections

Qualified Person	Professional Organisation	Qualification	TRS Section Responsibility	Personal Insp.
Mr. JD Ackermann	SAIMM	BSc (Geol)	1, 2, 3, 4, 5, 7, 11, 12, 13, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25	Full time
Mr. M Hopwood	CIMA	BCom (Hons) Management Accounting; ACMA/CGMA	16, 18, 19	Full time
Ms S v Huyssteen	None	BA Environmental Management	17	Full time
Mr. JJ Le Roux	None	BSc Hons (Geol)	6,7,8	Full Time
Mr. GJ Nagel	None	MBA, GDE Mining Engineering	13	Full time

This TRS is the first filing of such a document with the SEC and has an effective date as at 30 June 2022. No material changes have occurred between the effective date and the date of signature.

3 Property Description and Location

Section 229.601(b)(96) (3) (i-vii)

Kusasalethu is a deep level gold mine, operating at depths ranging between 2,800m and 3,300m, located in the West Wits mining district, Gauteng Province. At longitude 27°21'32.91"E and latitude 26°27'16.23"S, the mine is approximately 70km southwest of Johannesburg and 15km south southwest of Carletonville and forms part of Harmony's West Rand ("West Wits") operations. The location of Kusasalethu and its relative proximity to the other West Wits operations is shown in Figure 3-1.

3.1 Mineral Tenure

South African Mining Law is regulated by the MPRDA which is the predominant piece of legislation dealing with acquisitions or rights to conduct reconnaissance, prospecting and mining. There are several other pieces of legislation which deal with such ancillary issues such as royalties (the Mineral and Petroleum Resources Royalty Act, 2008), title registration (the Mining Titles Registration Act, 1967), and health and safety (the Mine Health and Safety Act, 1996).

A single mining right covers Kusasalethu which was successfully converted, executed and registered as a new order mining right at the MRTO. The principal mining right (GP30/5/1/2/2/(07) MR) covers an area of 7,000 hectares ("ha") for the mining of gold. This mining right was granted on 18 December 2007 and, unless cancelled or suspended, will continue in force for 30 years ending 17 December 2037.

A section 102 application was submitted in 2018 to combine the contiguous farms Buffelsdoorn 143IQ and Deelkraal 142IQ, which increased the extent of the original mining right from 5,100ha to the current 7,000ha. The Kusasalethu mining right is shown in Figure 3-2 and detailed in Table 3-1.

Table 3-1: Summary of Mining Rights for Kusasalethu

Licence Holder	Licence Type	Reference No.	Effective Date	Expiry Date	Area (ha)
Kusasalethu Mine	Mining Right	GP30/5/1/2/2(07) MR	18-Dec-2007	17-Dec-2037	7,000

Under the MPRDA, Harmony is entitled to apply to renew the mining right on its expiry. There are no known legal proceedings (including violations or fines) against the Company which threatens its mineral rights, tenure, or operations.

3.2 Property Permitting Requirements

All relevant underground mining and surface right permits, and any other permit related to the work conducted on the property have been obtained and are valid, including the applications which have been submitted to amend the existing EMPR and WUL. These have been approved by the regulator at the effective date of this TRS.

The surface rights in the Kusasalethu area were previously held by AngloGold and were acquired by Harmony in 2001. The surface mining right and surface right areas are sufficient in size and nature to accommodate the required surface infrastructure to facilitate current and planned mining and processing operations.

Harmony monitors complaints and litigation against the Company as part of its risk management systems, policies, and procedures. There is no material litigation (including violations or fines) against the Company as at the date of this report which threatens its property permitting. The Company is also not aware any land claims or other legal proceedings that may have an influence on the rights to mine the minerals.

Figure 3-1: Location of Kusasalethu

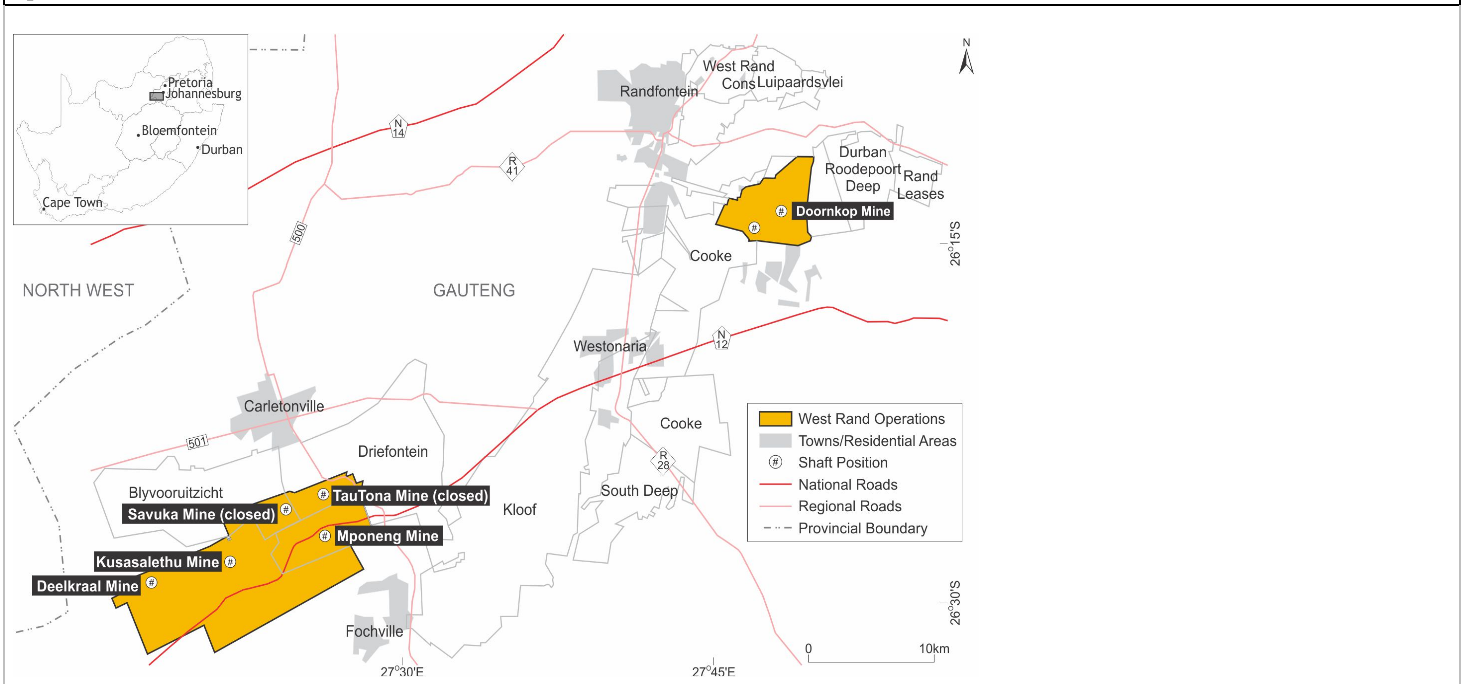
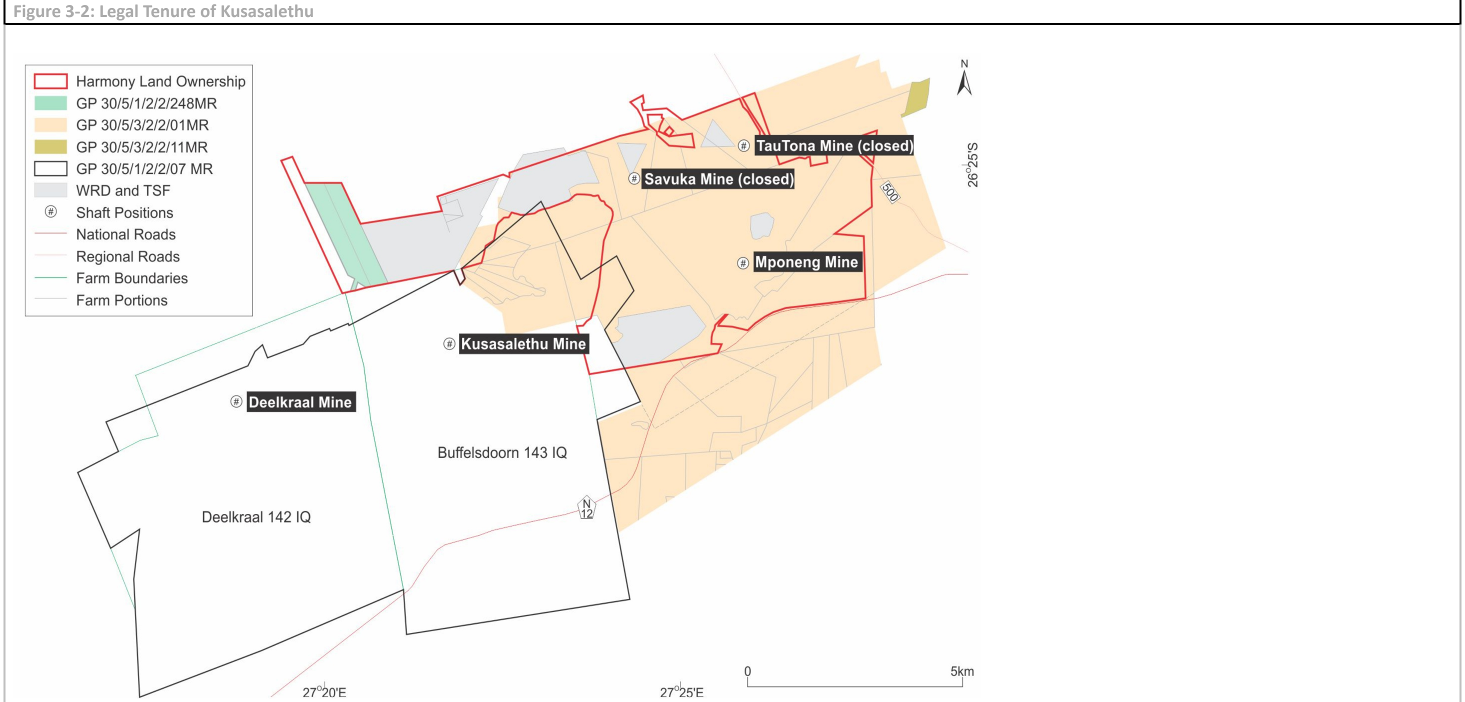


Figure 3-2: Legal Tenure of Kusasalethu



Effective Date: 30 June 2022

4 Accessibility, Climate, Local Resources, Infrastructure and Physiography

Section 229.601(b)(96) (4) (i-iv)

4.1 Accessibility

Kusasalethu is situated adjacent to the N12 national road (Figure 3-1) and can be reached via tarred roads to all main access points. Access to the mine is restricted by security fencing, security guards, booms and lockable gates at the main entrance. In addition, a communication system and access control system monitors personnel entering and leaving the mine property.

4.2 Physiology and Climate

Kusasalethu is situated approximately 1,640 metres above sea level ("mamsl") within the Highveld region of South Africa. The surrounding area is characterised by undulating plains interspersed by rocky peaks. A prominent rock ridge known as the Gatsrand extends from the eastern extent to the western extremity forming a watershed.

The mine falls within the Highveld climatic zone, which is characterised by warm temperatures, dry winters and summer rainfall. The average annual rainfall recorded at the operation, based on recorded data between 2015 and 2018 was 698mm. Heavy thunderstorms occur between November and February.

Temperature patterns are characterised by seasonal and daily variations, where summers are warm to hot, and winters are mild to cold. The seasonal fluctuations in mean temperatures between the warmest and the coldest months vary between 12°C and 15°C. The month of June is generally the coldest month with lowest recorded temperatures of an estimated -2°C while the maximum recorded temperature of 37°C generally occurs in February. Windy months occur between August and November.

The Kusasalethu operation is not restricted by climatic or seasonal occurrences.

4.3 Local Resources and Infrastructure

Infrastructure in the region is well established supporting the numerous operational gold mines in the area. The regional infrastructure includes national and provincial paved road networks, power transmission and distribution networks, water supply networks and communication infrastructure.

Kusasalethu comprises a twin-shaft system with two surface vertical shafts and two vertical sub-shafts. Ore is hoisted to surface and is delivered to the plant by road. Although Kusasalethu has its own processing plant situated adjacent to the mine, this plant does not treat the mine's ore. Operations are powered by electricity from Eskom Holdings State Owned Company Limited.

5 History

Section 229.601(b)(96) (5) (i-ii)

5.1 Historical Ownership and Development

Kusasalethu was previously known as Elandsrand Gold Mine when it was owned by AngloGold. The shaft system (i.e., the vertical twin shaft) together with the gold plant were commissioned in 1978.

In 2001, Harmony took control and ownership of Elandsrand Gold Mine and Deelkraal Gold Mine from AngloGold. The name Elandsrand was changed to Kusasalethu in 2010.

Kusasalethu is part of the West Wits mining district that includes the former Western Deep Levels shafts which include the Mponeng, TauTona and Savuka mines, all now also 100% owned by Harmony. The historical ownership and associated activities related to Kusasalethu are summarised in Table 5-1.

Table 5-1: Summary of Historical Ownership Changes and Activities of Kusasalethu Mine

Year	Asset History Highlights
1975	AAC commenced construction of the original twin shaft system and the gold plant complex in the southern part of the lease area.
1978	The vertical twin shaft system and the gold plant was commissioned down to 2,195m.
1984	A sub-vertical shaft down to 3,048m was commissioned that enabled development and production of the VCR.
1995	AAC approves project to deepen the mine's shaft system from 3,048m to 3,388m BMD.
1998	AngloGold Ashanti Limited was formed through the merger of the gold interests of AAC and its associated companies.
2001	Harmony acquires the Kusasalethu and Deelkraal mines from AngloGold.
2010	Elandsrand changed name to Kusasalethu Mine.
2014	Old portions of Kusasalethu Mine suspended in order to restructure the mine. Subsequently, mining above 98 level ceased.
2015	A revised and shortened LOM was implemented due to the decrease in the Mineral Reserve, for mining over five levels from 98 level to 113 level.
2018	Section 102 approved for to adding Buffelsdoorn 143IQ and Deelkraal 142IQ to mining right.

5.2 Historical Exploration

Exploration work on the Kusasalethu mining right area commenced in the early 1940s as part of the Western Deep Levels evaluation programme. The work was initially limited to surface platforms, where an extensive surface exploration programme was conducted across the Western Deep Levels leases by AAC. As the underground areas were accessed, more platforms were generated, and underground drilling conducted. When shaft sinking began in January 1975, a total of 16 surface drill holes had been drilled with VCR gold values ranging from 21cmg/t to 6,517cmg/t.

Surface core drilling and a historical geophysical seismic survey was used to define the ore body across the West Wits area and identified major structures that define the margins of the reef blocks upon which the mine is designed.

The last surface exploration programme at Kusasalethu took place from 1985 to 1991, during which 116 boreholes were drilled from surface by means of 15 mother holes, to complement and enhance the geological confidence levels of the areas of interest, situated to the south of the current mining area. The area of interest was prospected for the economic potential of deepening the project, with the exploration drilling reaching depths of up to 3,833m.

5.3 Previous Mineral Resource and Mineral Reserve Estimates

The previous in-situ Mineral Resource estimate for the VCR horizon at Kusasalethu was declared as at 30 June 2021, according to the SAMREC Code, 2016. The Mineral Resource was estimated using mixed support co-kriging, a technique that allows both drill hole and underground sampling data to be used together.

The previous Mineral Resource estimate is summarised in Table 5-2, is exclusive of Mineral Reserves and has been superseded by the current estimate prepared by Harmony in Section 11 of this TRS.

Table 5-2: Summary of the Previous Kusasalethu Mineral Resources as at 30 June 2021 (exclusive of Mineral Reserves)

METRIC

Mineral Resource Category	Tonnes (Mt)	Gold Grade (g/t)	Gold Content (kg)
Measured	1.863	11.57	21,551
Indicated	12.373	9.09	112,511
Total / Ave. Measured + Indicated	**14.236**	**9.42**	**134,062**
Inferred	3.698	8.63	31,903

IMPERIAL

Mineral Resource Category	Tonnes (Mt)	Gold Grade (oz/t)	Gold Content (Moz)
Measured	2.054	0.337	0,693
Indicated	13.639	0.265	3,617
Total / Ave. Measured + Indicated	**15.693**	**0.275**	**4,310**
Inferred	4.076	0.252	1,026

The previous Mineral Reserve estimate for the VCR horizon was also declared as at 30 June 2021 in accordance with the SAMREC Code, 2016. Modifying Factors were applied to the in situ Mineral Resource to arrive at the Mineral Reserve estimate. These factors included a dilution to accommodate the difference between milling width and stoping width, as well as the Mine Call Factor ("MCF"). The previous Mineral Reserve estimate is summarised in Table 5-3 and has been superseded by the current estimate prepared by Harmony as detailed in Section 12.3 of this TRS.

Table 5-3: Summary of the Previous Kusasalethu Mineral Reserves as at 30 June 2021

METRIC

Mineral Reserve Category	Tonnes (Mt)	Gold Grade (g/t)	Gold Content (kg)
Proven	1.883	7.51	14,143
Probable	0.280	4.76	1,334
Total / Ave. Proven + Probable	**2.163**	**7.15**	**15,477**

IMPERIAL

Mineral Reserve Category	Tonnes (Mt)	Gold Grade (oz/t)	Gold Content (Moz)
Proven	2.076	0.219	0,455
Probable	0.309	0.139	0,043
Total / Ave. Proven + Probable	**2.385**	**0.209**	**0,498**

5.4 Past Production

Kusasalethu's production over the past five years is provided in Figure 5-1 and Figure 5-2. Kusasalethu is currently in steady state, with a long operational history.

Figure 5-1: Graph of Past Production– Tonnes and Grade

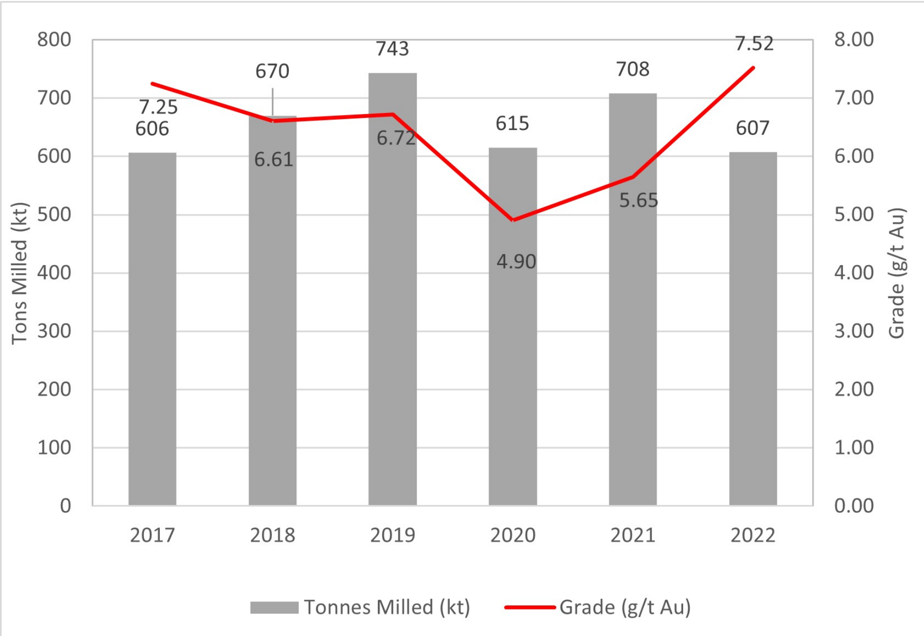
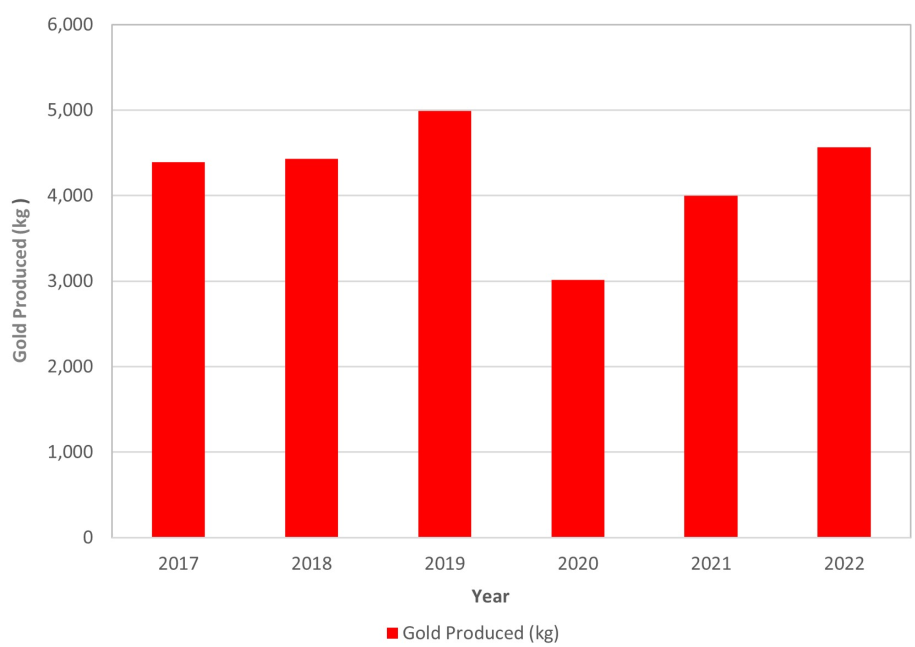


Figure 5-2: Graph of Past Metal Production



6 Geological Setting, Mineralisation and Deposit

Section 229.601(b)(96) (6) (i-iii)

6.1 Regional Geology

Kusasalethu is located on the northwestern margin of the Archean Witwatersrand Basin, one of the most prominent gold provinces in the world. The Witwatersrand Basin is an approximately 7,000m thick terrigenous sequence comprising mainly arenaceous and argillaceous, together with minor rudaceous, lithologies deposited in a fluvio-deltaic environment in the centre of the Archaean Kaapvaal Craton of South Africa (Robb and Meyer, 1995). The regional geology of the Witwatersrand Basin is shown in Figure 6-1.

The Witwatersrand Basin hosts the Witwatersrand Supergroup, which either conformably or unconformably overlies the metamorphosed volcanic and minor clastic sediments of the Dominion Group (Tucker et al., 2016). The Dominion Group overlies the older granite-greenstone basement.

The majority of the Witwatersrand Supergroup is capped by the volcano-sedimentary sequence of the Ventersdorp Supergroup through an angular unconformity. The Ventersdorp Supergroup is in turn overlain by the dolomitic and quarzitic sequence of the Transvaal Supergroup, and sediments of the Karoo Supergroup (Tucker et al., 2016). Several suites of dykes and sills cut across the Archaean basement and the Witwatersrand, Ventersdorp, Transvaal and Karoo supergroups, and form important geological time-markers

The Witwatersrand Supergroup is subdivided into the basal West Rand Group ("WRG") and overlying CRG (Robb and Robb, 1998). The WRG extends over an area of 43,000km^2 and is up to 5,150m thick. It is sub-divided in three subgroups, namely, from bottom upwards, the Hospital Hill Subgroup; Government Subgroup and Jeppestown Subgroup. The stratigraphic succession of the WRG mainly consists of shale sediments, with occasional units of banded iron formation and conglomerate. The CRG is up to 2,880m thick and covers an area of up to 9,750 km^2, with a basal extent of 290km x 150km. It is sub-divided into the lower Johannesburg Subgroup and upper Turffontein Subgroup as shown in Figure 6-2. These subgroups are separated by the Booysens Shale Formation. The stratigraphic succession of the CRG comprises coarse-grained fluvio-deltaic sedimentary rocks.

The major gold bearing conglomerates are mostly confined to the CRG, and these conglomerate horizons are known as reefs. The most important reefs within the CRG are at six stratigraphic positions, three within the Johannesburg Sub-group and three within the Turffontein Sub-group. The reefs are mined in seven major goldfields, and a few smaller occurrences, which extend for over 400km in what has been called "The Golden Arc". This arc is centred on the prominent Vredefort Dome, as shown in Figure 6-1, which is thought to be a major meteorite impact site in the centre of the Witwatersrand Basin (Therriault et al., 1997). The goldfields, as shown in Figure 6-1, include: East Rand, South Rand, Central Rand, West Rand, West Wits, Klerksdorp, Free State (Welkom), and Evander.

6.2 Local Geology

Kusasalethu is located within the West Wits Goldfield as shown in Figure 6-1. The general orientation of the Witwatersrand Supergroup succession in this goldfield is interpreted as west-southwest-trending and south-southeast dipping (Dankert and Hein, 2010).

The north-northeast-trending Bank Fault and the bedding sub-parallel Master Bedding Fault are the main faults identified in this area of the goldfield (Dankert and Hein, 2010). The Bank Fault is described as a west-dipping reverse fault that was reactivated as a normal fault. The Master Bedding Fault, which hosts brecciated and mylonite rock fragments, is described by various scholars as a 1m to 50m wide fault zone that is sub-parallel to bedding.

Kusasalethu mainly exploits the VCR, a tabular inclined gold-hosting horizon which is located at the top of the CRG (Figure 6-2), capping the Witwatersrand Supergroup (Figure 6-3). Extrusion of the overlying lavas of the Ventersdorp Supergroup halted the deposition of the VCR, preserving it in its current state.

