



**ROYAL BAFOKENG  
PLATINUM**  
MORE THAN MINING

Mineral Resources and  
Mineral Reserves Statement  
2017

**MORE THAN  
MINING >**

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## DISCLAIMER

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## MINERAL ASSET SUMMARY AND KEY REPORTING CRITERIA

The Royal Bafokeng Platinum (RBPlat) mining operations, namely the Bafokeng Rasimone Platinum Mine Joint Venture (BRPM JV), lie on the Western Limb of the Bushveld Igneous Complex, immediately south of the Pilanesberg Complex. Rocks of the lower, critical and main zones of the Rustenburg Layered Suite (RLS) underlie our operations, apart from a very small portion of the northern boundary area where the igneous rocks of the Pilanesberg Complex occur. RBPlat's mining operations, on the farms Boschkoppie 104 JQ, Styldrift 90 JQ and Frischgewaagd 96 JQ (Figure 2), exploit the two primary economically favourable platinum group metal (PGM) enriched stratigraphic horizons of the Western Bushveld Complex, the Merensky reef and the UG2 reef. Both reef horizons contain concentrations of base metal sulphides and PGMs, of which the Merensky reef has historically been the most important platinum-producing layer in the Western Bushveld Complex. The PGMs consist of platinum (Pt), palladium (Pd), iridium (Ir), rhodium (Rh), osmium (Os) and ruthenium (Ru). Copper (Cu), nickel (Ni), cobalt (Co) and gold (Au) are also extracted.

RBPlat has a 67% attributable interest in the BRPM JV mineral resources and reserves, consisting of the Merensky and UG2 reefs

underlying the Boschkoppie 104 JQ and Styldrift 90 JQ farms and portions of Frischgewaagd 96 JQ. Our attributable resources and reserves for 2017 are summarised in the infographic on the following page.

Geological losses and structural models are reviewed on an annual basis as part of the resource evaluation lifecycle. During the 2017 structural and geological loss reviews, a re-interpretation of the Chaneng Dyke, which forms the natural boundary between BRPM and Styldrift, as well as an iron replacement intrusion (BRPM North shaft Phase III IRUP) confirmed by the 2016 exploration drilling, has resulted in a decrease in mineral resources by 0.18Moz and 0.12Moz on the Merensky and UG2 reefs respectively.

RBPlat mineral resources and reserves are reported in accordance with guidelines and principles of the South African Code for the Reporting of Exploration Results, Mineral Resources and Mineral Reserves (SAMREC Code), the South African Code for reporting mineral asset valuation (SAMVAL Code), and section 12.11 of the Listings Requirements of the JSE Limited (JSE) and are subject to the following key criteria:

➤ All mineral resources and reserves in this statement are reported as

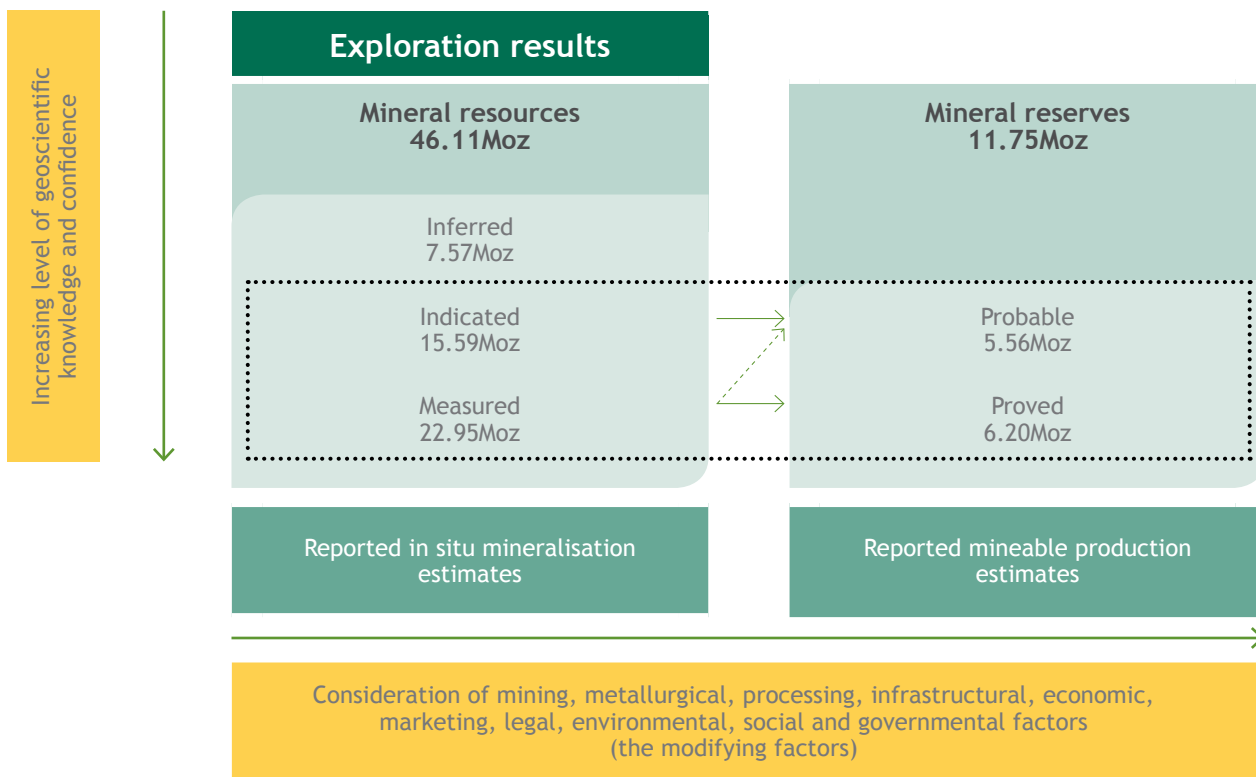
the 67% attributable interest of RBPlat

- Mineral resources and reserves stated in this document reflect estimations as of 31 December 2017
- No mineral resources or reserves are excluded due to the 75°C virgin rock temperature cut-off applied by RBPlat
- Grades and ounces are stated as the summation of four elements (4E), namely platinum, palladium, rhodium and gold
- Tonnes are indicated in metric units
- Ounces are indicated in troy with a 31.10348 metric gram per ounce factor applied
- Rounding of figures may result in computational discrepancies
- Only indicated and measured mineral resources are converted to mineral reserves, if it is part of an approved mining right, with the minimum requirement of a pre-feasibility completed on the specific resource
- There are no legal proceedings or material conditions that will impact the mineral resources and reserves reported for 2017, or the BRPM JV's ability to continue with mining activities as per life of mine plan
- No pre-feasibility or feasibility studies were initiated or conducted by RBPlat during 2017
- Frischgewaagd mineral resources and reserves are reported as part of Styldrift I.

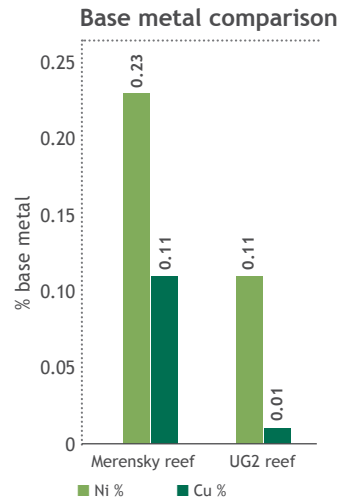
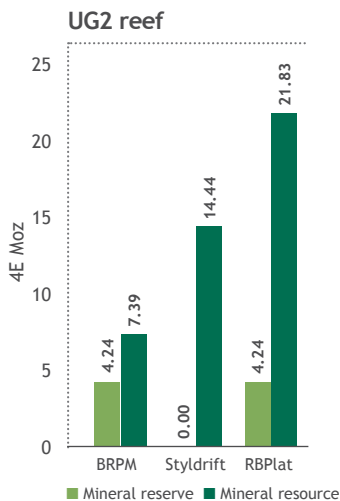
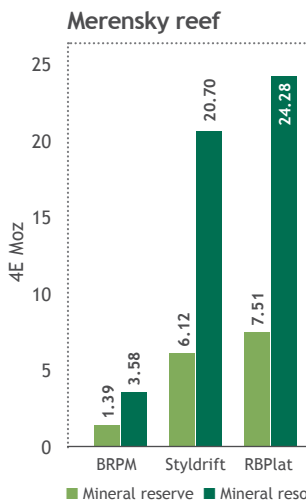


Exploration drilling operation, Styldrift I

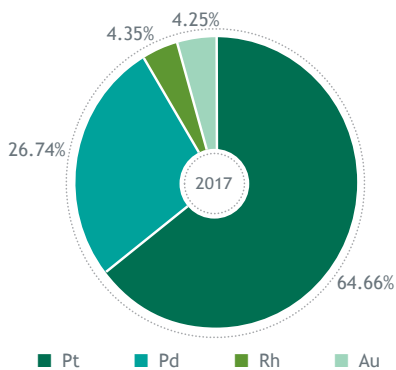
**TOTAL MERENSKY AND UG2 INCLUSIVE MINERAL RESOURCES AND MINERAL RESERVES SUMMARY, RBPLAT 67% ATTRIBUTABLE INTEREST 31 DECEMBER 2017**



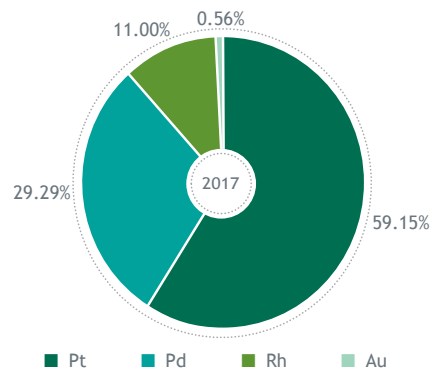
Feldspathic pyroxenite, Merensky reef hangingwall



**Merensky reef prill split**



**UG2 reef prill split**



## REGULATION COMPLIANCE

The stated aim of the SAMREC Code is the following:

- to provide a minimum standard for reporting of exploration results, mineral resources and mineral reserves
- add credibility to declarations by project promoters and assist in comparisons because of a uniform basis of declaration
- assist professionals by providing them with guidance
- assist the Competent Person to demonstrate the legitimacy of the declaration and provide credibility to the public report such that the registered professional is accountable and enabled to take full responsibility for their work.

The reporting of mineral resources and reserves for RBPlat, as a publicly traded company listed on the JSE, is compiled in accordance with the SAMREC Code. This reporting is drafted and reported with a view to materiality, transparency and competence. Compliance with the SAMREC Code, which provides a minimum standard for public reporting, ensures all information furnished to stakeholders, interested parties and investors may enable them to make a reasoned and balanced judgement regarding the mineral resources or mineral reserves.

The SAMREC Code was first compiled in 1998, issued in March 2000 and adopted by the JSE in its Listings Requirements in the same year. The code, which sets out the framework for ongoing public reporting, was promulgated in 2005. The recently updated edition of the SAMREC Code (the third revised edition of the SAMREC Code launched at the JSE on 19 May 2016) replaces all previous editions of the code. Section 12.11 of the JSE Listings Requirements has been updated with the new SAMREC Code as now mandatory as of 1 January 2017.

The 2016 SAMREC Code requires every aspect of Table 1's comprehensive checklist to be answered by the Competent Person in order to adequately address all key elements when reporting on exploration results, mineral resources and mineral reserves. The use of the checklist for every declaration is considered to be best practice. An assessment in terms of the "if not, why not" basis clarifies the relevance of each item to investors and stakeholders and assists the Competent Person in ensuring that all aspects of relevance to an investor in a statement of a company's mineral resources and reserves are included. It also provides the users of the statement with the

confidence that the declaration is fully compliant and reliable. In compliance with the 2016 edition of the SAMREC Code, the geology department of RBPlat will annually update the Competent Person's technical report in accordance with the assessment criteria of Table 1. This internal document is compiled and housed with the technical specialists and Competent Persons of RBPlat mineral resources and mineral reserves department.

Jaco Vermeulen, Group Geologist and full-time employee of RBPlat, assumes responsibility for mineral resource estimates and is also responsible for the collation of the mineral resource and reserve statement of the Company. Mineral Resource Managers Clive Ackhurst and Robby Ramphore take full responsibility for mineral reserve estimates of BRPM and Styldrift I Mine, respectively. Both are full-time employees of RBPlat. RBPlat has written confirmation from the Lead Competent Persons that the information disclosed in terms of this document is compliant with the SAMREC Code and, where applicable, the relevant JSE section 12 and SAMREC Table 1 requirements, and that it may be published in the form, format and context in which it was intended.

## MINERAL RIGHTS AND LEGAL TENURE

All mining and prospecting rights in South Africa are governed by the provisions of the Mineral and Petroleum Resources Development Act 28 of 2002 (MPRDA). Certain provisions of the MPRDA Amendment Act (49 of 2008) came into operation on 7 June 2013. A reviewed MPRDA Amendment Bill (B15D – 2013) was passed by the National Assembly in 2016. The Bill was, however, referred to the National Council of Provinces for public hearings and the outcome thereof has not been made public.

The mining rights managed by RBPlat on behalf of the BRPM JV are held in the names of Royal Bafokeng Resources Proprietary Limited (67% undivided interest) (RBR) and Rustenburg Platinum Mines Limited (RPM) (33% undivided interest).

During 2017 the BRPM JV twice informed the Minister of the

Department: Mineral Resources (DMR), as a matter of courtesy, of the negative impact on operations as a result of adverse platinum markets and above average price increases. The mines had no option but to scale down operations and discontinue UG2 reef mining at the South shaft operations of BRPM. Downscaling was, however, such that there was no legal requirement for notification in terms of section 52 of the MPRDA.

The BRPM JV and Impala Platinum Limited (Impala) concluded agreements allowing Impala to mine certain areas of the BRPM JV’s mining area from Impala’s 6, 8 and 20 shafts. Optimisation and evaluation studies revealed significant benefits to both parties as well as increased employment opportunities. This is mainly a royalty agreement as the ownership

in the rights has not been transferred. Mineral resource and reserve statements for the BRPM JV operations therefore include these areas.

### MINING RIGHTS

The BRPM JV operates the BRPM and the Styldrift mines by virtue of mining rights granted by the DMR and registered at the Mineral and Petroleum Titles Registration Office.

The DMR consented to the conversion of the two Frischgewaagd prospecting rights into the Styldrift mining right during 2016. Closure of the prospecting rights will be applied for following the registration of the MPRDA section 102 deed of variation, which was executed at the DMR’s regional office during 2017. Figure 1 indicates the geographical extent of the RBPlat mining rights.

