Atlatsa Resources Corporation

TECHNICAL REPORT
THE MINERAL RESOURCE ESTIMATE FOR THE MERENSKY AND UG2 REEFS AT THE BOKONI PLATINUM MINE, LIMPOPO PROVINCE, REPUBLIC OF SOUTH AFRICA

31 December 2017

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1. EXECUTIVE SUMMARY (ITEM 1)

ExplorMine Consultants was commissioned by Atlatsa Resources Corporation ("Atlatsa") to complete a National Instrument 43-101 Technical Report following the principles of the Canadian Institute of Mining, Metallurgy and Petroleum ("CIM") Definition Standards on Mineral Resources and Mineral Reserves ("CIM Definition Standards"), in support of obligations in terms of Canadian Securities Regulatory Authorities.

On February 2, 2012 Atlatsa Resources and Anglo American Platinum Limited ("Amplats") announced an agreement ("Transaction") to refinance Atlatsa, restructure and recapitalise the Bokoni Mining Operations ("Bokoni"). A new strategic plan for Bokoni resulting in the disposal of undeveloped platinum group metals ounces to Amplats, recapitalisation and refinancing of Atlatsa and Bokoni, together with accelerated production growth at Bokoni Platinum Mine. As a consequence of this Transaction, Bokoni Mine as referred to in this Report includes the properties Klipfontein and Avoca ("Ga-Phasha West"), which were previously incorporated in the Ga-Phasha Project.

On the 21st of July 2017 Atlatsa entered into a letter agreement with Amplats, which details a two-phased transaction, in terms of which Atlatsa will implement a Care and Maintenance strategy for the Bokoni Mine and a financial restructure plan for itself and its subsidiaries. This will be conditional on Amplats acquiring and including into its adjacent mining rights the resources specified in the Central Block and Kwanda North prospecting rights. Amplats has agreed to suspend servicing and repayment of about R4.2bn debt incurred by Atlatsa until December 31st, 2019. Upon implementation of Phase 2 of the agreement, all debt incurred during this debt standstill period will also be capitalised and/or written off, in accordance with the debt write-off.

A decision to place mine on a Full Care and Maintenance Programme was taken on 1 August 2017 and will be effective on 1 October 2017 following a Section 189 consultation process with all effected parties.

Atlatsa Resources (TSXV: ATL; NYSE Amex: ATL; JSE: ATL) is a platinum group metals mining, exploration and development company, controlling the third largest Platinum Group Minerals ("PGM") resource base in South Africa. Atlatsa controls and operates the Bokoni Platinum Mines ("Bokoni Mine"), located on the Eastern Limb of the Bushveld Complex, which includes the area previously referred to as the Ga-Phasha West Project, located adjacent to Bokoni Mine, and the Kwanda Project.

The subject of the Technical Report is the Mineral Resource Estimate for the Merensky and UG2 Reefs at the Bokoni Platinum Mine, Limpopo Province, Republic of South Africa. The Mineral Resource estimation is based on historic drillhole and mining (chip sampling) data collected since the 1960s to present.

This Report has been prepared based on a technical review by ExplorMine Consultants over the period December 2016 to October 2017. The effective date of the Technical Report is the 31st of December 2017. The Mineral Resource estimate presented in this Report is an update of the Mineral Resource estimate of 30th June 2016.

1.1. History, Exploration and Mining

The Bokoni Platinum Mine has undergone several ownership and name changes since commissioning. The present day Bokoni Mine was commissioned as Atok Platinum Mine (Pty) Limited by Anglo Transvaal Consolidated Mines ("Anglovaal") in 1969 and was subsequently acquired by Rustenburg Platinum Mines ("RPM") Limited in 1977. RPM was a subsidiary of Johannesburg Consolidated Investments Limited ("JCI"), in which Anglo American Corporation ("AAC") held a significant equity interest.

In the mid-1990s, JCI was 'unbundled' and its platinum interests were listed separately as Lebowa Platinum Mines Ltd ("LPM"), which was later merged with Anglo Platinum's other mines to become a wholly owned subsidiary of Anglo Platinum Limited.

In 2008, Anooraq entered into a Transaction Framework Agreement with Anglo Platinum, whereby Anglo Platinum sold to Anooraq an effective 51 % of Lebowa Platinum Mine and an additional 1 % interest in each of the Ga-Phasha, Boikgantsho and Kwanda Joint Venture Projects, resulting in Anooraq holding a controlling interest in each of these projects, for a total cash consideration of ZAR3.6 billion (Lebowa Transaction). Lebowa Platinum Mine was renamed Bokoni Mine.

Atlatsa is currently in possession of Converted Mining Rights in terms of Item 7 of the Mineral and Petroleum Resources Development Act No. 28 of 2002. The original Mining Authorisations for Bokoni Mine and Ga-Phasha in terms of s.9(1) of the South African Minerals Act, 1991, were Old Order License Numbers 6/2003, 23/2003 and 8/2004.

The area which incorporates the mining and surface areas pertaining to the Bokoni Mine is located in the magisterial district of Sekhukhuneland, in the Limpopo Province. The total surface area occupied by the Mining Rights in terms of the mining authorisations 6/2003, 23/2003 and 8/2004 is approximately 20,395 ha (**Figure 1**).

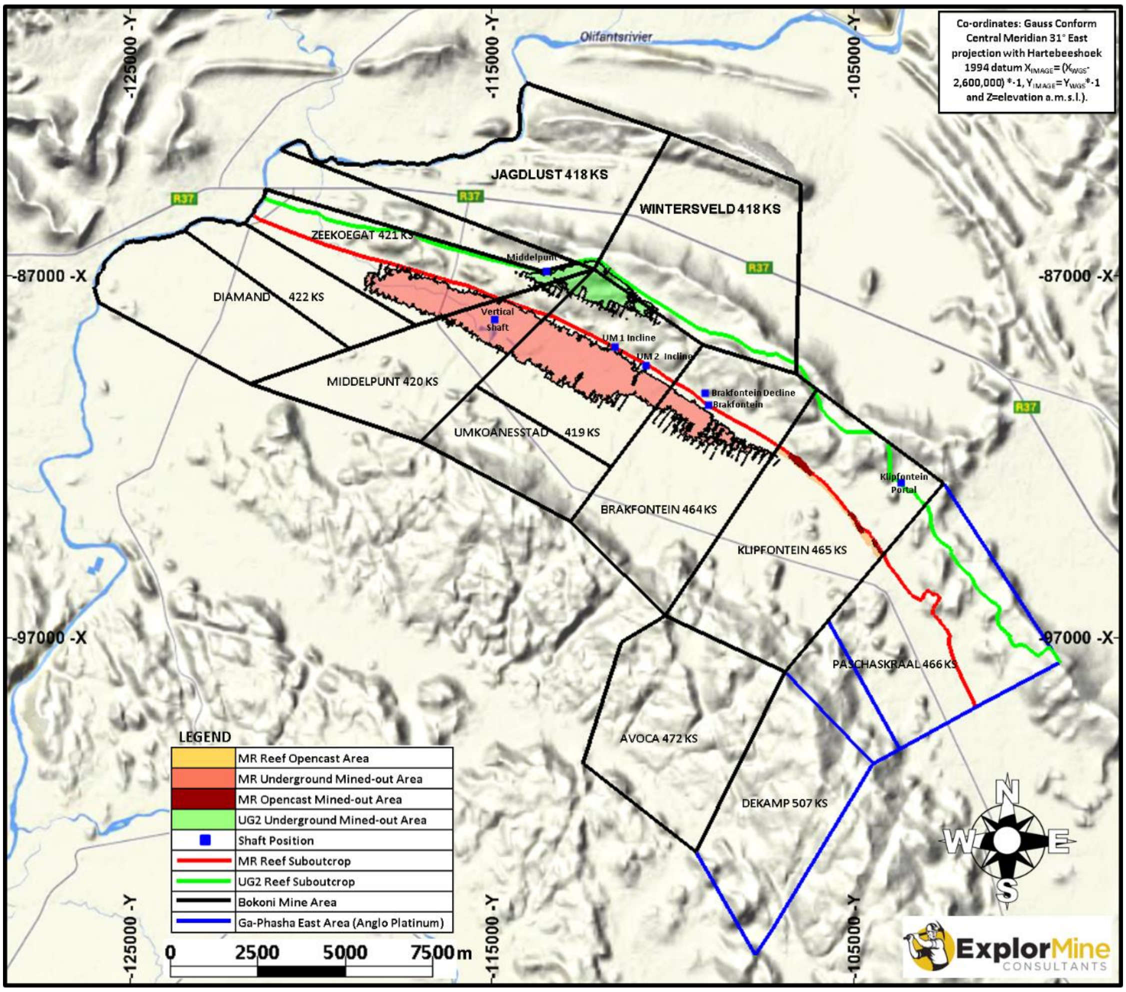

Figure 1: Bokoni Mine area indicating the topography and Merensky and UG2 Reef suboutcrop positions.