The VCR was deposited on the uneven footwall strata due to uplift and is now represented by a shallow angular unconformity. An east–west cross section is presented in Figure 6-4. The footwall lithologies to the VCR therefore vary across Kusasalethu as the unconformity cuts deeper in an easterly direction into older strata of the Witwatersrand Supergroup.

Figure 6-1: Regional Geology of the Witwatersrand Basin

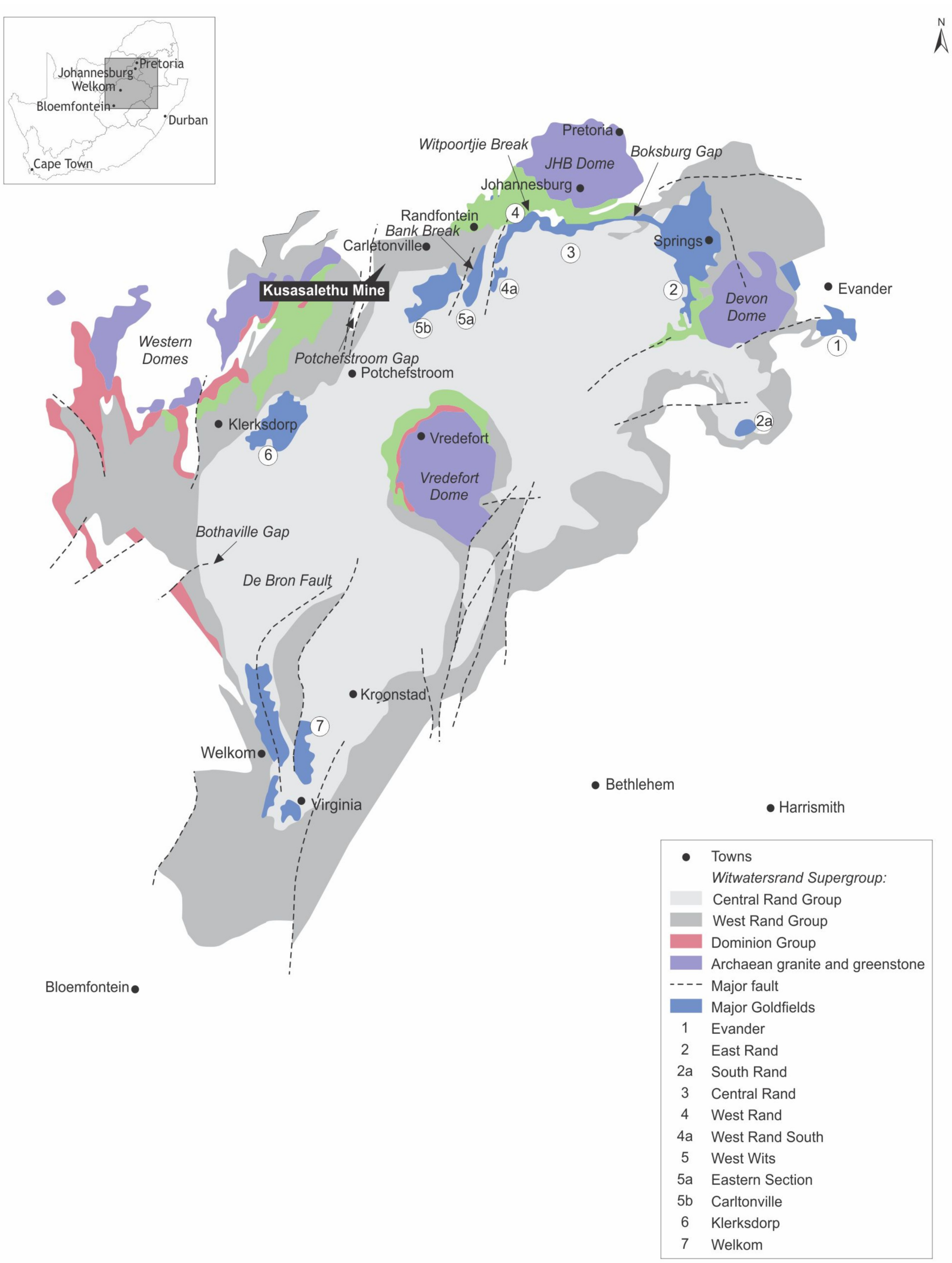
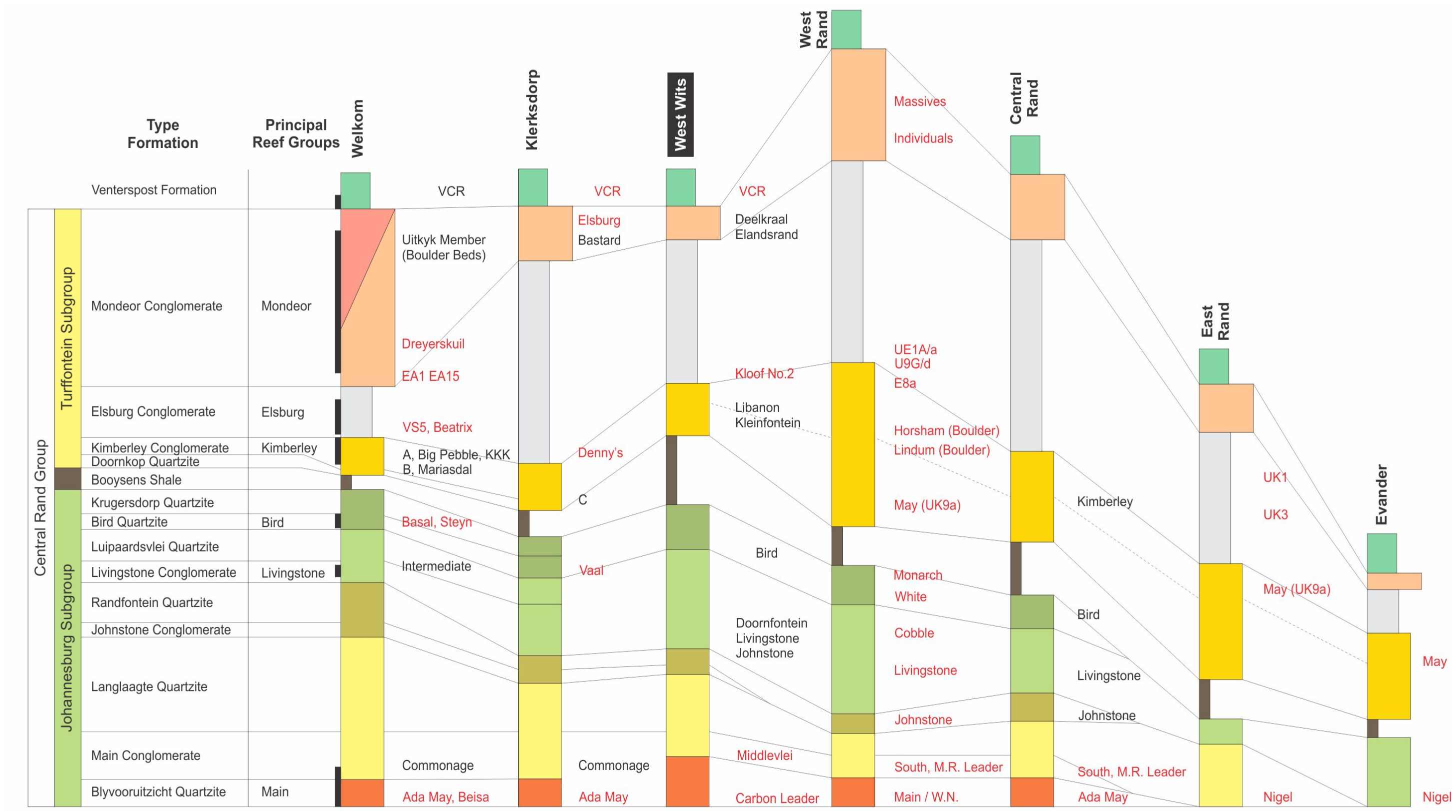
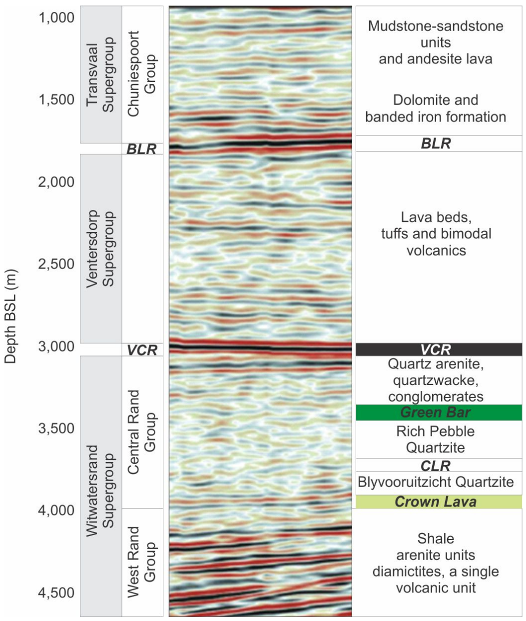


Figure 6-2: Stratigraphy of the CRG in the Witwatersrand Supergroup



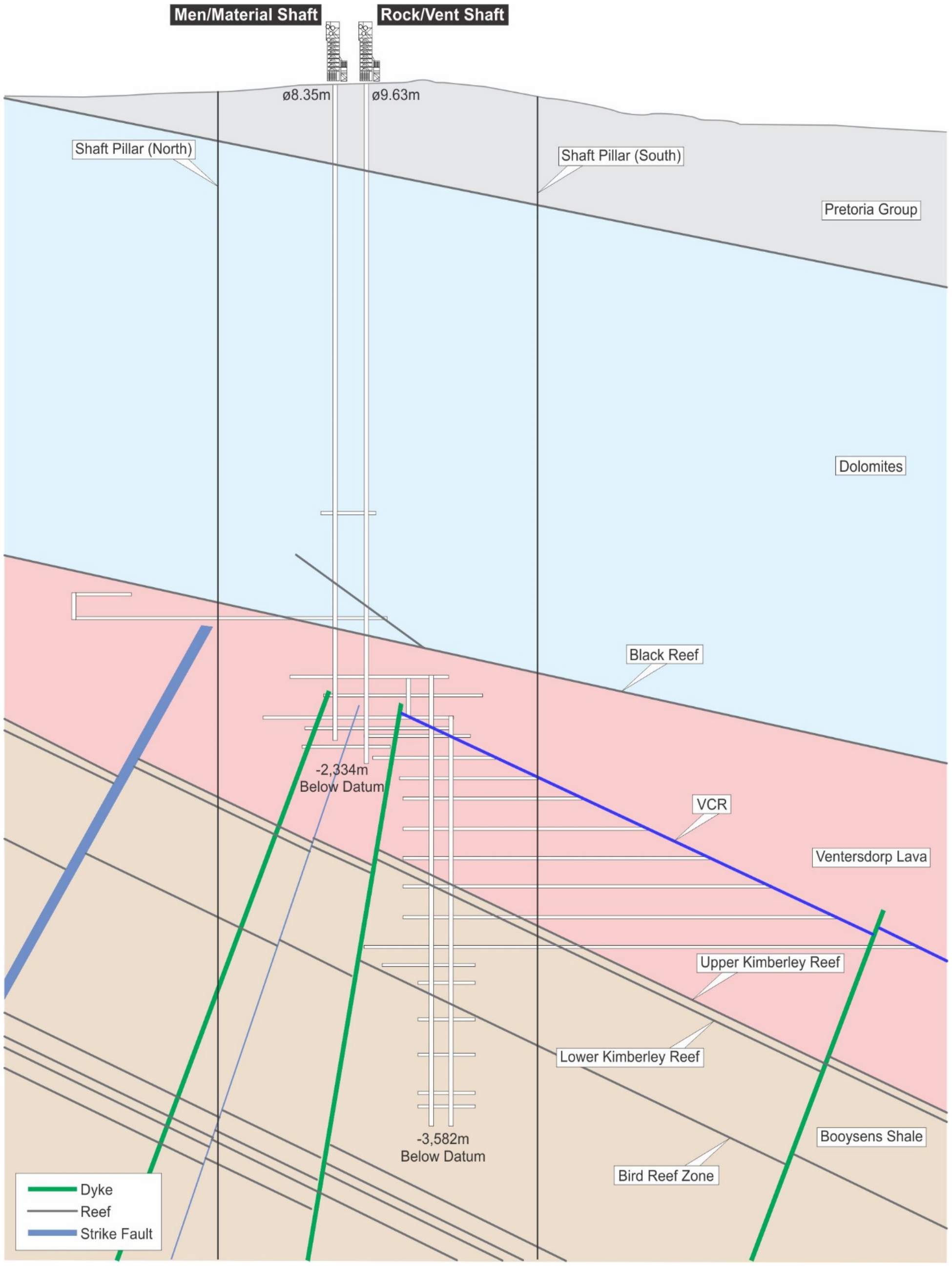
Source: Modified after Tucker et al. (2016)

Figure 6-3: Simplified Stratigraphy of the West Wits Goldfield



Source: Adapted from Manzi et al. (2015)

Figure 6-4: Cross Section Through Kusasalethu



6.3 Property Geology

The VCR is continuously developed across the entire Kusasalethu mining area and dips at approximately 22° in a south southeast direction.

At Kusasalethu, the CLR strikes west-southwest and dips to the south at approximately 25° and lies 900-1,300m stratigraphically deeper than the VCR. Therefore, it occurs too deep to allow mining from current infrastructure. In addition, it is lower in grade than elsewhere in the goldfield. Consequently, the VCR is the only reef currently exploited at Kusasalethu.

The Middlevlei Reef, which occurs approximately 50m to 75m above the CLR, is the most important secondary reef within the Far West Rand. Other secondary reefs also occur in the area, the most significant being individual bands within the Mondeor Conglomerate Reef Zone that sub-crop beneath the VCR at Deelkraal Mine and on the western side of Kusasalethu.

6.3.1 VCR Lithology

The VCR consists of a quartz pebble conglomerate, reaching up to 3m thick in places. A well-developed VCR facies model exists at Kusasalethu and is based on the terrace-slope model. The VCR is thought to have been degradational and eroded into its footwall during successive periods of deposition. This resulted in preserved terraces of deposition on various palaeotopographic elevations, separated by areas predominantly erosional in nature. The latter are characterised by either preservation of a thin conglomerate lag, or non-deposition, known as slopes. On the terraces, mineralised conglomerates typical of Witwatersrand type reefs are preserved, while in the slope areas there may be a narrow pebble lag preserved, or a complete lack of conglomerate developed.

Nine facies types have been recognised on Kusasalethu; eight sedimentological and one structural. Facies types are distinguished by sedimentological criteria such as pebble type and assemblage, pebble packing, textural relationships, maturity, amount of internal quartzite and sedimentological structures. Each facies type also has a characteristic grade and thickness profile.

There are four terrace-type facies identified:

- Terrace Complex 1: a massive to planar crossbedded oligomictic conglomerate, with scattered small internal lenses of quartzite, and quartzite cappings. The pebble assemblage consists of milky and smoky quartz and gold found within any portion of the reef;
- Terrace Complex 2: consisting of lower, middle and upper conglomerate units. The lower unit shows extensive interdigitation of polymictic, matrix supported conglomerates, pebble supported, pebble lags and crossbedded quartzites. The pebble assemblage consists of milky and smoky quartz pebbles and green shale clasts. The facies is characterised by its lime and apple green internal quartzites. Gold occurs predominantly in channel lags;
- Terrace Complex 4: a massive conglomerate consisting of mainly milky quartz pebbles, which can either be matrix or pebble supported. This lower conglomeratic unit grades into mainly a quartzitic unit with gritty bands and occasional pebble lags. This is overlain by an apple green massive quartzite. Gold concentration occurs mainly within the lower conglomerate unit and along scours in the upper conglomerate unit; and
- Terrace Complex 5: This complex comprises three to ten upward fining cycles with erosional basal contacts. Each cycle starts at the base with a basal leg, a thin oligomictic matrix supported conglomerate or pebble supported conglomerate. The pebble assemblage consists of chert, smoky and milky quartz. Gold occurs within the basal conglomerate and the basal scours of each stacked cycle.

A further set of non-terrace-type facies includes:

- Sand Filled Channel: a thin basal conglomerate with thick, grey and white, trough crossbedded quartzite capping;
- Slope Reef: a single pebble lag or with no conglomerate developed;
- Sandy Terrace Complex 2: a pebbly quartzite with a very low conglomerate percentage;

- Mondeor Conglomerates or Elsburg reef: a matrix to clast supported conglomerate with lenses of internal quartzite. The conglomerate grades laterally to pebbly quartzite, it consists of chert (5% to 10%) and quartz pebbles in a yellow-green quartzite matrix; and
- Duplicated Reef: a structural facies caused by low angle, bedding parallel thrust faulting on the reef horizon. Encompasses both duplicated and eliminated reef bands, within any of the above-mentioned facies types.

6.3.2 Structure

The structural geology plan for the VCR is presented in Figure 6-5. Major faults at Kusasalethu were interpreted from historical seismic data and using information from surface drill holes. These major faults define the margins of some of the reef blocks, as well as the preliminary contoured surface of the reefs.

There are a series of east-trending, north-dipping normal faults with throws of up to 40m and a series of north-northeast-striking normal faults with generally smaller displacements in the northwest. These faults have a general dip of 75°. The Kit Tims and De Twem faults are examples of these normal faults. The original displacements on these faults are occasionally increased as a function of subsequent post-Bushveld displacement, but overall faulting is much less prevalent than it is in other Witwatersrand goldfields.

The Kusasalethu mining right is also intruded by dolerite sills and syenite dykes of different ages (Manzi et al., 2015). Many of these dykes strike north to north–northeast with thicknesses that vary from 1m to 90m. The prominent dykes are the Cobra, BV 78, Hammer, Grass, Wuddles, CAD, Bounder, Rogue, Rubble, Kent, Pink, Eastern Oberholzer and the Eastern Oberholzer 2.

Intrusive sills, although rare, have been identified in drill hole data and may be laterally continuous over several hundreds of metres. These sills often intrude along or close to the lava/quartzite contact (VCR horizon), thus removing or interrupting substantial portions of the reef, especially in old, mined out areas of the main shaft.

Kusasalethu mines in blocky ground created by these dykes and faults, which are fairly basic in composition.

Faults and dykes can be classified according to their relative geological ages, as follows:

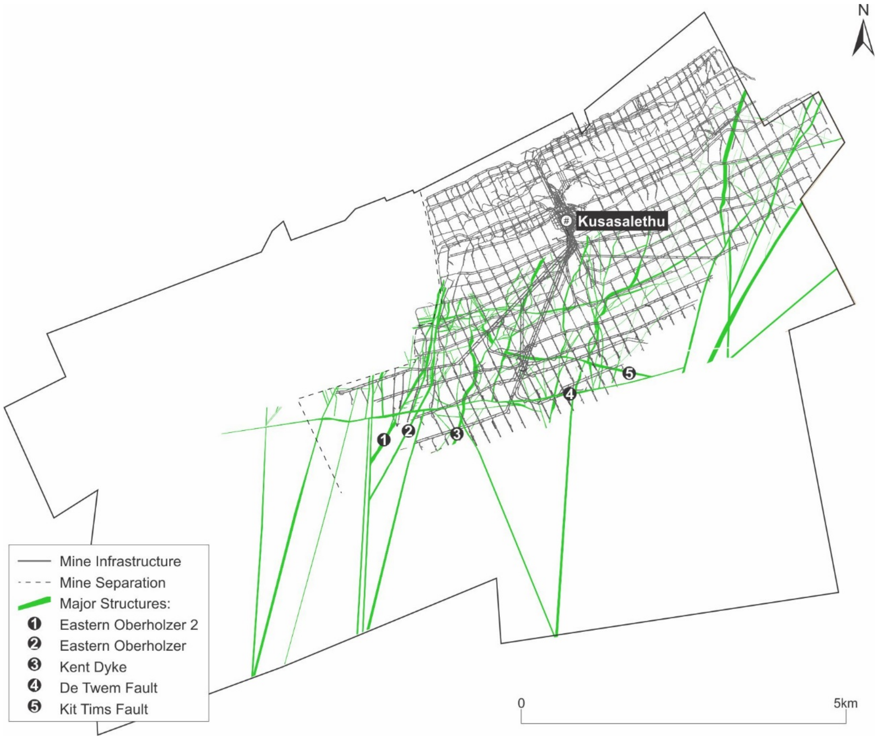
- pre-VCR structures including faults and dykes observed in the footwall with throws that do not affect the reef horizon, and are thus pre-Ventersdorp age such as the Fred, Alex and Ash dykes;
- low angle, bedding-parallel reverse and thrust fault systems that affect both the footwall units, and the VCR reef horizon are interpreted as being Bushveld or Vredefort age, from similar structures documented in literature. Vertical throws are usually no more than 2-5m, but lateral displacements can be up to several hundred metres; and
- Pilanesberg structures are the youngest features and have a NE-SW trend. They have intruded along pre-existing late Ventersdorp-age dykes and are thus usually multi-phase or bi-model intrusives. Throws are normal, typically 5 to 20m down to the NW e.g., Eastern Oberholzer and Wuddles dykes.

6.4 Mineralisation

Gold mineralisation is believed to have 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 horizons, 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.

Figure 6-5: Kusasalethu VCR Geological Structure Plan



6.4.1 VCR Mineralisation

The VCR is dominated by silicate phases such as quartz (~60%), chlorite (~10%), muscovite (~5%) and zircon (~1%), as well as sulphide phases such as pyrite, pyrrhotite and chalcopyrite (~10 %). The pyrrhotite/pyrite relationship is thermally related to prograde metamorphism often associated with the extrusion of the lavas of the Ventersdorp Supergroup.

6.4.2 Alteration

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, sphalerite 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 chloritization 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.

6.5 Deposit Type

The Kusasalethu deposit is classed a meta-sedimentary gold deposit. Folding and basin edge faulting have been important controls for sediment deposition and gold distribution patterns within the Witwatersrand Basin and fold trends have been employed in the economic evaluation of various reef horizons.

6.6 Commentary on Geological Setting, Mineralisation and Deposit

The geological setting, mineralisation model and deposit types are well established at Kusasalethu, as a result of continuous exploration and mining activities over several decades. These geological interpretations and models form the basis of the Mineral Resources estimates for the VCR.

7 Exploration

Section 229.601(b)(96) (7) (i-vi)

Exploration at Kusasalethu has mainly focused on improving confidence in the geological model, as well as adding and upgrading additional Mineral Resources to the mine to replace depletion. Geological data has been obtained through underground channel (chip) sampling, underground mapping and underground drilling. The close spaced underground data gathering was preceded by a surface geophysical seismic survey, as well as surface diamond core drilling. Exploration from underground platforms continues to improve geological confidence for the VCR.

7.1 Geophysical Seismic Survey

The Kusasalethu area was included in a three dimensional ("3D") seismic reflection survey conducted by AAC in 1993. The 3D survey was conducted by Compagnie Générale de Géophysique, covering an area of approximately 300km^2 (Manzi et al., 2015). The objective of the survey was to delineate the sub-surface formations above and below the VCR and CLR horizons, at depths ranging from 2.7km to 4.2km.

The data obtained from the survey was processed by Velseis Processing Pty Limited, successfully delineating the entire stratigraphy from surface through the Ventersdorp Supergroup to the base of the Witwatersrand Basin (~11km in depth) including the VCR (Figure 6-3). This enabled AAC to better understand the structural characteristics of the VCR at depths between 2.5km and 3.5km below surface. The CLR was not detected due to its relatively thin nature and association with quartzitic units which have unfavourable characteristic for seismic contrast.

In 1994, AAC interpreted the results of the survey using Geophysical AIS-3D™ software which was further enhanced using exploration drill core and VCR mappings from sub-shaft intersections. The interpretation together with the new data allowed for the bulk shift of all interpreted data of about 42m.

Additional analysis and interpretation of the dataset was undertaken in 1997 using the GeoQuest™ software. The results improved confidence in the geological planning at the then Western Deep Levels, particularly the positioning of the VCR at the sub-outcrop of the Kimberley Quartzite.

No further surveys and interpretations have been undertaken on Kusasalethu.

7.2 Topographic Surveys

No topographic survey has been completed in the past, and in the opinion of the QP, these surveys are not necessary as the information in this TRS relates to an underground operation.

7.3 Underground Mapping

Underground mapping is undertaken for grade control purposes, and in order to obtain geological information to support the updating of Kusasalethu's geological model.

Face and reef development mapping is undertaken by a team comprising two or more personnel, including a geologist. Face tapes are setup along gullies and the stope face and oriented with reference to the latest survey pegs installed in the workplaces. Reef positions, lithological descriptions, the presence of faults or dykes, and other pertinent geological information is collected and measured relative to the reference tapes. The information is captured in a notebook. The primary scale of mapping is 1:200, however other scales are acceptable as long as the required detail can be depicted i.e., 1:20 or 1:50 profiles or 1:500.

Once at surface, the geologist transfers the information from the notebook into the geological mapping system, where a mapping report is produced for each mapped workplace. Data from the mapping is also incorporated into the geological models.

Approximately 80-90% of all workplaces are inspected by members of the Geosciences team on a monthly basis to ensure that suitable mapping information coverage is achieved. The primary focus on Kusasalethu is the mapping of the reef raises.

7.4 Channel Sampling Methods and Sample Quality

Channel sampling is used to provide local grade and thickness points of observation for both grade control and the Mineral Resource estimates.