Table 1: Mining rights pertaining to the BRPM and Styldrift mines

	Farm	Extent (ha)	Portion	Minerals	Status
<b>BRPM</b>	Boschkoppie 104 JQ	3 363	Portion 1 and a portion of the remainder and Portion 2	Platinum, PGMs and associated minerals	Valid until 9/9/2040 and renewable
<b>Styldrift Mine</b>	Styldrift 90 JQ		Farm	PGMs, gold ore, silver ore, nickel ore, copper ore, cobalt and chrome ore, stone aggregate (from waste dump) and sand (manufactured) from waste dump	Valid until 11/3/2038 and renewable
	Frischgewaagd 96 JQ	5 096	Remainder of Portion 10, Portion 14 and Portion 17		

Serpentinized altered breccia, Railway Block Fault, BRPM





## MINERAL RIGHTS AND LEGAL TENURE continued

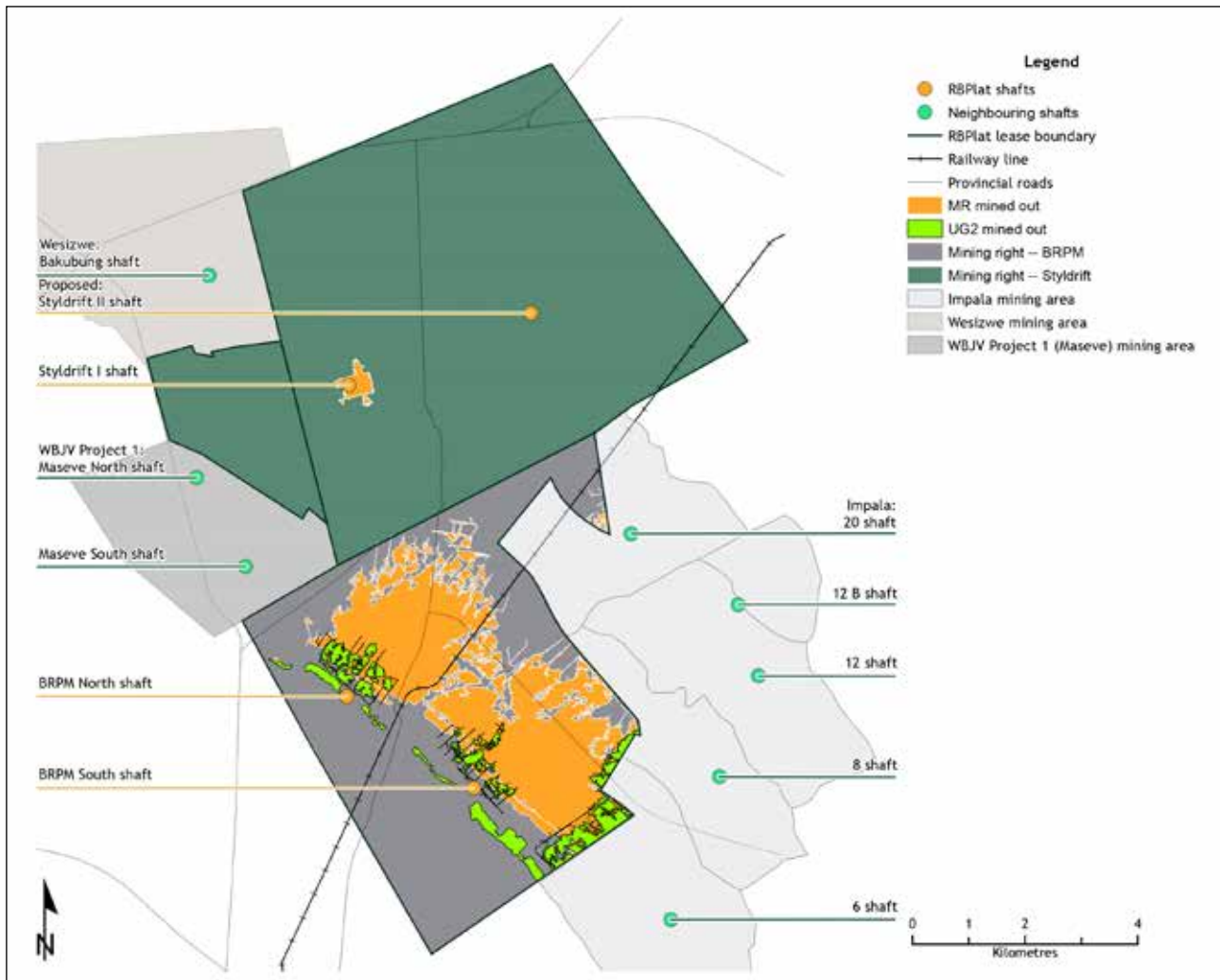


Figure 1: RBPlat mining rights

### SURFACE RIGHTS

Lease agreements and the joint venture agreement provide for the rights to utilise certain areas within the mining right areas for mining and associated surface infrastructure.

The BRPM JV mainly utilises land registered in the name of RPM and land owned or held in trust for the Royal Bafokeng Nation (RBN).

An application to amend the land use scheme (rezoning) of land owned by RPM was submitted to the Rustenburg local municipality in 2017 for a decision. Negotiations related to the rezoning of RBN land were initiated in 2017 and are ongoing.

An agreement was reached with Maseve Investments 11 Proprietary Limited in respect of responsibility

for a certain portion of the farm Frischgewaagd 96 JQ, defined as the “Maseve project area”. RBR and RPM are the mining right holders and Maseve as surface owner will utilise the surface of the Maseve project area for mining infrastructure including a tailings storage facility.



Table 2: Surface rights pertaining to the BRPM and Styldrift mines

Agreement	Farm	Portion	Extent (ha)	Status
Lease agreement concluded between RBN and RPM	Boschkoppie 104 JQ	Portion 1	1929.2242	Valid until 14/10/2022 and renewable
		RE	1886.3993	
Lease agreement concluded between RBN, RBR and RPM	Styldrift 90 JQ	Portion of the farm	215.4975	Valid for life of mining operations
	Boschkoppie 104 JQ	Portion of the RE (replaces above lease area)	1430.0320	
Second amended and restated notarial joint venture agreement concluded between RBN, RBR and RPM	Elandsfontein 102 JQ	Portion 4/1	35.3705	Valid for life of mining operations
		Portion 19/15	21.4133	
		Portion 17/15	21.4133	
	Boschhoek 103 JQ	Portion 71/11	86.3194	
		Re of Portion 70	30.6996	
		Portion 85/70	63.3914	
		Portion 103/11	52.4855	
Portion 137/21	271.8925			

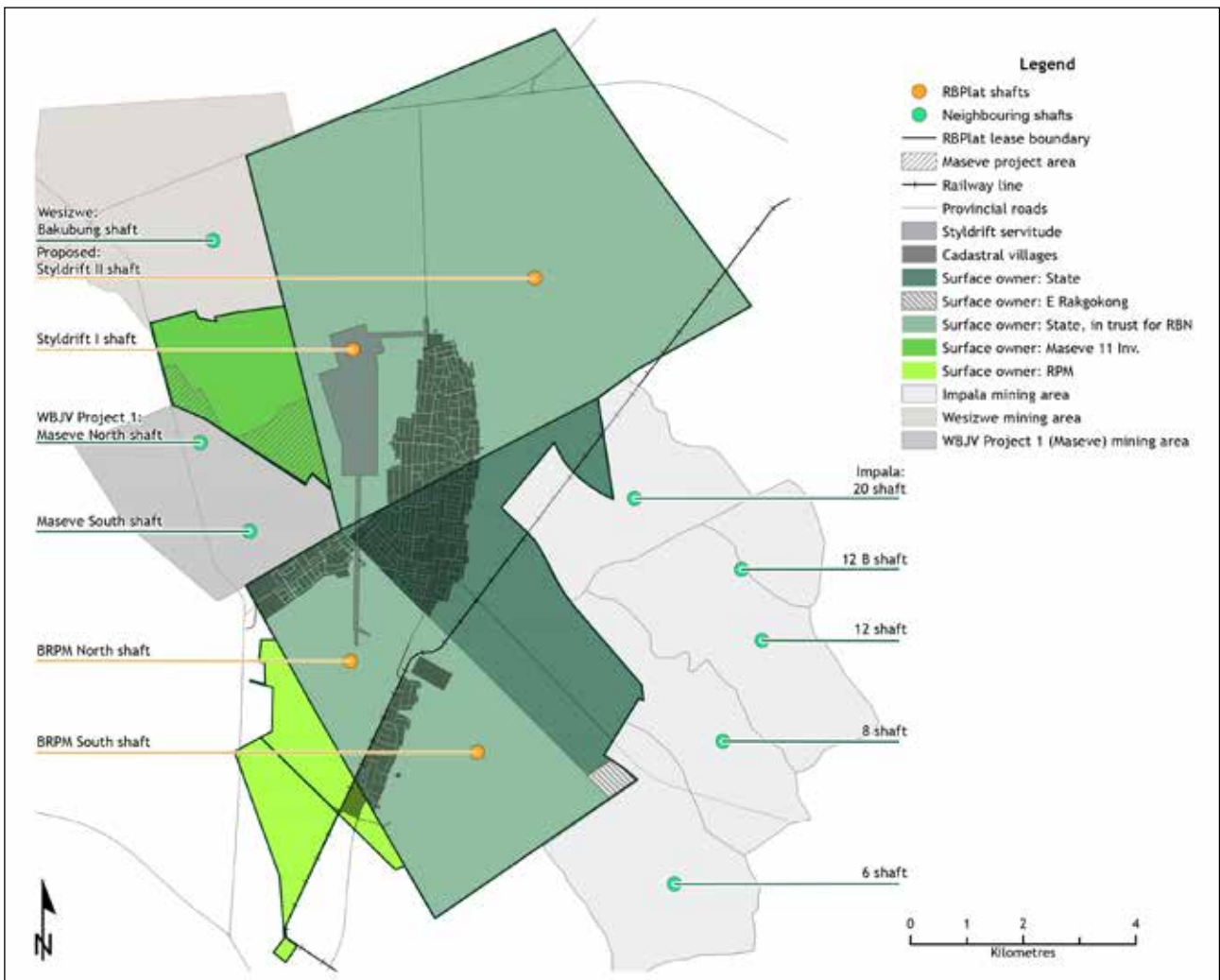


Figure 2: RBPlat surface rights

Pegmatoidal feldspathic pyroxenite with chromitite top reef contact, Styldrift I shaft



## MINERAL RIGHTS AND LEGAL TENURE continued

### THE ENVIRONMENT

The BRPM JV aims to:

- ▶ optimally mine the mineral resources and to prevent environmental pollution and degradation in the process
- ▶ continually improve environmental performance and to manage resources efficiently

- ▶ eliminate waste and reduce dependence on fossil fuels and external water supplies
- ▶ protect eco-systems and comply with legislation.

In line with legal requirements, our operations update their closure liability assessments and financial closure provisions annually and this ensures that our operations'

financial closure provisions and closure liabilities remain fully funded. Please refer to notes 6 and 21 of RBPlat's annual financial statements for 2017.



Geologists performing field mapping, Styldrift 90 JQ

## GEOLOGICAL SETTING

The largest host of PGMs, chromium and vanadium commodities in the world is the Bushveld (Igneous) Complex. It formed on the stable geological foundation made up of the Kaapvaal and Zimbabwe cratons in southern Africa, together with other large mafic and ultramafic layered intrusions. The Bushveld Complex has been mined for several decades for its high-value ore, and plays a key role in the South African economy.

RBPlat is situated on the Western Limb of the Bushveld Complex, one of three main portions which all comprise similarities in their formation, economic potential and type of commodity (Figure 3). The Bushveld Complex, formed approximately 2.04 billion years ago, comprises three main suites: the Rooiberg Group, Lebowa Granite Suite and the Rustenburg Layered Suite. The Rustenburg Layered Suite contains four main zones (upper, main, critical and lower) with each zone characterised by signature igneous intrusive layering, known as stratigraphy. The critical zone hosts the platinum group element (PGE) bearing reef (economically important layer) types of the Merensky reef and the Upper Group 2 reef (UG2). Both the Merensky reef and UG2 reef are mined at RBPlat.

RBPlat operates immediately south of the Pilanesberg Alkaline Complex, a younger (1.25 billion years old) complex of highly alkaline rocks formed through a ring-type volcanic system, and about 30km north of the town Rustenburg. Three farms make up the areas of mining, namely Boschkoppie 104 JQ, Frischgewaagd 96 JQ and Styldrift 90 JQ. The surface of the farms is predominately topologically horizontal, with little outcrop and a dominant covering of thick black cotton soil (black turf) from the main zone's weathering over the years. Further towards the west of the farms, quartzite outcrops can be found from the Magaliesberg Formation of the Transvaal Supergroup (estimated at 2.5 billion years old).

The Merensky and UG2 reefs are both sulphide enriched with the Merensky reef being the main economic horizon mined by RBPlat mines. The PGMs (platinum (Pt), palladium (Pd), iridium (Ir), rhodium (Rh), osmium (Os), ruthenium (Ru)) and gold (Au) are found within the sulphide minerals within the reefs, and include varieties of copper (Cu) and nickel (Ni) as accompanying metals. The reef horizons dip in

the north-eastern direction between 5° and 12°.

The steeper dips are in the north-eastern part of Styldrift, with the shallower dips being present in the centre and western parts of the farm.

The average depth of the Merensky reef is 505 metres below surface (mbs), with RBPlat having the advantage of being a Merensky reef dominant shallow mine. The newly sunk Styldrift I shaft is currently developing a 5° dipping Merensky reef horizon at an average depth of 713mbs.

The Merensky reef on the farm Styldrift 90 JQ comprises five different geological facies types, namely the abutment, terrace, central, transition, normal, normal thick and main reef facies, derived from a western to eastern direction of the mining area (Figure 4). Each facies type exhibits unique geological and geochemical characteristics and plays a fundamental role in planning the optimised mining method thereof (Figure 5).