As far as ExplorMine Consultants could ascertain all relevant surface right permits and any other permit related to the work conducted on the properties have been obtained and are valid. ExplorMine are not aware of any legal proceedings that may have an influence on the rights to prospect or mine for minerals. The surface overlying the Bokoni Mine Property is owned by the State, and tenure to the required areas is currently held through various Surface Right Permits in terms of Section 90 of the Mining Rights Act of 1967, and lease agreements. Pursuant to Item 9 in Schedule II to the MPRDA, such Surface Rights will remain in force and attach to converted mining rights. These Surface Rights have been re-registered in accordance with the requirements of Item 9.

The Environmental Management Program includes a detailed 'Environmental Closure Assessment' detailing all areas of environmental liability. It is understood that Atlatsa will ensure that the Rehabilitation Trust Fund is funded to cover the total environmental liability on closure of operations.

ExplorMine are not aware of any legal proceedings that may have an influence on the rights to prospect or mine for minerals.

Anglovaal drilled fifteen shallow Merensky Reef drillholes on the farm Klipfontein during the 1960s (**Figure 1**). An extensive trenching programme along the UG2 Reef outcrop comprising 30 trenches was also conducted. The results of these programmes were obtained by RPM as part of the procurement of Anglovaal's Atok interests.

The farm Paschaskraal had been the focus of Anglovaal's drilling program in the 1960s prior to the acquisition of the mineral rights by RPM and included drillholes to intersect the Merensky Reef. JCI/RPM had, however, secured significant mineral rights over properties held in trust by the State for various indigenous tribes on the Eastern Limb and exploration was progressed in order to determine the geological extent and characteristics of the Merensky and UG2 mineralisation. In the 1980s JCI drilled additional drillholes to intersect the UG2 and Merensky Reefs.

Significant interest in the Eastern Limb was initiated in 1999 and was driven by the increasing demand (and robust forecast of demand) for PGMs. Since 2001 Anglo Platinum exploration activities have continued with a number major exploration drilling programmes and related activities after a strategic decision to increase total PGM production. The UG2 was identified as a major target and the Middlepunt project was initiated on the basis of geological continuity, grade consistency and precious metal values. In addition, the Brakfontein Merensky Reef project was also initiated.

Recent exploration activities by Anglo Platinum (up to 2008) have included the upgrading of the geological Mineral Resources for the area and diamond drilling to improve the overall coverage.

Atlatsa recently completed a surface drilling project on the Klipfontein (Ga-Phasha West) property. A total of 52 mother drillholes with a total of 2,142 m were drilled from June 2012 to September 2012. The drilling programme was specifically designed to upgrade a shallow outcropping strike length of Merensky Reef which is being considered for an opencast operation.

Several sets of exploration and mining data and associated sampling and assay data have been acquired over time on the Bokoni property by previous and current owners. The standards applicable to the collection and interpretation of these data have largely remained consistent. The exploration data includes the following:

- Surface drillholes
- Underground drillholes
- Aeromagnetic surveys
- Underground channel sampling
- Surface geological mapping
- Underground geological mapping

Bokoni Mine has been the focus of various exploration activities since 1964, with six phases of exploration having been carried out, all involving diamond drilling. Diamond drilling and channel sampling represent by far the largest exploration datasets for the Bokoni Mine Property.

The bulk of the surface drilling on the Bokoni Mine property has been has been conducted by Anglo Platinum as the operator. Anglo Platinum employed contractors to conduct the drilling activity although diamond core logging and sampling was conducted by Anglo Platinum staff at the Driekop Exploration Base (located approximately 50 km southeast of Bokoni Mine). No single drilling contractor was used to complete the drilling and contracts were put out to tender at the beginning of each exploration phase.

1.2. Geology

The Bushveld Complex is situated in the northern half of South Africa and exists as an ellipse-shaped body consisting of five lobes. The Bushveld Complex is the world's largest known ultramafic igneous intrusion, and extends approximately 450 km east to west and approximately 250 km north to south. It occupies parts of Limpopo Province, North-West Province, Gauteng Province and the Mpumalanga Province. It is estimated to have been formed approximately 2,000 million years ago. The Bushveld Complex is host to PGM mineralisation in addition to chrome, vanadium, nickel and copper.

Bokoni Mine is located on the northern extremity of the Eastern Limb of the Bushveld Complex. The platiniferous horizons mined at Bokoni Mine are the Merensky and the UG2 reefs, located in lithologies of the Critical Zone of the Rustenburg Layered Suite. In the Eastern Limb, the Critical Zone is developed over about 150 km of strike length in three areas separated by regional faulted systems. The Merensky Reef and UG2 outcrop over about 130 km, but also occur in down-faulted blocks and erosional outliers. In the Eastern Limb, the Merensky Reef comprises facies somewhat different when compared to the equivalent reef that is developed within the Western Limb. In common, however, is the fact that in both the Eastern and Western Limbs, the mineralisation is hosted within the pyroxenite and between relatively narrow (2 mm to 5 mm) chromitite layers. The chromitite forms useful mining contacts that visually define the position of the orebody.

Distinctive pegmatoidal pyroxenite, such as that which contains the bulk of the mineralisation of the Merensky Reef in the Western Limb is present beneath the lower chromitite stringer in the Eastern Limb and, whilst this unit does contain elevated Platinum Group Elements ("PGE") grades, the bulk of the continuous mineralisation is located within non-pegmatoidal ("porphyritic") pyroxenite, but between two chromitite stringers.

Both the Merensky Reef and UG2 Reef horizons outcrop in the area along a northwest-southeast trending strike length. The Bushveld Complex layering dips from northeast to southwest at approximately 25º in the north-western areas (Zeekoegat), and gradually decreases to approximately 18º in the south-eastern area (Brakfontein). The general structural geology is characterised by northeast and east trending dykes and faults with associated conjugated joint sets.

The mining area is located within the farms Zeekoegat, Middelpunt, Umkoanesstad and Brakfontein. The north-eastern portion of the mining area is located below a range of pyroxenite hills and the south-western portion is below the valley floor, overlain by black turf.

Several structural and lithological features occur locally on the Bokoni Mine property which remove or result in the disruption of normal Merensky and UG2 Reef occurrence and mineralisation, these include:

- Potholes which occur in both the Merensky and UG2 Reefs
- Bifurcation recorded only in the UG2 Reef horizon
- Dykes including dolerite, diabase, lamprophyre and syenite dykes
- Structural breaks including faults, shears and joints
- Alteration features including veins and alteration zones
- Pegmatiods and dunite replacement of the reefs

The origin of the PGE's in the Merensky and UG2 Chromitite remains contentious and several hypotheses explain some of the features observed.

The mining and exploration techniques employed at Bokoni Mine are well established within the Bushveld Complex style of mineralisation. PGM mineralisation includes platinum (Pt), palladium (Pd), rhodium (Rh), and ruthenium (Ru), osmium (Os) and iridium (Ir). The precious metals gold (Au) and silver (Ag) and the base metals chrome (Cr), iron (Fe,) cobalt (Co), nickel (Ni) and copper (Cu) are often associated with PGM metals.

A combination of desurveyed surface drillhole reef intercepts, channel sampling, previous structural interpretations, topography and an interpreted aeromagnetic survey was used by ExplorMine Consultants to complete a first principles structural interpretation. The top contacts, as determined during the reef coding process, of the Merensky and UG2 Reefs were wireframed as continuous surfaces honouring intersections.

Utilising boundary polygons and the reef intersections, wireframe surfaces were gridded. Mother surface drillholes were always used as the dominant indication of the surface as these intersections have downhole surveys. Where the mother drillhole intersection was not available the next sequential intersection was utilised.

1.3. Mineral Resources

A block modelling process was undertaken to allow estimation of the Merensky and UG2 Reefs in Datamine™. Two types of block models were constructed to allow estimation. The first and main resource model type facilitated estimation of the main mineralised 'interval' for both the Merensky and UG2 Reefs.

The secondary type of model facilitated the estimation of multiple 10cm reef hangingwall and footwall layers. The top reef contact was used as a datum for the various block models.

The densities for each reef unit were estimated into the primary block models using the variography and values from the surface drilling sampling data. Parent cell ordinary kriging estimates were done for 4E (mg/t), 4E (g/t), Pt (g/t), Pd (g/t), Rh (g/t), Au (g/t), Cu (%), Ni (%), channel width (m) and density ("SG").

The Merensky Reef was modelled as a single zone as defined by statistical studies. The UG2 Reef was modelled as two zones.

In terms of the secondary block models for both the Merensky and UG2 Reefs, for each successive 10 cm reef hangingwall and footwall layer, three orthogonal block models were created initially on a zero-elevation average plane, in the same dimensions as those constructed for the primary block model and constructed in the same geographical locations. Parent cell ordinary kriging estimates were done for 4E (g/t), Pt (g/t), Pd (g/t), Rh (g/t), Au (g/t), Cu (%), Ni (%) and density ("SG").

The top surface (zero elevation) of the primary block model was then used for a basis for 'stacking' the secondary hangingwall block model to create a multiple vertical cell block model above the reef composite. The basal contact of each composite was utilised as the zero point for stacking of the footwall 10 cm vertical cells. Composites were calculated from the stacked block models by the use of a process called MODTRA in Datamine™ to simulate a vertical single cell block model such that various iterations of Mineral Resource width could be generated.