Channel sampling of underground panels, blasted on monthly basis, is conducted perpendicular to the channel contact across the exposed channels. The section lines demarcating the width of the sample are drawn parallel to the reef waste contact while those demarcating the length of the sample are drawn at right angles to the reef waste contact and are marked 10cm apart. The samples are chipped out between these section lines.

Sampling of the VCR channel is undertaken at the advancing face on a grid spacing of 6m x 6m. The channel sampling is undertaken by a sampler and several assistants. The sampling process is audited monthly and annually by the Geoscience Manager.

The location of samples collected from the VCR to date is shown in Figure 7-1.

7.5 Surface Drilling Campaigns, Procedures, Sampling, Recoveries and Results

Most of the surface drill holes used in the estimation of the current Mineral Resources, as well as those drilled on adjacent properties, such as Mponeng, Savuka and TauTona mines, were drilled by AAC and AngloGold before Harmony acquired the mine. The drill holes were completed using the diamond core drilling method. The reader should note that no holes have been drilled from surface since Harmony's acquisition of the mine in 2001.

The location of the channel samples, as well as underground drillholes and surface drill holes intersecting the VCR on Kusasalethu is shown in Figure 7-1.

7.5.1 Drilling Methods

The surface diamond core drilling has been undertaken using a thin-walled core barrel (TNW size core barrel) that delivers NQ (47.6 mm) core. No information on the drill rig types used to complete the surface drilling was available as they pre-date Harmony's involvement and were drilled over 20 years ago.

The drill grid spacing of the surface drill hole intersections is up to 1,000m, and is often required to be complemented by underground drill hole intersections. The accuracy of the surface drilling intersection positions from drill holes that are from 2,500m to 4,000m in depth is the major limiting factor of actually achieving a planned grid spacing. Long surface drill holes often deflect and controlling the direction over that depth has always been challenging in the South African gold mining context.

7.5.2 Collar and Downhole Surveys

The drill holes used for reef delineation at Kusasalethu are surveyed to confirm both collar position and trajectory. Drill hole collar and downhole surveys are conducted on all surface drill holes. Collar positions are surveyed by the internal Land Survey Department.

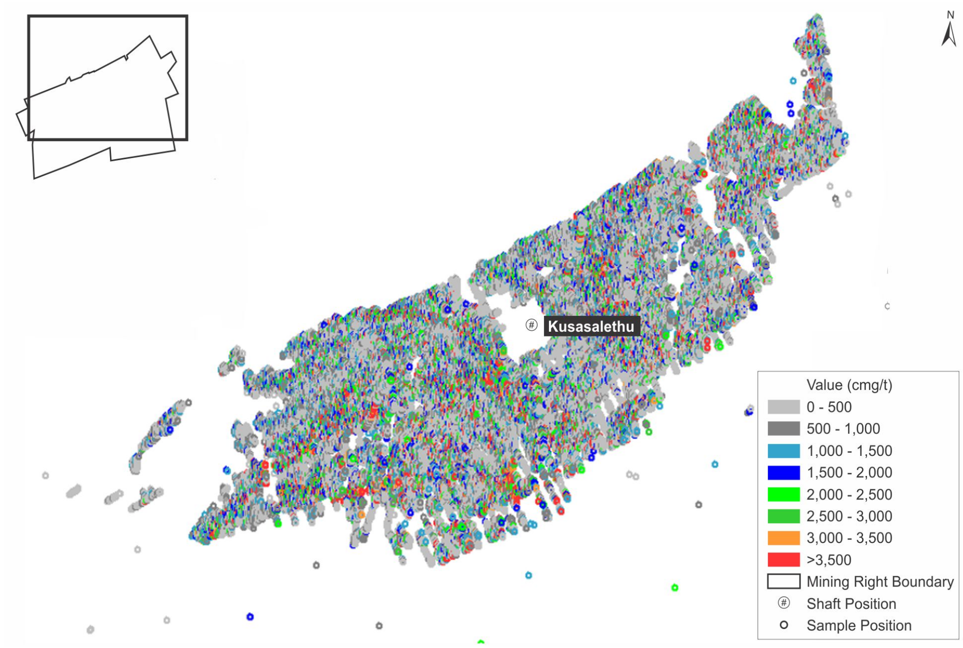
Downhole surveying is conducted using Electronic Multi-shot System and non-magnetic north seeking Gyro tools as supplied by a certified and specialised downhole survey company. Additional downhole surveys are conducted on all long inclined boreholes ("LIB") and long vertical boreholes ("LVB") for verification purposes, and the results are submitted together with the primary survey data used to determine the drill hole trajectories.

All records received from the survey company are checked for accuracy and then captured and stored in the electronic databases.

7.5.3 Logging Procedures

No core photography is undertaken.

Figure 7-1: Location of Samples Collected from the VCR to Date



Drill core logging is quantitative and qualitative. The following information is recorded:

- lithology;
- packing density;
- roundness;
- sorting;
- contact type, grain/pebble size;
- sediment maturity; and
- mineralisation; and alteration.

Observations are captured on the diamond drilling database by geologists. The logs are checked by the Senior Geologist prior to sampling.

7.5.4 Drilling Results

A total of 2,787 surface holes have been drilled, totalling 50,460m. The VCR surface drilling results are too voluminous to be presented in the TRS. The results have, however, been included into the geological modelling and Mineral Resource estimation process.

A summary of the drilling, by year is presented in Table 7-1. The drill holes have been drilled to a maximum depth of 3,833m below surface.

Table 7-1: Summary of Drilling at Kusasalethu

Period	Company	No. Holes	Surface (m)	Underground (m)
1962 - 1979	Boart Longyear	84	9,898	5,310
1980 - 1989	Boart Longyear	810	37,820	40,997
1990 - 2001	Boart Longyear	1,002	2,742	57,977
2002 - 2009	Lesedi	427	0	21,310
2010 - 2022	Rosond	523	0	31,660
Total		**2,846**	**50,460**	**157,254**

7.5.5 Core Recovery

Reef intersection “acceptability” is categorised according to the criteria set out in Table 7-2. Geological acceptability of drill hole intersections is determined by geologists based on, amongst others, drill core condition and faulting. The acceptability is verified for each reef intersection before the assay results are used for Mineral Resource estimation. Where possible, precautions were taken by the drilling contractors to utilise core barrels to ensure maximum recovery.

Table 7-2: Drill Hole Acceptance Criteria

Category	Comment
Acceptable	100% core recovery in the reef zone, or very minor loss due to reef chipping. No evidence of faulting within the reef horizon or at either contact with hanging wall or footwall lithologies.
Minimum value	Light to moderate disking of core in the core barrel due to drilling and/or ground conditions. Visual observations indicate that the conglomerate portion of the reef is usually more prone to disking, resulting in possible gold loss.
Faulted minimum value	If the fault loss is considered to be minor, this term may be used if the geologist is certain that only low-value internal quartzite is missing from the intersection.
Not acceptable	Heavy disking of core which may indicate core loss, partial known core loss due to grinding. Also faulting of any description within the reef zone.

In accordance with available historic data, an average core recovery of 95% was achieved for surface drilling.

7.5.6 Sample Length and True Thickness

In areas where drill holes intersect the reefs at obtuse angles, the sampled width is corrected for true thickness using the angle of intersection and the drilled width. The true thickness is used to determine the value the gold content of the reef.

7.6 Underground Drilling Campaigns, Procedures, Sampling, Recoveries and Results

Underground exploration drilling has been on-going throughout the operational life of Kusasalethu. Most of the underground drill holes used in the estimation of the current Mineral Resources were drilled by AAC and AngloGold before Harmony acquired the mine.

The underground exploration strategy adopted to address the geological structure and reef locations at Kusasalethu includes the following:

- definition drilling aiming for a 100m to 200m drilling grid for optimal placement of primary haulage and crosscut development; and
- infill drilling from haulages and crosscuts at a 100m to 30m drilling spacing which is used for placement of secondary development and understanding reef existence and quality.

More drilling may be required in more complex areas and areas beyond the 200m drill spacing where geological definition is limited.

The location of the channel samples, as well as underground drillholes and surface drill holes intersecting the VCR on Kusasalethu is shown on Figure 7-1. The underground exploration drill holes vary in length depending on the target position and ground conditions, but can have a length of up to 1,500m.

7.6.1 Drilling Methods

Two types of underground drilling methods are used at Kusasalethu.

The first method involves drilling of LIB or LVB, which are drilled up to 1,500m in length. These are angled at between 0° - 90°. These drill holes are drilled using a powerful hydraulic machine to improve depth penetration and core recovery. The core sizes used for reef intersections are BX (42.0mm) or BQ (36.5mm).

The second underground method is infill diamond core drilling, which is undertaken using small hydraulic and pneumatic drill rigs. The core size used for reef intersections is AXT (35.5mm).

7.6.2 Collar and Downhole Surveys

The drill holes used for reef delineation at Kusasalethu are surveyed to confirm both position and trajectory. Drill hole collar and downhole surveys are conducted on LIBs/LVBs, as well as on the majority of the exploration drill holes drilled on the mine.

Underground drill hole collars are checked against layouts issued to diamond drilling contractors and confirmed by offsets taken underground in the workplaces.

Downhole surveying is conducted using Electronic Multi-shot System and non-magnetic north seeking Gyro tools as supplied by a certified and specialised downhole survey company. Additional surveys are conducted on all LIB/LVB drill holes for verification purposes, and the results are submitted together with the primary survey data used to determine the drill hole trajectories.

All records received from the survey company are checked for accuracy and then captured and stored in the electronic databases.

7.6.3 Logging Procedures

Logging procedures are conducted as per the Harmony company standards, which have been in place since Harmony took over Kusasalethu in 2001. Upon arrival at the on-site core yard. Drill core is marked at every meter interval. The core is then orientated so that the low point of bedding is coincident with the edge of the angle iron.

The cut line is defined by the low point of the bedding at the base of the reef zone, when viewed as per convention, from left to right in the direction of increasing depth, is drawn parallel to the core. The core is then rotated through 90° and a yellow line was then drawn parallel to the core, to define the retention half core. Logging and sampling is done by the Kusasalethu geologists. Manual core logging is done on the mine and the logs are kept on hard copy. No core photography is undertaken.

Drill core logging is quantitative and qualitative. The following information is recorded:

- lithology;
- packing density;
- roundness;
- sorting;
- contact type, grain/pebble size;
- sediment maturity; and
- mineralisation; and alteration.

Observations are captured on the diamond drilling database by geologists. The logs are checked by the Senior Geologist prior to sampling.

7.6.4 Drilling Results

The VCR surface drilling results are too voluminous to be presented in the TRS. The results have, however, been included into the geological modelling and Mineral Resource estimation process. The underground drilling is summarised, by year, in Table 7-1.

7.6.5 Core Recovery

Where possible, precautions are taken by the drilling contractors to utilise core barrels to ensure maximum recovery. Reef intersection "acceptability" is categorised as per the criteria summarised in Table 7-2.

A core recovery of 99.9% for underground drilling, with losses on underground holes primarily caused by chipping. There were minimal holes that were faulted or diced during underground drilling.

7.6.6 Sample Length and True Thickness

In areas where drill holes intersect the reefs at obtuse angles, the sampled width is corrected for true thickness using the angle of intersection and the drilled width. The true thickness is used to determine the value the gold content of the reef.

7.7 Hydrogeology

Various studies have been conducted at Kusasalethu on hydrogeology and geochemistry, in line with Water Use License ("WUL") requirements. Phase I of the study comprised an assessment of the regional groundwater use and field investigations to collect data on the groundwater regime. The information gathered during this phase was incorporated into Phase II of the study, which assessed and quantified the impacts over time with the aid of a numerical groundwater model.

For each phase of the hydrogeological study, investigative/monitoring boreholes are drilled to supplement the existing monitoring programme, and in line with recommendations by independent Specialists that were appointed with each phase. The most recent hydrogeological study was done in 2021, which started with the updating of the numerical groundwater flow and mass transport model for Kusasalethu mine.

As part of the study, eight additional groundwater monitoring boreholes were drilled and will be incorporated into the existing groundwater monitoring programme. As part of the 2021 hydrogeological study, two quaternary catchment groundwater monitoring localities were included.

7.8 Geotechnical Data

Geotechnical data is gathered independently by the Rock engineering manager. This data is derived by taking samples from exploration boreholes for especially uniaxial compressive tests bi-annually.

7.9 Commentary on Exploration

Surface drilling was used as the initial exploration drilling, and this was later infilled to provide sufficient detail for geological modelling and Mineral Resource estimation. The underground infill drilling system is in place to improve data density in specific areas and are drilled from the underground development access drives. Drilling and logging practices are based on the Harmony company standards, which have been in place since Harmony took over Kusasalethu in 2001. The QP is of the opinion that the quality and quantity of the exploration methods and information gathered is sufficient to support the estimation of Mineral Resources and Mineral Reserves.

8 Sample Preparation, Analyses and Security

Section 229.601(b)(96) (8) (i-v)

This section summarises information relating to the sample preparation on site through to the laboratory preparation and analysis.

8.1 Sampling Method and Approach

Sample types used to support both production and geological exploration include diamond drill core samples and channel (chip) samples. Sampling is carried out in accordance with the Harmony's internal sampling procedure guidelines, which have been in place since 2001.

8.1.1 Channel Samples

A standard practice for the sampling of stopes and development ends is required to ensure quality of sampling information and safety in its collection. Channel sampling is undertaken by a sampler, according to industry best practice, as well as the internal Underground Sampling Procedure.

Samples are chipped, using a standard chisel and mallet, from the advancing face from within clearly measured and marked channel sections, including the 2cm hanging wall and footwall width. The samples are individually chipped out to an even depth (1 to 2cm to replicate the same amount of sample as would be recovered from half BX core), commencing from the bottom sample. The remainder of the samples are chipped in succession up the face. Contamination of samples is reduced to a minimum by starting at the bottom.

A sampling dish is used to collect the chipped samples. If any contamination occurs from the surrounding rock, the sample is discarded and the section re-sampled. The samples are transferred from the sample dish to the sample bag. The sample dish is cleaned thoroughly before using it for the next sample. Samples are bagged, labelled, sealed and weighed and transported to surface.

Samples are taken from underground by the samplers and delivered to the mine surface, where they are later collected by the laboratory. All inter-person transfers are recorded. This process continues until the samples are delivered to the laboratory, where the chain of custody form is signed evidencing the date and time of sample receipt.

An adequate mass of each sample is collected (±300g) to allow sufficient sized aliquots to be analysed at the designated laboratory. Underground chip sampling is subject to a mass measurement versus theoretical mass analysis.

8.1.2 Core Samples

Diamond drilled core is transported in sealed core boxes to the secured storage facility in the Geology office, under the supervision of a Senior Geologist. Once there, the core is logged and sampled according to Harmony's Drill Hole Sampling Procedure.

Where possible, the entire channel width intersected in each drill hole is split using a diamond drill core cutter and one half of the sample is bagged, labelled with a unique sampling number, and sent to the designated laboratory for assay. The remaining half is retained for future reference.

If the core condition is such that a successful cut cannot be achieved, then the whole core is submitted for assay. Pertinent data captured during sampling includes sample width (cm), mass, core lithological intersection angles and a detailed visual description of the reef. The data is recorded in the drill hole database together with the unique sample number, collection date and spatial location.

All samples are assessed for quality and signed-off by the Senior Geologist for completeness and auditability, prior to laboratory dispatch.

8.2 Density Determination

The relative density ("RD") of samples was determined through the work conducted in the period by AAC from 1980 to 2000. The dry mass and the submerged mass of the samples in water were measured and the density was calculated. Tests have occasionally been conducted thereafter on samples collected from the working places.

A relative density of 2.78 is used for tonnage calculations, which is based on historical analytical work conducted by the previous owners, AAC, and is therefore acceptable for use in tonnage calculations.

8.3 Sample Security

Chip samples are bagged, sealed and transferred to surface on the same day as they are collected. Chain-of-custody for chip samples exists from sampler to the Sampling Team Leader to truck driver to laboratory official.

Cores are delivered to the core yard at the end of each day's drilling. Chain-of-custody for drill hole samples exists from Geologist to Sampling Team Leader to truck driver to laboratory official.

Samples are stored in a secured facility and can only be transported by a permit holder for transporting gold bearing material. Waybills and registers are checked and signed off by security. The samples are received by the laboratory, from the mine, in locked containers with seals. The sample labels are scanned at the designated laboratory and the batches compared to the submitted sample sheets. The scanned bar codes are kept at the laboratory and compared to the work sheets that are automatically created on the system. Sample lists submitted by the mine are used to compare what is received at the laboratory.

8.4 Sample Storage

All pulp samples of drill hole intersections and underground chip samples are kept for a few months at the laboratory and later discarded. The remaining half of the sampled core of drill holes is kept at the core yard for future reference.

8.5 Laboratories Used

All samples are sent to the external SGS South Africa (Pty) Limited ("SGS") laboratory (previously Performance Laboratories (Pty) Limited) in Randfontein for preparation and assay. The laboratory is ISO/IEC 17025:2017 certified for chemical analysis by the South African National Accreditation System ("SANAS")(No. T0265).

8.6 Laboratory Sample Preparation

Upon receipt, the samples are dried, crushed, and milled to the appropriate size. Routine screen tests on pulps by the assay laboratory are used to check comminution of samples to contract specification. The contract specification is that the comminution should be 90% to 95% passing 75µm.

The grind should not be less than 90% passing 75µm nor should it be more than 95% passing 75µm. If the grind is less than 90% passing 75µm (under milled), not all the gold will be liberated. If more than 95% passing 75µm (over milled), the risk is run of smearing and rolling the gold particles (adversely affecting the Au assay/value obtained). This standard is applicable to all gold assay methods.

The total percentage mass loss on each sample should not exceed 2%.

8.7 Assaying Methods and Analytical Procedures

For the period 1 January 2021 to 31 December 2021, Kusasalethu submitted a total of 27,606 samples for analysis of gold and 46 samples for analysis of uranium using the following analytical techniques:

- gold: 30g fire assay with a gravimetric finish. The lower detection limit is 0.2g/t.; and
- uranium: X-ray diffraction ("XRD") analysis.

Pulverised samples (85% passing 75 microns) are fused with a suitable flux. The flux combines with the gangue to form a fluid slag and the litharge in the flux is reduced to minute globules of lead.

The rain of lead globules, falling through the molten mass, collects the particles of precious metal and coalesces into a button at the bottom of the crucible. For effective collection, the composition of the flux, the temperature and its rate of increase is optimised. On cooling, the slag solidifies and is separated from the lead button containing the precious metals.

During cupellation, lead is oxidised to molten litharge, which wets the inner surface of the hot porous cupel and is absorbed. The molten precious metals are not absorbed because of their high surface tension, and because they do not oxidise. Parting is the separation of silver from gold alloys by acid dissolution of the silver. Where gold is not soluble, silver is readily soluble in hot nitric acid.

The prill after parting, has the black amorphous appearance of sponge gold which must be annealed at 800°C. After annealing, the gold contracts into the form of a coherent, malleable prill of the classic golden yellow colour. The mass of the prill is measured on an assay balance. To ensure that a high standard of analysis is maintained, each step of the analytical process and procedure, including the adherence to safety standards, is checked by a supervisor.

8.8 Sampling and Assay Quality Control ("QC") Procedures and Quality Assurance ("QA")

The assessment of assaying accuracy and precision is carried out using Certified Reference Materials ("CRMs"), blanks and duplicates. CRMs, blank samples and duplicate samples are added to the underground chip samples and drill hole core samples sent to the assay laboratory.

If the CRM or blank sample has been deemed to have failed, the entire batch of samples assayed with this failed QAQC sample must be identified. A request must then be sent to the laboratory requesting the laboratory to repeat the assay procedure on all samples within the batch.

A second CRM or blank sample is provided to the laboratory to include with the batch of samples. Should the batch of samples fail the QAQC standards again, these samples are excluded from the sampling database (not captured in the sampling system), and the panel/drill hole will have to be resampled if necessary. In addition, regular audits of the laboratory processes and facilities are conducted by mine evaluators and regional experts to monitor compliance and quality controls.

8.8.1 Field QAQC

Blank samples are submitted to monitor the possible contamination in the fusion process stage of the analysis at the laboratory. High- and low-grade CRMs are inserted to monitor the accuracy of the analytical methods. This ensures that the full range of gold categories is covered.

Duplicate samples are submitted to monitor precision of the analytical methods. Pulverized primary samples are also selected at random and re-assayed.

Harmony inserts blanks, or CRMs obtained from African Mineral Standards ("AMIS") and duplicates into their sample stream. inserts blanks, or CRMs obtained from AMIS and duplicates into their sample stream. The number of QAQC samples inserted by Harmony for the sampling period 01 October 2020 to 31 August 2021 is presented in Table 8-1.

Table 8-1: Field QAQC Samples

Type	Total No.
Primary Samples	35,019
Blanks	612
CRM	609
Duplicates	616

Monthly process compliance reports are compiled as part of the quality control on the sampling process. Standard formats are used and recorded for audit purposes. Process compliance reports on the chipping personnel are also compiled in order to check the quality of the chipping. These observations are made weekly and are also kept on record for audit purposes.

The assay results on the chip samples are reviewed daily and re-assays are requested if necessary. Chip sample data is also swapped where applicable on an annual basis or as required from the neighbouring operations. This data is used in the evaluation process for the macro estimates.

8.8.2 Laboratory QAQC

The laboratory's internal QAQC procedures include the following:

- insertion of split pulps, crushed duplicated and standards; and
- regular audits of the laboratory processes and facility are conducted by mine personnel and regional experts to monitor compliance. All audit reports compiled are assessed for remedial action by the responsible persons before next review. Monthly laboratory meetings are held with the Kusasalethu representatives to discuss concerns over the specific periods.

8.8.3 QAQC Results

Password-protected Microsoft Excel spreadsheets are used to assess results of the QC samples. This is undertaken to validate the accuracy of the laboratory assay data and ensure a high level of confidence in the assay results used in the estimation of Mineral Resources.

If results of any of the CRM samples fall outside two standard deviations of the expected value for that particular CRM, they are deemed to have failed (i.e., they plot outside the acceptable tolerance limit). Portions of the batches that fail this criterion are queried with the laboratory and those samples are re-assayed.

The degree of bias is also monitored by comparing the calculated mean value to the expected value. Consistent failure of a standard and the bias to the low or high side of a standard, are cause for concern and acted on as soon as a trend is observed. All concerns are addressed with the laboratory directly.

Results of the Kusasalethu quality control samples and the performance of the CRM or standard samples is summarised in Table 8-2 and Table 8-3, respectively.

Table 8-2: Summary of Analytical Quality Control Data

Quality Control Material Type	No. of Samples Submitted	No. of Failed Samples	Action Taken
CRM	609	28	Failed/warnings regarding internal checks at the laboratory.
Blanks	612	0	
Duplicates	616	0	

Results of the CRMs are used to identify any issues with specific sample batches, and biases associated with the laboratory to which primary samples are sent. Control charts are produced to demonstrate performance of the laboratory's sample preparation and analytical procedures.

A total of 1,837 aliquots (portions of larger samples) of the material were submitted to the laboratory and 28 of those received warnings but not failures i.e., they plotted on the acceptable tolerance limit of ±2 standard deviation from the expected value. Of note however, is 38% of the duplicate pulps for the low-grade samples (below 4.7g/t) fell outside the accepted hard value variance of 20%. This is a result of the known high nugget effect on the mine. Hard plots for medium and high grade were at 14% and 7%, respectively

Table 8-3: Summary of Kusasalethu CRM Performance

Standard	CRM Alias	Certified Value (g/t Au)	Kusasalethu (±2 STD)		SGS Randfontein			
			Upper Limit (g/t Au)	Lower Limit (g/t Au)	Analysis	Ave. (g/t)	Outliers & Failures	Bias (%)
Wits Au	AMIS0429	22.93	23.46	22.40	FA	23.00	0%	0%
Greenstone Belt Au	AMIS0441	2.44	2.55	2.33	FA	2.50	0%	2%
Wits Au	AMIS0465	14.80	15.45	14.15	FA	15.00	0%	1%
Wits Au	AMIS0554	7.88	8.35	7.42	FA	7.90	0%	0%
Greenstone Belt Au	AMIS0558	5.45	5.67	5.23	FA	5.60	0%	2%
Greenstone Belt Au	AMIS0559	12.01	12.42	11.60	FA	12.10	0%	0%
Wits Au	AMIS0705	12.91	13.71	12.11	FA	13.40	0%	3%
Wits Au	AMIS0721	8.32	8.57	8.07	FA	8.20	2%	-2%
Wits Au	AMIS0722	7.30	7.67	6.93	FA	7.30	0%	1%

Note: FA - Fire assay

8.9 Comment on Sample Preparation, Analyses and Security

In the opinion of the QP that:

- the drill core sampling method adopted at Kusasalethu is appropriate for the Witwatersrand and VCR-type mineralisation;
- the underground chip sampling is representative of the channel sampled;
- the sample preparation, security and analytical procedures followed for gold grade determination are adequate; and
- the results of the QAQC assessment have been appropriately addressed to ensure that the assay results of the primary samples are adequate for Mineral Resource estimation.