## GEOLOGICAL SETTING continued

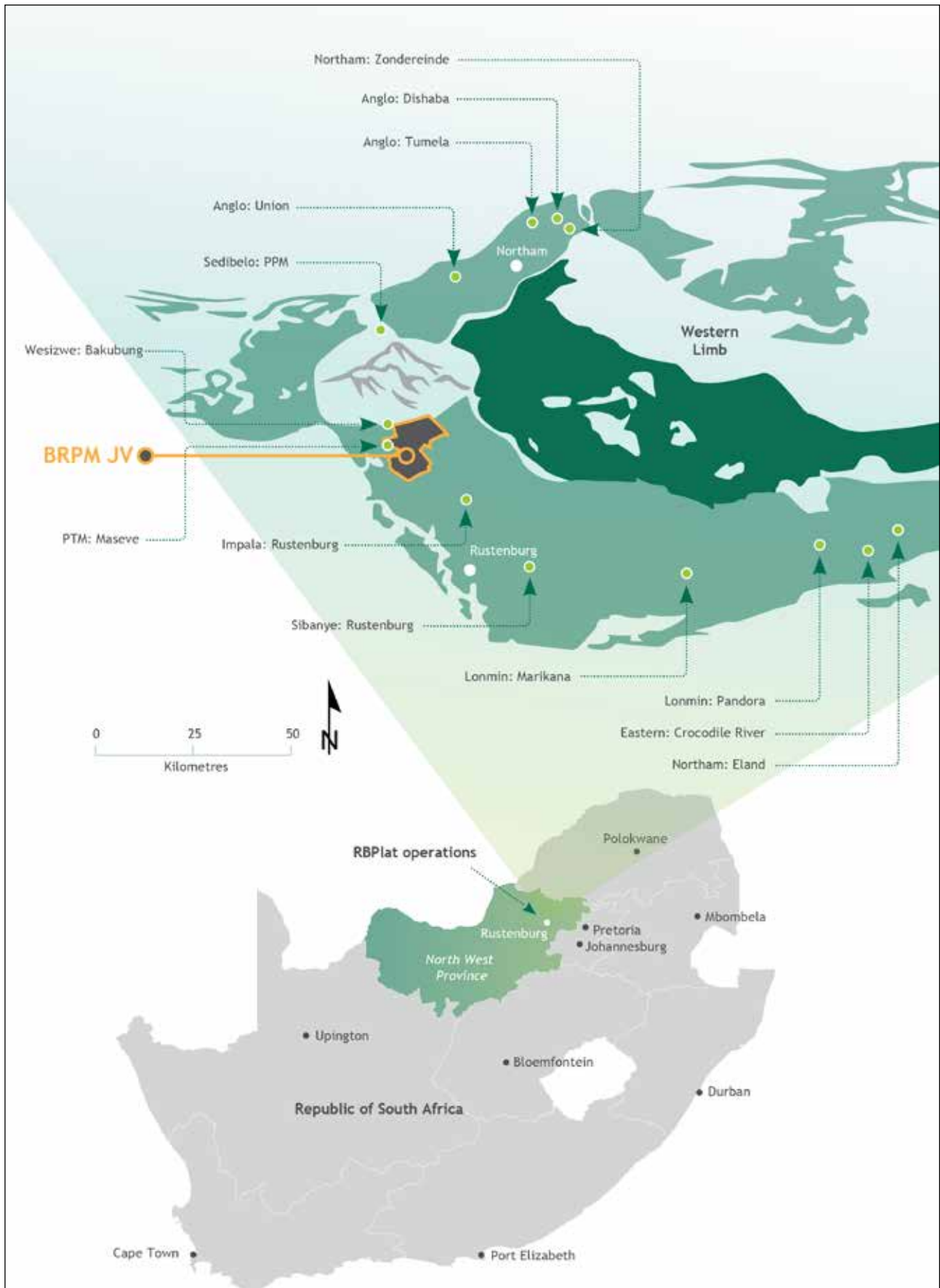


Figure 3: Location of the RBPlat operations



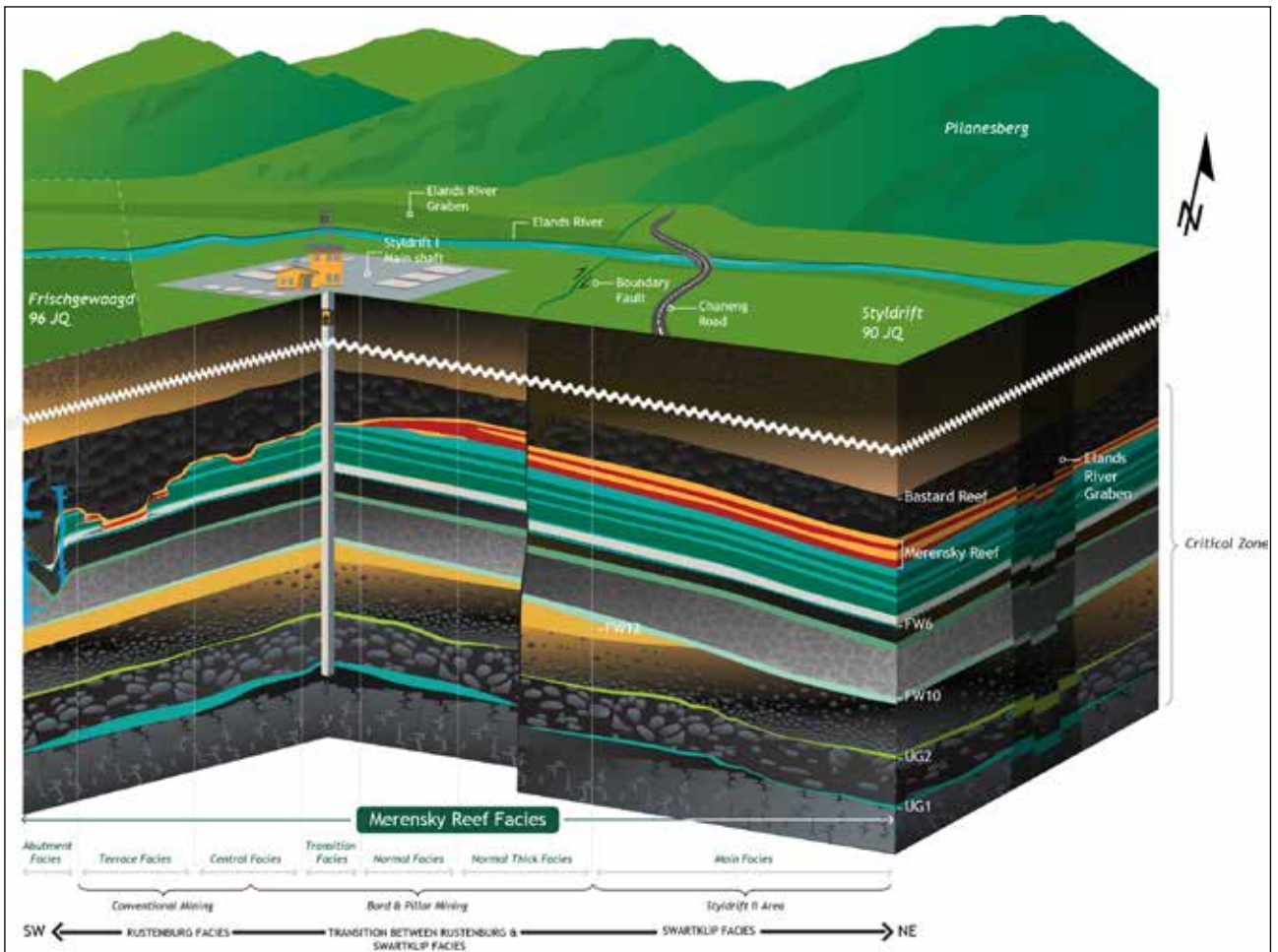


Figure 4: Three-dimensional illustration of local geology, Styldrift 90 JQ (not to scale)

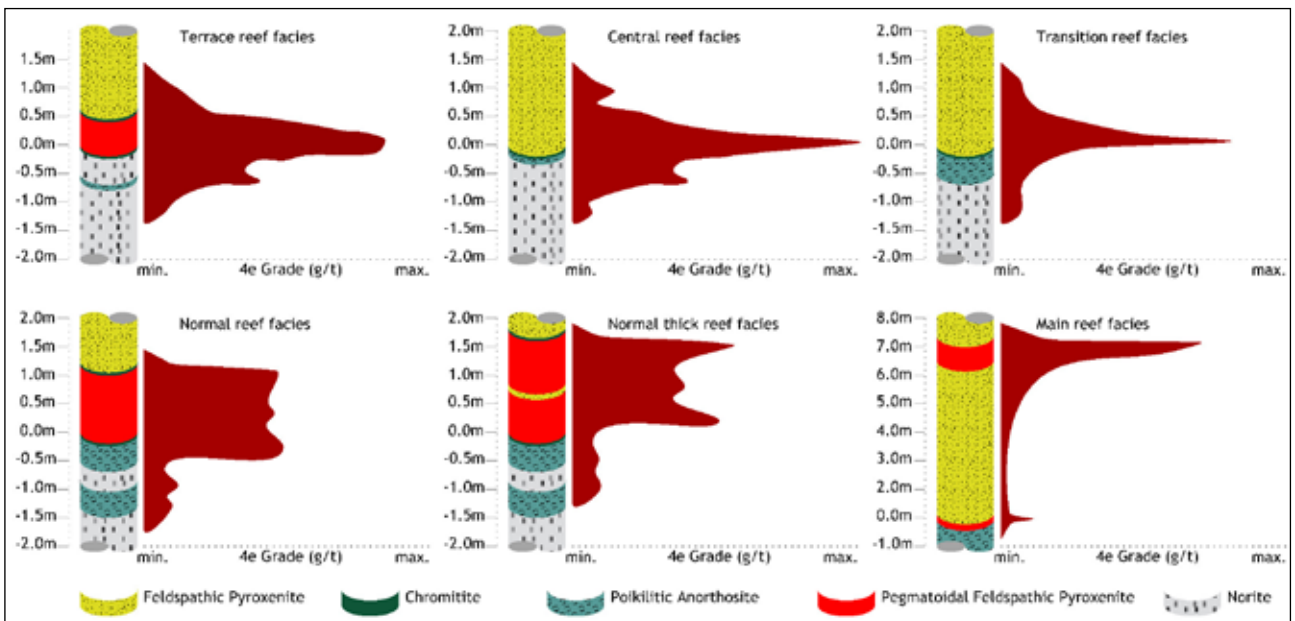


Figure 5: Merensky reef grade (4E) distribution, Styldrift 90 JQ

Chromitite stringer, footwall 6



## EXPLORATION ACTIVITIES

RBPlat's exploration has two primary focus areas, namely Styldrif I shaft and BRPM North shaft Phase III. These are brownfield exploration activities which ensure that the target areas obtain the required data to meet the requirements as stipulated with the project parameters aligned with the life-of-mine (LOM) strategy and in agreement with the SAMREC Code. Constant and sustainable updating of the resource model is the approach taken, which ensures mandatory quality processes are followed and, together with continual updating of other geological information, ensures that accurate and precise information is used to confirm the project's success. All exploration activities are planned and executed on an annual basis, with critical exploration activities remaining the priority.

### EXPLORATION HISTORY

Exploring for platinum targets has been pursued since the 1930s in the Western Limb. Targets for platinum originate in shallow Merensky reef and remained the focus of attention until approximately 1997. The gradual depletion of the Merensky reef over the years shifted focus towards the lower grade UG2 reef. RBPlat remains focused on the shallower Merensky reef horizon.

In 1998, BRPM was established and exploration work supported the mine until 2010. BRPM North shaft Phase III was the last target for BRPM with drilling programmes across 2009, 2010, 2012 and 2016. The first large drilling and geophysical activities on Styldrif started in 2003 to comply with data requirements for the feasibility study of the sinking of Styldrif I,

with stable exploration activities in 2012, 2013, 2014 and 2015 to support the appropriate geological data for the new shaft. The deeper parts of Styldrif (eastern side of the property), together with Frischgewaagd, had a large drilling programme in 2011 with a supporting drilling programme in 2013.

Geophysical updates for the mining right properties included 3D seismic surveys in 2009 with updates in 2014 and 2015, light detection and ranging (LiDAR) surveys in 2014, aerial photographs in 2014, satellite imagery in 2009 and 2014, resistivity surveys in 2015, groundwater drilling and monitoring in 2015, and downhole geophysical surveys in 2015. Most of the updates were undertaken to assist the geological model confidence prior to and during the sinking of Styldrif I as well as updating the deeper structural features of Styldrif.

Geological updates of major stratigraphic changes are important to the mining design. These are known as facies and refer to changes in the characteristics of the reef horizons. Each facies type is similar, characterised by their signature of grade average, grade placement within the stratigraphy, footwall type and their relationship to other reef intersections showing the same characteristics. RBPlat has seven facies types and the information is used to better design the mining going forward and ensure optimal continuity of quality ore extraction. The facies model is updated annually.

Exploration information is added to the structural model annually. In 2017, a change was made in the Chaneng Dyke with a

re-interpretation of the aeromagnetic survey completed in 2009. The Chaneng Dyke is the investment centre boundary between the BRPM North shaft Phase III and Styldrif I.

Exploration drilling has focused on three main areas over the past five years: Styldrif I, Styldrif II and BRPM North shaft Phase III. Diamond core drilling in 2013 comprised 17 drillholes equating to 23 924m, the drilling programme in 2014 included 26 drillholes at a total of 17 896m, 2015 encompassed six drillholes equalling 7 133m and 2016 was the smallest drilling programme with four drillholes and 3 076m of core.

### 2017 EXPLORATION ACTIVITIES

The 2017 exploration programme focused primarily on the two project areas of BRPM North shaft Phase III and Styldrif I, in line with the RBPlat business strategy (Figure 6). A total of 18 drillholes were completed: seven drillholes were allocated to the northern block of BRPM North shaft Phase III to better delineate the iron replacement ultramafic pegmatoid (IRUP) intersected in 2016 and to update the known position of the Chaneng Dyke; and three drillholes were assigned to Styldrif I for assistance in the change in facies south of the new shaft and continuing the geotechnical evaluation of the ventilation shaft positions started at the end of 2016. An additional eight short holes were drilled in an old area of the UG2 reef near BRPM South shaft to evaluate the potential for future extraction. In total, 18 Merensky and 26 UG2 reef intersections were taken from the 6 725m drilled at a total exploration cost of R13.5 million.

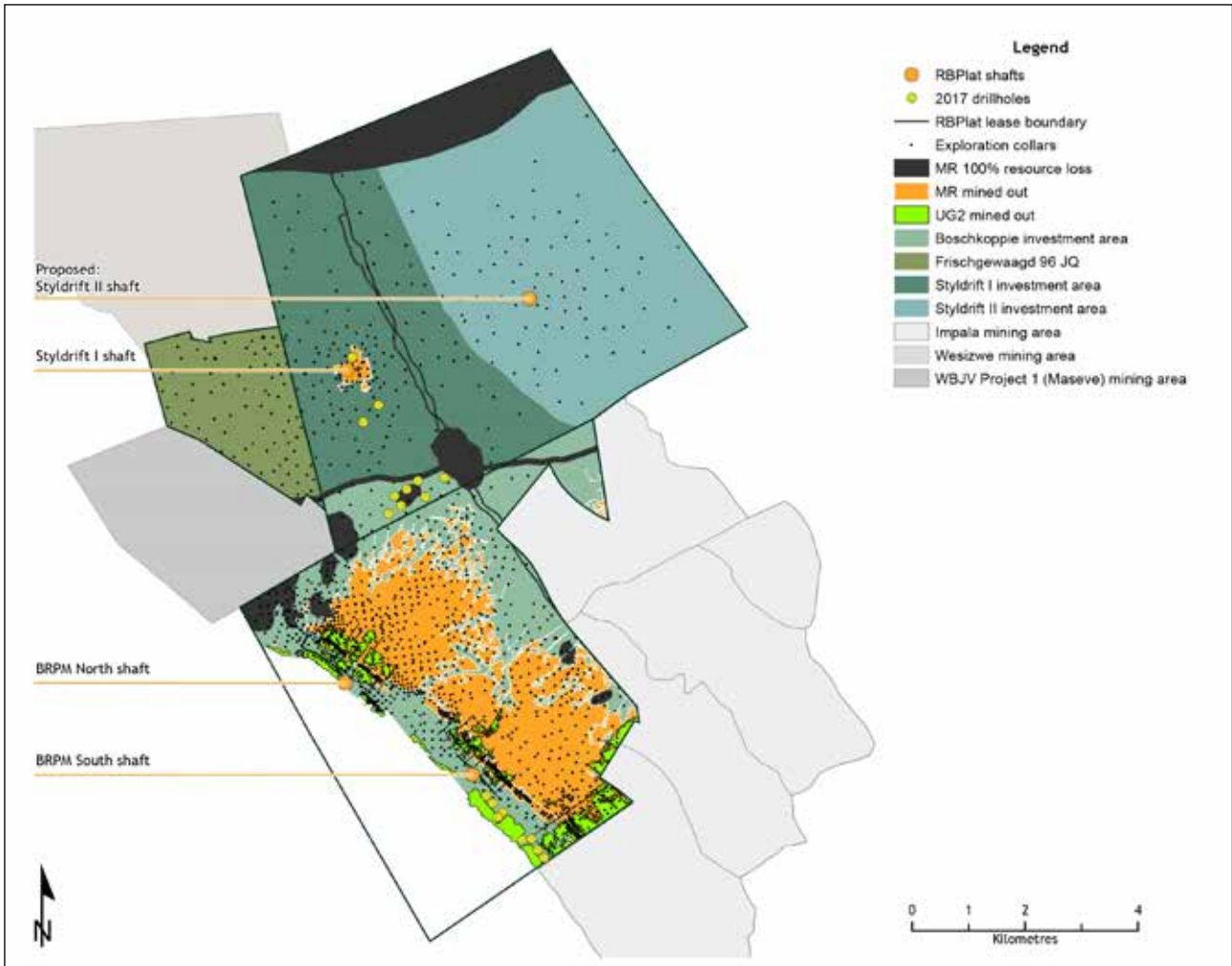


Figure 6: Exploration drilling activities 2017

**2018 EXPLORATION ACTIVITIES**

In continuing the updating of the IRUP delineation at BRPM North shaft Phase III in support of the 2016 and 2017 drillhole data, four holes are planned. Increasing the resource confidence of the

indicated resources in the southern section of Styldrift I will allow for three planned drillholes. One hole will be drilled in the eastern Chaneng Dyke geological loss area to better determine the structural constraint of the dyke.