The average local dip of the relevant reef wireframe was estimated into the block model and used to correct the volume (tonnage) increase required for a two-dimensional orthogonal block model to be represented on an inclined plane. Geological losses were applied to the Merensky and the UG2 Reef models. Losses include potholes, dykes, faults, shears, MPEG's (Mafic Pegmatoids) and IRUP's (Iron Replacement Ultramafic Pegmatoids only applicable to the farm Brakfontein for MR).

Geological losses related to the Merensky Reef potholes were estimated into 200 m (X direction) 200 m (Y direction) parent cells on the same model origin as the grade model estimate. A geostatistical study of the distribution of the size of potholes (area) and the distribution of potholes (number per unit area) was undertaken. Semi-variogram models were created and modelled from this data. The resultant of the Merensky Reef pothole estimate, the product of the number of potholes per block (200 m by 200 m) and the average area of those potholes was obtained. The total area of potholes versus the total area of the block could be calculated, thus providing a proxy for the potential geological loss related to potholes. Due to the small representative mined area, a low number of potholes population has been recorded in the UG2 at the Middlepunt Decline, hence a similar UG2 pothole estimation model could not be developed. A geological discount factor due to potholes of 9 % was used for the UG2 Reef based on historical mining data.

A complete re-evaluation of the Mineral Resources has been performed based on a database that has been completely checked and corrected for entry errors. It is intended to perform an evaluation that will give a spatial expression of value distribution, so that the extraction of the PGM Mineral Resources can be planned efficiently. Hangingwall and footwall mineralisation was estimated in 10 cm layers, so mine management can decide what mining widths are most lucrative. In the central reef zone 4E plus the individual elements as well as channel widths and relative density were estimated. Irrelevant hangingwall and footwall data was coded out (Zone Coding) of the data before initial composites were made for the purpose of experimental variograms. These limits were defined by obvious breaks in 4E mineralization.

Both the Merensky Reef and UG2 Reef exhibited outliers when the distributions were analysed. Therefore, top and bottom cutting and capping of outliers was necessary during the generation of the semi-variograms.

Ordinary kriging was computed into a two-dimensional geological block model, which produced a two-dimensional spatial distribution of low and high grade in inclined reef structural blocks, which enables the design of single reef mining. Ordinary kriging was applied to Measured Resource, Indicated Resource and Inferred Mineral Resource categories. Ordinary kriging with a searches equivalent to multiples of the range of the variogram model was done utilising variogram models from respective reef and zones.

Delineation of Mineral Resource category was determined through a matrix of categorisation criterion.

Each reef model estimate was inspected for conformity with the composite data used for the estimate. The estimation process as detailed resulted in a global non-depleted resource model. The outlines of mining on the Merensky and UG2 Reef in the Bokoni Mine area were therefore applied to deplete each modelled reef horizon. Adjustments to volumes were calculated for various geological and geotechnical factors. Mineral Resources for Bokoni Mine are tabulated in **Table 1** below:

Table 1: Mineral Resource estimates for the Merensky Reef and UG2 Reef at Bokoni Mine. A 4E pay-limit for the Merensky and UG2 Reefs respectively has been applied. (Tonnes and element kilogrammes have been rounded-off to the appropriate level of accuracy). The e estimate is inclusive of any Mineral Reserve declared. The 2016 ExplorMine Mineral Resource estimate has been included for comparison.

		Total 2017 [1 2]				**Total 2016** [2 3 4]									
Mineral Resource Category [#]	**Reef Type**	**Tonnes (million)**	**Grade 4E (g/t)** [1]	**4E Kg's ('000)**	**4E (Moz)**	**Tonnes (million)**	**Grade 4E (g/t)**	**4E Kg's ('000)**	**4E (Moz)**	**Pt grade (g/t)**	**Pd grade (g/t)**	**Rh grade (g/t)**	**Au grade (g/t)**	**Cu grade (%)**	**Ni grade (%)**
Measured	MR	92.8	4.82	447.1	14.4	98.1	4.83	474.0	15.2	2.97	1.37	0.17	0.30	0.08	0.21
Indicated	MR	47.8	4.85	231.7	7.4	48.3	4.85	234.4	7.5	2.98	1.39	0.17	0.30	0.08	0.20
Measured + Indicated	**MR**	140.6	4.83	678.8	21.8	146.4	4.84	708.4	22.8	2.97	1.38	0.17	0.30	0.08	0.21
Inferred	MR	205.8	5.02	1,033.4	33.2	200.8	5.02	1,007.7	32.4	3.08	1.45	0.18	0.30	0.08	0.20

Notes

1. No Klipfontein MR Opencast Mineral Resources declared in 2017 as not economically extractable. Economically extractable areas mined pre-2017.
2. Underground best-cut based on a minimum 90 cm and maximum 115 cm width, including 10 cm hangingwall.
3. 2016 Opencast best-cut method based on a minimum 120 cm and maximum 180 cm with 10 cm hangingwall included (based on Investment Centre approximately 50 m highwall).
4. 2016 numbers from "Bokoni_Ga_Phashsa_MR_UG2_Resources_06072016-50m_u.xlsx", inclusive of Klipfontein Opencast Mineral Resources.

		Total 2017 [1 2]				**Total 2016** [1 2 3]									
Mineral Resource Category	**Reef type**	**Tonnes (million)**	**Grade 4E (g/t)**	**4E Kg's ('000)**	**4E (Moz)**	**Tonnes (million)**	**Grade 4E (g/t)**	**4E Kg's ('000)**	**4E (Moz)**	**Pt grade (g/t)**	**Pd grade (g/t)**	**Rh grade (g/t)**	**Au grade (g/t)**	**Cu grade (%)**	**Ni grade (%)**
Measured	UG2	198.6	6.43	1,277.9	41.1	198.9	6.45	1,282.9	41.2	2.65	3.13	0.52	0.13	0.05	0.17
Indicated	UG2	92.3	6.57	606.5	19.5	92.2	6.58	607.1	19.5	2.71	3.21	0.53	0.13	0.05	0.17
Measured + Indicated	**UG2**	290.9	6.48	1,884.4	60.6	**291.1**	**6.49**	**1,890.0**	**60.8**	2.67	3.15	0.52	0.13	0.05	0.17
Inferred	UG2	174.6	6.71	1,171.1	37.7	173.8	6.71	1,165.7	37.5	2.73	3.31	0.54	0.12	0.06	0.18

Notes

1. Marginal pay-limit applied to UG2HW and UG2FW for UG2 for best-cut generation, per Investment Centre.
2. Underground best-cut based on a minimum 90 cm and maximum 100 cm width, including 5 cm hangingwall.
3. 2016 numbers from "Bokoni_Ga_Phashsa_MR_UG2_Resources_06072016-50m_u.xlsx".

1.4. Conclusions and Recommendations

This Technical Report is intended to fulfil two basic objectives:

- To compile a NI43-101 compliant Mineral Resource Estimate for the Merensky and UG2 Reefs for the Bokoni Platinum Mine.
- To guide management in the identification of potential mining and exploration target areas, by providing a spatial expression of the estimated Mineral Resource.

This Technical Report and the technical work on which it is based, provide a compliant Mineral Resource Estimate. An estimated block model has been constructed and can be used as a tool to guide future exploration and mining decision making.

ExplorMine Consultants and Atlatsa geologists collectively have extensive experience in the geology of the Bokoni Mine Bushveld Complex style of mineralisation and estimation thereof based on all available historic and recent exploration and mining data.

A combination of historic and recent desurveyed surface drillhole reef intercepts and an aeromagnetic survey completed by Anglo Platinum were used by ExplorMine Consultants in a complete first principles structural interpretation.

The Mineral Resource estimate presented in this Report for the Merensky and UG2 Reefs is based on several sets of data. This data was collected over an extended period of time from the 1960s through to present. The data set includes surface and underground diamond drillholes represented by electronic databases, geophysical data and underground channel sampling data.

ExplorMine Consultants has completed its own assessment and validations on primary data, and considers the validity and quality of the historic and recent data to be reasonable. The data complies with acceptable standards and norms and is considered of sufficient quality for use in Mineral Resource Estimates.

Geological modelling recognises two distinct geological zones in the UG2 Reef. The Merensky has only a single zone identified. These zones have been used as a basis for geostatistical modelling.

ExplorMine Consultants has in preparation of this Report on the Mineral Resource estimate collated and compiled a single comprehensive composite database consisting of surface and underground drillhole composites and chip sampling composites. All composite data has been corrected for dip and therefore true width has been accounted for. All of the composites were coded for project area, source type (drillholes and channel sampling), reef type (Merensky or UG2 Reef), facies and reef disturbance (pothole or bifurcation).

The drillhole data, historic and recent, is stored in electronic format within a Sable Data Works™ Microsoft® SQL Server Database, where codes and protocols are standardised. In addition, the channel sampling database on-site has been upgraded to store individual prill splits, historically only the 4E / 3E values were stored. Historical prill values have been incorporated into the estimate where available.