9 Data verification

Section 229.601(b)(96) (9) (i-iii)

The dataset used for model update comprises chip samplings, underground boreholes/drill holes and surface boreholes. These inputs need to be checked and verified beforehand to ensure that the correct data is used for the model generation. This database is protected through administration rights allocated to an authorised administrator.

9.1 Data Verification Procedures

This is a time-consuming phase of any geostatistical evaluation process. Kriging uses the sample value and spatial location of all sample points, and as such these parameters need to be checked. The steps followed are:

- the drill hole data gets checked against the original logs by the senior geologist before he inputs the values into the Microsoft Excel-based database;
- duplicate checking – Duplicate samples can easily be introduced to the sampling database through digitising the same samples from adjacent assay tracings, duplication of data inputs in the electronic sampling system or incorrect projections from stope sheets. After importing values into the evaluation software, a duplicate checking macro is run to identify and remove exact duplicates and "offset" duplicates from the database. "Offset" duplicates are samples located close together (within 50cm of each other) and have the same value;
- removal of obvious errors – The data is checked for obvious errors, such as negative values, blank values or default values. Any suspect value needs to be checked and corrected, and if no validation can be found, it should be removed from the database;
- spatial data check – The data is plotted spatially by means of a post-plot to ensure that the data is plotting in the correct position. Any co-ordinate error needs to be checked and corrected. This process cannot be put into a macro, and needs to be done manually; and
- the primary assay results captured in the database were validated by spot checking a selection of drill holes used in the current Mineral Resource estimate.

The QP did not identify any critical errors in the database.

9.2 Limitations to the Data Verification

There are no limitations to this process as the verification methodology is over inspected by a central audit team and also, sample data has been integrated into the Harmony standard software system utilised for reporting of Mineral Resources and Reserves.

9.3 Comment on Data Verification

The QP is of the opinion that the Kusasalethu drill hole and sample database is reliable and adequate for the purposes Mineral Resource estimation.

10 Mineral Processing and Metallurgical Testing

Section 229.601(b)(96) (10) (i-v)

The ore mined from Kusasalethu is processed at the Mponeng Gold Plant, located adjacent to the Mponeng shaft (Figure 3-1). The Mponeng processing facility has been in operation since 1986 and, as such, the processing method is considered well established for the style of mineralisation processed. The plant makes use of historical trends and data as a basis for the forecast processing parameters, except for instances where projects are planned for optimisation, for which appropriate test work is done.The ore processed at the Mponeng Gold Plant is a blend of ore received from the Mponeng Mine and the Kusasalethu Mine. The latest test work performed was in 2019 and analysed these blends to determine optimal conditions for processing.

10.1 Extent of Processing, Testing, and Analytical Procedures

The objective of the test work, performed by Mintek SA ("Mintek"), was to evaluate the gold extraction techniques at the Mponeng Gold Plant under a range of conditions. This test work was conducted to ensure optimal conditions for processing gold at the plant. The following conditions were evaluated:

- grind size;
- leach residence time;
- sodium cyanide (NaCN) concentration;
- carbon contact time; and
- composite feed material blended at different ratios.

10.2 Degree of Representation of the Mineral Deposit

Two samples, sourced from Mponeng and Kusasalethu ores at the front of the mill, were sent to Mintek. Each sample weighed approximately 20kg and had a complete particle size distribution ("PSD") of below -1.7mm. The head grade of the samples is presented in Table 10-1 and may be considered as representative of the ores being mined at each site.

Table 10-1: Average Head Grades of Samples

Ore	Gold Grade (g/t)
Mponeng	7.34
Kusasalethu	9.43

10.3 Analytical Laboratory Details

The metallurgical test work was carried out at Mintek, by the company's Analytical Services Division. This division specialises in geochemical and metallurgical analyses. The laboratory is ISO 17025 certified.

10.4 Test Results and Recovery Estimates

The results of the analysis by Mintek are presented in Table 10-2. The optimal plant recovery was achieved on Composite 2, at a ratio of Mponeng ore to Kusasalethu ore of 60:40.

Table 10-2: Results for the CIP Tests

Ore	Gold grade (g/t)	Carbon (g/t)	Percent Milled (%)	Lime Consump. (kg/t)	Recovery (%)
Kusasalethu	9.43	265	90	0.61	94.60
Kusasalethu (Sample 2)	9.43	210	80	0.58	94.00
Composite 1 (Kusasalethu 30:70 Mponeng)	7.82	210	-	0.55	97.20
Composite 2 (Kusasalethu 40:60 Mponeng)	8.17	201	-	0.47	97.60

10.5 Commentary on Mineral Processing and Metallurgical Testing

Ore is fed into the Mponeng Gold Plant at the optimal feed ratio as determined by the metallurgical test work.

11 Mineral Resource Estimate

Section 229.601(b)(96) (11) (i-vii)

The narrow-tabular nature of the VCR at Kusasalethu lends itself to the estimation of grade and thickness in two-dimensional ("2D") block models, without the requirements for geological wireframes. An independent process of building a set of 3D wireframes of the structural interpretation to inform mine planning and the Mineral Reserve estimates is also undertaken.

The Mineral Resources for Kusasalethu have been estimated in geological domains using geostatistical parameters that reflect the variability of the data and data spacing, using a customized script in Datamine™ Studio 3 ("Datamine™") modelling software. This allows the steps in the process to be easily audited.

11.1 Geological Database

The Kusasalethu Mineral Resource estimate is based on the surface drilling, underground drilling and underground chip sampling data obtained up to 30 December 2021. The database was exported from the electronic database to Datamine modelling software.

The VCR validated database contains a total of 2,846 surface and underground drill holes (surface and underground), and 1,089,893 underground channel samples.

11.2 Global Statistics

Histograms and statistics of the raw data are calculated for each geological domain for comparison purposes. The Coefficient of Variation ("COV"), calculated by dividing the standard deviation with the mean, gives a measure of the variability of the data. A high COV (>1) represents highly variable or highly skewed data, which may require some form of capping of extreme values to lower the COV to a more reasonable value (c.1).

A summary of the global statistics, by geozone, is provided in Table 11-1.

Table 11-1: Summary of the Gold Assay Descriptive Statistics

Geozone	No. Samples	Minimum (cmg/t Au)	Maximum (cmg/t Au)	Mean (cmg/t Au)	Variance	SD (cmg/t Au)	COV
GZ1	156,964	0.10	7,428	1,208	2,405,322	1,550	1.2
GZ2	11,228	0.80	4,059	660	734,126	1,162	1.2
GZ3	3,686	0.30	6,874	574	1,226,439	1,107	1.9
GZ4	28,520	1.00	4,096	790	810,547	1,175	1.1
GZ5	792,995	0.40	7,750	1,409	2,784,292	1,668	1.1
GZ6	23,825	0.30	7,240	1,226	2,436,122	1,560	1.2
GZ7	62,692	0.50	5,617	1,184	1,499,123	1,491	1.8
GZ8	3,349	8.00	3,125	820	494,654	817	1.4
GZ9	6,634	1.00	10,091	1,534	4,277,618	2,068	1.3
Total	**1,089,893**						

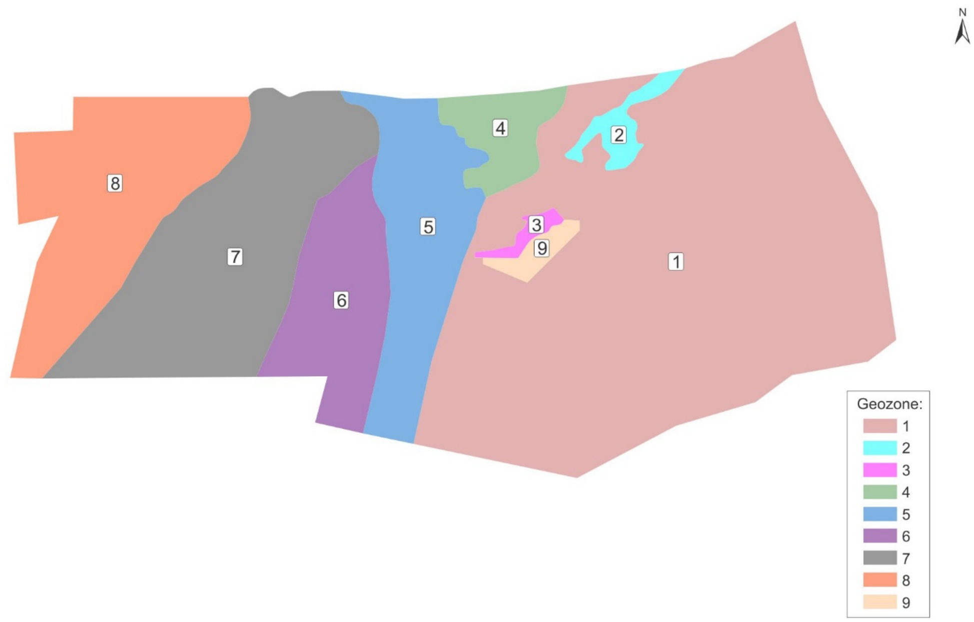
11.3 Geological Interpretation

The imported data is assigned to a series the VCR geological domains, or geozones, for generating the geological models. A plan showing the geozones is provided in Figure 11-1.

Although the geozone model used at Kusasalethu takes cognisance of structural discontinuities and the geological facies model (Section 6.3.1), the geozones are principally based on gold accumulation and channel width distributions. Geozones are selected based upon areas of similar grade or channel width and therefore may crosscut, and in some cases, subdivide the geological facies.

In the upper sections of the Kusasalethu mining right area the geozone directions reflect the predominant facies orientations, where the central portion trends northwest-southeast, while the rest of the mining area has a northeast-southwest trend. In the lower central portion of the mine the geozones converge, with the western geozones boundary having a more north-south orientation and truncating the northeast-southwest trend geozones in the eastern section of the mine.

Figure 11-1: Kusasalethu VCR Geozones



11.4 Structural Wireframe Model

A set of 3D structural wireframes is generated, representing the geological interpretation for each reef. This is informed by the geological drilling, chip sampling, underground geological mapping and survey point data (or underground pegs) data and is created in Datamine™ in order to allow subsequent mine design and planning to take cognisance of the latest geological information. These wireframes are not required for the Mineral Resource estimates.

11.5 Compositing

Channel widths were calculated from the core bed axes (“CBA”) using the cosine rule as CBA’s are measured 90° to the drill hole core axis. The different Zone Code units were extracted into unique files, which were further processed in the geostatistical procedures. This is done over the full length of the reef channel.

11.6 Capping

Outlying values (both for cmg/t and channel width) are calculated per domain at an optimal percentile using the “QUANTILE” process. The capping allows for meaningful semi-variogram modelling and avoids potential over-estimation due to extreme sample values. Capping parameters for both grade and channel width (“CW”) are summarised in Table 11-2.

Table 11-2: Grade and CW Capping Parameters

Geozone	Au Cut (cmg/t) (Max)	CW Cut (cm) (Max)
GZ1	7,428	204
GZ2	4,059	208
GZ3	6,874	121
GZ4	4,096	166
GZ5	7,750	201
GZ6	7,240	274
GZ7	1,184	234
GZ8	3,125	210
GZ9	10,091	136

11.7 Variography

The experimental semi-variogram is a descriptive statistic diagnostic tool for spatially characterizing regionalized variables and is central to the process of kriging with the set data that can be used. The semi-variogram is a mathematical function that describes how the spatial continuity of the sampled attribute changes as a function of distance and orientation.

Either an isotropic or an anisotropic model can be defined, comprising a nugget variance and up to nine individual structures, although it is rarely necessary to include more than three structures. Each structure may be either spherical, power, exponential, Gaussian or De Wijsian, although spherical models are deemed adequate for Kusasalethu.

The orientations and ranges of each geozone’s semi-variogram are used to determine the optimised set of kriging estimation parameters. The search ellipse is aligned with respect to its range and direction, to the direction of the associated semi-variogram, as well as the range distances.

11.8 Mineral Resource Estimation Methods

Grade and thickness estimates are undertaken within the domains or geozones and informed by statistical and geostatistical analysis. Channel width and gold accumulation (cmg/t), which factors both reef thickness and grade, are the two variables estimated. No change of support corrections are considered necessary as it is assumed that the differing support sizes for chip samples and borehole samples are negligible.

11.9 Estimation Parameters

The estimation method used for the local Measured Mineral Resource estimates is ordinary kriging ("OK") and for the Indicated and Inferred estimates, simple macro kriging ("SMK").

Estimates are generally kriged into 30m x 30m blocks for the Measured category, using point support data. The Indicated category estimates are kriged into 60m x 60m blocks, using the associated semi-variograms, utilising a macro kriging declustered data set. Similarly, the Inferred category estimates are kriged into 120m x 120m blocks, using the associated semi-variograms.

The minimum and maximum number of data points used is 14 - 25 for the Measured category, 8 - 20 for the Indicated category and 3 - 12 for the Inferred category. Any un-kriged areas in the Inferred category regions are then estimated using a global mean.

The Measured Mineral Resource model is constrained using the Slope of Regression Estimation Confidence and merged together with the Indicated Mineral Resource and Mineral Resource models to produce a combined kriged block model.

The distribution of the VCR gold values is show in Figure 11-2.

11.10 Density Assignment

The density currently used for tonnage calculation at Kusasalethu is an average of 2.78t/m^3. Reef volume is determined by block area multiplied by the thickness estimate. The tonnage of the reef horizon is determined by multiplying the volume by the density.

11.11 Model Validation

The QP validated the Kusasalethu Mineral Resource model using the following:

- visual comparisons with the raw drill hole data;
- comparisons of the raw drill hole data statistics with the model statistics;
- model volume; and
- visual assessment of the block model with drill hole intersections to ensure that the grades are locally honoured by the model.

The QP did not identify any critical errors in the block model.

11.12 Mineral Resource Evaluation

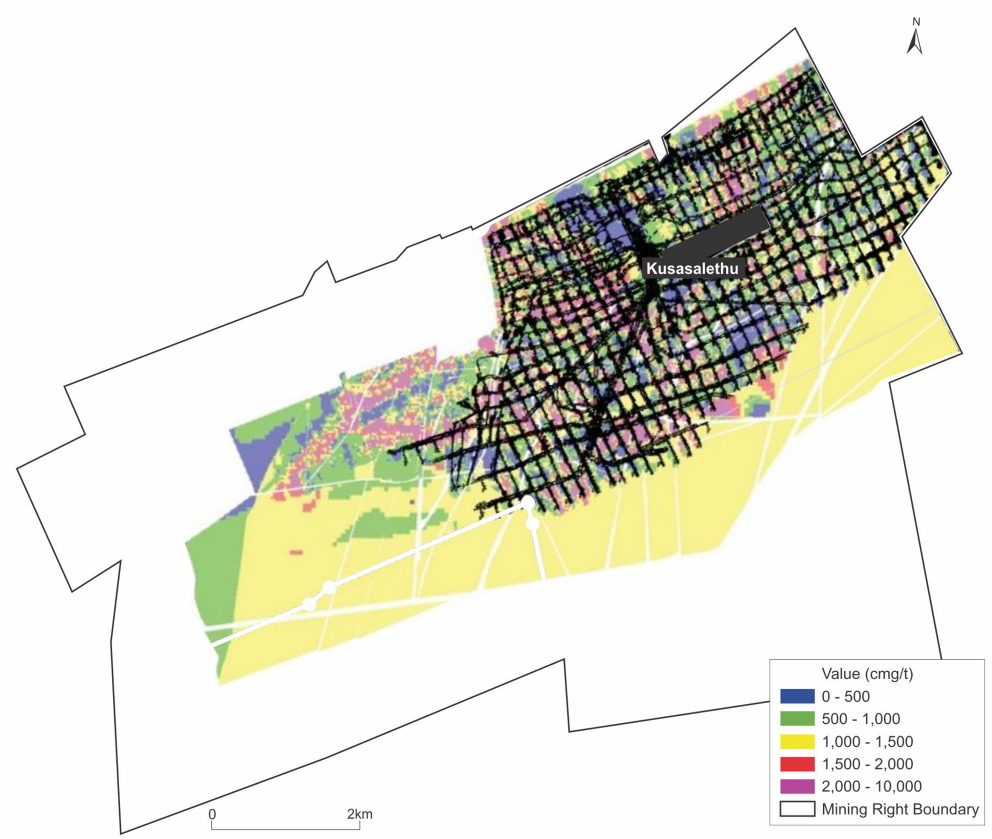
The Mineral Resource estimate for Kusasalethu is considered to have reasonable prospects for economic extraction. This is demonstrated by the results of the cash flow for the mine. The cut-off value for the Mineral Resources is determined at 1,042cmg/t gold based on the economic assumptions presented in Table 11-3 at the effective date 30 June 2022. This cut-off value represents typical costs for the mining method and preliminary mining and metallurgical recovery assumptions.

Table 11-3: Harmony Economic Assumptions (30 June 2022)

Description	Unit	Value
Gold Price	USD/oz	1,723
Exchange Rate	ZAR:USD	15.35
Gold Price	ZAR/kg	850,191
Plant Recovery Factor	%	95.5
Unit Cost	ZAR/t	4,655

The gold price was derived by the Harmony Executive Committee at Head Office. The QP considers the price to be appropriate for Mineral Resource estimation and is slightly higher than that used for estimating Mineral Reserves (USD1,546oz). The operating costs (both mining and processing) are based on historical performance and budget.

Figure 11-2: Distribution of Gold Values on the VCR



11.13 Mineral Resource Classification and Uncertainties

The Kusasalethu Mineral Resources have been classified into Measured, Indicated and Inferred categories, according to the S-K 1300 definitions. The classification is based on geostatistical and geological confidence.

For the geostatistical confidence, the Measured Mineral Resource model is constrained by the Slope of Regression Estimation Confidence, and the Indicated and Inferred Mineral Resource models are constrained by their kriging estimation parameters.

The QP then considered if the geostatistical confidence boundaries required modification based on the geological confidence in an area. The geological confidence could include confidence in the sedimentary facies and mineralisation model, or confidence in the structural model.

A 1.90% structural model discount has been applied for Measured Mineral Resource and 2.92% for Indicated and Inferred Mineral Resource, to account for any unknown geological structures that cannot be adequately defined by the available geological information ahead of the mining faces.

The application of the criteria above results in the following set of approximate sample spacings for each Mineral Resource category:

- >60m x >60m for Inferred Mineral Resource;
- 60m x 60m for Indicated Mineral Resource; and
- 6m x 6m for Measured Mineral Resource (underground channel sampling).

11.14 Mineral Resource Estimate

The Mineral Resources for Kusasalethu were originally prepared, classified and reported according to SAMREC, 2016. For the purposes of this TRS, the Mineral Resources have been classified in accordance with § 229.1302(d)(1)(iii)(A) (Item 1302(d)(1)(iii)(A) of Regulation S-K). The location of the VCR Mineral Resources in relation to the mining right boundary is presented in Figure 11-3.

The Mineral Resource estimate, as at 30 June 2022, exclusive of the reported Mineral Reserves is presented in Table 11-4. These estimates account for mining depletion recorded from July 2021 to June 2022. The QP compiling the Mineral Resource estimates is Mr J Ackermann (Ore Reserve Manager), who is employed by Harmony.

Factors that may affect the Mineral Resource estimates include the following:

- gold price assumptions;
- exchange rate assumptions;
- operating and capital cost assumptions;
- gold recovery assumptions;
- geology-related risks; and
- operational risks.

It is important to note that the combined Measured and Indicated Mineral Resources, inclusive of Mineral Reserves, are carried forward to the Mineral Reserves conversion and subsequent LOM planning.

Figure 11-3: Location of Kusasalethu VCR Mineral Resources and Mineral Reserves

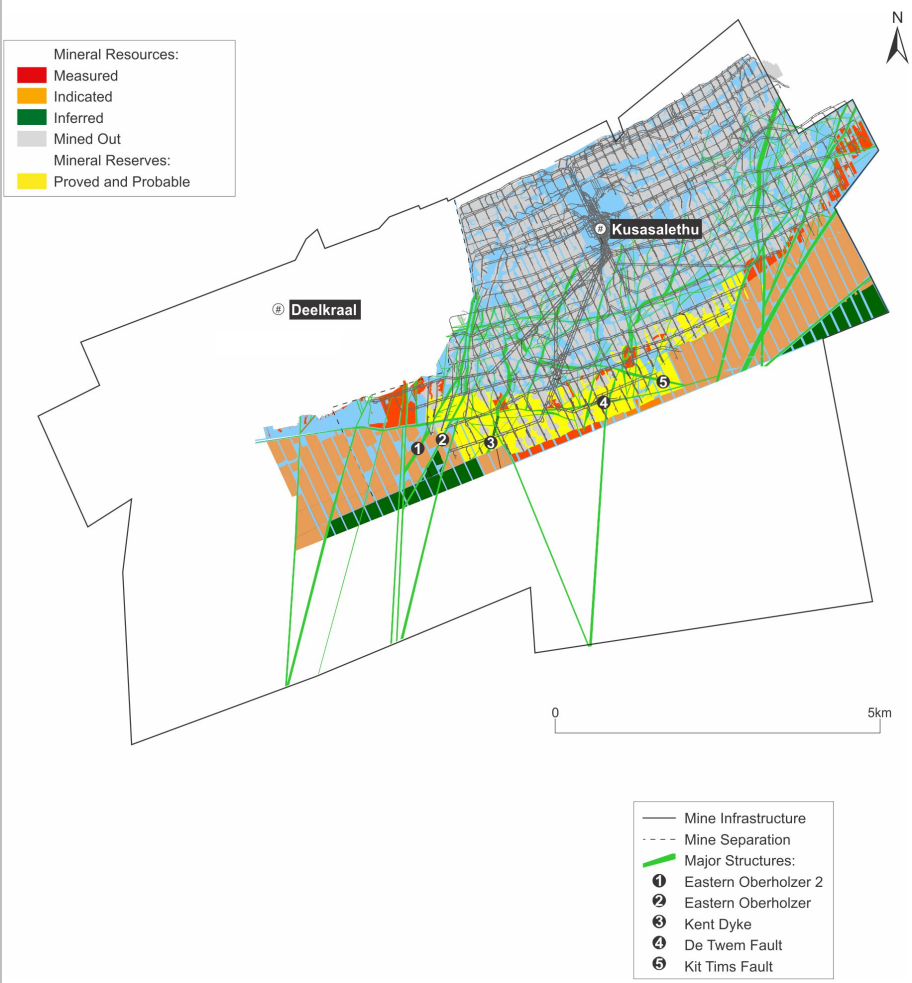


Table 11-4: Summary of Kusasalethu Mineral Resource Estimate as at 30 June 2022 (exclusive of Mineral Reserves)[1-8]

METRIC

Mineral Resource Category	Tonnes (Mt)	Gold Grade (g/t)	Gold Content (kg)
Measured	0.990	13.03	12,906
Indicated	8.545	9.28	79,333
Total / Ave. Measured + Indicated	**9.535**	**9.67**	**92,239**
Inferred	2.025	8.85	17,927

IMPERIAL

Mineral Resource Category	Tonnes (Mt)	Gold Grade (oz/t)	Gold Content (Moz)
Measured	1.091	0.380	0.415
Indicated	9.419	0.271	2.551
Total / Ave. Measured + Indicated	**10.511**	**0.282**	**2.966**
Inferred	2.232	0.258	0.576

Notes:

1. Mineral Resources are reported with an effective date of 30 June 2022 were originally prepared, classified and reported according to SAMREC, 2016. For the purposes of this TRS, the Mineral Resources have been classified in accordance with § 229.1302(d)(1)(iii)(A) (Item 1302(d)(1)(iii)(A) of Regulation S-K). The Qualified Person responsible for the estimate is Mr J Ackerman, who is Ore Reserve Manager at Kusasalethu, and a Harmony employee.

2. The Mineral Resource tonnes are reported as in-situ with reasonable prospects for economic extraction.

3. No modifying factors or dilution sources have been included to in-situ Mineral Reserve which was subtracted from the SAMREC Resource in order to obtain the S-K 1300 Resource.

4. The Mineral Resources are reported using a cut-off value of 1,042cmg/t determined at a 90% profit guidance, and a gold price of USD1,723/oz.

5. Tonnes are reported rounded to three decimal places. Gold values are rounded to zero decimal places.

6. Mineral Resources are exclusive of Mineral Reserves. Mineral Resources are not Mineral Reserves and do not necessarily demonstrate economic viability.

7. Rounding as required by reporting guidelines may result in apparent summation differences.

8. The Mineral Resource estimate is for Harmony's 100% interest.

11.15 Audits and Reviews

The Mineral Corporation (Pty) Limited ("Mineral Corporation") conducted an external audit of the current Mineral Resource and Mineral Reserve estimates in August 2021. Its findings were presented in report No. C-HGC-R&R-1950/1179.

Mineral Corporation concluded that Mineral Resources and Mineral Reserves as at June 2021 can be disclosed and signed-off by the QP according to internationally recognised mineral reporting guidelines and rules.

11.16 Mineral Resource Reconciliation

The combined Measured and Indicated Mineral Resource gold content estimate for 2022, exclusive of Mineral Reserves, decreased by 31%, from 4.317Moz gold as at June 2021 to 2.966Moz gold as at June 2022.

The major difference in the reconciled Mineral Resources between June 2021 and June 2022 is attributed to a 19% increase in Mineral Resource cut off. This was directly driven by a 13% unit cost increase (from ZAR4,134/t to ZAR4,655/t) and only a 4% increase in the gold price used (ZAR850/g versus ZAR820/g). Further to this there was a decline in mineral inventory grade by 1,5% (979cmg/t to 964cmg/t).