It is estimated that a total of 7 500m will be completed for the eight drillholes. It is expected that 16 Merensky and 16 UG2 intersections will be extracted from the diamond core.

Dolerite sill intrusion contact, BRPM South shaft





## MINERAL RESOURCES

A mineral resource according to SAMREC's definition "is a concentration or occurrence of solid 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 eventual economic extraction". As custodians of the RBPlat mineral portfolio, the key focus as part of a mineral resource management strategy is the optimal extraction of the mineral asset.

### SALIENT POINTS REGARDING RESOURCES

- Mineral resources are reported as "in situ" tonnes and ounces
- Estimated known and unknown geological losses are discounted from the reported mineral resources
- Mineral resources for 2017 are estimated at a minimum cut of 0.90m
- For the UG2 reef, a 30cm geotechnical support beam has been applied
- No mineral resources are excluded from the 2017 declaration relative to 2016 as a result of the cut-off grade calculation derived from the mineral reserve pay limits
- Mineral resources are quoted as both inclusive and exclusive of mineral reserves.

### MINERAL RESOURCE ESTIMATION METHOD AND ITS KEY PARAMETERS IN THE MODELLING TECHNIQUE APPLIED

The Merensky reef and UG2 reef mineral resources are based on evaluation comprising an estimation of the 4E prill split (Pt, Pd, Rh and Au) accumulations, the base metal accumulation and density over the mineralised envelope. The mineralised envelope for both Merensky and UG2 is modelled over

a minimum resource cut width of 90cm. The reported UG2 model consists of a geotechnical consideration such that if either a stringer parting and/or the leader package lies within 30cm of the top UG2 reef contact, then this parting and stringer/leader package becomes part of the resource cut. Therefore, the UG2 resource cut is based on a minimum 90cm with a geotechnical composite which will include the leader package if the parting is less than 30cm, the UG2 and a minimum of 5cm footwall. Composite grades used for estimation are length and density weighted and are corrected for dip by application of dip domains calculated from wireframes, informed by 3D seismics and reef contour data. The modelling domains are based on the reef facies identified which have been delineated from widths, footwall types, physical characteristics and mineralisation trends.

The mineral resource model is a 2D block model created and estimated within the Datamine software. Ordinary kriging is the estimation method applied with the semi-variogram analysis to understand the spatial continuity and variance of the data.

Kriging neighbourhood studies are conducted with the resource model update to ascertain block sizes, sample number support and data search volumes required for the greatest confidence in the estimate.

The resource classification method applied is a scorecard method adopted from Anglo American Platinum. The procedure assesses the ore body geology, geometry and the estimation results by means of several statistical and non-statistical parameters. The parameters are quantified into high,

medium and low categories on a cell by cell basis. A process that assigns individual weightings per block/cell and the average weighted value determines the resource confidence. The procedure provides documented support for the classification adopted and the rationalisation of the diverse qualitative and quantitative attributes of the elements considered. The result of the analysis is then assessed by the Competent Persons team and signed off. The statistical and geological (non-statistical) considerations are tabled below:

#### Non-statistical parameters

- Aeromagnetic survey
- Seismic survey
- Structural model
- Facies interpretation
- Historic data/mining history
- Geological loss
- Quality assurance quality control

#### Statistical parameters

- Kriging efficiency
- Kriging variance
- Number of samples
- Search volume
- Slope of regression

### MINERAL RESOURCE SUMMARY

The Merensky reef resource estimation model is a variable cut model, which is based on an economical mineralised envelope that is reported as the in situ mineral resource. The UG2 resource model is a variable model that evaluates the UG2 Main Band (UG2 MB) and the overlying chromitite leader package which is included with a 30cm support beam when there is a geotechnical consideration. The widths of these individual packages vary significantly over the mining lease area, as well as the vertical difference between the UG2 MB and the overlying leader package.



The Merensky resource was updated and resulted in a 0.5% increase in additional data in comparison to the 2016 resource model. Geological structures and associated losses were updated for both Merensky

and UG2 in accordance with the annual cycle for input into the resource reporting. Drilling and mined-out intersections allowed for a structural re-interpretation

update within BRPM North shaft which resulted in a loss of area.

Note: The exclusive resources are resources outside the reserve “footprint/window”.

**Table 3: RBPlat inclusive mineral resources, RBPlat 67% attributable interest, 31 December 2017**

Reef	Resource classification	2017			2016		
		Tonnes (Mt)	4E grade (g/t)	Contained 4E (Moz)	Tonnes (Mt)	4E grade (g/t)	Contained 4E (Moz)
Merensky and UG2	Measured	114.11	6.26	22.95	115.90	6.24	23.25
	Indicated	83.64	5.80	15.59	82.65	5.75	15.29
	Inferred	37.81	6.23	7.57	40.24	6.30	8.16
	<b>Total</b>	<b>235.56</b>	<b>6.09</b>	<b>46.11</b>	<b>238.79</b>	<b>6.08</b>	<b>46.70</b>

**Table 4: RBPlat exclusive mineral resources, RBPlat 67% attributable interest, 31 December 2017**

Reef	Resource classification	2017			2016		
		Tonnes (Mt)	4E grade (g/t)	Contained 4E (Moz)	Tonnes (Mt)	4E grade (g/t)	Contained 4E (Moz)
Merensky and UG2	Measured	56.29	5.98	10.82	55.62	5.98	10.70
	Indicated	64.97	5.65	11.80	65.68	5.63	11.89
	Inferred	37.81	6.23	7.57	40.24	6.30	8.16
	<b>Total</b>	<b>159.07</b>	<b>5.90</b>	<b>30.19</b>	<b>161.55</b>	<b>5.92</b>	<b>30.75</b>

**MERENSKY REEF MINERAL RESOURCE**

The Merensky reef resource model update resulted in resource category upgrades within the North shaft Phase III of -0.11Mm<sup>2</sup> to a measured resource and -0.11Mm<sup>2</sup> to an indicated resource. North shaft’s boot area, which forms part of Impala Platinum’s mining session area, was upgraded to an indicated resource based on successful mining history and evaluation model output recommendations (Figure 7).



Geologist performing underground mapping, North shaft Phase III

Norite, footwall 7



## MINERAL RESOURCES continued

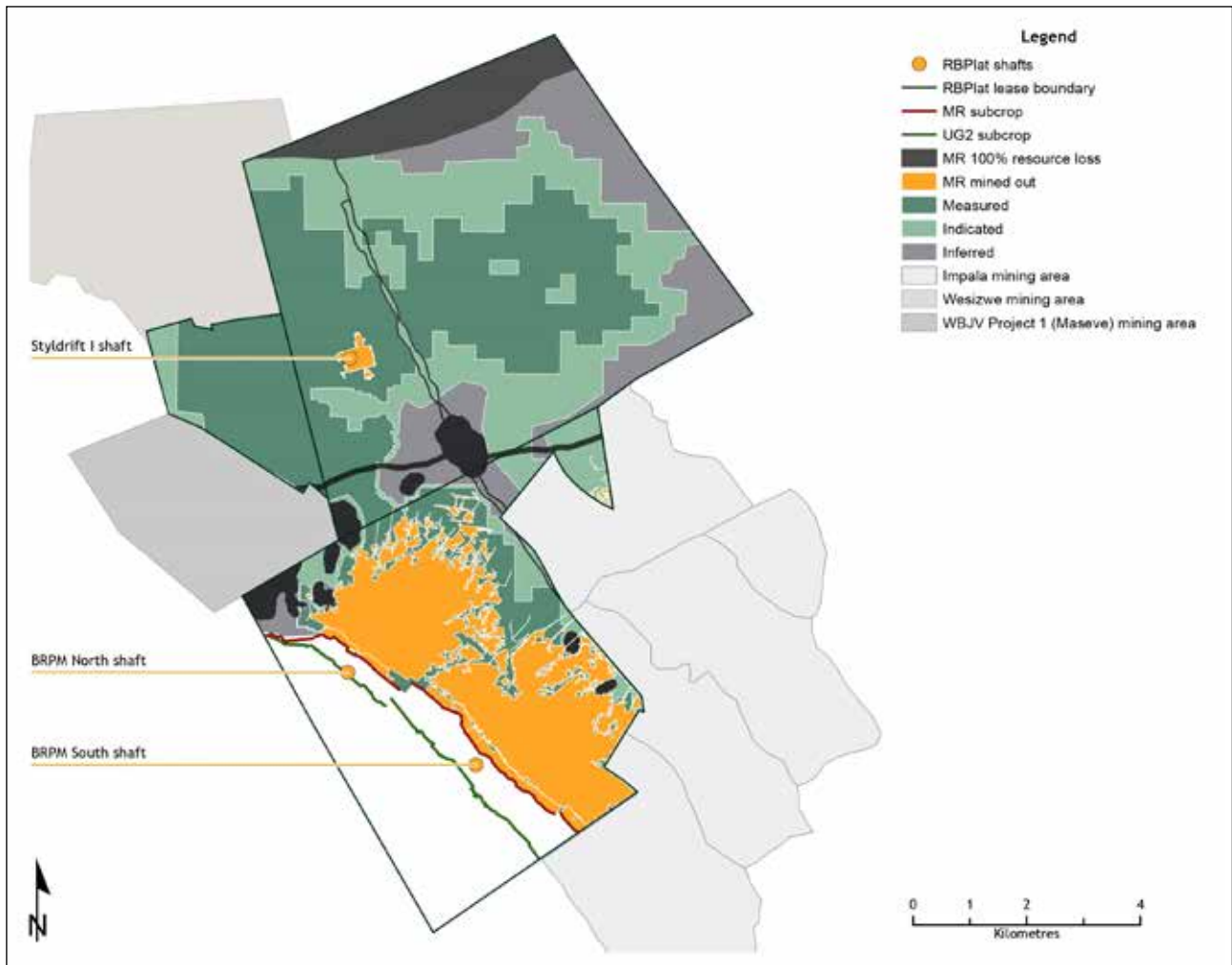


Figure 7: Merensky reef resource classification 2017

Table 5: Merensky reef inclusive mineral resource, RBPlat 67% attributable interest, 31 December 2017

Reef	Resource classification	2017			2016		
		Tonnes (Mt)	4E grade (g/t)	Contained 4E (Moz)	Tonnes (Mt)	4E grade (g/t)	Contained 4E (Moz)
Merensky	Measured	50.67	7.55	12.30	51.91	7.50	12.52
	Indicated	33.73	7.02	7.61	32.30	6.95	7.22
	Inferred	17.89	7.59	4.36	19.62	7.70	4.86
	<b>Total</b>	<b>102.28</b>	<b>7.38</b>	<b>24.28</b>	103.83	7.37	24.60

### Merensky reef inclusive mineral resource keynotes

The Merensky reef resources inclusive of mineral reserves decreased by 1.55Mt and 0.32Moz due to mining depletion and a decrease in area due to an increase in updated geological structures.

**Table 6: Merensky reef inclusive mineral resource per investment area, RBPlat 67% attributable interest, 31 December 2017**

Area	Year Resource classification	2017			2016		
		Tonnes (Mt)	4E grade (g/t)	Contained 4E (Moz)	Tonnes (Mt)	4E grade (g/t)	Contained 4E (Moz)
BRPM	Measured	7.17	7.90	1.82	8.58	7.64	2.11
	Indicated	4.73	7.26	1.10	3.50	7.11	0.80
	Inferred	2.61	7.78	0.65	4.81	8.17	1.26
	<b>Total</b>	<b>14.50</b>	<b>7.67</b>	<b>3.58</b>	<b>16.89</b>	<b>7.68</b>	<b>4.17</b>
Styldrift I	Measured	29.82	7.20	6.90	29.82	7.16	6.87
	Indicated	15.66	6.54	3.30	15.75	6.48	3.28
	Inferred	2.69	7.07	0.61	2.48	6.94	0.55
	<b>Total</b>	<b>48.17</b>	<b>6.98</b>	<b>10.81</b>	<b>48.05</b>	<b>6.93</b>	<b>10.70</b>
Styldrift II	Measured	13.67	8.14	3.58	13.51	8.17	3.55
	Indicated	13.34	7.49	3.21	13.05	7.48	3.14
	Inferred	12.59	7.66	3.10	12.33	7.67	3.04
	<b>Total</b>	<b>39.61</b>	<b>7.77</b>	<b>9.89</b>	<b>38.89</b>	<b>7.78</b>	<b>9.73</b>

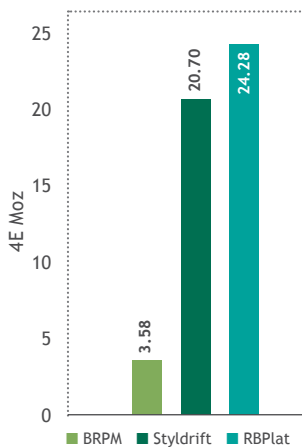


Figure 8: Merensky reef inclusive mineral resource per mine

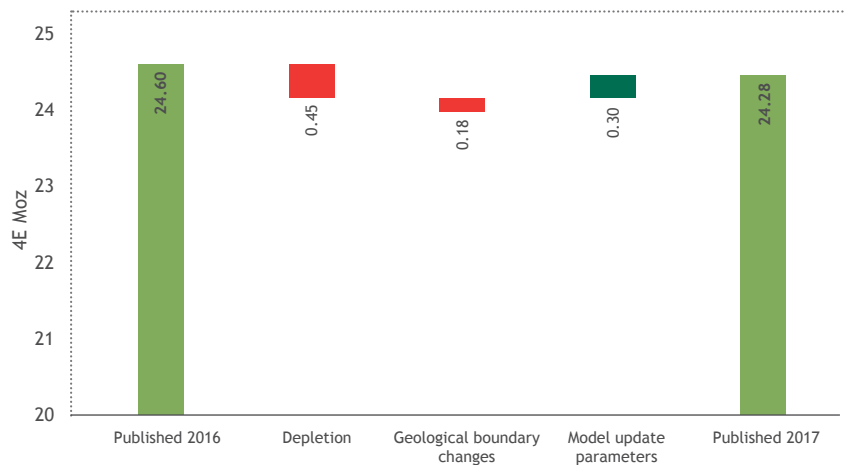


Figure 9: Merensky reef inclusive mineral resource reconciliation (Moz)

**Table 7: Merensky reef exclusive mineral resources, RBPlat 67% attributable interest, 31 December 2017**

Reef	Resource classification	2017			2016		
		Tonnes (Mt)	4E grade (g/t)	Contained 4E (Moz)	Tonnes (Mt)	4E grade (g/t)	Contained 4E (Moz)
Merensky	Measured	18.33	7.86	4.63	18.32	7.85	4.62
	Indicated	21.21	7.05	4.81	21.13	7.01	4.76
	Inferred	17.89	7.59	4.36	19.62	7.70	4.86
	<b>Total</b>	<b>57.43</b>	<b>7.48</b>	<b>13.80</b>	<b>59.07</b>	<b>7.50</b>	<b>14.25</b>

### Merensky reef exclusive mineral resource keynotes

The mineral resource tonnage decreased from 59.07Mt to 57.43Mt and the 4E ounce content decreased from 14.25Moz to 13.80Moz. This is attributed to the decrease in area from the geological loss of the structural update including an upgrade of inferred resources to an indicated resource category. The inferred resource decreased by approximately 1% from 2016.