A block modelling process was undertaken to allow estimation of the Merensky and UG2 Reefs in Datamine™. The resultant block models are designed to facilitate the use of mineral optimisation software.

An evaluation of the Mineral Resources has been performed based on the database that has been electronically captured, completely checked and corrected. It is intended to perform an evaluation that will give a spatial expression of value distribution, so that the extraction of the Mineral Resources can be planned efficiently.

Kriging was affected into a geological block model, which produced a spatial distribution of low and high grade in reef structural blocks, which enables the design of single reef mining. Ordinary kriging was applied to Measured, Indicated and Inferred Mineral Resource categories.

Consequently, the Mineral Resource Estimate and associated review of source data for the estimate as detailed in this report, ExplorMine Consultants recommend that Bokoni Mine staff focus on several areas relating to the drillhole database, underground channel sampling data, as well as the quality control and assurance thereof, and geological zone / facies definition.

In addition, ExplorMine Consultants also recommends that a study of the vertical mineralisation profile for the Merensky Reef versus the lithology or stratigraphic profile be initiated. It is clear from initial studies that the mineralisation profile relative to the lithology profile changes from one geographic area to another. This may have implications for the determinations of mining profiles or cuts.

No additional surface or underground exploration is planned on the Bokoni Mine property at this stage. A decision to place mine on a Full Care and Maintenance Programme was taken on 1 August 2017 and will be effective on 1 October 2017following a Section 189 consultation process with all effected parties.

2. INTRODUCTION (ITEM 2)

2.1. Terms of Reference

ExplorMine Consultants was commissioned by Atlatsa Resources Corporation ("Atlatsa") to complete a National Instrument 43-101 Technical Report following the principles of the Canadian Institute of Mining, Metallurgy and Petroleum ("CIM") Definition Standards on Mineral Resources and Mineral Reserves ("CIM Definition Standards"), in support of obligations in terms of Canadian Securities Regulatory Authorities.

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The subject of the Technical Report is the Mineral Resource Estimate for the Merensky and UG2 Reefs at the Bokoni Platinum Mine, Limpopo Province, Republic of South Africa. The Mineral Resource estimation is based on historic drillholes and mining (chip sampling) data collected since the 1960s to present.

ExplorMine Consultants is a geological contracting and consulting company focused on mining and exploration in a wide range of commodities. Experience includes mine ore resource management, exploration project management, database administration, target generation, geological modelling, Competent Person's Reports and Mineral Reserve and Resource declarations as per the NI43-101 code, and other internationally recognised mineral reporting codes.

This Report has been prepared based on a technical review by ExplorMine Consultants over a period from December 2016 to October 2017. ExplorMine Consultants in the preparation of this Report has no beneficial interest in Atlatsa or any other related companies and subsidiaries. ExplorMine Consultants will be paid a commission for the Technical Report in accordance with professional consulting practice in South Africa. The professional consulting fee does not rely on the conclusions or recommendations resultant from this Report. This permits the provision of objective views and recommendations.

The individuals who have provided input to this Technical Report have extensive experience in the mining and exploration industry and are members in good standing of appropriate professional institutions are as follows:

- Mr Andre Deiss, BSc (Hons), Pr.Sci.Nat., MSAIMM
- Dr Bill (William) Northrop, PhD, GDE, Pr.Sci.Nat., FGSSA, FSAIMM
- Mr Garth Mitchell, BSc (Hons), BCom., Pr.Sci.Nat., MSAIMM, MGSSA

Mr Deiss has 23 years' experience in geology and geostatistics in Southern Africa, and has worked for numerous large South African and International mining companies as a geologist. Mr Deiss acting in a consulting capacity has provided geological and geostatistical services to mining companies in Southern and Eastern Africa, Asia, Europe, North and South America, active in a wide scope of commodities. Mr Deiss is responsible for the geological database compilation, data integrity geological, block modelling and estimation. Mr Deiss is the person with overall responsibility for this Report.

Dr William (Bill) Northrop has 48 years' experience in the mining and exploration industry in various commodities including gold, oil, base metals, and diamonds. Dr Northrop has been involved in mines and projects throughout Southern and Eastern Africa for numerous large multinational mining companies. He has a wide range of geological, geophysical and geostatistical experience. Dr Bill Northrop is the person responsible for the estimation and reporting of the Mineral Resource.

Mr Mitchell is a geologist with 23 years' experience in the mining and exploration industry and has been responsible for the reporting of Mineral Resources on various properties in South Africa during the past seven years. Mr Mitchell has been employed with major South African gold mining companies since 1993 as a Mining Geologist, Exploration Geologist and has 6 years of senior mine management experience as an Ore Reserve Manager. Mr Mitchell has been consulting and contracting for numerous companies since 2004. Mr Mitchell is responsible for the geological modelling, assay and geological database compilation, data integrity, and quality control and assurance.

Messrs Mitchell and Deiss and Dr Northrop, are competent persons registered with the South African Council of Natural Scientists ("SACNASP") as well as with various mining and geological professional bodies.

2.2. Purpose of Technical Report

ExplorMine Consultants was commissioned to prepare a Technical Report on the Mineral Resource Estimate of the Merensky and UG2 Reefs for the Bokoni Platinum Mine (previously Lebowa Platinum Mine), Limpopo Province, South Africa. The work involved an assessment of the following aspects:

- Regional and local geology
- History of exploration work in the area
- Compile and verify the validity of geological, sampling and assay data and procedures
- Complete a mineral resource estimate
- Recommendations for future exploration and mining

This Technical Report is prepared in support of the reporting requirements in terms of the Canadian Securities Regulatory Authorities. The report has been prepared following the principles of the Canadian Institute of Mining, Metallurgy and Petroleum ("CIM") Standards on Mineral Resources and Reserves and National Instrument 43-101 ("NI 43-101") developed by the Canadian Securities Administrators. In addition, principles of the South African Mineral Reporting Code ("SAMREC") have also been considered.

2.3. Reliance on Information

This Technical Report is highly dependent upon technical input. The technical information provided by Atlatsa has been independently verified as follows:

- All relevant technical issues likely to influence the Mineral Resource Declaration were reviewed.
- Inspection visits annually to the Bokoni Mine site, since December 2009.
- A review of all available published and 'in-house' documentation with respect to the Properties as of October 2017.
- A review of historical information and results made available by Atlatsa with respect to all relevant previous exploration operations and mining activities.
- A review of exploration work and previous Mineral Resource estimates up to October 2017.
- A review of geological, drilling, sampling, and assay methodologies.
- A compilation of all relevant geological and assay data relating to the Bokoni Property.
- An estimate and classification by ExplorMine Consultants of the Mineral Resource for the Merensky and UG2 Reefs as at 31 December 2017.

ExplorMine Consultants has satisfied itself that information, data and methodology is adequate and valid for the declaration of a Mineral Resource as per the principles of the CIM Standard. ExplorMine Consultants considers that the level of work is sufficient to ensure compliance, both in terms of level of investigation and level of disclosure. ExplorMine Consultants is aware that this Technical Report may be subjected to review by a reader's panel.

Where ExplorMine Consultants has reviewed basic data provided by Atlatsa, ExplorMine Consultants has performed sufficient validation and verification, placing an appropriate level of reliance on such information. Where information is not directly verified, it is stated as such.

Details of information used to prepare this Technical Report are as follows:

- Various sources as presented in the References Section 27;
- All relevant various scale topographical, geological and mine plans and sections;
- Various electronic drillhole data – historic and recent;
- Various electronic channel sampling data - historic and recent and
- Personal communication with Bokoni Mine Staff

2.4. Site Visit

Bokoni Mine has been visited on an annual basis since 2009 by Messrs Mitchell and Deiss in the course of the work conducted during the Mineral Resource Estimation and the compilation of this Report. The site initial visits to the mine office complex and exploration office were conducted in December 2009. The sites were visited to collect raw data for collation and preparation of the Mineral Resource Estimate. Mr Mitchell also visited the UG2 underground stoping operations at Middlepunt Hill.

The Anglo Platinum Limited ("Anglo Platinum") core yard located at Driekop (approximately 50 km southeast of Bokoni Mine) where all recent surface drill cores for the Bokoni Mine Property are stored was also visited during December 2009. Drilling, logging, sampling and quality control procedures were discussed with Anglo Platinum personnel.

3. RELIANCE ON OTHER EXPERTS (ITEM 3)

ExplorMine Consultants' opinion and Mineral Resource estimate and statement, with respect to this Technical Report is effective on December 31, 2017 and is largely based on information and data provided by Atlatsa representatives and consultants. To its knowledge, ExplorMine Consultants has disclosed all material.

Calculations, which occur in this report, may include a degree of rounding which can introduce small errors; such errors are not considered significant.

In consideration of all legal aspects relating to property tenure and the 'right to mine' ExplorMine Consultants has placed reliance on information provided by Atlatsa and previous NI43-101 submissions to the Canadian Securities Regulatory Authorities. No additional legal due diligence has been applied. This is also the case in terms of any environmental liability and any other claims on Atlatsa and related parties.