11.17 Comment on Mineral Resource Estimates

In the opinion of the QP:

- methodologies applied in estimating the Mineral Resource are subjected to scrutiny and sign off by a Qualified Person and are based on historical parameters;
- there is no known geological data that was not used that could materially influence the estimated quantity and quality of the Mineral Resource;

- there is no obvious geological, mining, metallurgical, environmental, social, infrastructural, legal and economic factors that could have a significant effect on the prospects of any possible exploration target or deposit; and
- the model for the Mineral Resource estimate is sound and it was not deemed necessary to consider alternative interpretations for the current Mineral Resource Statement.

12 Mineral Reserve Estimate

Section 229.601(b)(96) (12) (i-iv)

The reported Mineral Reserves are derived through a business planning process and consideration by the Chief Operating Decision-Maker ("CODM"). The business planning process comprises multi-functional reviews, including the mining, support, and service departments, that are involved in the verification of the inputs and the Modifying Factors. The CODM consists of various executive roles and responsibilities. These executives assess the profitability, revenue, and production costs. The CODM also considers capital expenditure, gold production and tonnes milled when assessing the overall economic sustainability.

12.1 Key Assumptions, Parameters, and Methods used to Estimate the Mineral Reserve

The results and assumptions derived from the business planning process extend over an 18-month period. The planning process carefully considers strategic plan directives; analysis of historical performance; realistic productivity, and cost parameters; Modifying Factors; and technical and economic studies that have demonstrated justified extraction, as applicable to specific portions of the Mineral Resources and Mineral Reserves.

The reported Mineral Reserve is an estimate of the gold as delivered to the processing plant, solely from the in situ underground tabular orebody at Kusasalethu Mine. The Mineral Reserve estimate takes several factors into account, including:

- the latest geological structure model and associated Mineral Resource models that constrain the layout for the mine design and LOM plan;
- the preferred mining method. The sequential grid mining method is employed at Kusasalethu, taking the mining and geotechnical properties of the deposit into account;
- the rock engineering considerations in the mine design. The geotechnical team designs a suitable pillar layout based on modelling results and include dip stabilizing- and bracket pillars into the mine design. A detailed mine design and schedule is then built, taking the pillar design and macroeconomic factors into consideration;
- the resultant mine design and schedule is the basis of the LOM plan and initial Mineral Reserve estimate; and
- Modifying Factors are then applied to the schedule, get to the final Mineral Reserve estimate.

The mine design, and finalised mine design and schedule, including the relevant mine design parameters and mine layout (Section 13) are derived using Microstation™ (Version 8). The Modifying Factors are then incorporated in order to derive the Mineral Reserve estimate. The location of the VCR Mineral Reserves in relation to the licence boundaries is presented in Figure 11-3.

12.2 Modifying Factors

A summary of the Modifying Factors that were applied in the conversion of Mineral Resources to Mineral Reserves for Kusasalethu is presented in Table 12-1. The Modifying Factors are consistent for Mineral Reserve estimation and mine planning. Although the Modifying Factors are based on historical operational performance, the future strategy and changes in mining conditions are considered.

Table 12-1: Kusasalethu Mineral Reserves Modifying Factors (30 June 2022)

Modifying Factor	Unit	Value
RD	t/m³	2,78
Stoping Width	cm	132,5
Gully	%	5,72
Off Reef	%	2,14
Waste to Reef	%	0,13
Flushing	%	0.16
Discrepancy	%	16,50
Mine Call Factor	%	85,92
Plant Recovery Factor	%	95,50
Mine Recovery Factor	%	82,05
Plant Call Factor	%	100,00
Mineral Reserves Cut Off	cmg/t	1100

The Modifying Factors do not include the plant recovery, on the basis that the Kusasalethu Mineral Reserve estimate represents the mineral content of the material delivered to the plant.

12.3 Mineral Reserve Estimate

The Mineral Reserves were originally prepared, classified and reported according to SAMREC, 2016. For the purposes of this TRS, the Mineral Reserves have been classified in accordance with § 229.1302(d)(1)(iii)(A) (Item 1302(d)(1)(iii)(A) of Regulation S-K).
Mineral Reserves are derived from the Mineral Resources, a detailed business plan and the operational mine planning processes. Mine planning utilises and takes into consideration historical technical parameters achieved. In addition, Mineral Resource conversion to Mineral Reserves considers Modifying Factors, dilution, ore losses, minimum mining widths, planned mine call and plant recovery factors.

The reported Mineral Reserves, as at 30 June 2022, are declared as delivered to the plant, except for the recovered gold content. This gold content is calculated after factoring in the plant recovery as a Modifying Factor. The Mineral Reserve estimate for Kusasalethu is summarised in Table 12-2. The location and classification of Mineral Reserve is presented in Figure 11-.

The QP compiling the Mineral Resource estimates is Mr J Ackermann, who is employed by Harmony.

Table 12-2: Kusasalethu Mineral Reserve estimate (30 June 2022)[1-5]

METRIC

Mineral Reserve Category	Milled Tonnes (Mt)	Gold Grade (g/t)	Gold Content (kg)
Proved	1.313	6.97	9,153
Probable	0.031	6.84	210
Total (Proved + Probable)	**1.343**	**6.97**	**9,363**

IMPERIAL

Mineral Reserve Category	Milled Tonnes (Mt)	Gold Grade (oz/t)	Gold Content (Moz)
Proved	1.447	0.203	0.294
Probable	0.034	0.199	0.007
Total (Proved + Probable)	**1.481**	**0.203**	**0.301**

Notes:

1. The Mineral Reserves were originally prepared, classified and reported according to SAMREC, 2016. For the purposes of this TRS, the Mineral Reserves have been classified in accordance with § 229.1302(d)(1)(iii)(A) (Item 1302(d)(1)(iii)(A) of Regulation S-K). The Qualified Person responsible for the estimate is Mr J Ackerman, who is the Kusasalethu Ore Reserve Manager, and who is a Harmony employee.

2. Tonnes, grade, and gold content (oz) are declared as net delivered to the mills.

3. Figures are fully inclusive of all mining dilutions, gold losses and are reported as mill delivered tonnes and head grades. Metallurgical recovery factors have not been applied to the Mineral Reserve figures.

4. Gold content is recovered gold content after taking into consideration the modifying factors.

5. Mineral Reserves are reported using a cut-off grade of 1,100cmg/t determined using a gold price of USD1,546/oz gold.

The requisite surface and underground infrastructure is in place to support the Mineral Reserves. The Mineral Reserve estimate takes all sources of dilution into account, and all the Modifying Factors (Table 12-1), with the exception of the plant recovery. While the plant recovery is not used in the estimation of Mineral Reserves, it is however used in determining the economic viability of Kusasalethu.

12.4 Mineral Reserve Reconciliation

The declared Mineral Reserve estimate decreased from 0.498Moz as at 30 June 2021 to 0.301Moz as at 30 June 2022. The changes in the Kusasalethu Mineral Reserve estimate between 30 June 2021 and 30 June 2022 are attributed to depletion of 0.131Moz and an 8% decrease in planned efficiencies from 312m²/crew to 281m²/crew. There was also a decrease in the Mineral Reserve value by 3% from 1,392cmg/t to 1,351cmgt/.

12.5 Commentary on Mineral Reserve Estimate

The declared Mineral Reserves takes into consideration all Modifying Factors. The Mineral Reserves are depleted to generate the cash flows presented in Section 19 and are deemed by the relevant QP's to be appropriate and, both technically and economically achievable.

Any by-products that are recovered as part of the refining process, make up an immaterial component of the total metal inventory, and is thus not reported as part of the Mineral Reserve estimate.

There are no obvious material risks that could have significant effect on the Mineral Reserves.

13 Mining Method

Section 229.601(b)(96) (13) (i-v)

Kusasalethu is a deep level underground gold mine, currently operating at depths ranging between 2,900m and 3,300m BMD. Access to the orebody is gained through a twin shaft system from surface to 73 level. The twin sub shaft system extends from 73 level to 115 level.

13.1 Mining Operations

The VCR horizon is extracted at Kusasalethu, and mining is conducted over five levels (98 level to 113 level) using sequential grid mining techniques.

The ore mined at Kusasalethu is processed at Mponeng Gold Plant. The Kusasalethu Plant is used for processing marginal ore, and for generating backfill material for mining operations.

13.1.1 Sequential Grid Mining ("SGM")

Due to the current mining depths at Kusasalethu, the SGM method with backfill and pre-conditioning is used. The SGM method is preferred due to the variability of the VCR orebody with respect to value, and the seismic risk associated with deep level mining. The mining sequence used for breast mining is a V-shaped configuration, colloquially referred to as the "inverted Christmas tree". An underhand face configuration is adopted when mining towards the west, and an overhand face configuration when mining towards the east. The SGM method makes use of dip pillars and reduced mining spans with pre-developed tunnels, aimed at further control of stresses experienced during rock movement. An example of the mining sequence used at Kusasalethu is shown in Figure 13-1.

The selected SGM method, with breast mining as the mining direction, is a suitable mining method for underground, narrow reef mining. The layout of the primary and secondary development excavations at Kusasalethu are shown in Figure 13-2.

Primary development is done off-reef (in waste rock), while secondary development is done on-reef (in the mineralised zone). In primary development, horizontal haulages are developed from the vertical shaft, extending to the extremities of the mining level. Inter-level spacing is the perpendicular distance between two consecutive level stations underground.

Further development is done at set intervals along the haulages towards the mineralised zones in the form of crosscuts. For secondary development, an inclined excavation that connects two levels is established, referred to a raise or winze, depending on the upwards or downwards direction of the development.

A key feature of the SGM mine design is the use of non-crushing stabilizing and regional pillars as shown in Figure 13-1. During the Kusasalethu mine design process, the pillar dimensions for a particular layout and depth are determined using the assumptions and model created by the geotechnical team. More details of the geotechnical and geohydrological considerations are found in Section 13.1.

To manage the seismic risk associated with ultra-deep level mining, the SGM method is used in the current mining operations. The SGM method is employed for this deep mining approach and offers various advantages, the critical one being increased safety. A noticeable characteristic of the SGM method is that mining from the raises is advanced in only one direction at a time, directed towards the stabilizing or regional pillars.

At Kusasalethu, SGM works in conjunction with backfill support and pre-conditioning, which allows this mining method to be more effective. The SGM mining sequence also eliminates the creation of remnant pillars, reducing the risk of seismicity. Therefore, the advantages offered by the SGM method make it the preferred mining method, especially when considering the current operating depths at Kusasalethu.

Figure 13-1: Plan Showing the SGM Sequence at Kusasalethu

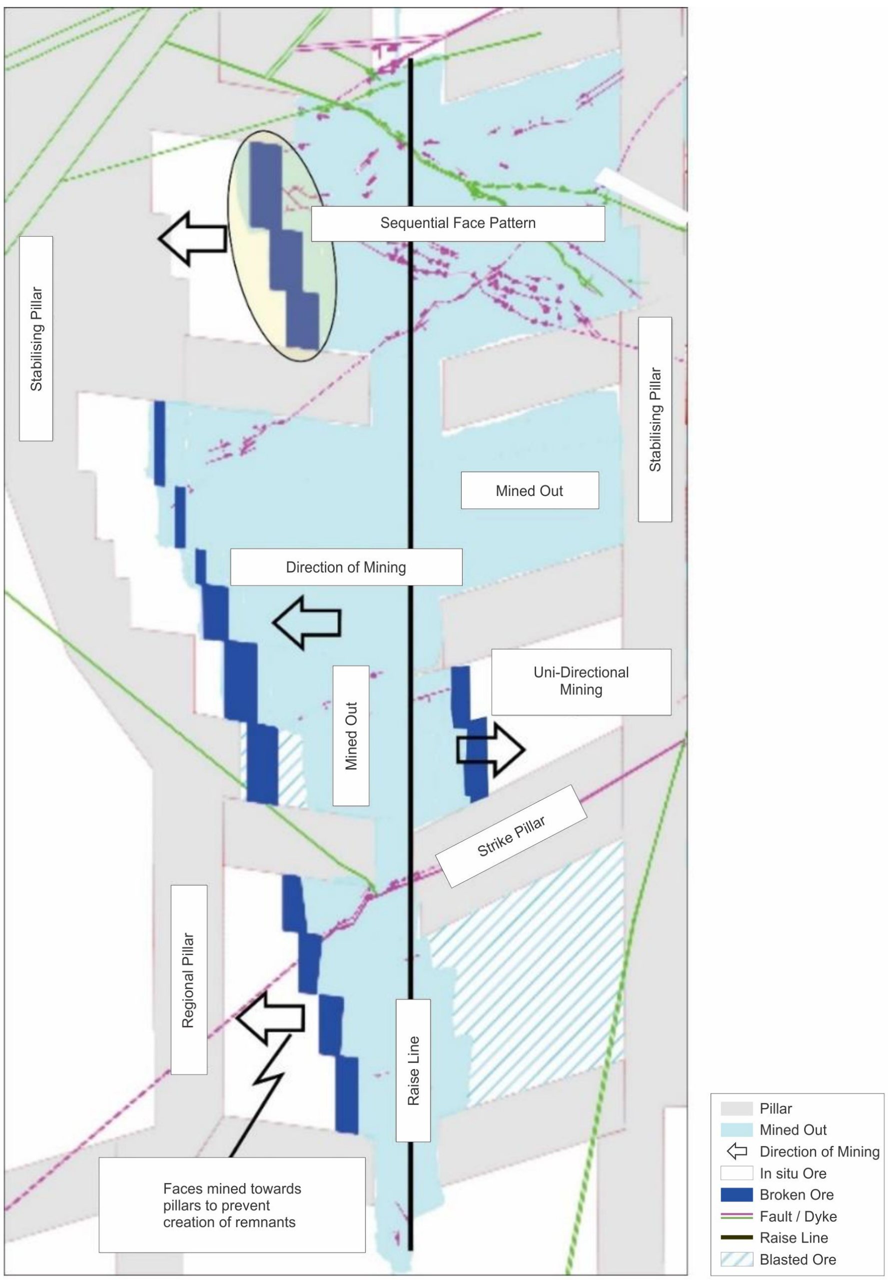


Figure 13-2: Plan View Extracted from Mine Design Software Depicting a Crosscut

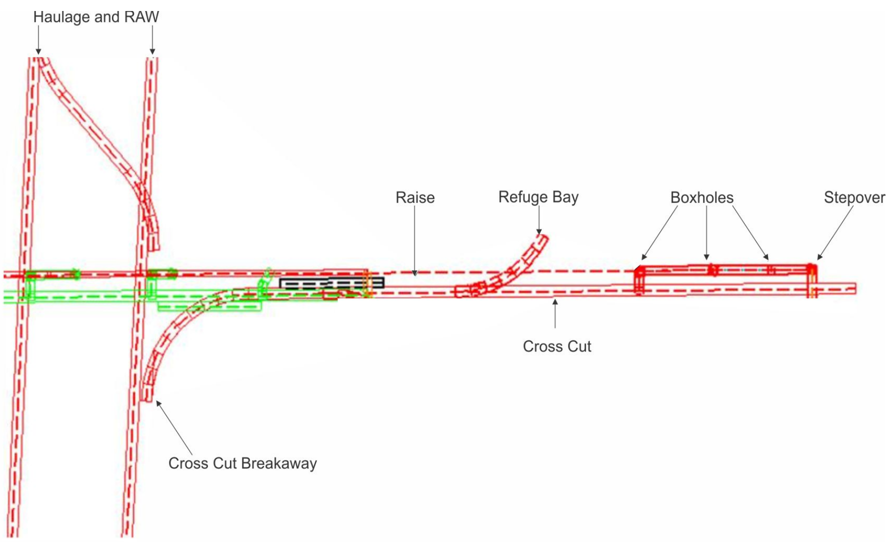
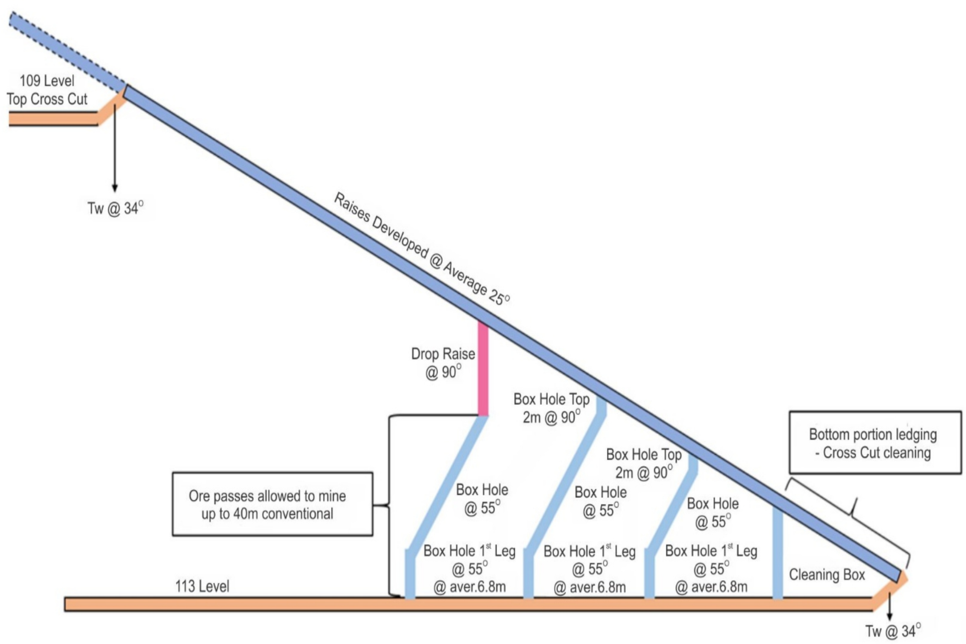


Figure 13-3: Section of the Blueprint Footwall Crosscut Design at Kusasalethu



13.2 Mine design

The mine design strategy aims at maximising the safe extraction of ore, while minimising the risk of geotechnical failures, which can result in operational disruptions and dangerous working conditions. The VCR is a tabular inclined horizon, which is almost continually developed across the Kusasalethu mining right area. The most critical parameter that varies in mining is the geology of the area. There are structure interruptions and some sedimentary features that may remove the reef in some places.

The occurrence of geological faults is also a source of groundwater intersections during mining operations which may lead to production delays, geotechnical risks, and the potential for flooding. Depending on the geology of the dyke or sill, a change in the mining direction may be required, or as in the case of low-risk scenarios the Rock Engineering department may suggest a safety and support strategy to mitigate the associated geotechnical risk. A change in mining direction may result in Mineral Resource losses, or an increase in dilution.

A mine design that is sufficiently informed, with geological data, is progressed to the mine planning phase. Mine planning is done on a macro scale as well as on a micro scale. On a macro scale, a regional cut-off grade is applied and the material below cut-off is excluded from the mining model. On a micro scale, the mining model is then subject to constraints that are applied because of the geotechnical design and other limitations.

Access to the orebody is gained through a twin shaft system from surface to 73 level. The twin sub shaft system extends from 73 level to 115 level. Section 15 provides more detail on the surface and underground infrastructural layout that supports the mining operations at Kusasalethu. Broken rock handling is track-bound, transferring the rock to a number of inter level sub-vertical transfer systems that gravity feeds to the main silos on 115 level.

At Kusasalethu, development for the VCR horizon for all the levels is in the footwall. The presence of large geological structures within the raiseline can influence these developments. As part of primary development, a crosscut is developed in the direction of mine workings. A plan view of a typical footwall crosscut is shown in Figure 13-2.

A section view of the inclined secondary development is depicted in Figure 13-3. This is used to access the reef contact, and advanced from the position of respective crosscuts. Ore is extracted from stoping panels established from the inclined development. The typical stoping panel dimensions are a panel length of 27.6m and a stoping width of 1.32m.

13.2.1 Mine Design Parameters

Mine design is done internally, using CADSMine™ (Graphics logon Version 10.1.94). The mine design parameters used are shown in Table 13-1.

Table 13-1: Key Mine Design Parameters

Parameter	Unit	Value
Regional Stability		
Dip Stabilizing Pillar Dimensions		
Strike Span	m	30
Dip Span	m	Full length of the raise
Strike Stability Pillar Spacing[1]	m	N/A
Access Haulages Middling to Reef	m	90
Primary Development		
Advance	m/month	28
Secondary Development		
Advance	m/month	20
Stoping Parameters		
Middling to Reef (VCR)	m	90
Economic Parameters		
Cut-off Grade (planning)	cmg/t	1,100

Notes: 1. Faults are clamped and therefore strike stability pillars are not included in the mine design.

The geological models, and the geotechnical parameters formulated by the rock engineers, are used as a basis of the mine planning process. The stopes are mined from the centre raise line westwards and eastwards, one direction at a time, towards the stabilizing pillars (Figure 13-1). Additional support is provided using bracket pillars, to ensure safety around major geological features.

13.3 Mine Plan Development and Life of Mine ("LOM") Schedule

The key objective with the SGM method is to create flexibility and minimise any risks posed to the production plan by ensuring that development is at least two years ahead of mineable Mineral Reserves. This strategy allows for the collection of geological information, which is then considered in the mine design process to optimise the final mine design. It enables planning and scheduling activities to be accurately sequenced, which leads to better planning, safer working conditions, and improved profitability.

The Kusasalethu Mineral Reserves model is used at the basis of the LOM Plan and scheduling exercise. The Kusasalethu Mineral Reserve estimate is modelled at a cut-off grade of 1,100cmg/t, and 1.34Mt of Mineral Reserves are included in the LOM Plan.

The Mineral Reserves can be mined using the existing surface and underground infrastructure. The Mineral Resources which cannot be accessed using the existing infrastructure have not been included in the Mineral Reserve estimate and are therefore not included in the LOM Plan.

Kusasalethu is at the end of its mining life and currently mining in harvest mode (high grade, low volumes). The operation has a remaining life of two years, with a mining rate of 672ktpa milled tonnes during the period.

The Kusasalethu mine outline is shown in Figure 6-5 and Figure 11-2.

The forecasted mining production rates for Kusasalethu are the tonnages of the LOM plan which considers the planned and available working areas, inclusive of the mines current infrastructure capacity. The annual forecasted tonnages and gold produced for the LOM is shown in Figure 13-4 and Figure 13-5, respectively.

13.4 Geotechnical and Geohydrological Considerations

Currently, the major geotechnical risk at Kusasalethu is the risk associated with flooding of the mine from the influx of water from Deelkraal Mine. To mitigate the risk, the mine design includes a series of water pillars, and dewatering boreholes drilled into the decommissioned Deelkraal underground workings.

The primary source of water in the underground workings is naturally occurring fissures. The Deelkraal water has a pH below 5 and is drained by 6 boreholes drilled from 98 level up into the old Deelkraal workings. The head pressure on the water is known to fluctuate seasonally, and it is hypothesized that this is groundwater from the overlying Transvaal Supergroup which is draining along abandoned mining operations and surface boreholes into the Witwatersrand Supergroup.

In addition to the geotechnical risks that can be caused by the existence of geological structures and the presence of water and gas, there is also a seismicity risk at Kusasalethu due to the depth of the current mining operations. Kusasalethu maintains a working geotechnical model, to manage and control seismicity risk, consisting of primary data sourced from seismometers, reinforced with data inputs from geohydrological and other seismic monitoring processes. The geotechnical model for Kusasalethu takes the latest geological structural model and the selected mining method into account to design a suitable pillar layout.

The purpose of the pillar designs, regardless of the pillar type, is to customize them to the prevailing mining conditions, and make the mine design safe, practical, easy to implement, and profitable. These pillars include dip stabilizing-, bracket- and strike pillars. The details of the pillar design are presented in Table 13-1.

The dimensions depicted for the pillars are standard and are adjusted depending on planned bracketing of geological structures, backfilling or in some circumstances, if patches of low value reef have been encountered. The Rock Engineers measure the release of seismic energy known as the energy release rate to establish backfill support requirements and pillar design limits. Studies at Kusasalethu have shown backfill as a reliable support methodology for the SGM method. Large geological structures are supported by means of clamping pillars.