The Merensky resource category progression of RBPlat over the past few years, with increased measured resources and decrease in indicated and inferred resources, is a result of the exploration, business planning and LOM strategies that develop the mineral resource model confidence accordingly. The 2017 confidence classification of the Merensky 4E ounce content comprises 50.68% measured, 31.34% indicated and 17.98% inferred mineral resources (Figure 10).



## MINERAL RESOURCES continued

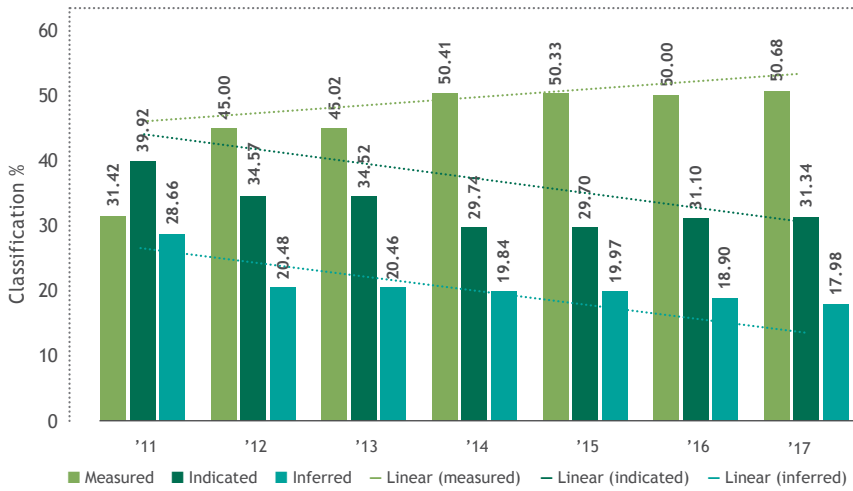


Figure 10: Merensky reef mineral resource classification progression

### UG2 REEF MINERAL RESOURCE

The UG2 mineral resource model was updated with structural changes and its applied geological losses. An increase of ~0.5Mm<sup>3</sup> within the north-west block area of North shaft from inferred to indicated was reviewed based on the current mining around the area and the previous model output recommendations (Figure 11).

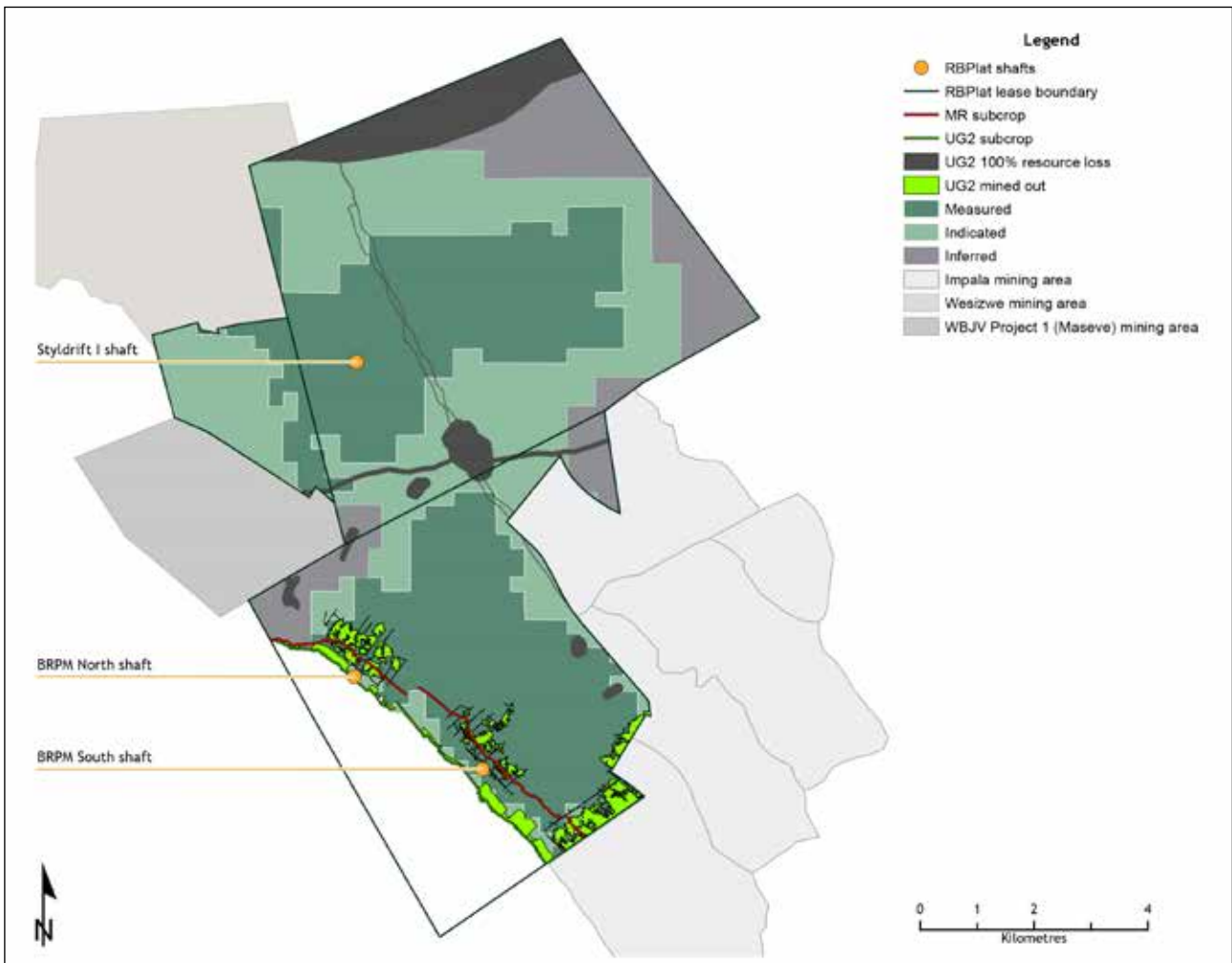


Figure 11: UG2 reef resource classification 2017



**Table 8: UG2 reef inclusive mineral resource, RBPlat 67% attributable interest, 31 December 2017**

Reef	Resource classification	2017			2016		
		Tonnes (Mt)	4E grade (g/t)	Contained 4E (Moz)	Tonnes (Mt)	4E grade (g/t)	Contained 4E (Moz)
UG2	Measured	63.45	5.22	10.65	63.99	5.22	10.73
	Indicated	49.91	4.97	7.98	50.35	4.99	8.07
	Inferred	19.92	5.00	3.20	20.62	4.98	3.30
	<b>Total</b>	<b>133.28</b>	<b>5.10</b>	<b>21.83</b>	134.96	5.09	22.10

**UG2 reef inclusive mineral resource keynotes**

Mineral resources inclusive of mineral reserves increased in tonnage by 1.67Mt and decreased in content by 0.26Moz due to mining depletion, the decrease in area within North shaft from the loss due to the structural re-interpretation and geological loss which increased from 34.72% to 34.97% (Table 9).

**Table 9: UG2 Reef inclusive mineral resource per investment area, RBPlat 67% attributable interest, 31 December 2017**

Area	Resource classification	2017			2016		
		Tonnes (Mt)	4E grade (g/t)	Contained 4E (Moz)	Tonnes (Mt)	4E grade (g/t)	Contained 4E (Moz)
BRPM	Measured	28.86	5.42	5.03	29.52	5.40	5.13
	Indicated	9.67	4.93	1.53	10.81	4.96	1.73
	Inferred	5.56	4.62	0.83	6.30	4.58	0.93
	<b>Total</b>	<b>44.09</b>	<b>5.21</b>	<b>7.39</b>	46.63	5.19	7.78
Styldrift I	Measured	20.23	5.17	3.36	20.13	5.17	3.34
	Indicated	21.26	4.98	3.40	20.64	4.99	3.31
	Inferred	0.00	0.00	0.00	0.00	0.00	0.00
	<b>Total</b>	<b>41.48</b>	<b>5.07</b>	<b>6.76</b>	40.77	5.08	6.66
Styldrift II	Measured	14.36	4.89	2.26	14.34	4.89	2.26
	Indicated	18.98	4.99	3.05	18.90	4.99	3.03
	Inferred	14.36	5.15	2.38	14.32	5.15	2.37
	<b>Total</b>	<b>47.70</b>	<b>5.01</b>	<b>7.68</b>	47.56	5.01	7.66

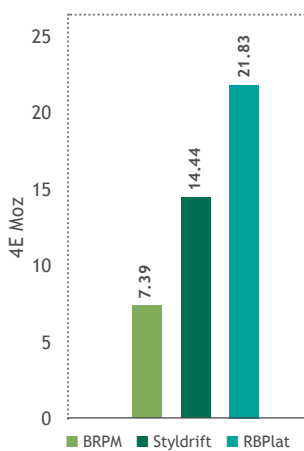


Figure 12: UG2 reef inclusive mineral resource per mine

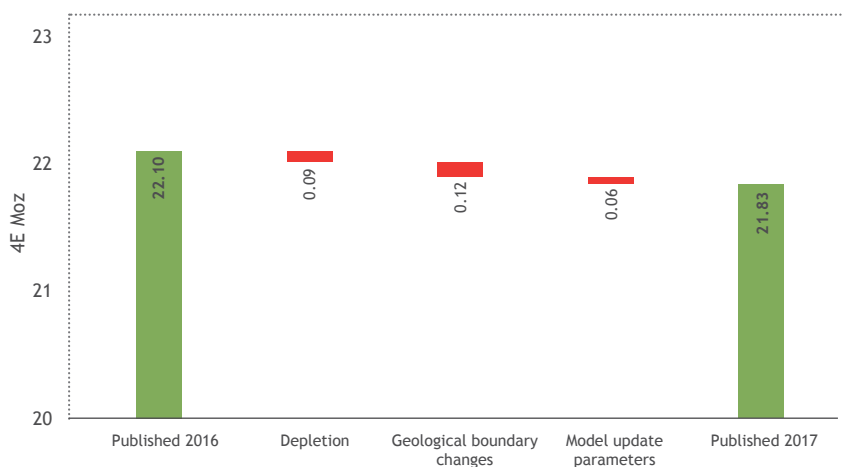


Figure 13: UG2 reef mineral resource reconciliation

Sulphide mineralisation within pegmatoidal feldspathic pyroxenite, Merensky reef



## MINERAL RESOURCES continued

**Table 10: UG2 reef exclusive mineral resource, RBPlat 67% attributable interest, 31 December 2017**

Reef	Resource classification	2017			2016		
		Tonnes (Mt)	4E grade (g/t)	Contained 4E (Moz)	Tonnes (Mt)	4E grade (g/t)	Contained 4E (Moz)
UG2	Measured	37.97	5.07	6.19	37.30	5.07	6.08
	Indicated	43.76	4.97	7.00	44.55	4.98	7.13
	Inferred	19.92	5.00	3.20	20.62	4.98	3.30
	<b>Total</b>	<b>101.65</b>	<b>5.01</b>	<b>16.39</b>	<b>102.47</b>	<b>5.01</b>	<b>16.50</b>

### UG2 reef exclusive mineral resources keynotes

Mineral resources exclusive of mineral reserves decreased in tonnage by 0.81Mt and 0.11Moz (Table 8). This decrease is attributed to the 100% discounted loss area from the structural update and an upgrade of inferred resources to indicated resources within North shaft. No changes were reported for the UG2 mineral resource classification percentage for the 4E ounce content.

RBPlat’s UG2 resource category progression over the past few years, with increased measured resources and a decrease in indicated and inferred resources, is a result of the exploration, business planning and LOM strategies that develop the mineral resource model confidence accordingly. The 2017 confidence classification of the UG2 4E ounce content comprises 48.00% measured, 37.00% indicated and 15.00% inferred mineral resources (Figure 14).

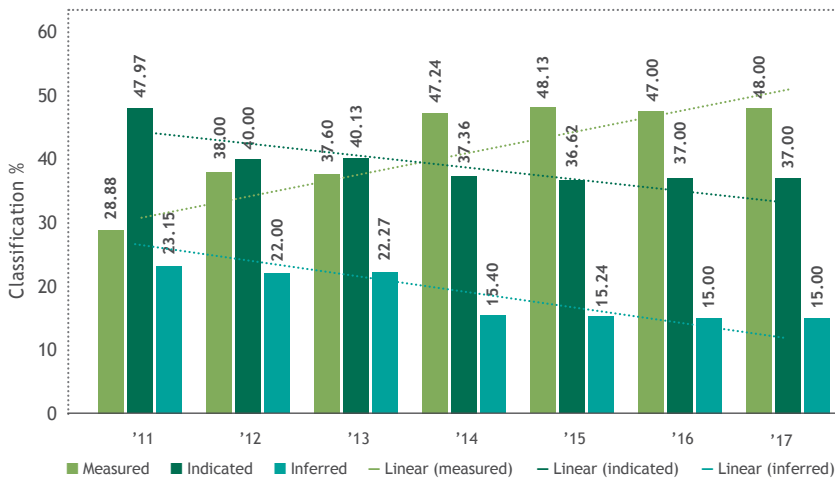


Figure 14: UG2 reef mineral resource classification progression



Styldrift I shaft at the foot of the Pilanesberg Igneous Complex

## MINERAL RESERVES

Styl drift is in the construction and ramp-up mining phase and limited mining has shown little deviation to expected tonnage and grade from the mining layout. A vertical shaft designed as a bord and pillar mechanised mining operation is in ramp-up to achieve 230ktpm of ore at steady state. BRPM has been in operation since early 2000 and has declines to provide access to the shallow dipping, narrow reef ore body. The narrow, slightly dipping tabular ore body has largely dictated the adoption of a historically conventional mining method. Mineral reserve classifications for 2017 are indicated in Figure 15 and Figure 16.

### SALIENT POINTS REGARDING RESERVES

- Only scheduled, measured and indicated mineral resources have been converted to mineral reserves with no inferred resources converted
- Modifying factors are applied using a consistent approach based on historical performance at BRPM and, where information needed benchmarking, for Styl drift.