4. PROPERTY DESCRIPTIONS AND LOCATION (ITEM 4)

The Bokoni Mine Property is located approximately 80 km southeast of Polokwane. The Bokoni Property is located on the north-eastern periphery of the Eastern Limb of the Bushveld Complex and has a combined northwest-southeast strike length of approximately 24.5 km (**Figure 2** and **Figure 3**). The platiniferous horizons mined at Bokoni Mine are the Merensky and the UG2 Reefs. The Bushveld Complex is a pear-shaped large igneous body, extending 450 km east to west and 250 km north to south and occurs partly in the Limpopo, North-West and Mpumalanga Provinces, of the Republic of South Africa.

The Eastern Limb of the Bushveld Complex is the site of numerous operating Platinum Group Element ("PGE") and chrome mines and associated exploration projects and has a well-established history of PGE and chrome mining on the Merensky, UG2 Reefs and LG Reefs respectively.

Atlatsa is currently in possession of Converted Mining Rights in terms of Item 7 of the Mineral and Petroleum Resources Development Act No. 28 of 2002. The original Mining Authorisations for Bokoni Mine in terms of s.9(1) of the South African Minerals Act, 1991, were Old Order License No. 6/2003, 23/2003 and 8/2004. On the 11th December 2013, a notarial deed of amendment was granted to amend the converted mining right MPT No: LP 59 to extend the mining area to include the farms Avoca 472 KS and Klipfontein 465 KS. The amended mining right includes the farm Diamand 422 KS, Portion of Zeekoegat 421 KS, Umkoanesstad 419 KS, Middelpunt 420 KS, Brakfontein 464 KS, Avoca 472 KS and Klipfontein 465 KS (**Table 2** and **Figure 6**).

Government registered surveyors surveyed the surface areas occupied by the Bokoni Platinum Mine operations. Boundary beacons have local survey ("Lo 31") and World Geodetic System ("WGS") co-ordinates. In terms of the Mining Right, the boundary beacons are plotted on the Surveyor General ("SGen") and relevant mining title ("RMT") diagrams.

The area which incorporates the mining and surface areas pertaining to the Bokoni Mine is located in the magisterial district of Sekhukhuneland, in the Limpopo Province. The total surface area occupied by the Mining Rights in terms of the New Order Mining Rights is approximately 20,395.01 hectares.

Table 2: Details of the Bokoni Mining Licence Areas.

Property	Area (ha)	Old Order Licence No.	Date Conversion Granted	New Order Licence Number	Period Validity
Middelpunt 420 KS	1,544.91	06/2003	12/05/2008	LP30/5/2/59/MR	Up to 30 Years
Diamand 422 KS	2,238.65				
Umkoanesstad 419 KS	2,635.10				
Zeekoegat 421 KS	2,127.69				
Brakfontein 464 KS	2,391.04				
Wintersveld 417 KS	2,459.75	23/2003	12/05/2008	LP30/5/2/65/MR	
Jagdlust 418KS	2,062.63				
Klipfontein 465 KS (Previously Ga-Phasha West)	2,841.88	8/2004	29/06/2009	LP30/5/2/59/MR	
Avoca 462 KS (Previously Ga-Phasha West)	2,093.36		29/06/2009	LP30/5/2/59/MR	
Total Area	**20,395.01**				

As far as ExplorMine Consultants could ascertain all relevant surface right permits and any other permit related to the work conducted on the properties have been obtained and are valid. ExplorMine are not aware of any legal proceedings that may have an influence on the rights to prospect or mine for minerals.

4.1. Mineral Tenure and Issuers Interest

Atlatsa, through its wholly owned South African subsidiary, Plateau Resources Proprietary Limited ("Plateau"), holds a 51% interest in Bokoni Platinum Holdings Proprietary Limited ("Bokoni Holdco"), a private company incorporated under the laws of South Africa, which is the holding company of Bokoni, Kwanda, Boikgantsho and Ga-Phasha. Bokoni Holdco holds a 100% interest in several PGM projects, including the operating Bokoni Mine and the Kwanda PGM project, located on the Northern Limb of the Bushveld Complex. As a result of a transaction with Rustenburg Platinum Mines Limited ("RPM"), a wholly owned subsidiary of Anglo Platinum on December 13, 2013, Boikgantsho and Ga-Phasha do not currently hold any mineral properties and are now dormant.

Atlatsa (and previously Anglo Platinum) applied for a conversion of "Old Order Rights" which has been converted to "New Order Rights" as of the 12th of May 2005, subject to certain terms and conditions, in terms of the Mineral and Petroleum Resources Development Act No. 28 of 2002 ("MPRDA"). The mining right will continue to be in force for a period of up 30 years. To the extent that the mineral rights and authorisations are in good standing and according to the requirements of the MPRDA, ExplorMine Consultants has relied on information provided by Atlatsa.

The Minerals and Petroleum Resources Development Act (Act 28 of 2002) (the "MPRDA") was promulgated by the South African Parliament during July 2002 and came into effect on 1 May 2004. The intention of the MPRDA is to make provision for the equitable access and sustainable development of the nation's mineral and petroleum resources. It is also intended to provide many opportunities for recognised empowerment exploration and mining companies. The legislation enforces the “use it or lose it” principle of mineral exploration and development.

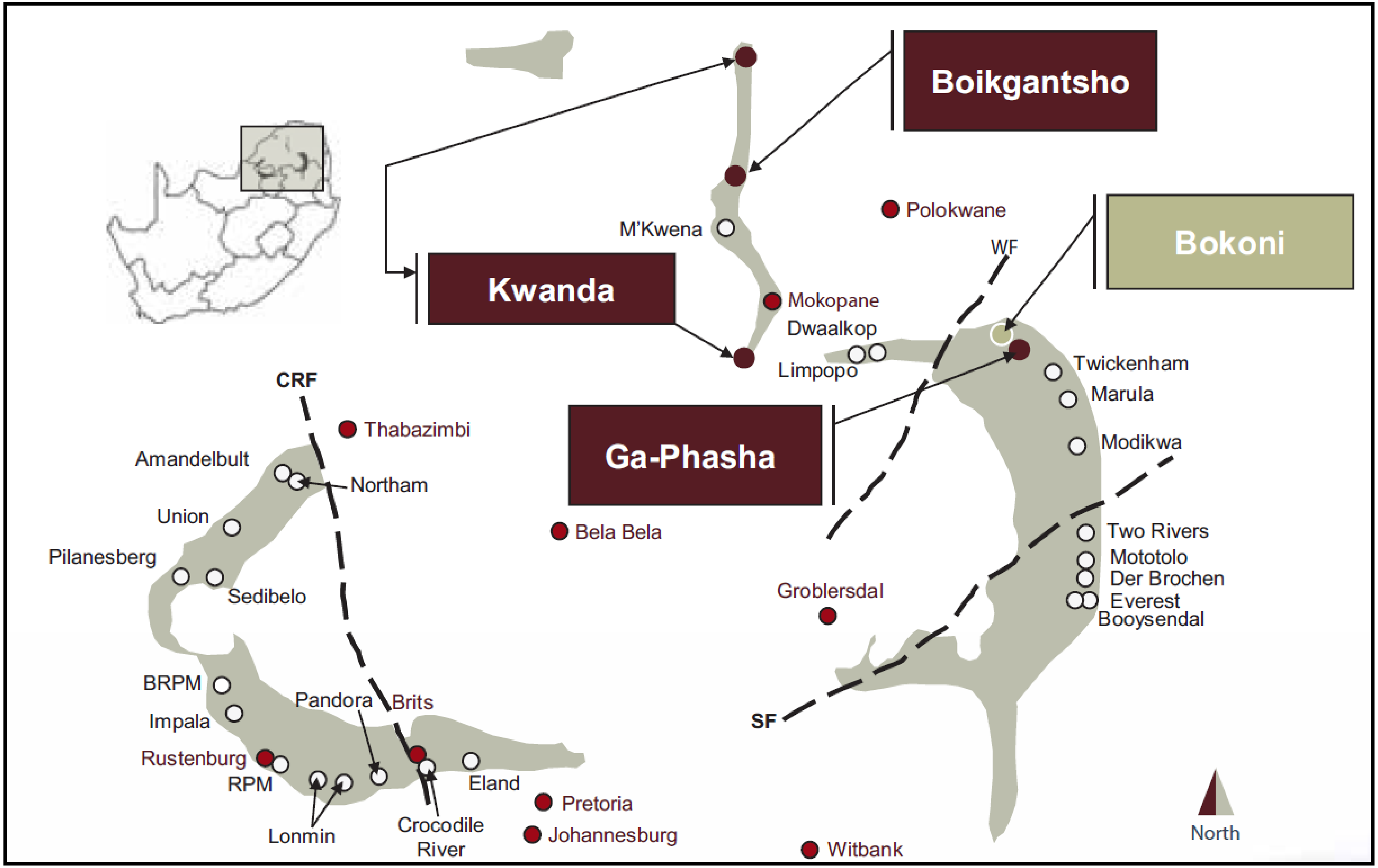


Figure 2: Bokoni Mine Property location relative to the Bushveld Complex. (Not to Scale)