Figure 13-4: Graph of the Kusasalethu LOM Plan - Tonnes and Grade

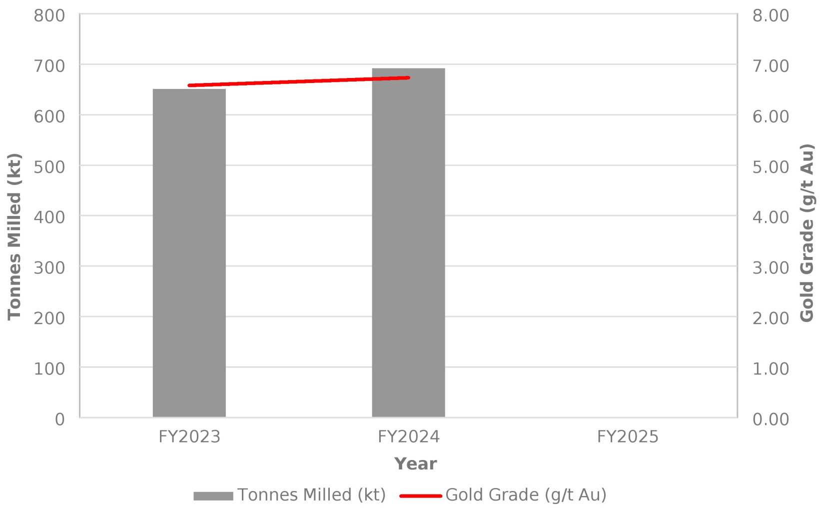
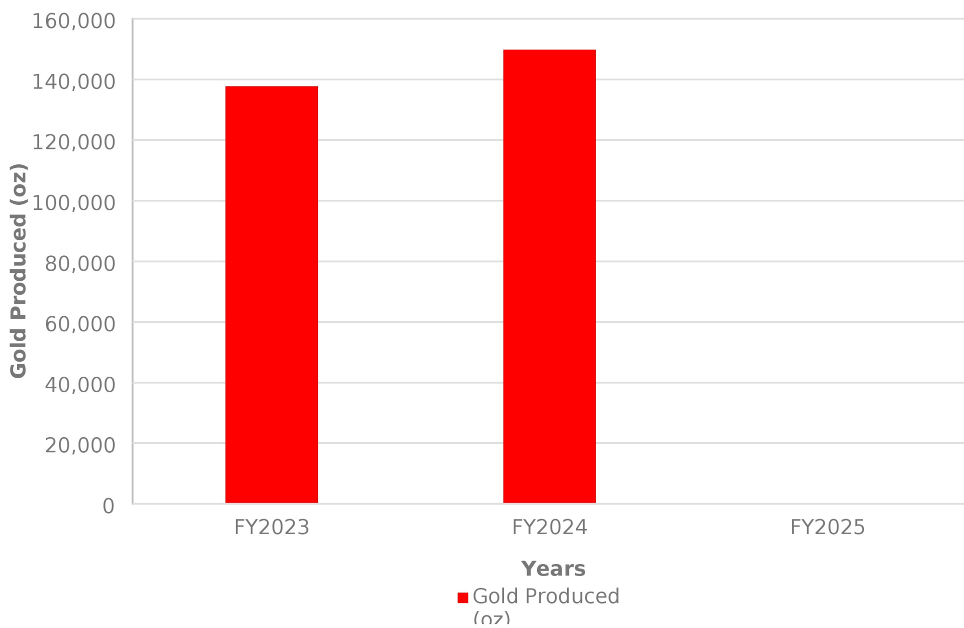


Figure 13-5: Graph of the Kusasalethu LOM Plan – Gold Produced (oz)



The geotechnical model is also used to manage and monitor the occurrence of ground water and gas intersections at the mine. There is a material risk associated with flooding and gas explosions at the mine, in the event of an unforeseen influx of uncontrolled water or gas from within the mining operations or from neighbouring mining operations. The rock fall mitigation strategy is detailed and managed through the Mining and Rock engineering Code of Practice ("COP") and communicated, adhered to, and monitored by both the mine's technical services and operational teams.

13.5 Dilution and Grade Control

Grade and dilution control is mostly achieved through improved drilling and blasting practices. Drilling accuracy is achieved by holes that are drilled parallel, aimed at being correctly burdened and that are within the stoping limits. This ensures consistent and economic rock breaking, without dilution. Kusasalethu also adopts electronic blasting technology consisting of an integrated electronic system, which allows for precision timing and improved control of rock breaking. This technique controls stoping width and protects the integrity of the footwall and hanging wall, aimed at minimising dilution.

Mine Surveyors measure stopes monthly. The Mine Surveyors are accompanied by Grade Control Officers, who assess the extent to which blasted material has been cleaned from the stope and identify any tonnage lock-ups. Follow up checks are done on previously identified and reported lock-ups, off-reef mining and areas where reef has been left in the footwall or hanging wall. On the monthly measuring day, all relevant information is extracted electronically in order for the necessary adjustments to be made to the grade and tonnage calculations.

13.6 Ore transport

The blasted ore from the stoping panels is moved with winch-operated scrapers along gullies to ore passes where it gravitates down to the loading boxes in the footwall crosscuts below the stopes. The ore is discharged into rail hoppers and transported, via front-driven locomotives, to dedicated inter-level transfer systems that gravity feed to the main silos on 115 level. Separate streams are used for waste rock and gold bearing ore.

The rock is hoisted to surface through the sub-shaft and transferred to the Rock / Vent shaft. From the Rock / Vent shaft, the ore is transported to the Mponeng plant by road to the Mponeng Plant, and the waste rock is transported by conveyor belt to the Kusasalethu plant. The waste rock is processed as a separate business unit at the Kusasalethu plant.

13.7 Mining Equipment and Machinery

Mining equipment and machinery used at Kusasalethu, according to their function, includes the following:

- haulages and associated development: compressed air hand-held drills, mechanical loaders, rail hoppers and locomotives;
- production drilling and pre-condition drilling in the stopes: compressed air hand-held drills;
- rock movement - ore: box-front chutes load ore into the hoppers, where it is trammed to the shaft, then to the inter-level tips. It is then transferred to the main loading bins for hoisting to surface;
- rock movement – waste: waste rock from development operations is loaded into hoppers and trammed and hoisted in the same manner as the ore movement, but waste tramming is done via dedicated waste system to prevent diluting the ore grade; and
- ancillary equipment: Small articulated dump trucks, graders, and crawler mounted bulldozers for dump, waste and marginal ore movement also support the Kusasalethu Mine operations.

13.8 Mining Personnel

Kusasalethu is a labour-intensive mining operation. The mine uses an 8-hour shift system, operating a 2-shift cycle per day. The mining personnel operating on this shift cycle are divided into workers performing development, stoping and other tasks. A crew is allocated for development and stoping. A crew is sub-divided into crews performing the following functions:

- drill and blast;

- cleaning; and
- support.

The drill and blast, and supporting crews primarily complete their tasks during the day shift, while the cleaning crew completes their task during the night shift. One development end is allocated for each crew for primary and secondary development. Development is done ahead of mining.

A panel pairing strategy is implemented for stoping. The aim of the strategy is to maximise efficiency by having less mining crews. The LOM plan is based on a hybrid plan, in which paired panels will have 20 crew members (Table 13-2) and single panels (Table 13-3) will have 18 crew members. The planned efficiencies are signed off by the Company Executive.

In addition to the primary functions noted in Table 13-2 and Table 13-3, there are supporting activities that are required during the 8-hour shift which include:

- pre-conditioning;
- support functions for mining gullies;
- backfill support;
- maintaining efficient spacing on strike; and
- in-stope support and blasting functions

The expected benefits of panel pairing are increased face time per task, better lead and lag management, increased efficiency in panel equipping, and improved efficiency overall. The benefits of panel pairing were proven in FY2021, as such the hybrid plan concept is the strategy used in the LOM plan. On average, the monthly advance is 262m²/month, using 45 crews.

Table 13-2: Mining Personnel and Functions (Paired Panels)

Mining Cycle Day and Shift	Crew No.	Function of Mining Crew	No. of Personnel
Dayshift (Drill and Blast Crew)	Panel A	Team Leader	1
Dayshift (Drill and Blast Crew)	Panel A	Rock Drill Operator	6
Dayshift (Drill and Blast Crew)	Panel A	Miner's Assistant	1
Dayshift (Drill and Blast Crew)		**Total Crew Members**	**8**
Dayshift (Support Crew)	Panel B	Team Leader	1
Dayshift (Support Crew)	Panel B	Rock Drill Operator	2
Dayshift (Support Crew)	Panel B	Stope Team Member	3
Dayshift (Support Crew)	Panel B	Winch Driver	1
Dayshift (Support Crew)		**Total Crew Members**	**7**
Nightshift (Cleaning)	Panel A	Team Leader	1
Nightshift (Cleaning)	Panel A	Winch Driver	3
Nightshift (Cleaning)	Panel A	Water Jet Operator	1
Nightshift (Cleaning)		**Total Crew Members**	**5**
Grand Total			**20**

Notes: 1. See crew no. (E1 and E2), and function of mining crew (support, break, clean) depicted in Figure 13-7.

Table 13-3: Mining Personnel and Functions (Single Panels)

Mining Cycle Day and Shift	Crew No.	Function of Mining Crew	No. of Personnel
Dayshift (Support, Drill and Blast)	Panel A	Team Leader	1
Dayshift (Support, Drill and Blast)	Panel A	Rock Drill Operator	7
Dayshift (Support, Drill and Blast)	Panel A	Stope Teams	3
Dayshift (Support, Drill and Blast)	Panel A	Winch Driver	1
Dayshift (Support, Drill and Blast)	Panel A	Miner's Assistant	1
Dayshift (Support, Drill and Blast)		**Total Crew Members**	**13**
Nightshift (Cleaning)	Panel A	Team Leader	1
Nightshift (Cleaning)	Panel A	Winch Driver	3
Nightshift (Cleaning)	Panel A	Water Jet Operator	1
Nightshift (Cleaning)		**Total Crew Members**	**5**
Grand Total			**18**

Notes: 1. See crew no. (E1 and E2), and function of mining crew (support, break, clean) depicted in Figure 13-7.

13.9 Commentary on Mining Method

The SGM method with backfill support and pre-conditioning is optimal for the mining conditions at Kusasalethu.

The main geotechnical and geohydrological risks at Kusasalethu include influx of uncontrolled water from Deelkraal mine and seismicity.

The use of backfill results in lower rates of energy release relative to other mining methods. Low energy release rates are known to reduce the occurrence of seismic events and rockbursts or rockfalls. Seismicity is managed through monitoring systems, which are incorporated into the working mine models that continually inform mine planning and decision-making.

The risk associated with the influx of uncontrolled water is mitigated by the inclusion of water pillars and dewatering drill holes into the mine design.

Mine design, planning and scheduling at Kusasalethu are done using reputable software, taking the geotechnical model and related parameters into account.

The mining rates, machinery and equipment, ore transportation, grade and dilution control, as well as the allocation and optimisation of resourcing are driven by the mine schedule and continuous improvement initiatives on site.

The mining parameters and associated risks for Kusasalethu are well understood, and risk mitigation measures are put in place.

14 Processing and Recovery Methods

Section 229.601(b)(96) (14) (i-iv)

The ore from Kusasalethu is processed at Mponeng's gold processing facility which has been in operation since 1986. The technology used to process the gold-bearing ore is well established and suitable for the style of mineralisation (VCR ore).

14.1 Mineral Processing Description

The ore extracted from Kusasalethu is transported by road to the Mponeng Gold Plant, where it is treated and smelted. The process flow for Mponeng Plant is presented in Figure 14-1.

The ore is reduced in sized by crushing, followed by grinding using a semi-autogenous milling. A conventional gold leach process (cyanidation) follows, which uses liquid oxygen injection. The cyanidation process is one of the most utilised methods for the recovery of gold from auriferous ores. The use of cyanide leaching in the gold recovery process is based on the properties of gold, mainly its solubility (ability to dissolve) in cyanide solutions. Once the gold is dissolved into the cyanide solution, its ability to adsorb (attach) onto activated carbon through the application of carbon in pulp ("CIP") technology.

The loaded carbon goes into the elution columns, which are high pressure vessels that circulate the loaded carbon, which extract the gold. The gold will then de-adsorb from the activated carbon and attach onto stainless-steel wool by means of electrowinning. The CIP circuit uses the gravity flow of slime between the consecutive counter-flow stages to recover and recirculate the activated carbon back into the system. The subsequent step after the CIP circuit is smelting of the cathode steel wool (after it had been dried in the calcining ovens). The gold bullion will then be dispatched to Rand Refinery for further refining, where silver is also produced as a by-product.

14.2 Plant Throughput, Design, Equipment Characteristics and Specifications

The ore milled at the Mponeng plant follows a standard cyanide leach, CIP, and electrowinning process in order to extract the gold bullion. The plant is designed to process 95tph of ore (Table 14-1). The plant capacity is well-matched to accommodate the total ore feed from Kusasalethu and Mponeng, and the gold produced is in line with the forecast ounces. (Table 14-2).

Table 14-1: Key Equipment Specifications at Mponeng Gold Plant

Equipment	Unit	Capacity
Mill Silo (per silo – 3 silos)	Volume / silo (m^3)	3,478
	Tonnes	3,500
ROM Mill (per mill – 3 mills)	Volume / tank (m^3)	127
Leach (10 leach tanks)	Dry Tonnes / tank	1,011
CIP (8 tanks)	Volume / tank (m^3)	231
	Dry Tonnes / tank (t)	159
Acid Wash (2 tanks)	Volume / tank (m^3)	10.1
	Carbon (t)	5
	Cycle time (hr)	3
Elution (3 tanks)	Volume / tank (m^3)	11.3
	Carbon (t)	5
	Cycle time (hr)	12
Thickener (3 thickeners)	Volume / thickener (m^3)	1,590
	Dry Tonnes (t)	5,620

Figure 14-1: Schematic Flow Diagram of the Metallurgical Process

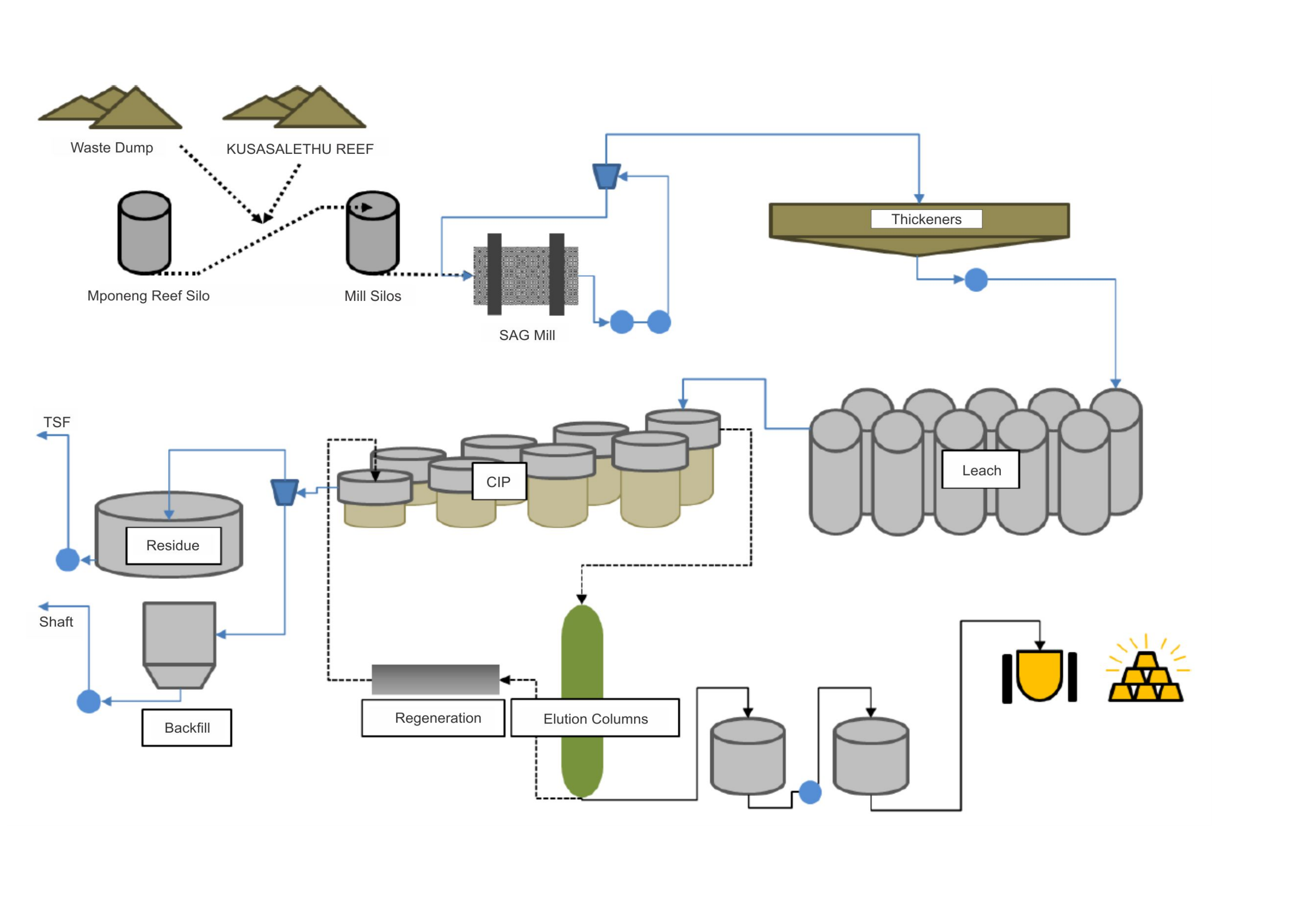


Table 14-2: Design Throughput Versus Actual Throughput at Mponeng Gold Plant

	Throughput	
Equipment	Design (t/hr)	Actual (t/hr)
Mill	95	75
Leach	300	223
CIP	300	223
Thickener	160	110

The cyanide leach is an intricate balance of time, pH and oxygen sparging. These parameters have been determined with metallurgical test work and historical performance to optimise the recovery. The parameters used in this process are set out in Table 14-3.

Table 14-3: Leaching Process Material and Properties

Process Requirements	Properties
pH	10.5 - 11.5 (controlled by lime addition)
Cyanide	180 - 300ppm as 100% NaCN
Leaching Time	24 – 40 hours
Oxygen	Air or oxygen sparged, 5 - 25 ppm O_2
Cyanide Relative Density	1.38 - 1.45, 40-50% solids at SG 2.7

14.3 Energy, Water, Process Material and Personnel Requirements

The Mponeng plant operates 365 days a year, with the exception for scheduled routine maintenance. The facility has a long operational history, and the planned mill feed rate for the remaining Kusasalethu operating life fits well with historical production statistics. Harmony expects that the Mponeng plant will have adequate energy, water, process material and labour required for processing ore from Kusasalethu and Mponeng.

14.3.1 Energy

The energy requirements are noted in Table 14-4.

Table 14-4: Mponeng Plant Energy Requirements

Area	Unit	Average / month
Mponeng Gold Plant	kWh	8,371,204

14.3.2 Water

The water infrastructure for the Mponeng plant includes supply and return water pipelines, and process water storage tanks. As a measure to minimise water consumption, clear overflow water from the metallurgical process is recycled to the process water storage tanks. In addition, the plant monitors water balance on a monthly basis using GoldSim modelling software. The purpose of the software is to keep track of demand for external water source requirements for the metallurgical process. The water consumption rate for Mponeng plant milling process is 15.31l/t/month.

14.3.3 Process Material

Since the introduction of the McArthur/Forrest process in 1890, the leaching of Witwatersrand gold ores has been carried out in alkaline cyanide solutions. The process requires significant amounts of reagents, the reagents and their consumption rates are presented in Table 14-5.

Table 14-5: Consumables

Equipment	Unit	Value
Steel Balls	Steel balls / annum	550
Lime	tpm	67,500
Flocculant	tpm	3,000
Cyanide	tpm	51,750
Carbon	tpm	6,000

14.3.4 Personnel

The Mponeng plant has experienced management and staff for operating and technical functions, as well as support staff that is responsible for administration. The personnel requirements are summarised in Table 14-6.

Table 14-6: Mponeng Plant Personnel Requirements

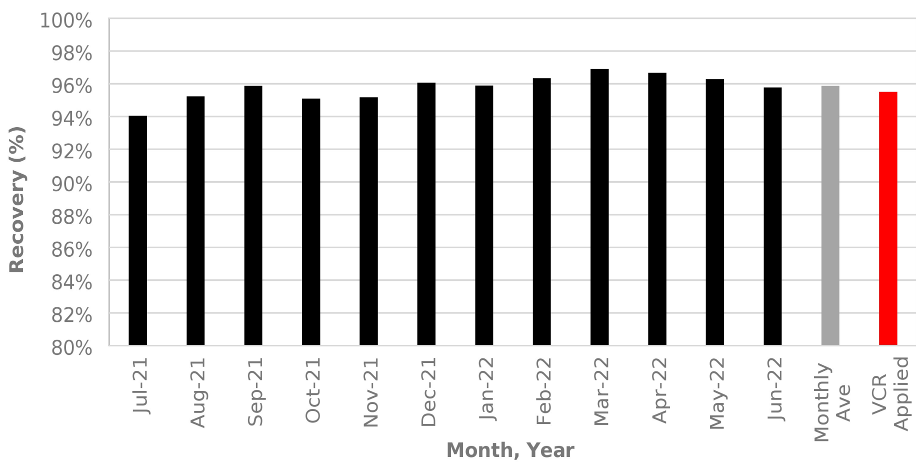
Department	Personnel
Absorption	14
Backfill	9
Leach	8
Milling	48
Ore Reception	17
Smelt House	11
Tailings	7
Thickeners	10
Other	23
Mponeng Gold Plant Total	**192**

14.4 Commentary on the Processing and Recovery Methods

The Mponeng Gold Plant has been in operation since 1986 and, as such, the processing method is considered well established for the style of mineralisation processed. The plant makes use of historical trends and data as a basis for the forecast processing parameters, except for instances where projects are planned for optimisation, for which appropriate test work is done.

The metallurgical process is a well-tested technology which has been in operation since 1986. The recoveries used in the business plan are based on historical performance. The methodology applied did not use the 18 month historic grades, due to the fact that Kusasalethu ore was moved to the Mponeng plant in July 2021, the recoveries used were based on a combination of a six month history, Mponeng plant historical performance and outlook. The actual monthly head grades were reviewed and the relationship between the head grade and recovery were used as base for the 2022/23 Business Plan (“BP”) metallurgical recoveries, taking into consideration the relevant forecast head grades (Figure 14-2).

Figure 14-2: Graph of VCR Historical Recovery Factor (18 month actual)



Note: VCR Applied signifies the recovery according to the monthly average which will be applied for VCR recovery used in the budget.

15 Infrastructure

Section 229.601(b)(96) (15)

Kusasalethu is an established operation and as a result, it has adequate access to the infrastructure required to meet the planned LOM production schedules.

15.1 Surface Infrastructure

The infrastructural layout includes hauling and hoisting facilities; logistical support for core handling, sampling, and transporting; a mineral processing plant; marginal ore and waste processing facility; roads; water and power supply; ventilation and refrigeration systems; stores and workshop support; electrical supply; offices; housing and security. The surface infrastructure used by Kusasalethu also includes the Mponeng Gold Plant and associated tailings storage facility. The location of the Kusasalethu and Mponeng surface infrastructure is presented in Figure 15-1. The infrastructure associated with Kusasalethu is presented in Figure 15-2, whilst the Mponeng Gold Plant infrastructure is presented in Figure 15-3.

15.1.1 Ore and Waste Rock Storage Facilities

Ore mined at Kusasalethu is classified into gold bearing ore and marginal ore. The gold bearing ore is transported by road to the Mponeng Gold Plant (Figure 15-1) where it is processed. Ore is deposited onto the run of mine ("ROM") stockpile located adjacent to the plant.

Marginal ore and waste are transported and deposited on the marginal ore facility, adjacent to the Kusasalethu Plant. The marginal and waste ore is processed at the Kusasalethu Plant to make backfill. The existing physical extent on site for this waste dumping is sufficient.

15.1.2 Tailings Storage Facilities

As the ore mined is processed at the Mponeng Gold Plant, a description of the tailings storage facility ("TSF") at Mponeng is provided below. The TSF at Kusasalethu is utilised by a different business unit.

The Mponeng TSF is located to the south western section of the Mponeng mining right area (Figure 15-1). The TSF is currently active and is owned and operated by Mponeng. All waste material from the mineral processing activities at Mponeng is accumulated at this TSF. The initial TSF operations began in 1990. Incidental ore recovered since the inception of development and mining in 1986, until the commissioning of the tailings facility, was transported and processed via the Savuka infrastructure system.

The TSF site has full engineering records including design, construction, operation, and maintenance plans. The design height is 41m and is engineered in an upstream raising method, divided into three compartments; namely Compartment 1, Compartment 2 and Lower Compartment. The designed volume is 50.2Mm^3. A feasibility study was done by independent tailings engineer company (Jones & Wagener Engineering and Environmental Consultants) in 2018 as part of the LOM extension project. The study indicated that the Mponeng TSF has sufficient capacity until 2032 at the current LOM plan and production rate.

An analysis of the downstream impact on communities, ecosystems, and critical infrastructure in the event of catastrophic failure is complete. A closure plan, typically extending over a 2-year period, to assess the TSF against the impact of extreme weather events because of climate change is also in place. The facility has never failed stability certifications and has no notable stability concerns. There is also a long-term monitoring and closure plan in progress. The TSF adheres to the SANS 10286 governed classification system and is monitored by internal engineers, supported by external engineering specialists.

15.1.3 Power and Electrical

The Kusasalethu Mine power supply is designed to satisfy the planned LOM production and service requirements. Main power supply is managed and distributed via electrical sub-stations located on site, as represented in Figure 15-3. The total power requirement for Kusasalethu is 119MVA, with the maximum notified demand to Eskom averaging at 110MVA. The noted power requirements include the Kusasalethu plant, which is essential for backfill generation.