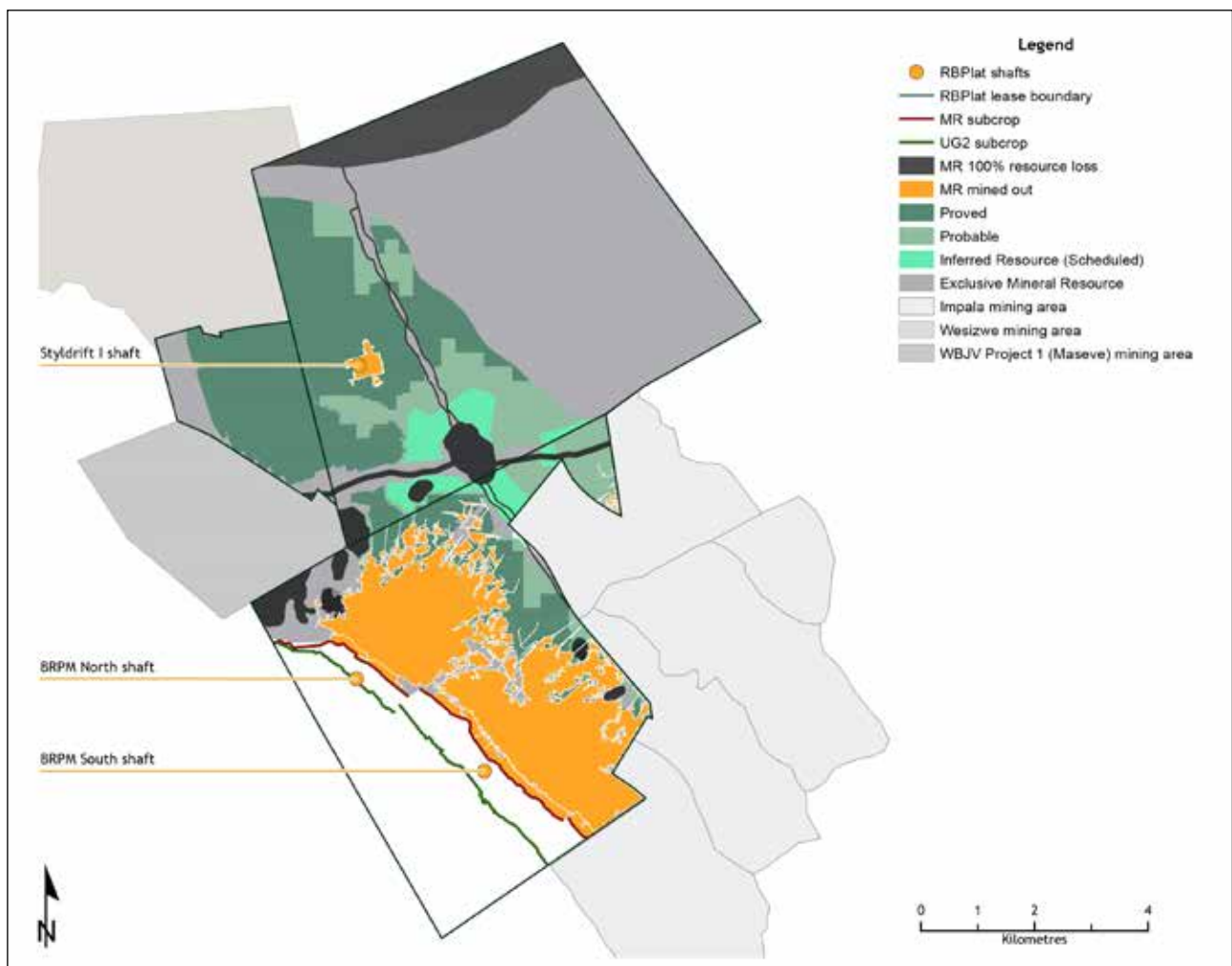


Figure 15: Merensky reef reserve classification 2017



## MINERAL RESERVES continued

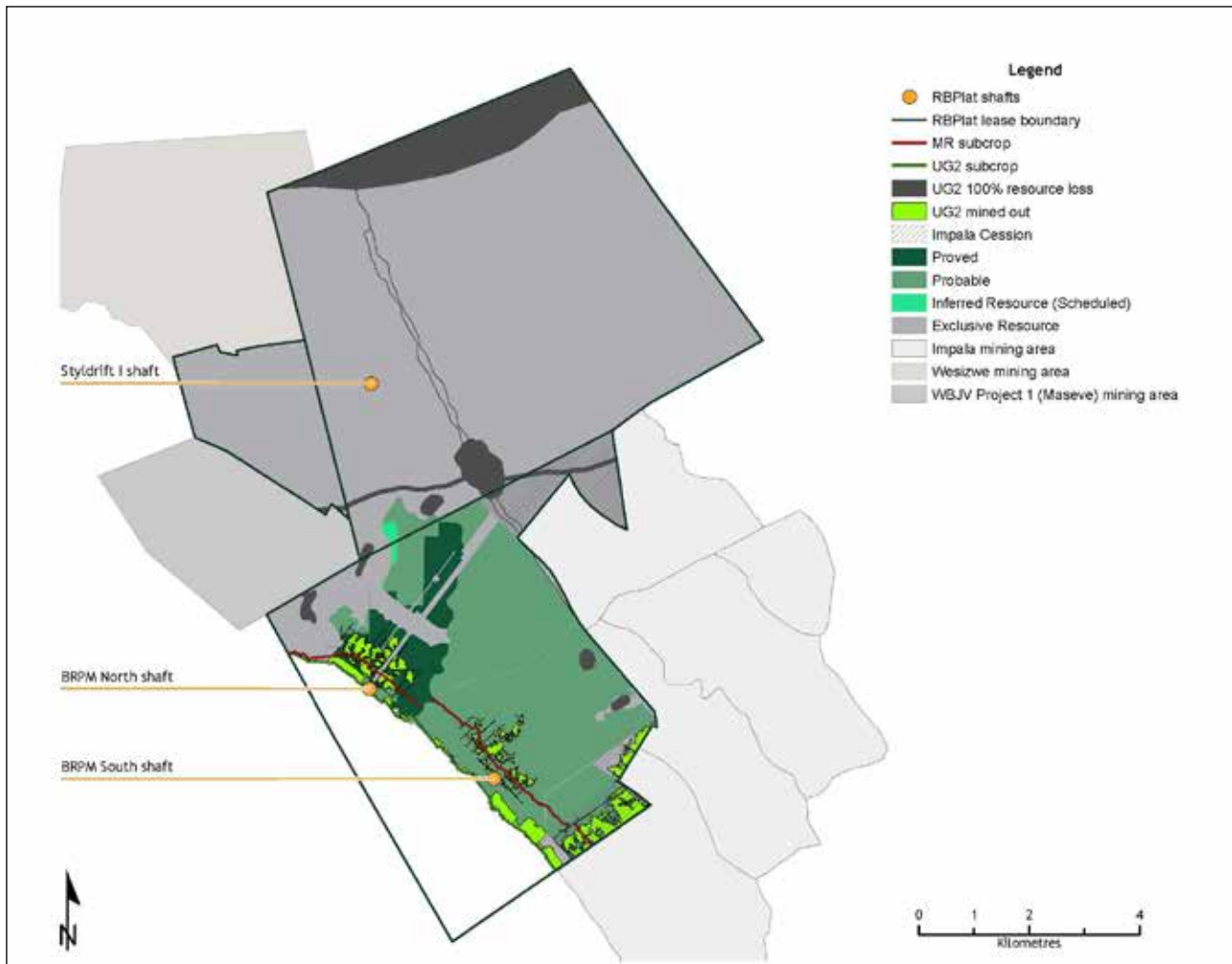


Figure 16: UG2 reef reserve classification 2017

### RBPLAT MINERAL RESERVE SUMMARY

Merensky annual reserves when compared to last year were marginally up, with mining depletion at the shafts and loss due to an area of iron replacement at North shaft made up with a gain in probable reserves in the Impala tribute area and marginal reduction in geological loss estimate at Styltdrift.

Merensky mineral reserves increased by 1% from 51.09Mt to 51.49Mt and 4E ounce content from 7.41Moz to 7.51Moz with the average grade remaining relatively unchanged (Table 11).

Only UG2 at BRPM was converted to a reserve of 4.24Moz at a 4E grade of 3.81g/t. Proved reserves in the general facies area was downgraded

31.45Mt to probable reserve of approximately 3.86 4EMoz. Total UG2 mineral reserve tonnage decreased by 1.3% from 35.09Mt to 34.62Mt after depletion. The 4E ounce content decreased by 2.5% from 4.35Moz to 4.24Moz with 1.2% drop in estimated grade (Table 11).



Table 11: RBPlat mineral reserves, RBPlat 67% attributable interest, 31 December 2017

Reef	Reserve classification	2017			2016		
		Tonnes (Mt)	4E grade (g/t)	Contained 4E (Moz)	Tonnes (Mt)	4E grade (g/t)	Contained 4E (Moz)
Merensky	Proved	36.21	4.70	5.47	38.11	4.63	5.67
	Probable	15.28	4.15	2.04	12.98	4.17	1.74
	<b>Total</b>	<b>51.49</b>	<b>4.54</b>	<b>7.51</b>	<b>51.09</b>	<b>4.51</b>	<b>7.41</b>
UG2	Proved	5.90	3.83	0.73	28.45	3.89	3.56
	Probable	28.73	3.81	3.52	6.64	3.72	0.79
	<b>Total</b>	<b>34.62</b>	<b>3.81</b>	<b>4.24</b>	<b>35.09</b>	<b>3.86</b>	<b>4.35</b>
Total	Proved	42.10	4.58	6.20	66.57	4.31	9.23
	Probable	44.01	3.93	5.56	19.62	4.02	2.53
	<b>Total</b>	<b>86.11</b>	<b>4.25</b>	<b>11.75</b>	<b>86.19</b>	<b>4.25</b>	<b>11.76</b>

### BRPM MINERAL RESERVE

There was an increase in Merensky reserves reported from the Impala boot area, where the production schedule and resource estimate supported the upgrade of previously classified inferred resource to indicated resource and converted to a reserve. This offset the losses due to depletion, an increase in estimated geological loss around

the boundary fault at South shaft and a loss of an area due to iron replacement (IRUP) delineated at North shaft, resulting in total reserves estimated at the end of the year remaining unchanged when compared to last year.

Merensky mineral reserves increased by 1% from 9.82Mt to 9.83Mt and 4E ounce content from 1.37Moz to 1.39Moz with

the average grade remaining unchanged, after depletion and loss due to IRUP and an increase in the tribute area reserves (Table 12).

The UG2 reef has approximately 4.24Moz at a 4E grade of 3.81g/t. The UG2 mineral reserve tonnage decreased by 1.3% from 35.09Mt to 34.62Mt after depletion. The 4E ounce content decreased by 2.6% from 4.35Moz to 4.24Moz with 1.3% drop in estimated grade (Table 12).

Table 12: BRPM mineral reserves, RBPlat 67% attributable interest, 31 December 2017

Reef	Reserve classification	2017			2016		
		Tonnes (Mt)	4E grade (g/t)	Contained 4E (Moz)	Tonnes (Mt)	4E grade (g/t)	Contained 4E (Moz)
Merensky	Proved	5.35	4.34	0.75	6.74	4.38	0.95
	Probable	4.57	4.39	0.65	3.07	4.29	0.42
	<b>Total</b>	<b>9.92</b>	<b>4.36</b>	<b>1.40</b>	<b>9.81</b>	<b>4.35</b>	<b>1.37</b>
UG2	Proved	5.90	3.83	0.73	28.45	3.89	3.56
	Probable	28.73	3.81	3.52	6.64	3.72	0.79
	<b>Total</b>	<b>34.63</b>	<b>3.81</b>	<b>4.25</b>	<b>35.09</b>	<b>3.86</b>	<b>4.35</b>
Total	Proved	11.25	4.07	1.47	35.20	3.99	4.51
	Probable	33.30	3.89	4.16	9.72	3.90	1.22
	<b>Total</b>	<b>44.55</b>	<b>3.93</b>	<b>5.63</b>	<b>44.92</b>	<b>3.97</b>	<b>5.73</b>

### BRPM mineral reserves keynotes

- Non-scheduled mineable pillars have not been included in reserves
- UG2 general facies at South and parts of North shaft classified as a scheduled, measured resource was downgraded to a probable reserve due to current market conditions and lack of spare concentrator capacity available (Figure 16)
- Impala Merensky reef in the boot area was converted to a reserve based on the Impala life-of-mine (LOM) schedule and resource classification being upgraded from inferred to indicated resource.



## MINERAL RESERVES continued

### BRPM mining method

The infrastructure employed provides access to the shallow dipping, narrow reef ore body that sub-outcrops on the Boschkoppie property and extends to approximately 430m in depth at South shaft and 630m at North shaft. The narrow, slightly dipping tabular ore body has largely dictated the adoption of a conventional mining method, using hand-held rotary-percussion pneumatic rock drills and winch operated scrapers in the stope with rail-bound hopper ore-hauling on the levels. Access is divided into two distinct mining areas by virtue of an almost west-east trending fault known as the Railway Fault. The northern and southern areas are quite separate and are each serviced by an inclined shaft complex. Each of the two shaft complexes includes an inclined conveyor shaft, an inclined material shaft, chairlift and vertical up-cast ventilation shafts.

Due to the shallow dipping nature of the ore body, a conventional cross-cut layout or layby method is employed to gain access to the ore body at 200m intervals raising up between levels for conventional breast stoping to take place. Merensky advanced strike gullies (ASGs) are spaced at approximately 36m intervals along the raise. The ASGs are planned to advance at 15° above strike, the maximum panel width of 32m between pillars. Strike gullies are developed

adjacent to pillar lines, staggered along the raise to prevent their scraper ropes from fouling and allowing for sufficient tipping space in the raise. Stope back length varies between 180m and 270m, with panels set out at 35m intervals on either side of the raise.

Main support is installed according to the mine standard and rock engineering recommendations in development and stoping. Main support includes rock bolts and pre-stressed elongates that are installed with temporary support, which is typically mechanical props on the face during drilling. Crush pillars are left at the top of the panel, with ventilation holings separating the pillars, and regional pillars are left to ensure regional stability according to rock engineering recommendations and local geological losses.

Drilling is done using compressed air-powered hand-held machines with an expected drilled round length of 1.2m to 1.5m in a drilling pattern determined by the explosive used. Shock tube is used to initiate the blast. A face winch is used to clear blasted ore from the panel face into the ASG (strike gully) from where the reef is scraped to the raise line (centre gully) by means of a dedicated ASG winch. A centre gully winch scrapes the reef to the boxhole. The boxhole is equipped with a grizzly on top and a box front and Spilmanator chute at the bottom,

to feed ore into hoppers in the conventional mining sections. The footwall is serviced by 10-tonne locos and hoppers that take ore to the station, where it is tipped and fed onto the decline belt system.

We also employ a semi-hybrid system in the North shaft Phase III where the development includes two on-reef drives and the belt drive which services the conventional stopes as described by scraping the ore down the raise into the drive where it is loaded by a load haul dump truck (LHD) and tipped onto the belt.