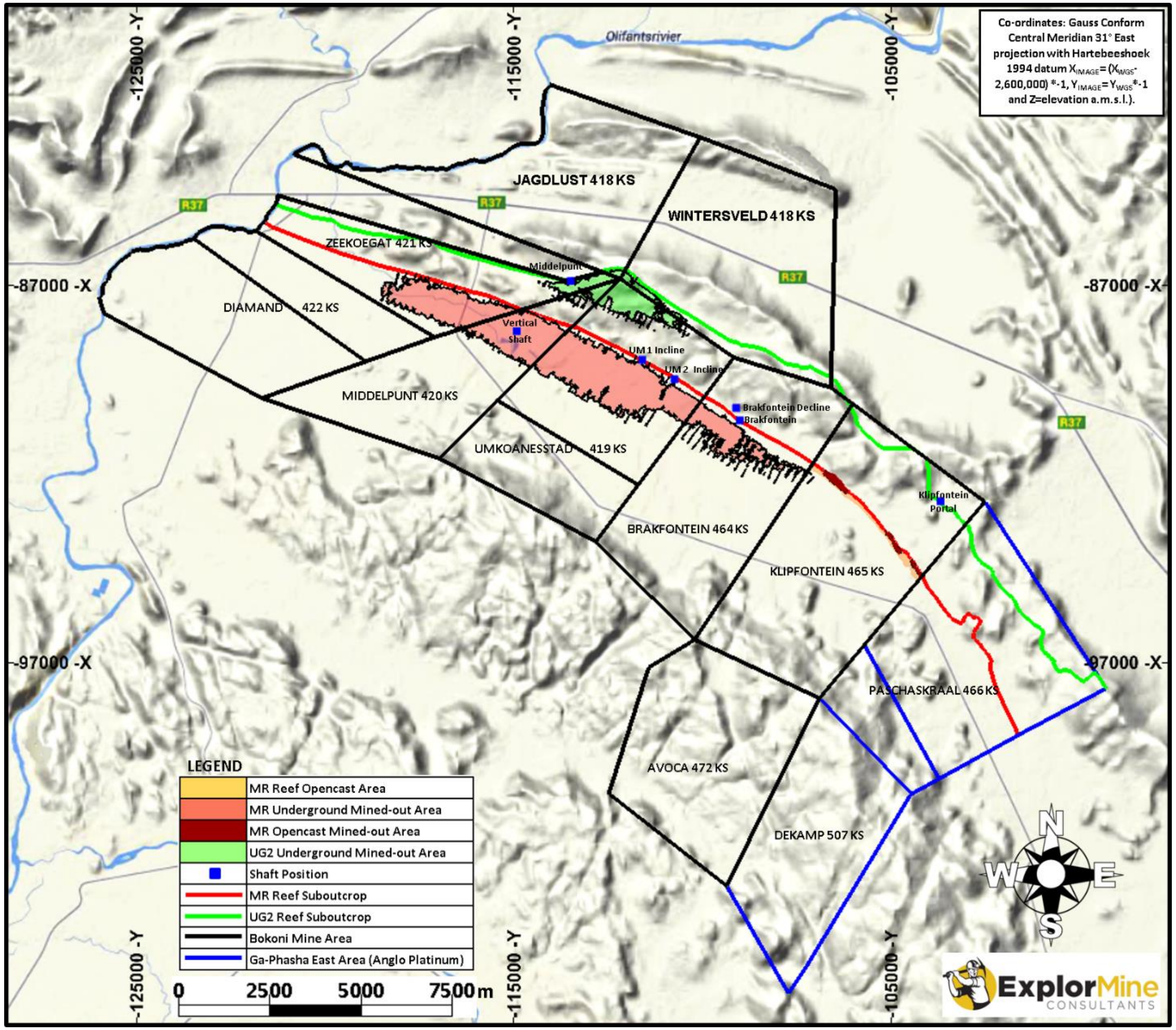


Figure 3: Bokoni Mine area topography, Merensky and UG2 Reef suboutcrop positions and mined out areas indicated.

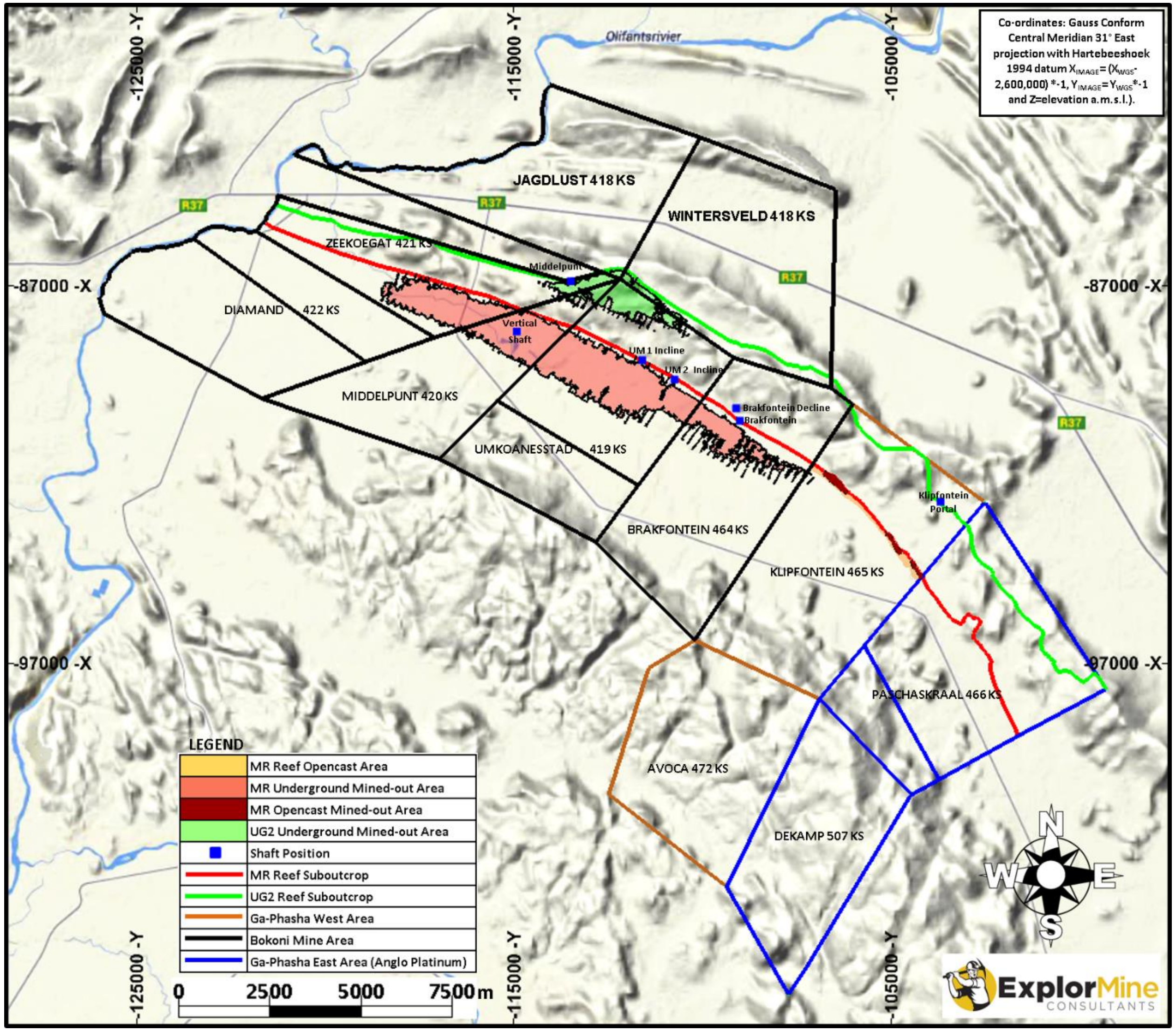


Figure 4: Historic Bokoni Mine and Ga-Phasha Project area boundaries topography with Merensky and UG2 Reef sub-outcrop positions indicated.

Another important facet of the MPRDA is that it promotes holding of and transfer of mineral rights in respect of Historically Disadvantaged South Africans ("HDSA"). These provisions are driven by the South African Government's Mining Charter which has embodied a policy of facilitating the transfer of ownership within the South African mining industry to HDSA up to 2014. All stakeholders are obliged to achieve a target of 26 % empowerment status. In addition, the Mining Charter contains employment equity targets of at least 40 % HDSA participation in mining company management, with 10 % being participation by women.

The Mining Charter required a 15 % Black Economic Empowerment stake holding (at fair market value) by April 30, 2009, and an additional 11 % by 2014. Atlatsa which currently has a 62 % BEE ownership meets the required level of BEE equity holding in respect of any current and future agreement and subsequent transfer of mining rights.

Atlatsa will retain the "New Order Rights" if it maintains its HDSA status, and adheres to the Mine Works Programme submitted with the original Right applications. The Mine Works Programme includes environmental and social compliance and proposed financial plans.

On February 2, 2012 Atlatsa and Anglo American Platinum Limited ("Amplats") announced an agreement to refinance Atlatsa, restructure and recapitalise the Bokoni Platinum group of companies ("Bokoni group").