Figure 15-1: Kusasalethu and Mponeng Surface Mine Layout and Infrastructure

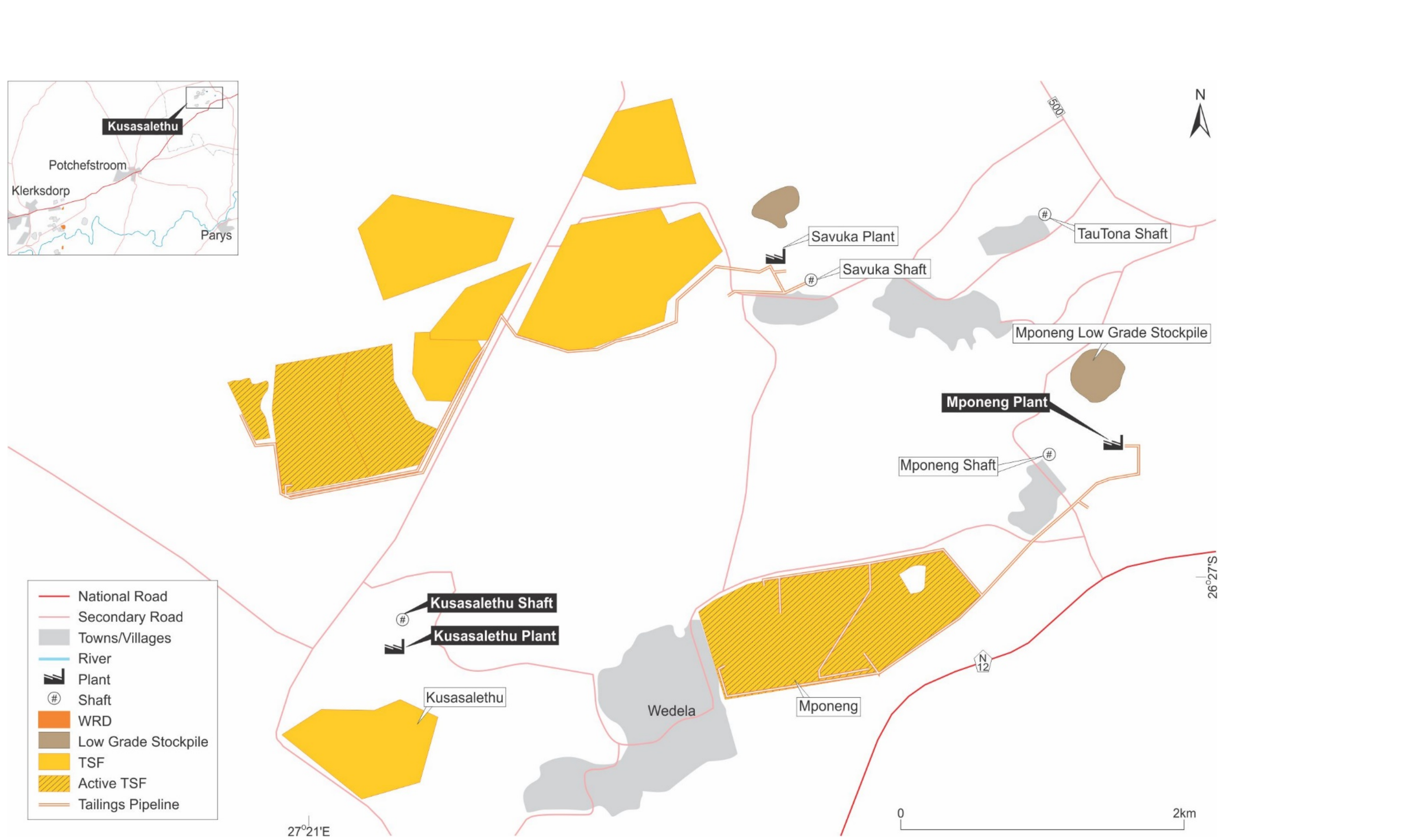


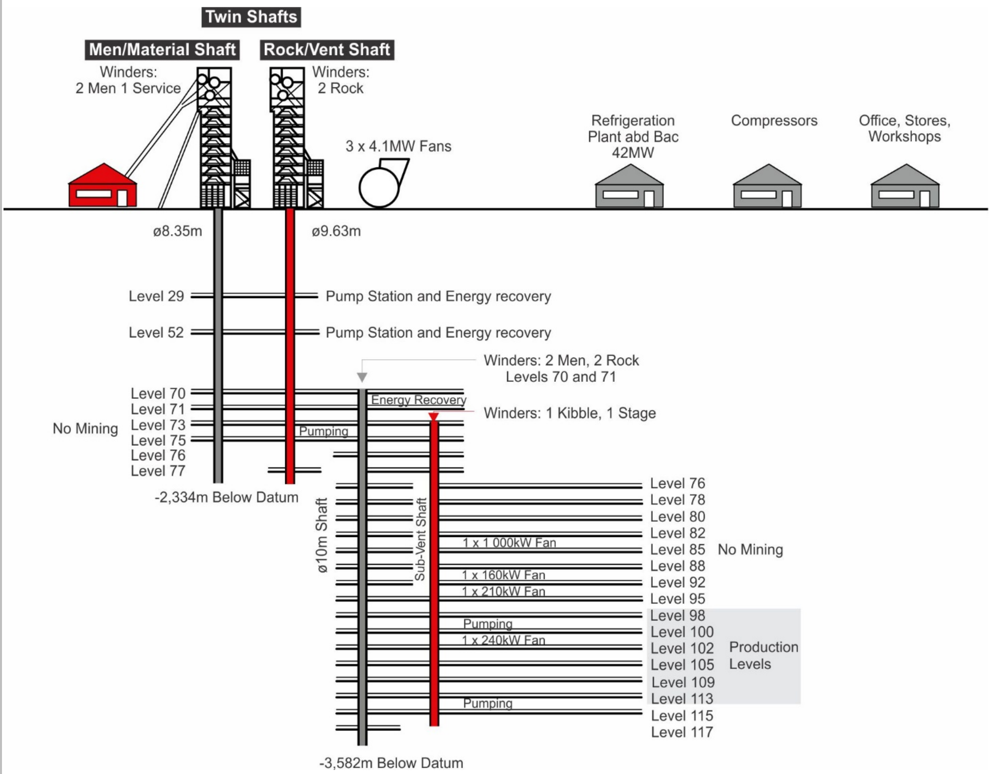
Figure 15-2: Kusasalethu Surface Infrastructure

Source: Google Earth Image Date: March 2021

Figure 15-3: Mponeng Plant Surface Infrastructure

Source: Google Earth Image Date: March 2021

Figure 15-4: Kusasalethu Mine Shaft and Underground Infrastructure



15.1.4 Water Usage

Kusasalethu utilises approximately 2,800Ml of water per annum.

15.2 Underground Infrastructure and Shafts

Kusasalethu underground infrastructure consists of twin surface shafts extending to a depth 2,334m below datum (Figure 15-4) and the sub vertical system to a depth of 3,582m below datum. The underground infrastructure also includes the associated winders and fans (Figure 15-4) need to facilitate the underground access.

Several refrigeration plants are operational, providing chilled water to the bulk air coolers on the working levels. Additional ventilation is exhausted at the adjacent Deelkraal mine.

All movement is systematically facilitated by respective man and material tramming sections. Underground broken rock handling is track-bound via locomotive material cars. These movements are supported by traffic management systems, including control room monitoring, decline logistics control, etc. Rock is transferred via gravity feed to the main silo infrastructure, located on 115 level. Rock from the 115 level silos is transferred to surface by means of the sub-shaft and vertical shaft systems.

15.3 Commentary on Infrastructure

The operational infrastructure including road, rail, offices, security services, water and power supply is adequate, and is shared with the Harmony operations in the relevant areas. Overall, Kusasalethu is well-established with sufficient logistical and infrastructure support for the existing and planned mining operations.

16 Market Studies

Section 229.601(b)(96) (16) (i-ii)

Gold is traded in a variety of markets/exchanges both in physical form through over the counter ("OTC") markets, bullion banks and metal exchanges etc., and through passive investments such as exchange traded funds ("ETF's"), which are based on gold prices and units representing physical gold which may be in paper or dematerialised form. Demand is driven by the jewellery market, bar and coin, use in technology, ETF's and other financial products, and by central banks. An overview of the gold market is given in the following sections based mainly on data from the World Gold Council and GoldHub websites.

16.1 Market Overview

Unlike almost all mineral commodities, the gold market does not respond the same way to typical supply and demand dynamics which are founded on availability and consumption, but rather on global economic affairs, particular those of the major nations, industrial powerhouses and economic regions, such as the Eurozone. The gold market is affected by government and central bank policies, changes in interest rates, inflationary or deflationary environments and events such as stocking and de-stocking of central reserves. It is also largely affected by global events such as financial crises, geopolitical trade tensions and other geopolitical risks. Price performance is linked to global uncertainty prompted by the prolonged Russia-Ukraine war (GoldHub, Accessed July 2022). It is an asset that can preserve wealth and deliver price outperformance in an uncorrelated way and that makes it extremely attractive.

16.2 Global Production and Supply

Gold production and supply is sourced from existing mining operations, new mines and recycling.

16.2.1 New Mine Production

Gold mining is a global business with operations on every continent, except Antarctica, and gold is extracted from mines of widely varying types and scale. China was the largest producer in the world in 2021 and accounted for around 9-12% of total global production (Gold.org, Accessed 2022; USGS Mineral Commodity Summaries, 2022). Overall, global mine production was 3,000t in 2021, slightly lower than production levels in 2020 (3,030t), and the second annual decline in production after 2016. Recent decline has been largely attributable to COVID-19 interruptions. In 2021, the major producing gold countries in the world were China (370t), Australia (330t), Russian Federation (300t), USA (180t), Canada (170t), Ghana (130t), Mexico (100t), and Uzbekistan (100t). Indonesia, Peru and Sudan produced 90t each, followed by Brazil (80t). South Africa produced 100t in the same year (USGS Mineral Commodity Summaries, 2022).

16.2.2 Recycling

Annual global supply of recycled gold was 1,143.5t in 2021, a decline from the 2020 figure of 1,291.3t. Recycling supply responds to the gold price and its rate of change but experienced a modest increase during the year even as prices increased to all-time highs. India and China play large roles in the recycling market. In the first quarter of 2022, when gold demand was 34% higher than the previous year, the supply of recycled gold increased to 310t (a 15% increase y-o-y), and highest amount of activity for six years (Gold Demand Trends Q1 2022, Gold.org, April 2022).

16.3 Global Consumption and Demand

Gold consumer demand is expected to be supported by gradual economic recovery. Gold has performed well as a consequence of a high-risk environment, low interest rates and a high price. While continued improvement in markets is expected post-COVID in 2022, economic slowdown among other factors is anticipated to place some downward pressure on consumer demand in China and India.

16.3.1 Jewellery

Global annual jewellery demand increased from 1,329.7t in 2020 to 2,229.4t in 2021, amid a recovery of markets from the COVID-19 pandemic. As with recycling, the two largest markets, India and China, were major contributors to the decline in 2020, and markets were expected to improve with economic recovery in these geographies. In Q1 2022, recovery of demand was soft, down 7% y-o-y, after new lockdowns to contain COVID-19 (Gold Demand Trends Q1 2022, Gold.org, April 2022).

16.3.2 Investment

The COVID-19 pandemic, high inflation and recent period of heightened risk and geopolitical uncertainty, has driven the value of gold as a 'safe haven' investment (www.gold.org/goldhub). Bar and coin investment was 20% lower in Q1 2022, but 11% higher than a five-year quarterly average (Gold Demand Trends Q1 2022, Gold.org, April 2022).

A total annual gold investment of 1,006.42t was noted by the World Gold Council for 2021, a decline of 43% from the 2020 figure. Weaker investor interest in 2021 was seen with a net outflow of gold ETFs (-173.6t). Gold demand has since increased in Q12022 (34% higher than Q1 2021), driven by strong ETF inflows, and safe-haven demand (Gold Demand Trends Q1, 2022, Gold.org, April 2022).

Investment drivers also include low interest rates, a weakened USD, and an economic slowdown. A consequentially favourable price means even greater investment, but momentum has slowed with gold reaching a USD1,800/oz marker (Recent moves in gold, Gold.org, July 2022).

16.3.3 Currency

Gold holds an inverse relationship with the USD and is usually traded relative to its USD price. During the current period of uncertainty, and the rising influence of Chinese currency, central bank asset managers may likely increase their interest in gold as a result. This has been a prominent trend since the economic downturn in 2008.

Future performance of the gold market is expected to be supported by investment demand (a need for effective hedges and a low-rate environment) and will be driven by the level of risk observed in the recovery of the global economy from the effects of COVID-19, which may offset any lag in recovery of consumer demand.

16.4 Gold Price

16.4.1 Historical Gold Price

In early August 2020, the London Bullion Market Association ("LBMA") gold price reached historical highs and remained relatively high for the rest of the year (Figure 16-1).

16.4.2 Forecast Gold Price

The minimum and maximum consensus gold price range for the year 2021 Q4 to year 2025 is presented in Figure 16-2. The long-term gold prices are considered from year 2025 onwards. Forecasts as advised from various financial institutions show that gold is expected to trade in a range of USD1,652/oz - USD1,728/oz, for the period 2022 to 2025 with a long-term outlook of USD1,521/oz.

The gold price forecast of USD1,546/oz is conservative if corroborated against a long-term broker consensus gold price outlook (Figure 16-2).

16.4.3 Harmony Group Gold Hedging Policy

Harmony has a hedging policy which is managed and executed at Group treasury level on-behalf of its operating entities. The key features of the hedging programme are as follows:

- the policy provides for hedging (or forward selling) up to a maximum of 20% of expected gold production for a rolling 24-month period;
- the policy has no minimum quantity that should be hedged, and if an attractive margin above cost cannot be achieved (i.e., in a low gold price environment) then no hedges are entered into;
- Harmony enters into ZAR-denominated gold hedges for its South African operations (for the non-South African assets it enters into USD-denominated hedges);
- Kusasalethu does not enter into hedges in its own name but delivers bullion to Rand Refinery for refining on behalf of Harmony. Rand Refinery is one of the world's largest single-site precious metals refining and smelting complex in the world. Rand Refinery refine all of Harmony's gold to at least 99.5% purity, and acting as agent, sells the gold on the daily spot London fixing price and make payment to the Harmony two days later;

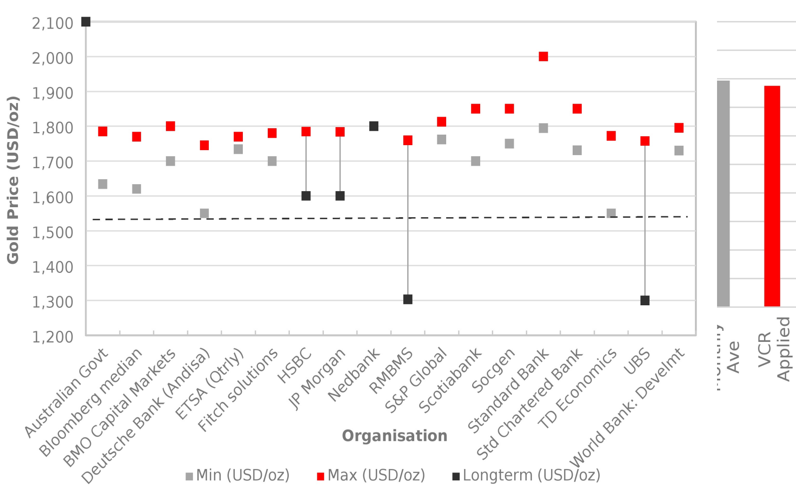
- gains and losses realised from the hedging program are accounted for at Group level and the financial benefit (or downside) is distributed amongst the operations proportional to their levels of gold sales; and

- Kusasalethu does its mine planning and financial forecasts based on the estimated future gold price provided by the Group treasury, but its year-end actual financial results reflect the received gold price inclusive of the benefit of the hedging programme. Therefore, in theory, Kusasalethu receives a hedged gold price for a maximum of 20% of its gold sales with the balance attracting the spot price.

Figure 16-1: Graph of Annual Gold Price History – ZAR/kg

Source: https://www.gold.org/goldhub/data/gold-prices

Figure 16-2: Graph of Consensus View of Forecast Gold Price



16.5 Commentary on Market Studies

The factors which affect the global gold market are well-documented as are the elements which influence the daily gold price. The gold price recorded all-time highs during both 2020 and 2022, and although it has since moderated and retracted, the price remains well above the 5-year historical average.

The positive outlook for gold will likely be sustained. Key headwinds for gold are interest rate hikes, currently at near historically low levels, but continued geopolitical risk and underperformance of stocks and bonds will support gold (Gold Mid-Year Outlook 2022, Gold.org, Accessed 2022). The gold price has experienced weaker momentum in Q2 2022, but stabilised. The gold market is expected to remain supported, and prices elevated for the balance of the financial year running into FY2023. Harmony has a relatively conservative gold hedging policy in place, and this is used to take advantage of the movements in the gold price to maximise the average gold price received, with the benefit of this hedging programme flowing through to Kusasalethu.

16.6 Material Contracts

Harmony has contractual vendor agreements with various service providers and suppliers. A list of the most significant of these contracts which are currently in place to support mining operations at Kusasalethu is presented in Table 16-1. All of the listed contracts are currently valid and in good standing. Terms, rates and charges of contracts are considered consistent with industry norms. Contract management processes are in place and resourced so that contracts re-tendered and/or renewed as they approach expiry.

Table 16-1: Material Contracts

Vendor Name	Nature of Service /Supply
Rosond (Pty) Limited	Underground Diamond Drilling
Axis Mining and Construction (Pty) Limited	Secondary support services
EBJ Gauteng (Pty) Limited	Drop Raising Services
Intasol Tailings (Pty) Limited	The management and maintenance of Kusasalethu TSF

17 Environmental Studies, Permitting and Plans, Negotiations, or Agreements with Local Individuals or Groups

Section 229.601(b)(96) (17) (i-vii)

The South African Government has an extensive legal framework within which mining, environmental and social aspects of the industry are managed. Harmony and its Kusasalethu operation is primarily regulated and managed by certain principal Acts (as listed in Section 17.3) as well as corporate policies, management systems and certain industry-wide guidelines, including:

- Energy Efficiency and Climate Change Policy;
- Environmental Policy;
- Harmony Water Management Strategy;
- Biodiversity and Rehabilitation Position Statement;
- Socio-Economic Transformation Policy; and
- Corporate Social Responsibility Policy.

The latest sustainability policies and public environmental social and governance ("ESG") performance and disclosure report(s) are available on the corporate website. Harmony has identified the environmental risks for the business and has strategies in place to manage the risks.

17.1 Results of Environmental Studies

Kusasalethu has prepared multiple Environmental Impact Assessments ("EIA") for regulatory approval, which under the current legal framework, require stakeholder engagement. Certain specialist studies are undertaken during operations to consciously to better understand the operations' impacts on the environment. For example, bio-monitoring surveys are conducted periodically on streams in the vicinity of the operations. The objectives of the survey are to establish the aquatic health of rivers and streams, the water quality as wells as establish baseline reference conditions required for future studies. The biomonitoring survey conducted in 2021/22 indicated that the in-situ water quality results showed variable pH levels ranging from marginally acidic to marginally alkaline. In some areas the conductivity levels varied where some levels have exceeded the recommended guideline. Of the tested toxicity samples, only the Loopspruit Catchment Site Kusasalethu South presented a hazard towards the aquatic environment. This may have been due to the low dissolved oxygen or one (or more) of the exceedances. The water quality has been altered because of the raw or inadequately treated sewage and solid waste pollution as well as the mining activities in the area this limits the colonization of aquatic biota within the assessed ecosystem.

Kusasalethu environmental aspects and impacts are managed according to the Environmental Management Program ("EMPR") approved by DMR in terms of Mineral and Petroleum Resource Development Act of 2004 and National Environmental Management Act 107 of 1998. All environmental aspects and impacts emanating from mining activities are documented in the two approved EMPR and the environmental aspect register as required by MPRDA and ISO 14001:2004 standard.

Harmony is committed to maintaining good relationships with regulatory authorities, industries, communities, business partners and surrounding stakeholders. A detailed environmental impact register has been developed to identify all potential environmental impact of the operations. The main impacts were rated, and mitigation measures were proposed to minimise their impact on environment.

17.2 Waste and Tailings Disposal, Monitoring & Water Management

The process of mining and beneficiation produce significant waste, typically consisting of 1) solid waste in the form of waste rock and overburden, 2) liquid wastes in the form of wastewater and tailings slurry and 3) gaseous emissions such as liquefied petroleum gas. Harmony recognises that responsible and effective waste management can positively reduce its environmental impacts and mitigate associated environmental liabilities.

Waste management is thus a priority focus area. Internally, guidelines on mineral, non-mineral and hazardous waste materials are included in the environmental management systems ("EMS") implemented at Kusasalethu.

Tailings comprises of crushed rock and process water emitted from the gold elution process in the form of slurry once gold has been extracted. As tailings contain impurities and pollutants, they are placed in TSF engineered to contain them, in line with Harmony's tailings management programme and the Global Industry Standard on Tailings Management ("GISTM"). Harmony's overall tailings management strategy is to ensure robust, meticulous engineering and dam design, along with a continual focus on management of risks through layered assurance and oversight.

The focus areas include, but are not limited to:

- freeboard control;
- water management;
- maintaining stability and the safety factor as advised by the engineer of record;
- erosion controls; and
- monitoring and control measures implemented to ensure continued compliance (including regular inspections, audits, and meetings on varying intervals with subsequent actions, minutes and reports).

As part of its mining, environmental and water approvals and licences, Harmony is required to implement monitoring programmes and plans to establish the operations impact on the environment. The compliance limits for the monitoring variable are included in the applicable EMPR(s), WUL(s) and environmental authorisations. The environmental monitoring implemented at Kusasalethu includes:

- ground and surface water monitoring
- biodiversity monitoring;
- waste classification and quantification;
- integrated waste and water management plan updates;
- water balance reviews;
- licence and authorisation compliance reviews; and
- air quality (i.e., noise and dust) and greenhouse gas emissions ("GHG") monitoring.

17.3 Permitting and Licences

In respect of environment, the following national Acts and the regulations promulgated thereunder provide the regulatory framework for mine permitting and licencing in South Africa:

- Mineral and Petroleum Resources Development Act, 2002 ("MPRDA");
- National Environmental Management Act, 1998 ("NEMA");
- National Environmental Management: Waste Act, 2008 ("NEM:WA");
- National Environmental Management: Air Quality Act, 2004 ("NEM:AQA"); and
- National Water Act, 1998 ("NWA").

A summary of the status of environmental permits and licences issued at the effective date related to Kusasalethu are presented in Table 17-1. Kusasalethu environmental aspects and impacts are managed according to the EMPR as approved by the DMRE in terms of the MPRDA. All environmental aspects and impacts emanating from mining activities are documented in a dedicated report and in the environmental aspect register as required by the act and the ISO 14001:2015 standard.

All relevant mining, environmental and water-use permits are in place that cover the environmental, archaeological, and hydrological components of Kusasalethu Mine.

The operation has a digital environmental legal register on an off-site server this is used to monitor compliance and to obtain applicable and relevant environmental legal updates for the operation.

Table 17-1: Status of Environmental Permits and Licences

Permit / Licence	Reference No.	Issued By	Date Granted	Validity
EMPR	GP30/5/1/2/3/2/1(07) EM	DMRE	2018	LOM
Mining Right	GP30/5/1/2/2 (07)MR	DMRE	2018	LOM
Water Use License	08/C23J/AJFG/1019	DWS	2018	2040

Note: LOM - Life of mine

In addition, the operation has retained its ISO14001 accredited and conforms the requirements of ISO14001: 2004 standard, the operation is also International Cyanide Management Institute ("ICMI") accredited and audited annually as per ISO14001 requirements and Cyanide Management Code.

All permits are audited regularly for compliance and no material risks to the operations have been identified. Applications for the environmental permits and licences have been submitted or being considered by the relevant authorities to ensure compliance and alignment with operations LOM requirements. To this end, applications have been submitted to amend the 2014 EMPR to account for the change in the WRD and TSF footprint, reclamation of the WRD and the expansion of the existing underground workings.

17.4 Local Stakeholder Plans and Agreements

Harmony strives to create sustainable shared value within the communities it operates. Local stakeholder plans and agreements are based on the results from socio-economic information, government development strategies and EIAs undertaken. The socio-economic development programme commits to:

- contribute to areas that will have the most meaningful socioeconomic impact on communities, namely infrastructure, education and skills development, job creation and entrepreneurial development;
- enhance broad-based local and community economic empowerment and enterprise development initiatives;
- facilitate socio-economic development in local communities by means of a social and labour plan ("SLP") and corporate social responsibility programmes;
- support arts, culture, and sports and recreation; and
- build relationships based on trust within host communities.

In South Africa, mining companies are required to have a SLP which forms an important component of Harmony's community investment plan and is a prerequisite to securing and maintaining a mining right. It sets out the Company's obligation to develop and implement comprehensive human resource development programs, community development plans, housing and living condition plans and employment equity plans.

The ultimate aim of the SLP is to ensure the upliftment of the social and economic circumstances of local communities surrounding the mine and, with progress required to be reported each year. The most recent progress on various SLP initiatives and commitments is reported on annually and is available on the Company's corporate website. Harmony has budgeted to spend approximately ZAR10.8m annually over the over LOM to ensure it meet its SLP and local economic development commitments.

17.5 Mine Closure Plans

Harmony makes provision for closure and rehabilitation both for accounting purposes and as required under the MPRDA.

The statutory obligation for all environmental rehabilitation at Kusasalethu is administered by the DMRE and requires the preparation of a closure plan, the development of a cost estimate, and financial assurance. The Company makes an annual submission to the DMRE setting out the cost of closure in accordance with the MPRDA and the regulations issued thereunder.