### BRPM modifying factors and annual production

Conversion of the resource to a reserve mined is done in the CAD's schedule with relevant evaluation applied to the area mined in the stoping and development environment. The modifying factors and basic parameters used at BRPM are based on history and outside benchmarking where necessary. The schedule takes into account all mining dimensions planned and these are depleted against the evaluation model. The current minimum mining cut with in-stope bolting is 110cm. An additional 10% overbreak is applied in determining the planned stope width. All other excavation tonnage is added to the stope cut; this includes planned on-reef redevelopment based on the replacement rate and layout including winch beds, strike gullies and primary on-reef development.

**Table 13: BRPM mining modifying factors**

Merensky reef	Unit	Merensky factors	UG2 factors
Mineral resource area scheduled	m <sup>2</sup>	2 282 422	8 906 084
Geological losses	%	26 – 30	32 – 36
Resource dilution	%	28.10	28.70
Mine call factor	%	100	100
In situ relative density	t/m <sup>3</sup>	3.17	3.94
Minimum mining cut	cm	110	90
Stoping width	cm	124	110

The two BRPM decline shafts (North shaft and South shaft) were designed to hoist on average 100ktpm of reef each and 25kt of waste. Due to a lack of concentrator capacity, with Styldrift taking up the South shaft Merensky space in the BRPM expanded plan, the UG2 reef at South shaft was temporarily stopped and all proved reserves downgraded to probable.

**Table 14: BRPM production figures 2017**

Merensky reef	Unit	2017	2016
<b>North shaft Merensky</b>			
Tonnes delivered to concentrator – Merensky	kt	1 119.0	941.7
4E grade in ore delivered	g/t	4.27	4.40
4E ounces in ore delivered	koz	153.7	133.1
<b>North shaft UG2</b>			
Tonnes delivered to concentrator – UG2	kt	439.0	411.9
4E grade in ore delivered	g/t	4.21	4.14
4E ounces in ore delivered	koz	59.4	54.9
<b>South shaft Merensky</b>			
Tonnes delivered to concentrator – Merensky	kt	757.1	824.0
4E grade in ore delivered	g/t	4.10	4.30
4E ounces in ore delivered	koz	99.8	113.9
<b>South shaft UG2</b>			
Tonnes delivered to concentrator – UG2	kt	115.6	170.9
4E grade in ore delivered	g/t	3.46	3.42
4E ounces in ore delivered	koz	12.8	18.8

### STYLDRIIFT I MINERAL RESERVE

The total mineral reserve tonnage and content increased by 0.7% and 1.39% respectively owing to the following:

- Gain in area due to change in bracket pillar design
- Geological losses drop of 1.96%
- Increase in grade by 0.7%.

Merensky mineral reserves increased by 0.7% from 41.3Mt to 41.6Mt and 4E ounce content from 6.04Moz to 6.12Moz with the average grade increase of 0.7% from 4.55g/t to 4.58g/t after depletion and loss due to a decrease in resource width.

**Table 15: Styldrift I mineral reserves, RBPlat 67% attributable interest, 31 December 2017**

Reef	Reserve classification	2017			2016		
		Tonnes (Mt)	4E grade (g/t)	Contained 4E (Moz)	Tonnes (Mt)	4E grade (g/t)	Contained 4E (Moz)
Merensky	Proved	30.85	4.76	4.72	31.37	4.68	4.72
	Probable	10.71	4.05	1.40	9.91	4.13	1.32
	<b>Total</b>	<b>41.56</b>	<b>4.58</b>	<b>6.12</b>	<b>41.28</b>	<b>4.55</b>	<b>6.04</b>
UG2	Proved	0.00	0.00	0.00	0.00	0.00	0.00
	Probable	0.00	0.00	0.00	0.00	0.00	0.00
	<b>Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
Total	Proved	30.85	4.76	4.72	31.37	4.68	4.72
	Probable	10.71	4.05	1.40	9.91	4.13	1.32
	<b>Total</b>	<b>41.56</b>	<b>4.58</b>	<b>6.12</b>	<b>41.28</b>	<b>4.55</b>	<b>6.04</b>

### Styldrift I mineral reserves keynotes

- No mineral reserves have been excluded from the 2017 declaration relative to 2016 as a result of cut-off grade consideration, based on the forecast
- Only scheduled resources have been converted to mineral reserve with no inferred resources converted
- Modifying factors used to convert mineral resources to mineral reserves are derived from historic data benchmarking exercises as well as taking cognisance of future conditions
- Annual comparison indicates a stable inventory with no real change in the Merensky reserves after depletion.



## MINERAL RESERVES continued

### Styldrift I mining method

Due to the nature of the Merensky reef ore body, the Styldrift I Mine is designed to optimally extract the reef via two different mining methods. These consist of room and pillar mining by means of trackless mechanised equipment for the flat dipping, stable, wide mineralised areas, and conventional scattered breast mining for the more undulating terrace reef facies towards the western, shallower portions of the ore body. Although the terrace reef facies is planned to be mined via conventional mining methods, RBPlat continuously re-evaluates the optimisation of the mining methods to achieve maximum, efficient long-term extraction.

Styldrift is designed to hoist 230ktpm of reef and 20kt of waste at steady state. The ramp-up to full production is planned in two phases, phase one to achieve 150kt by quarter four, 2018 and phase two 230kt by quarter two, 2020.

The underground working areas are accessed via a vertical twin shaft system, which comprises a Main shaft and Services shaft. The shaft system hoisting capacity is designed to allow for the possible future mining of the UG2 reef. The Main shaft, with a diameter of 10.5m and sunk to a depth of 758m is used for person, material and rock hoisting. It also serves as an air intake shaft. The Services shaft, with a diameter

of 6.5m, is sunk to a depth of 723m. The Services shaft is used as a second egress and services. This shaft will also serve as an air intake shaft.

### Styldrift I modifying factors and annual production figures

Conversion of the resource to a reserve mined is done in the CAD's schedule with relevant evaluation applied to the area mined in the stoping and developing environments. The modifying factors and basic parameters used at Styldrift I are based on history and outside benchmarking where necessary.

**Table 16: Styldrift I mining modifying factors**

Merensky	Unit	Room and pillar factors	Conventional factors
Mineral resource area scheduled	m <sup>2</sup>	6 021 847	4 217 683
Geological losses	%	22 – 26	22 – 26
Resource dilution	%	20.13	27.51
Mine call factor	%	100	100
In situ relative density	t/m <sup>3</sup>	3.24	3.22
Minimum mining width	cm	205	127
Stoping width	cm	212	139

**Table 17: Styldrift I production figures**

Merensky	Unit	2017	2016
Tonnes delivered to concentrator	kt	561	410
4E grade in ore delivered	g/t	3.13	3.09
4E ounces in ore delivered	koz	56.4	40.8



# MINERAL RESOURCES AND MINERAL RESERVES RISK ASSESSMENT

The enterprise risk management (ERM) approach we have adopted at RBPlat provides us with an integrated approach to the management of risks within a complex and ever-changing environment. The mineral resources and mineral reserves departments apply RBPlat’s ERM processes to the

management of the risks relevant to its mineral resources and mineral reserves. The effective management of risk enables management to address the uncertainty and associated threats relating to RBPlat’s mineral resources and mineral reserves.

The risk assessment method determines the inherent risk (Table 18), evaluates the effectiveness of the controls and thereby determines the residual risk. The following risk profile provides details of the key risks and controls related to our mineral resources and mineral reserves.

**Table 18: Inherent risk rating matrix**

Risk description	Root cause	Inherent risk	Existing controls	Residual risk
Insufficient continuous development on geological model and mineral resources resulting in poor understanding of the ore body	<ol style="list-style-type: none"> <li>Lack of new data obtained from surface and underground exploration drilling as well as underground sampling</li> <li>Budget limitation</li> <li>Land access constraints due to community issues</li> <li>Lack of human resources for underground sampling and mapping</li> </ol>	25	<ol style="list-style-type: none"> <li>Exploration strategy in place aligned with BP and LOM plan</li> <li>Organisational BP processes</li> <li>Land owner and community engagement strategy</li> <li>Competent Persons to interpret the data</li> <li>Company standard operating practice for collection of data</li> </ol>	10
Incorrect modifying factors assumed in the reserve conversion may result in over/under estimation of the reserve grade	<ol style="list-style-type: none"> <li>Lack of actual mining history</li> <li>Change in statutory requirements</li> <li>Use of benchmark with dissimilar mining operations</li> <li>Variation in mineralisation over short distances</li> </ol>	15	<ol style="list-style-type: none"> <li>Benchmark with mechanised mining operations</li> <li>Continuous reconciliation of mined out areas</li> <li>Underground photogrammetry and sampling</li> <li>Application of fixed cut</li> </ol>	6
Sub-optimal extraction of mineral reserves may lead to loss of revenue	<ol style="list-style-type: none"> <li>Poor mining practices</li> <li>Incorrect on-reef development</li> </ol>	16	<ol style="list-style-type: none"> <li>Monthly planning reviews</li> <li>Mining standards and procedures</li> <li>Geological section meetings</li> <li>Directional mining</li> <li>Geological department support</li> </ol>	6.4

		Consequence				
		1 minor	2 containable	3 significant	4 serious	5 catastrophic
Likelihood	5 Expected/likely	5	10	15	20	25
	4 Moderate/feasible	4	8	12	16	20
	3 Very unlikely	3	6	9	12	15
	2 Extremely unlikely	2	4	6	8	10
	1 Negligible	1	2	3	4	5

Iron-rich ultra-mafic pegmatoid (IRUP), BRPM South shaft



## MINERAL RESOURCES AND MINERAL RESERVES RISK ASSESSMENT

### continued

#### AUDIT ASSURANCE

In line with RBPlat's three lines of defence model, the risk management activities, as well as responsibility for the controls with regard to the mineral resources and mineral reserves, are entrusted to the first line of defence, which includes the line management function and RBPlat's Competent Persons. Independent third-party reviews (third line of defence) of the mineral resources and mineral

reserves are carried out biennially. The latest review by the Mineral Corporation took place in November 2016 to January 2017, and the next review will be conducted in 2018, in line with our combined assurance plan, which was approved by the Audit and Risk Committee.

The Mineral Corporation's scope of work included an audit on the mineral resource model inputs, review of the modelling, estimation techniques applied and mineral

resource classification. A statement included from the Mineral Corporation with the audit finding attached, concludes that there are no material concerns with a robust mineral resource estimate.

The Mineral Corporation also provided guidance and recommendations in terms of reporting according Table 1, to ensure it is aligned with the SAMREC 2016 and section 12 Listings Requirements (Figure 17).



Exploration drilling operation, BRPM North shaft Phase III investment area





## THE MINERAL CORPORATION

ADVISORS TO THE MINERAL BUSINESS

06 March 2017

The Directors  
 Royal Bafokeng Platinum Limited (RBPlats)  
 No 1 Monte Casino Boulevard  
 Block C, Floor 4, The Pivot  
 Fourways  
 c/o: Mr Jaco Vermeulen

Dear Sir / Ma'am

### Findings of the 2016 Mineral Resource Audit

As instructed, The Mineral Corporation has completed an audit of the Mineral Resource estimates for the Merensky and UG2 Reefs at the Bafokeng Rasimone Platinum Mine Joint Venture on behalf of RBPlats. The audit team included, Stewart Nupen, a Director of The Mineral Corporation, and Darren Portela, a Senior Technical Advisor.

The audit covered Mineral Resource estimates for the Merensky and UG2 Reefs and comprised a review of the geological modelling, geostatistical modelling, Mineral Resource classification, reporting and sign-off. A physical audit of the underground sampling was also included. The audit methods involved interviews of the relevant technical personnel responsible for the Mineral Resource estimates and underground sampling, the review of technical documents, and random checks on physical data input, and interpretation. In addition, a physical audit of the underground sampling protocols was conducted which included a site visit.

No material concerns were found relating to the geological or geostatistical modelling, the Mineral Resources were found to be robust, and The Mineral Corporation is of the view that the techniques employed during the classification fairly reflects the risk associated with the estimates.

The Mineral Corporation reviewed the underground sampling protocols and quality assurance and control practices, and is of the view that the sampling practices are generally in-line with industry standards. The inclusion of the underground sampling in Mineral Resource estimates at Styldrift Mine is warranted, and underground sampling and QAQC protocols should be implemented at BRPM going forward.

The Mineral Corporation also reviewed the underground sample spacing and block size strategy, and has provided recommendations with regards to selecting an appropriate grid spacing, which strikes a balance between confidence and resolution.

Without qualifying our findings, the following recommendations have been made:

- Review the underground sampling protocols at BRPM and implement the QAQC protocols as per Styldrift;
- Investigation/study the application of estimating tonnes per m<sup>2</sup> and 4PGE per m<sup>2</sup> as a further instrument for mine planning;
- Complete the underground sample spacing and block size strategy study; and
- Consider certain additions to the RBPlats' Competent Person's Report

Yours sincerely

**Stewart Nupen**  
 Director

Mineral Corporation Consultancy (Pty) Ltd Reg. No. 1995/000999/07 Trading as: The Mineral Corporation	Homestead Office Park 65 Homestead Avenue Bryanston 2021 South Africa	P O Box 1346 Cramerview 2060 South Africa	Tel: +27 11 463 4867 Fax: +27 11 706 8616 email: <a href="mailto:business@mineralcorp.co.za">business@mineralcorp.co.za</a>
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In South Africa, The Mineral Corporation is a Level 4 Contributor to 8-BBEE.

DIRECTORS: JE Murphy (Managing), FH Gregory, AH Hart, RA Heins (British), C Madamombe (Zimbabwean), SRQ Nupen



Figure 17: The Mineral Corporation's audit findings, March 2017

## COMPETENT PERSONS' ACCEPTANCE

### COMPETENCE

RBPlat's operations, projects and independently managed companies will ensure that technical teams responsible for the preparation of mineral reserve and mineral resource statements and mineral assets are managed by suitably qualified Competent Person(s)/

recognised mining professional(s). Such Competent Persons may be employed by the companies or operations or be engaged as external consultants. RBPlat maintains a register of Competent Persons in order to demonstrate compliance. The operations/ projects are responsible for

providing the mineral resource management department with registers updated annually to reflect any changes in the status of the Competent Persons. The Competent Persons' abridged curricula vitae are attached to this report.

**Table 19: Competent Persons' declaration**  
Mineral resources

Name	Designation	Qualifications	Registration – SACNASP
Jaco Vermeulen	Group Geologist	BSc (Hons) Geology, GEDP	PrSciNat (400232/12)
Prinushka Padiachy	Resource Geologist	BSc (Hons) Geology, GDE	PrSciNat (400358/14)

### Mineral reserves

Name	Designation	Qualifications	Registration – ECSA/SAIMM
Clive Ackhurst	MRM Manager – BRPM	BSc (Hons) Eng	PrEng, ECSA (20090200)
Robby Ramphore	MRM Manager – Styldrift	NHD (MRM), MSCC	SAIMM (705472)

**Table 20: Competent Persons' addresses**

Name	Competence	Address
Jaco Vermeulen	Mineral resources	BRPM, Boshhoek, Sun City Road R565, Rustenburg, North West
Prinushka Padiachy	Mineral resources	Head Office, The Pivot, Number 1 Monte Casino, Block C Floor 4, Fourways, 2021
Clive Ackhurst	Mineral reserves	BRPM, Boshhoek, Sun City Road R565, Rustenburg, North West
Robby Ramphore	Mineral reserves	Styldrift Mine, Boshhoek, Sun City Road R556, Rustenburg, North West



**MINERAL RESOURCES**

The figures presented in this report are considered to be a true reflection of the mineral resources estimates as at 31 December 2017 for RBPlat (BRPM and Styldrift). These have been carried out in accordance with the principles and guidelines of the SAMREC Code (2016 edition).