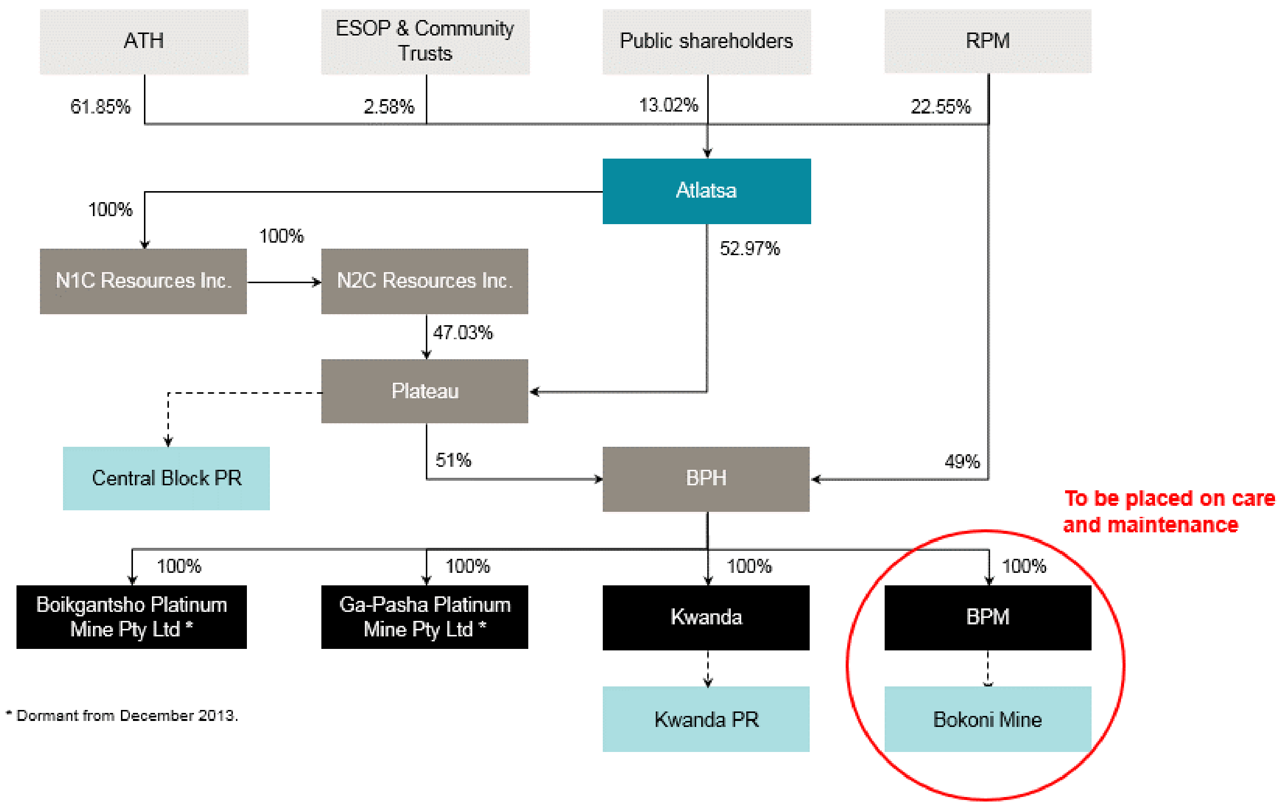


Figure 5: Current Atlatsa corporate structure and ownership.

The Parties agreed to a strategic plan for the Bokoni group resulting in the disposal of undeveloped platinum group metals) ounces to Amplats, recapitalisation and refinancing of Atlatsa and the Bokoni group, together with accelerated production growth at Bokoni Platinum Mine. The plan included:

- accelerating production growth at Bokoni Platinum Mine through a new ZAR2.6 billion capital development programme, adding 100,000 PGM ounces per annum to the Bokoni Mine production profile iny 2016, which had previously been deferred until after 2020;
- implementing a strategic re-alignment of the Bokoni group exploration and development mineral assets, by consolidating these assets into existing mine operations at Amplats' Twickenham and Mogalakwena mines, as well as an enlarged Bokoni Platinum Mines operation. The net effect of the strategic re-alignment is that Atlatsa will dispose of its entire interest in the Boikgantsho Project and

the Eastern section of the Ga-Phasha Project to Amplats for a net consideration of ZAR1.7 billion and utilize these proceeds to partially reduce its debt outstanding to Amplats (**Figure 3** and **Figure 4**). Atlatsa will continue to hold a minimum 51 % majority interest in the enlarged Bokoni Platinum Mine with Amplats retaining a 49 % minority interest (**Figure 5**).

On the 21st of July 2017 Atlatsa entered into a letter agreement with Amplats, which details a two-phased transaction, in terms of which Atlatsa will implement a Care and Maintenance strategy for the Bokoni Mine and a financial restructure plan for itself and its subsidiaries. This will be conditional on Amplats acquiring and including into its adjacent mining rights the resources specified in the Central Block and Kwanda North prospecting rights. Amplats has agreed to suspend servicing and repayment of about R4.2bn debt incurred by Atlatsa until December 31st, 2019. Upon implementation of Phase 2 of the agreement, all debt incurred during this debt standstill period will also be capitalised and/or written off, in accordance with the debt write-off.

A decision to place mine on a Full Care and Maintenance Programme was taken on 1 August 2017 and will be effective on 1 October 2017 following a Section 189 consultation process with all effected parties. All mining and development activities at Brakfontein and Middelpunt Hill mining shafts will cease, and all shafts and concentrators will be placed on care and maintenance. The staff complement will be reduced to 102 employees required to manage the care and maintenance of the mine.

With the conclusion of the Care and Maintenance process Atlatsa will either dispose of the Bokoni asset or source alternative funding opportunities to re-commission mining operations when financial and economic conditions improve. The Care and Maintenance Programme will not change the shareholder structure of Bokoni Mine which will continue to be held 51 % by Atlatsa and 49 % by Amplats.

4.2. Environmental Issues

Key environmental legislation, which is applicable to the South African mining industry, is as follows:

- National Environmental Management Act (107 of 1998) ("NEMA") as regulated by the Department of Environmental Affairs and Tourism ("DEAT") and relevant Provincial departments of environment.
- MPRDA as regulated by the DMR. The MPRDA replaces the Minerals Act, 1991 and makes provision for equitable access to, and sustainable development of, South Africa's mineral and petroleum resources. Regulations under the MPRDA set out the procedures for undertaking environmental impact assessments ("EIA").
- Minerals Act 1991 and the MPRDA make provision for transitional arrangements. A mine must have converted "Old Order Mining Rights" to "New Order Mining Rights" by the 30 April 2009. A key requirement for new mines or for the conversion process is the need for a social and labour plan ("SLP"), a mine works plan ("MWP"), proof of technical and financial competence as well as an approved Environmental Management Plan ("EMP").
- Mine Health and Safety Act (Act 29 of 1996) as regulated by the DMR This Act deals with the protection of the health and safety of persons in the mining industry but also has implications for environmental issues related to environmental health monitoring within mines.

Other relevant legislation includes the following:

- National Water Act (36 of 1998) ("NWA") as regulated by the Department of Water Affairs and Forestry ("DWAF").
- Atmospheric Pollution Prevention Act (45 of 1965) ("APPA") as regulated by DEAT.
- Environment Conservation Act (73 of 1989) ("ECA") as regulated by the DEAT, DWAF and relevant Provincial departments.
- National Heritage Resources Act (25 of 1999) as regulated by South African Heritage Resource Agency ("SAHRA") or relevant Provincial departments where established.
- Hazardous Substances Act (15 of 1973) as regulated by the Department of Health.

- ECA, Forest Act (84 of 1998), Provincial Nature Conservation Acts and other Ordinances as regulated by Provincial conservation authorities.
- National Nuclear Regulatory Act of 1999 as regulated by the National Nuclear Regulator ("NNR"). This legislation has been replaced by the Certificate of Registration ("COR") system.

The South African National Environmental Management Act 107 of 1998 as well as MPRDA, requires that operations are carried out in accordance with generally accepted principles of sustainable development. It is a MPRDA requirement that an applicant for a mining right make prescribed financial provision for the rehabilitation or management of negative environmental impacts, which must be reviewed annually. The financial provisions deal with anticipated costs for premature closure; planned decommissioning and closure; and post closure management of residual and latent environmental impacts.

Atlatsa makes full provision for the future cost of rehabilitating mine sites and related production facilities on a discounted basis at the time of developing the mines and installing those facilities. The rehabilitation provision represents the present value of rehabilitation costs relating to mine sites, which are expected to be incurred up to 2039, which is when the producing mine properties are expected to cease operations. These provisions are based on internal assumptions and estimates; which management believes are a reasonable basis upon which to estimate the future liability. These estimates are reviewed regularly to consider any material changes to the assumptions.

Actual rehabilitation costs will ultimately depend upon future market prices for necessary rehabilitation works required that will reflect market conditions at the relevant time. Furthermore, the timing of rehabilitation is likely to depend on when the mine ceases to produce at economically viable rates. This, in turn, will depend on future PGM prices, which are inherently uncertain.