Harmony appointed Digby Wells Environment ("Digby Wells"), independent environmental consultants, to review and update the closure cost for Kusasalethu and Deelkraal Shafts and its associated infrastructure. The mine closure assessment was done in terms of regulation 53 and 54 of the MPRDA and in accordance with the requirements of NEMA. The closure cost was calculated by Digby Wells at ZAR262m which represents the cost to close the operation in its current state as at 30 June 2022.

17.6 Status of Issues Related to Environmental Compliance, Permitting, and Local Individuals Or Groups

Risk management and mitigation measures are addressed in the environmental management plans and will be effective to mitigate risks and impacts to acceptable levels should the measures be implemented according to the specialists' recommendations. Most of the required environmental authorisations are in place and only require amendments to be made to reflect the current infrastructure at Kusasalethu.

17.7 Local Procurement and Hiring

Harmony is committed to investing in the future of local communities beyond the LOM and not to only empower them, but also to mitigate the impacts its activities to ensure a positive legacy. The 2014 Mining Charter serves to guide the south African mining industry in socio-economic transformation. Local procurement (goods and services) and human resource management are key measures set under the Mining Charter and are reported on annually.

Portable skills are developed through expanded learning programmes, learnerships and other programmes opened only to operating communities and areas where labour is sourced. Local procurement is being supported where there is a skills shortage. Harmony has included this in the Mining Charter annual compliance budget of approximately ZAR5.4m over the duration of the LOM towards local economic development. Compliance against the Mining Charter is reported is reported on annually and is available on the Company's corporate website.

17.8 Commentary on Environmental Studies, Permitting and Plans, Negotiations, or Agreements with Local Individuals or Groups

Periodic inspections are conducted by the DMRE to verify compliance with applicable environmental laws, regulations, permits and standards. In addition, Kusasalethu has implemented an EMS in line with the ISO 14001 standard. The EMS is audited on an annual basis by a third party and includes the needs and expectations of interested parties.

As part of Harmony, Kusasalethu conducts its operation based on policies and systems that are aligned to its corporate sustainable development framework. Although Harmony is not a signatory to the International Council on Mining and Metals or the UN Global Compact, these form the guiding principles of the framework. Harmony discloses its sustainable development voluntarily in accordance with the guidelines issued by the Global Reporting Initiative ("GRI"). Further to this, Harmony discloses environmental information on the Carbon Disclosure Project ("CDP") for both climate change and water. The CDP runs the global environmental disclosure system that supports companies to measure and manage their risks and opportunities on climate change, water security and deforestation.

Harmony has a good understanding of the environmental and social aspects of the operations through baseline and specialist studies previously conducted.

Risk management and mitigation measures were adequately addressed in the environmental management plans and will be effective to mitigate risks and impacts to acceptable levels should the measures be implemented according to the specialists' recommendations. Most of the required environmental authorisations are in place and only require amendments to be made to reflect the current infrastructure at Kusasalethu. Based on current industry norms, a realistic timeframe to obtain relevant authorisations is estimated between 12 and 18 months.

18 Capital and Operating Costs

Section 229.601(b)(96) (18) (i-ii)

Economic parameters for the Harmony Group, including capital and operating costs, are determined, and signed off by the CODM, before distribution to the business units, including Kusasalethu. The capital and operating costs are reported in ZAR terms and on a real basis. Rounding of figures may result in minor computational discrepancies.

18.1 Capital Costs

The reported capital cost estimates for Kusasalethu include costs associated with abnormal expenditure ("AE"), shaft projects, major projects, and operating capital, as presented in Table 18-1. There are no contingencies included in the costs, the capital cost estimates are known to a high level of confidence. The forecast capital cost estimates are modelled in the Kusasalethu cash flow. The costs relating to the Mining Charter Compliance ("MCC") are determined by Kusasalethu's SLP requirements and modelled accordingly in the SLP model. The costs presented in Table 18-1 were sourced from the SLP model.

Table 18-1: Summary of Capital Cost Estimate for Kusasalethu

Capital Cost Element (ZAR'000s)	Total LOM (FY2023 - FY2024)
AE	**62,419**
Shaft Projects	**9,710**
Total	**72,129**

18.2 Operating Costs

A summary of the direct and indirect operating cost estimates for Kusasalethu and presented in Table 18-2. The operating cost estimates are based on historical performance, taking expected changes in the new financial year into account (such as electricity requirements, increased/decreased labour costs), and used as an input into the Kusasalethu cash flow model.

Table 18-2: Summary of Operating Cost Estimate for Kusasalethu

Operating Cost Element (ZAR'000)	Total LOM (FY2023 - FY2024)
Mining	**3,002,706**
Services	**544,547**
Medical Hub / Station	**104,208**
Engineering	**2,645,345**
Workshops	**24,398**
Total Direct Costs	**6,321,204**
Mine Overheads	**219,556**
Royalties	**34,111**
Ongoing Capex	**68,877**
Total Cost	**6,643,748**

18.3 Comment on Capital and Operating Costs

The forecast Kusasalethu capital and operating cost estimates are based on previous performance, taking the budget updates for the new financial year into account. A record of the forecast and budget costs is maintained by the operation, allowing for an assessment of the alignment of the forecast and actual costs. The forecast costs are reliable and known to a high level of confidence. The approach used for the estimation of capital and operating costs is consistent with industry practice.

19 Economic Analysis

Section 229.601(b)(96) (19) (i-iv)

19.1 Key Economic Assumptions and Parameters

The economic assumptions used in the economic analysis are sourced from the CODM, which derives, reviews, approves, and distributes the assumptions to its various business units. Annually, the CODM receives long-term commodity prices and exchange rate forecasts from various financial institutions during the period from October to November. In addition, a specialist in Economics from a reputable economics company based in South Africa provides expert views on global markets, as well as forecasts on commodity prices, exchange rates, consumer price index, production price index, electricity costs and consumables' increases. These factors are analysed, taking cognisance of the requirements of the NYSE and JSE market, and presented to the CODM for recommendations and approval. These assumptions are then applied at Kusasalethu, together with specific operational considerations.

19.1.1 Metallurgical Recoveries

The metallurgical recoveries are those provided in Section 12.2. A plant recovery factor of 95% has been applied.

19.1.2 Gold Price

The proposed gold price (USD1,546/oz) is the price that is used by Harmony for the Kusasalethu annual planning cycle and forms the basis for the gold price assumptions used in the Kusasalethu cash flow. The reader is referred to Figure 16-2 for the consensus forecast gold price. The conversions used in the calculation of the various gold prices is presented in Table 19-1.

Table 19-1: Conversion Rates used in Cash Flow

Economic Factors	Gold Price (USD/oz)	Conversion Factor (oz/kg)	Exchange Rate (ZAR:USD)	Gold Price (ZAR/kg)
2022 Mineral Resource	1,723	32.15	15.35	850,191
2022 Mineral Reserve	1,546	32.15	15.35	763,000
2023 forecasted gold price	1,546	32.15	15.35	763,000

Notes: The forecast gold price as used in the Kusasalethu cash flow.

19.1.3 Exchange Rate

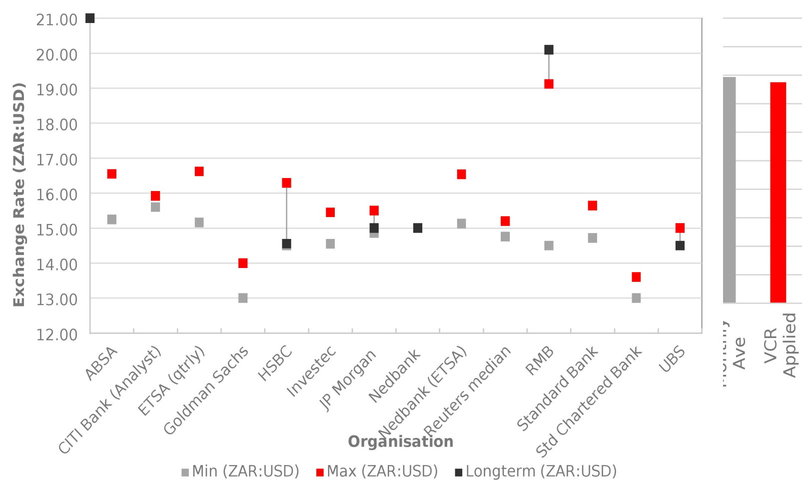
The consensus minimum and maximum ZAR:USD exchange rate for the year 2021 Q4 to year 2024 is presented in Figure 19-1. The long-term exchange rates are not relevant for Kusasalethu as they go beyond the end of its mine life. The volatility in the ZAR has continued against the USD resulting in the ZAR:USD exchange rate fluctuating.

Forecasts as advised from various financial institutions show that the ZAR/USD is expected to trade in a range of ZAR15.13:USD – ZAR15.83:USD for the period 2022 to 2025 with a long-term outlook of ZAR15.83:USD in the short term. In addition, the CODM has reviewed the ZAR:USD exchange rate performance over the past three years, for the period June 2019 - June 2022 (Table 19-2).

Table 19-2: ZAR:USD Exchange Rate Performance (June 2019 – June 2022)

Period	Average Exchange Rate (ZAR:USD)
July 2019 to June 2020	15.68
July 2020 to June 2021	15.41
July 2021 to June 2022	14.75
3-Year Ave. (not weighted)	**15.28**

Figure 19-1: Graph of Consensus ZAR : USD Exchange Rate Forecast



The proposed spot exchange rate of 15.35 ZAR:USD is the exchange rate that is used by Harmony for the Kusasalethu annual planning cycle and forms the basis for the ZAR:USD exchange rate assumptions used in the Kusasalethu cash flow.

19.1.4 Royalties

Royalty is an expense paid to the government of South Africa and is accounted for in the Kusasalethu cash flow models. In terms of the mining ring-fencing application, each ring-fenced mine is treated separately, and deductions can normally only be utilised against mining income generated from the relevant ring-fenced mine.

19.1.5 Capital Expenditure

At Harmony, capital is allocated to the mines with a longer life. Kusasalethu currently has a relatively short LOM model, and therefore has small amounts dedicated to capital expenditure. Detailed capital costs are presented for Kusasalethu in Table 18-1.

19.1.6 Operating Expenditure

The operating costs are determined as a function of the cash working costs of the mining and mineral processing plant activities, and ongoing capital development for mining. Whereas, total costs are a function of the operating costs, capital costs, and royalties. Detailed operating costs can be found for Kusasalethu in Table 18-2.

19.1.7 Working Capital

Working capital forms part of the total cost model applied to the LOM plan.

19.1.8 Taxes

Mining tax on gold mining taxable income in South Africa is determined according to a formula, based on the taxable income from mining operations. Of that, 5% of total revenue is exempt from taxation while the remainder is taxable at a higher rate (34%) than non-mining income (28%).

Accounting depreciation is eliminated when calculating the South African mining tax income. Excess capital expenditure is carried forward as unredeemed capital to be claimed against future mining taxable income.

19.1.9 Closure Cost and Salvage Value

The closure cost estimates are those provided in Section 17.5; no account has been taken of any potential salvage value.

19.1.10 Summary

The key assumptions used in the cash flow are summarised for Kusasalethu in Table 19-3.

Table 19-3: Key Economic Assumptions and Parameters

Parameter	Unit	Value
Production Rate	ktpm	672
Gold Recovery	%	95.5
Royalty	%	Formula
Tax Rate	%	Formula
Gold Price	ZAR/kg	763,000
Exchange Rate	USD:ZAR	Variable
Discount Rate	%	9.00

19.2 Economic Analysis

Harmony's respective business units and its associated operating sites consider the economic assumptions discussed in Section 19.1 during their respective planning and analysis processes. The LOM financial model for Kusasalethu is presented in Table 19-4.

The discounted cash flow model is used to calculate the Net Present Value (“NPV”) of the investments. The Kusasalethu NPV at the spot metal price is approximately ZAR57m, at a discount rate of 9%. The NPV is calculated on a cash flow that accounts for factors such as:

- mining and ore processing working costs;
- royalty payments;
- capital costs, including costs allocated to ongoing development;
- any significant project work considered as major projects; and
- costs deemed as abnormal expenditure.

19.3 Sensitivity Analysis

The economic assumptions, cash flow breakdown and economic analysis form the basis of the sensitivity analysis. The sensitivity analysis considers various scenarios, for which the project NPV is calculated. The sensitivity analyses on the Kusasalethu cash flow model are shown in Table 19-5, Table 19-6 and Table 19-7.

Harmony reviewed its exposure in terms of South Africa’s political instability, the impact of the COVID-19 pandemic, the exchange rate, and the gold price, as well as the likely impact of these factors on its financial assets and financial liabilities. Based on the review, the CODM determined a variance of ±10% for the sensitivity analyses.

The sensitivity analyses are done on selected production scenarios, the commodity price assumption (ZAR/kg), total operating costs (including capital costs and royalties paid) in ZAR terms, and a combined analysis considering all the factors.

Capital investments in Kusasalethu are relatively low and therefore not expected to have a significant impact on the NPV and thus not included in the sensitivity analysis.

Table 19-4: Kusasalethu Cash Flow

Item	Units	Total LOM	FY 2023	FY 2024
Mining advance	m^2	**294,727**	143,040	151,687
Ongoing Capital Development (OCD)	m	**1,284**	1,284	0
Milled tons	t ('000)	**1,343,257**	650,881	692,376
Yield	g/t	**6.66**	6.58	6.73
Gold recovered	kg	**8,941**	4,283	4,658
Revenue	ZAR'000	**6,822,194**	3 267 935	3,554,259
Total costs (including OCD)	ZAR'000	**6,609,636**	3,297,549	3,312,087
Mining Charter Compliance (MCC)	ZAR'000	**26,299**	13,150	13,149
Capital (excluding OCD)	ZAR'000	**72,129**	72,129	0
Royalty	ZAR'000	**34,111**	16,340	17,771
Total costs (including capital and royalty)	ZAR'000	**6,742,175**	3,399,167	3,343,008
Profit (after OCD and capital)	ZAR'000	**80,018**	-131,233	211,251
NPV - (low discount rate - 9%)	@9%	**57**		
NPV - (medium discount rate - 12%)	@12%	**51**		
NPV - (high discount rate - 15%)	@15%	**46**		

Table 19-5: Production Sensitivity Analysis

Sensitivity (%)	Production (kg)	Gold Price (ZAR/kg)	Revenue (ZAR'000)	Operating Cost[1] (ZAR'000)	Profit / Loss (ZAR'000)	NPV (ZAR'000)
10%	9,835	763,000	7,504,413	6,742,175	762,238	656,000
5%	9,388	763,000	7,163,303	6,742,175	421,129	357,000
LOM Plan	8,941	763,000	6,822,194	6,742,175	81,019	57,000
-5%	8,494	763,000	6,481,084	6,742,175	-261,091	-242,000
-10%	8,047	763,000	6,139,974	6,742,175	-602,201	-542,000

Note: 1. Total operating cost, including capital and royalty (ZAR).

Table 19-6: Gold Price Sensitivity Analysis

Sensitivity (%)	Production (kg)	Gold Price (ZAR/kg)	Revenue (ZAR'000)	Operating Cost[1] (ZAR'000)	Profit / Loss (ZAR'000)	NPV (ZAR'000)
10%	8,941	839,300	7,504,413	6,742,175	762,238	656,000
5%	8,941	801,150	7,163,303	6,742,175	421,129	357,000
LOM Plan	8,941	763,000	6,822,194	6,742,175	81,019	57,000
-5%	8,941	724,850	6,481,084	6,742,175	-261,091	-242,000
-10%	8,941	686,700	6,139,974	6,742,175	-602,201	-542,000

Note: 1. Total operating cost, including capital and royalty (ZAR).

Table 19-7: Total Operating Cost Sensitivity Analysis

Sensitivity (%)	Production (kg)	Gold Price (ZAR/kg)	Revenue (ZAR'000)	Operating Cost[1] (ZAR'000)	Profit / Loss (ZAR'000)	NPV (ZAR'000)
10%	8 941	763,000	6,822,194	7,416,392	-594,199	-536,000
5%	8 941	763,000	6,822,194	7,079,284	-257,090	-239,000
LOM Plan	8 941	763,000	6,822,194	6,742,175	80,019	57,000
-5%	8 941	763,000	6,822,194	6,405,066	417,128	354,000
-10%	8 941	763,000	6,822,194	6,067,957	754,236	651,000

Note: 1. Total operating cost, including capital and royalty (ZAR).

The insights that can be provided by this sensitivity analysis is that the project NPV for Kusasalethu Mine is most sensitive to changes in the gold price (ZAR/kg), closely followed by changes in total operating costs (ZAR).

20 Adjacent properties

Section 229.601(b)(96) (20) (i-iv)

Kusasalethu lies adjacent and to the west of the Mponeng, TauTona and Savuka mines. All mines are 100% owned by Harmony and collectively form the West Wits operation. TauTona and Savuka have completely mined out the VCR horizon, while some infrastructure is still available on the CLR horizon. The remaining portions of CLR Mineral Resource from these two mines was transferred to Mponeng in 2017 as at the time they were placed under and care and maintenance with intention to move towards eventual closure. Blyvooruitzicht Gold (Pty) Limited and Sibanye-Stillwater Limited own and operates other gold mines located to the northeast and northwest of Mponeng.

21 Other Relevant Data and Information

Section 229.601(b)(96) (21)

Public disclosure reports on Kusasalethu's operational, financial and environmental performance are available on the Company's corporate website. The following reports are relevant to this TRS:

- Integrated annual report 2022;
- ESG report 2022;
- Financial report 2022;
- Report to shareholders 2022;
- Operational report 2022;
- Task Force on Climate-related Financial Disclosures ("TCFD") report; and

22 Interpretation and Conclusions

Section 229.601(b)(96) (22)

Kusasalethu is a well-established mine and has been in operation since commissioning in 1978. The asset was acquired by Harmony in October 2001. Harmony has no known risks to conduct mining activities over the permitted mining rights' areas, incorporated as Kusasalethu. In addition, no known risks are posed over surface access and activities, regarding mining related activities.

The gold-bearing conglomerates at Kusasalethu are found in the northwestern margin of the Archean Witwatersrand Basin, a prominent gold deposit in the world. These gold bearing conglomerates are mostly confined to their horizons known as reefs. The VCR, hosted in the Kimberley and Booysens domain, is continuously developed across the entire Kusasalethu mining area and is currently the only economically mined reef.

Kusasalethu's regional geological setting, mineralisation and deposit is well understood. The geology is supported by seismic survey and, surface and underground drilling findings. The geological anomalies, synonymous with the VCR Reef are identified, defined, and managed by the Kusasalethu Geology Department. Planned targeted exploration for the 2022/2023 period is aimed at 3,400m.

The sampling approach and management, density assumptions, laboratory procedures, and assaying and analysis are in keeping with industry standards and practices and is appropriate for the Witwatersrand and VCR-type mineralisation. The holistic understanding of the regional geology, lithological and structural controls of the mineralisation at Kusasalethu is sufficient to support the estimation of Mineral Resources.

The data pertaining to the mineralisation, regional and geological setting, exploration findings, sample collection, preparation, and testing, inclusive of data verification and metallurgical test work gives rise to the Mineral Resource estimate.

The combined Measured and Indicated Mineral Resource, exclusive of Mineral Reserves, as at 30 June 2022 is 9.535Mt at 9.67g/t gold, containing 2.966Moz of gold, and the Inferred Mineral Resource contains 2.025Mt at 8.85g/t gold, containing 0.576Moz of gold.

Mineral Reserves are derived from the Mineral Resources, a detailed business plan and operational mine planning processes. Mine planning utilises and takes into consideration actual technical parameters. In addition, conversion of the Mineral Resources to Mineral Reserves considers Modifying Factors, dilution, ore losses, minimum mining widths, planned mine call and plant recovery factors. The Mineral Reserve is 1,343Mt of milled ore at 6.97g/t, containing 0.301Moz as at 30 June 2022.

Silver or any other by-products that are recovered as part of the refining process, make up an immaterial component of the total metal inventory, and is thus not reported as part of the Mineral Reserve estimates. There are no obvious material risks that could have significant effect on the Mineral Reserves.

The Mineral Reserves are extracted via the SGM method with backfill support, taking into consideration the mining and rock engineering design guidelines. This mining method increases flexibility and minimises seismicity. In addition, the breast mining method that is adopted in some parts of the mine provide a safe and economic mining method, for these specific areas.

Gold bearing ore mined at Kusasalethu is processed at the Mponeng processing facility which has been in operation since 1986 and, as such, the processing method is considered well established for mineralisation at Kusasalethu. The plant therefore makes use of previous trends and data as a basis for their recoveries of VCR.
Metallurgical test work was undertaken to identify the optimal blend of Kusasalethu to Mponeng ores to be treated through the plant. The results identified the optimal blend to be a ratio of Kusasalethu 40:60 Mponeng.

The Kusasalethu Plant is only used for processing marginal ore, and for generating backfill material for mining operations.

The mine's regional and local infrastructure is capable of fully supporting the mining and surface related mining activities. Kusasalethu is accessed via national and provincial road networks, has key power transmission and distribution networks provided by the national electricity regulator, water supply networks and communication infrastructure. Overall, Kusasalethu is well-established with sufficient logistics and infrastructure support for the existing and planned mining operations.

Harmony and Kusasalethu are exposed to market risks such as exchange rate and gold price fluctuations which are partially offset by the Harmony Group hedging policy. The hedging programme takes into account factors effecting the global gold market and these, along with macro-economic conditions, are used to determine planning and forecasting inputs at group level for all of Harmony's operating business units. Other non-gold related risks are addressed to some extent by Kusasalethu entering into vendor agreements for the provisions of supplies and services which are done on a competitive basis with customary price adjustment, renewal and termination clauses.

To successfully operate a mining operation in South Africa the state requires compliance with applicable environmental laws, regulations, permits and standards. Kusasalethu adheres to said compliance and regulatory standards and have, in addition, implemented an Environmental Management System in line with the ISO 14001.

As part of Harmony, Kusasalethu conducts its operations based on policies and systems that are aligned its corporate sustainable development framework. This is guided by the principles of the framework from the International Council on Mining and Metals or the United Nations Global Compact. Harmony discloses its sustainable development voluntarily in accordance with the guidelines issued by the Global Reporting Initiative. Further to this, Harmony discloses environmental information on the Carbon Disclosure Project for both climate change and water.

Harmony has a good understanding of the environmental and social aspects through baseline and specialist studies previously conducted. Risk management and mitigation measures were adequately addressed in the environmental management plans.

Most of the required environmental authorisations are in place and only require amendments to be made to reflect the current infrastructure at Kusasalethu. Based on current industry norms, a realistic timeframe to obtain relevant authorisations is estimated between 12 and 18 months.

The economics of Kusasalethu is based on the discounted cash flow model, with a spot price of ZAR763,000/kg. The NPV for the spot metal price, is ZAR57m, at a discount rate of 9%. The NPV is calculated on cash flow that takes factors such as: capital and operating costs; and royalties. The capital and operating cost estimates for Kusasalethu are based on historical data, as well as budget forecasts. This estimation technique allows for the forecast and actual costs to be aligned.

The economics of Kusasalethu are tested for its sensitivity to commodity price (ZAR/kg), operating costs (ZAR) gold production (kg). The insights provided by the sensitivity analysis is that Kusasalethu Mine is most sensitive to changes in the gold price (ZAR/kg), closely followed by changes in total operating costs (ZAR).

The TRS was prepared by a team of experienced professionals. The TRS provides a summary of the material scientific and technical information concerning the mineral exploration, Mineral Resources, Mineral Reserves, and associated production activities of the mineral asset, including references to the valuation for Kusasalethu. Each QP was responsible for specific sections of this TRS which they have personally supervised and reviewed. This TRS contains the expression of the QP opinions, based on the information available at the time of preparation.

23 Recommendations

Section 229.601(b)(96) (23)

The remaining mining life for Kusasalethu is two years. On the basis of the operation's short mine life, the QP does not have any recommendations for any additional work that will require significant capital investment.

24 References

Section 229.601(b)(96) (24)

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25 Reliance on Information Provided by the Registrant

Section 229.601(b)(96) (25)

Further to Section 24, in the preparation of this TRS, the principal QPs and authors relied upon information provided by the Registrant and other internal specialists with regards to mining rights, surface rights, contractual agreements, historical operating expenditures, community relations and other matters. The work conducted by these experts was completed under the supervision and direction of the respective QPs. The specialists who assisted the principal authors and QPs are listed in Table 25-1.

Table 25-1: Other Specialists

Name	Specialist	Area of Responsibility	Company / Association
BFM Malunga	Mining Engineering	General Manager	Kusasalethu
EA Mofokeng	Mining Engineering	Mining Department	Kusasalethu
GLP van Emmenis	Human Resources Management	Human Resources Department	Kusasalethu
SR Michaels	Valuation	Valuation Department	Kusasalethu
EGD Phenya	Mine Safety	Safety Department	Kusasalethu
NK Mosala	Mine Surveying	Safety Department	Kusasalethu
SJ Allen	Mining Engineering	Risk Management	Kusasalethu
H Kamedza	Electrical Engineering	Engineering Department	Kusasalethu
S Singh	Rock Engineering	Rock Mechanical Engineering Department	Kusasalethu
JR Powell	Geostatistics	Central Geostatistics Harmony North Operations	Central