**Table 21: Professional affiliation address (resources)**

South African Council for Natural Scientific Professionals (SACNASP)		
Council of Geosciences 3rd Floor, 280 Pretoria Road Silverton, Pretoria Gauteng province		
Jaco Vermeulen and Prinushka Padiachy supervise and conduct the estimation process of mineral resources and act as Competent Persons (CPs) for mineral resources for and on behalf of RBPlat.  RBPlat’s CP requirements for mineral resources: ➤ Minimum of five years’ relevant experience in the style, type and class of the Bushveld Complex	➤ The five years of experience must be in estimation, assessment and evaluation of resources ➤ Must include knowledge of sampling, assaying and some appreciation of extraction and processing ➤ Must be a valid member of one of the following: SACNASP, GSSA, SAIMM or any other recognised overseas professional association	➤ A working knowledge of the software systems used by RBPlat ➤ A working knowledge of the geology department’s standards and procedures.  A CP may manage a team of technical specialists (who may/may not themselves be CPs) who jointly generate a resource estimate. The CP, however, takes overall responsibility for the sign-off.

**MINERAL RESERVES**

The figures presented in this report are considered to be a true reflection of the mineral reserves estimates as at 31 December 2017 for RBPlat/(BRPM and Styldrift I). These have been carried out in accordance with the principles and guidelines of the SAMREC Code (2016 edition).

**Table 22: Professional affiliation address (reserves)**

Engineering Council of South Africa (ECSA)	Southern African Institute of Mining and Metallurgy (SAIMM)	
1st Floor, Waterview Corner Building Ernest Oppenheimer Avenue Bruma Lake Office Park, Bruma Johannesburg	Chamber of Mines Building 5th Floor 5 Hollard Street Johannesburg	
Both Clive Ackhurst and Robby Ramphore who have sufficient experience relevant to the style and type of mineral deposit under consideration and to the activity which is being undertaken to qualify as a CP as defined in the SAMREC Code, confirm that no undue influence has been brought to bear during the compilation of these estimates. Clive Ackhurst and Robby Ramphore are full-time employees of the Company.	RBPlat’s CP requirements for mineral reserves: ➤ Minimum of five years’ relevant experience in the style, type and class of deposit ➤ Experience must be in evaluation, planning and scheduling of the economic extraction of reserves ➤ Must have general knowledge of resource evaluation ➤ Must be a valid member of one of the following: SACNASP, PLATO, SAIMM, ECSA or any other	recognised overseas professional association ➤ A working knowledge of the software systems used by RBPlat ➤ A working knowledge of the mine planning department’s standards and procedures ➤ A CP may manage a team of technical specialists (who may not themselves be CPs) who jointly generate a reserve estimate. The CP, however, takes the overall responsibility for the sign-off.

Serpentinized altered poikilitic anorthositic, Styldrift I shaft



## APPENDIX A: ABRIDGED CURRICULA VITAE FOR LEAD COMPETENT PERSONS 2017

**Table 23: RBPlat mineral resources Lead Competent Person's abridged curriculum vitae**

Name of Competent Person	Gabriel Jakobus Vermeulen
E-mail address	jacov@bafokengplatinum.co.za
Responsibility	Mineral resources
Responsibility in activity	Responsible for the reporting of mineral resources and the acceptance of the resource model and managing of geological information
Title	Group Geologist
Qualifications	BSc (Hons) Geology, University of the Witwatersrand, GEDP, GIBS, University of Pretoria
Professional association and membership number	SACNASP 400232/12, GSSA 965833
Date of first registration with professional association	15 August 2012
Employed with RBPlat	From 2010 to present
Previously employed outside RBPlat, but in the platinum industry and for how long	Anglo American Platinum – from 2004 to 2010

**Table 24: RBPlat mineral resources Competent Person's abridged curriculum vitae**

Name of Competent Person	Prinushka Padiachy
E-mail address	prinushkam@bafokengplatinum.co.za
Responsibility	Mineral resources
Responsibility in activity	Responsible for the production and reporting of the resource estimation of the mineral resource model
Title	Resource Geologist
Qualifications	BSc (Hons) Geology, GDE, University of the Witwatersrand
Professional association and membership number	SACNASP 400358/14
Date of first registration with professional association	10 September 2014
Employed with RBPlat	From 2010 to present
Previously employed outside RBPlat, but in the platinum industry and for how long	Anglo American Platinum – from 2006 to 2010

**Table 25: BRPM mineral reserves Lead Competent Person's abridged curriculum vitae**

Name of Competent Person	Clive Alan Ackhurst
E-mail address	CliveA@bafokengplatinum.co.za
Responsibility	Mineral reserves
Responsibility in activity	Responsible for the conversion of mineral resources to mineral reserves and signing off the modifying factors
Title	Mineral Resource Manager BRPM
Qualifications	BSc (Hons) Mining Engineering (1987) University of the Witwatersrand, Mine Managers Certificate
Professional association and membership number	ECSA 20090200
Date of first registration with professional association	ECSA 2007
Employed with RBPlat	From 2010 to present
Previously employed outside RBPlat, but in the platinum industry and for how long	Anglo American Platinum – from 2001 to 2010
Previous employment in gold industry and for how long	Vaal Reefs Exploration and Mining Company From 1/1982 to 1/1990: nine years and Consolidated Modderfontein

**Table 26: Styldrift mineral reserves Lead Competent Person's abridged curriculum vitae**

Name of Competent Person	Robby Petrus Ramphore
E-mail address	robbyr@bafokengplatinum.co.za
Responsibility	Mineral reserves
Responsibility in activity	Responsible for the conversion of mineral resources to mineral reserves and signing off the modifying factors
Title	Mineral Resource Manager Styldrift
Qualifications	NHD Mineral Resource Management (2000) Wits Technikon. Mine Survey Certificate of Competency
Professional association and membership number	SAIMM 705472/Membership grade – member
Date of first registration with professional association	SAIMM 2010
Employed with RBPlat	From April 2014 to present
Previously employed outside RBPlat, but in the platinum industry and for how long	Anglo American Platinum – from 1996 to March 2014
Previous employment in platinum industry and for how long	Anglo Platinum – from 1996 to 2014
Responsibility in activity	Chief Mine Surveyor and up to Mineral Resource Manager



## GLOSSARY

3D seismic	Three-dimensional geophysical exploration programme involving induced seismicity tests
4E	Four platinum group elements: Platinum (Pt), palladium (Pd), rhodium (Rh) and gold (Au)
ASG	Advanced strike gully
Au	Gold
Base metal	A common metal that is not considered precious, such as copper, nickel, tin or zinc
BP	Business plan
BRPM	Bafokeng Rasimone Platinum Mine
BRPM JV	Bafokeng Rasimone Platinum Mine Joint Venture, includes BRPM and Styldrift
CAD	Computer-aided software used for mine design and scheduling
Chain of custody	Auditable sequence of events pertaining to sign off and date of each completed event
Chromitite	A rock primarily comprising the mineral chromite
Cu	Copper
Cut-off grade	Grade expressed in grams per tonne whereby it will be uneconomical to continue with the extraction of ore
DMR	Department of Mineral Resources
Dyke	Igneous rock intruded into the surrounding host rock in such a way that it cuts through existing stratigraphy
ECSA	Engineering Council of South Africa
Exclusive mineral resource	Mineral resources reported exclusive of resources, which have been converted to mineral reserves
Facies	The characteristics of a rock unit, with reference to the conditions of its origin, and differentiation from associated or adjacent units due to the change in the deposition environment
Fault	A Planar discontinuity within a rock which has been displaced as a result of rock mass movement
Geological loss	A geological loss is an area with no reef development due to a disruption in the reef by a geological feature
g/t	Grams per tonne. The unit of measurement of metal content, equivalent to parts per million
GSSA	Geological Society of South Africa
Inclusive mineral resource	Mineral resources reported inclusive of resources, which have been converted to mineral reserves
In situ	The original natural state of the ore body before mining or processing of the ore takes place
Inferred scheduled resource	That portion of an inferred mineral resource which is included in the mine design or planning but not converted to a mineral reserve due to a low level of confidence
IRUP	Iron-rich ultramafic pegmatite rock that occurs as discordant pipe, vein or sheet-like bodies that formed post-crystallisation of the Bushveld Complex either replacing or intruding the original igneous host rock
JSE	The South African Securities Exchange
LHD	Load haul dump
LiDAR	Light detection and ranging is a remote sensing method used to examine the surface of the earth
LOM	Life of mine
Merensky reef	The term “Merensky reef” refers to the economic base metal sulphide (BMS) and platinum group element (PGE) enriched, lithologically variable layer that is situated at or near the base of the Merensky Unit
Mm <sup>2</sup>	Million square metres
Modifying factors	Modifying factors include mining, metallurgical, economic, marketing, legal, environmental, social and governmental considerations
Moz	Million ounces
Mt	Million metric tonnes
Minimum cut	The predefined minimum width to extract ore while taking all safety and mining parameters into consideration
Mining right	The right to mine granted by the South African Department: Mineral Resources in terms of section 23(1). A mining right is valid for 30 years and renewable



Mining work programme	The planned mining work programme to be followed in order to mine a mineral resource optimally according to the MPRDA
MPRDA	Minerals and Petroleum Resource Development Act
Ni	Nickel
Non-scheduled resource	Mineral resources not scheduled in the mine plan due to a low level of study confidence or no approved mining right
Pd	Palladium
PGE	Platinum group elements comprising the six elemental (6E) metals of the platinum group. The metals are platinum, palladium, ruthenium, rhodium, iridium and osmium
PGM	Platinum group metals: Six elemental metals of the platinum group nearly always found in association with each other. These metals are platinum, palladium, rhodium, ruthenium, iridium and osmium
Pt	Platinum
Prospecting right	The right to prospect granted by the South African Department of Mineral Resources, in terms of section 17(1). A prospecting right is valid for five years and renewable
QAQC	Quality Assurance and Quality Control
RBN	Royal Bafokeng Nation
RBPlat	Royal Bafokeng Platinum
RBR	Royal Bafokeng Resources
Resource model	Representation of the underground resources constructed by means of geostatistical and no geostatistical methods to determine technical confidence as per SAMREC resource classification criteria
RDR	Rock Deformation Research Limited
Rh	Rhodium
RLS	Rustenburg Layered Suite
RPM	Rustenburg Platinum Mines
SACNASP	South African Council for Natural Scientific Professions
SAIMM	Southern African Institute of Mining and Metallurgy
SAMREC	The South African Mineral Resource Committee
SAMREC Code	The South African Code for the Reporting of Exploration Results, Mineral Resources and Mineral Reserves, 2016 edition
SAMVAL Code	The South African Code for the reporting of mineral asset valuation, 2016 edition
Scheduled resource	Measured and indicated resources that have a mine plan or scheduled mine design defined by studies at a pre-feasibility or feasibility level which is converted to a mineral reserve by applying modifying factors
Shear	Structural discontinuity surface in the earth, it forms as a response to deformation partitioning strain into planar high strain zone
Single stream	Analytical method used whereby a sample is analysed only once
SPLUMA	Spatial Planning and Land Use Managing Act
Stratigraphic markers	Lithological layered horizons used as identifiers in the stratigraphy of the critical zone of the BIC to spatially refer to an area or horizon
Surface right	The right to own and use property as described in a title deed registered at the office of the Department of Rural Development and Land Reform, where the property right of use can be legally transferred with terms and conditions, where applicable
Twin stream	An analytical procedure where one sample is equally divided into two portions and is analysed separately for the purpose of analysing internal laboratory precision
UG2 reef	The upper group number two chromitite layer in the critical zone of the Bushveld Complex, containing economical extractable grades of PGE and associated base metals
Waste rock	Any other product derived from or incidental to a mining operation and which is stockpiled, stored or accumulated for potential reuse, or which is disposed of by the holder of a mining right, mining permit, production right or an old order right according to the MPRDA
Western Limb	The western lobe of the Bushveld Igneous Complex



## MINERAL RESOURCES AND MINERAL RESERVES DEFINITIONS

Reference: SAMREC Code 2016

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**Competent Person** A Competent Person is a person who is registered with SACNASP, ECSA or PLATO, or is a Member or Fellow of the SAIMM, the GSSA or a Recognised Overseas Professional Organisation (ROPO). A complete list of recognised organisations will be promulgated by the SSC from time to time. The Competent Person must comply with the provisions of the relevant promulgated Acts.

A Competent Person must have a minimum of five years' experience relevant to the style of mineralisation and type of deposit or class of deposit under consideration and to the activity he or she is undertaking.

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**Mineral resource** A mineral resource is a concentration or occurrence of solid 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 eventual economic extraction. The location, quantity, grade, continuity and other geological characteristics of a mineral resource are known, estimated or interpreted from specific geological evidence and knowledge, including sampling.

**> Inferred mineral resource**

An 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. Geological evidence is sufficient to imply but not verify geological and grade or quality continuity.

An inferred resource has a lower level of confidence than that applying to an indicated mineral resource and must not be converted to a mineral reserve.

It is reasonably expected that the majority of inferred mineral resources could be upgraded to indicated mineral resources with continued exploration.

**> Indicated mineral resource**

An indicated mineral resource is that part of a mineral resource for which quantity, grade or quality, densities, shape and physical characteristics are estimated with sufficient confidence to allow the application of modifying factors in sufficient detail to support mine planning and evaluation of the economic viability of the deposit.

Geological evidence is derived from adequately detailed and reliable exploration, sampling and testing and is sufficient to assume geological and grade or quality continuity between points of observation.

**> Measured mineral resource**

A measured mineral resource is that part of a mineral resource for which quantity, grade or quality, densities, shape, and physical characteristics are estimated with confidence sufficient to allow the application of modifying factors to support detailed mine planning and final evaluation of the economic viability of the deposit.

Geological evidence is derived from detailed and reliable exploration, sampling and testing and is sufficient to confirm geological and grade or quality continuity between points of observation.

A measured mineral resource has a higher level of confidence than that applying to either an indicated mineral resource or an inferred mineral resource. It may be converted to a proved mineral reserve or to a probable mineral reserve.

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**Mineral reserve**

A mineral reserve is the economically mineable part of a measured and/or indicated mineral resource.

It includes diluting materials and allowances for losses, which may occur when the material is mined or extracted and is defined by studies at pre-feasibility or feasibility level as appropriate that include application of modifying factors. Such studies demonstrate that, at the time of reporting, extraction could reasonably be justified.

The reference point at which mineral reserves are defined, usually the point where the ore is delivered to the processing plant, must be stated. It is important that, in all situations where the reference point is different, such as for a saleable product, a clarifying statement is included to ensure that the reader is fully informed as to what is being reported.

➤ **Probable reserve**

A probable mineral reserve is the economically mineable part of an indicated, and in some circumstances, a measured mineral resource.

The confidence in the modifying factors applying to a probable mineral reserve is lower than that applying to a proved mineral reserve.

➤ **Proved reserve**

A proved mineral reserve is the economically mineable part of a measured mineral resource.

A proved mineral reserve implies a high degree of confidence in the modifying factors.

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