An assessment of the Bokoni Mine was completed in 2014, to determine the environmental rehabilitation liability as at December 31, 2014. This assessment was used to calculate the environmental rehabilitation liability as at March 31, 2015. The total environmental rehabilitation liability for the Bokoni Mine, was estimated at $14.1 million (ZAR135.0 million) for Q1 2015.

The Company makes annual contributions to a dedicated trust fund (the "Environmental Trust Fund") to cover the estimated cost of rehabilitation during and at the end of life of the Bokoni Mine. As at March 31, 2015, the amount invested in the Environmental Trust Fund was $4.0 million (ZAR38.0 million) compared to $3.5 million (ZAR33.6 million) at March 31, 2014 and $3.7 million (ZAR37.0 million) at December 31, 2014. The $14.1 million (ZAR97.0 million) shortfall between the funds invested in the Environmental Trust Fund and the estimated rehabilitation cost is covered by a guarantee from RPM.

Atlatsa's mining and exploration activities are subject to extensive environmental laws and regulations, which are constantly changing and are generally becoming more restrictive. Atlatsa has incurred, and expects to incur in the future, expenditures to comply with such laws and regulations, but cannot predict the full amount of such future expenditures.

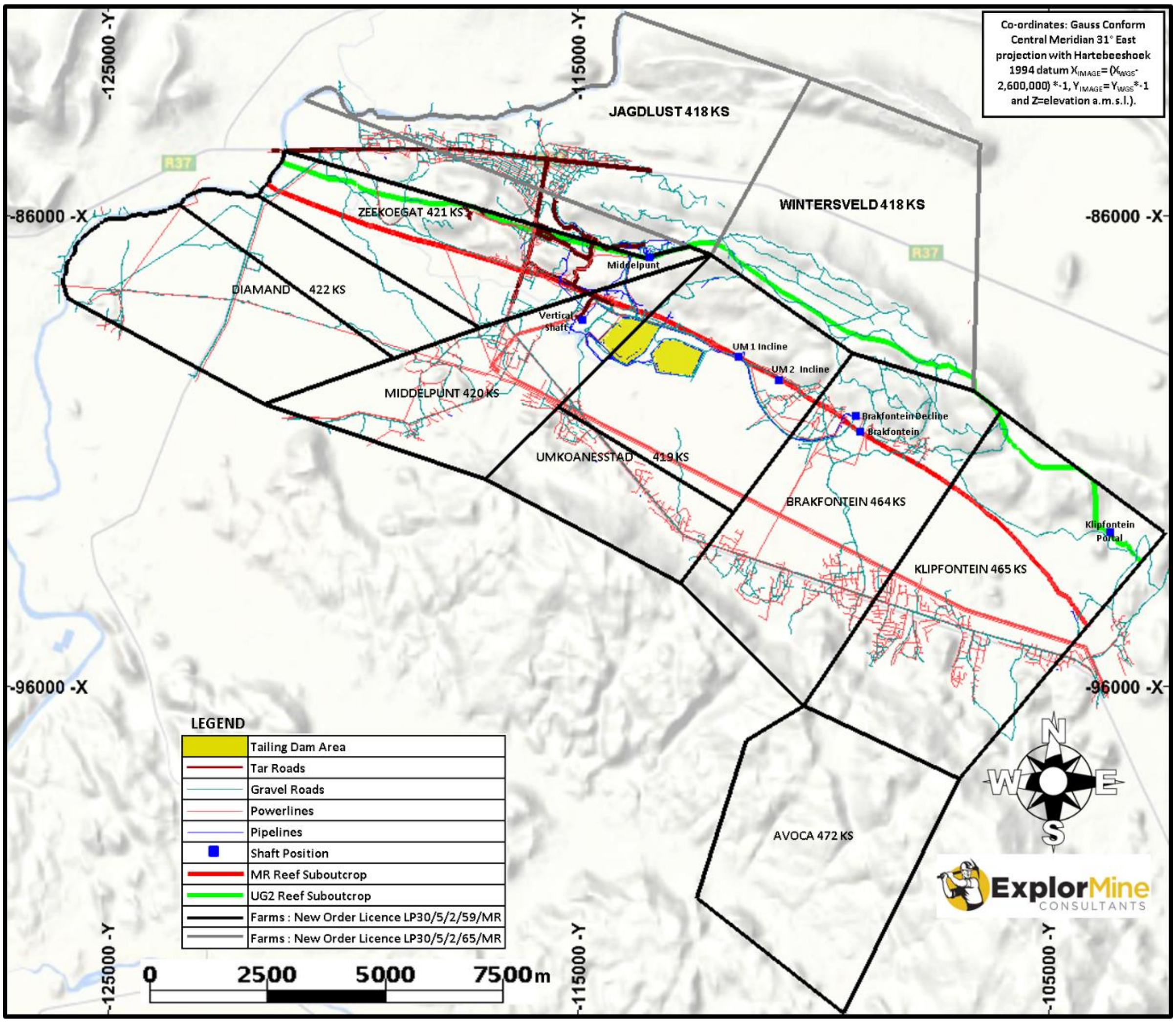


Figure 6: Bokoni Mine Mining rights and infrastructure.

4.3. Surface Rights and Permits

The surface overlying the Bokoni Mine Property is owned by the State, and tenure to the required areas is currently held through various Surface Right Permits in terms of Section 90 of the Mining Rights Act of 1967, and lease agreements. Pursuant to Item 9 in Schedule II to the MPRDA, such Surface Rights will remain in force and attach to converted mining rights. These Surface Rights have been re-registered in accordance with the requirements of Item 9 (**Figure 6**).

ExplorMine Consultants has not reviewed the validity of these rights but has been informed by Atlatsa that Bokoni Mine has valid Surface Rights Permits over all surface areas used by Bokoni Mine.

In addition to the various mine shafts, Bokoni Mine surface structures include:

- Mine buildings including: offices, change-houses, hostel facilities
- Workshops, compressor houses and stores
- Concentrators
- Tailings dams and waste rock dumps

Additional permits under the various sections of legislation, listed in Section 4, would also be required should mining proceed on the previously referred to Ga-Phasha West Properties (Klipfontein and Avoca).

5. ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY (ITEM 5)

5.1. Accessibility

The Bokoni Mine Property lies parallel to the main paved R37 provincial Polokwane – Lydenburg road (**Figure 6**). A number of secondary (paved), gravel roads service the area, but there is only limited access to much of the area. The nearest railheads are at Burgersfort and Steelpoort 80 km and 100 km away respectively. All stores and equipment are delivered by road-truck to Bokoni Mine. The nearest commercial (domestic) airport is located at the provincial capital Polokwane.

The general area is well developed in terms of access, and mining related infrastructure. Platinum and chrome mining and related activities have been conducted in the area for more than 50 years.

5.2. Climate and Physiography

The topography of the area is fairly rugged. A broad valley running due north-south is underlain by the rock units of the Upper Critical zone of the Bushveld Complex. The rocks of the Middle and Lower Critical zone form a series of elongated but isolated hills, on the eastern portion of the area. On the western limits of the area, the land surface rises steeply as the escarpment to the Lulu Mountains is approached. The average altitude of the plain is 800 m above mean sea-level ("AMSL") and the average altitude of the adjacent mountains is 1,600 m AMSL.

The plains, hills and mountains are sparsely vegetated with grasses, shrubs and occasional small trees with stunted growth. The vegetation is a result of both the arid climate and over-grazing by cattle and sheep.

The Sekhukhuneland District, in which Bokoni Mine operates, has a typical arid, temperate Southern African climate. In the summer (September to April), temperatures can reach the mid to high 30 °C, cooling to slightly below 20 °C overnight. Rainfall occurs between November and March and averages between 300 mm and 500 mm annually. Winter temperatures can fall below 10 °C but warm to the mid 20 °C in the daytime. Extreme weather conditions occur only a few times a year and can include mist, high wind with dust, thunderstorms and occasional hail.

Bokoni Mine is not affected by climate and weather.

5.3. Resources and Infrastructure

The Eastern Limb of the Bushveld Complex is characterised by both mature platinum and chrome mines and numerous developing mines and exploration projects and as a result the local industry is currently experiencing increasing activity.

The nearest large town is Polokwane, which is a modern and developing town providing housing, schooling, health care, commercial and government administrative facilities.

Many of Bokoni Mine employees reside in Polokwane and commute to Bokoni Mine. The remaining employees are housed in a mine residential village located at Bokoni Mine, while some staff resides in dwellings in the surrounding rural area.

Electrical and water supply infrastructure is well established in this portion of the Limpopo Province. Electrical supply is provided through an existing agreement with Eskom (parastatal electrical service provider).

The installed capacity of 60 MVA is reported as sufficient for the current workings at Bokoni Mine plus the two approved expansion projects, the Middlepunt UG2 Project and the Brakfontein Merensky Project. Regionally, Eskom has strengthened their grid by building the Lesideng Main Transmission Station which feeds the Witkop-Merensky 400 kV ring which provides a firm 500 MVA to the region.

In January 2008, the mismatch between installed, available, electrical generation capacity and rapidly growing demand in South Africa came to a head, resulting in rolling blackouts and a temporary shutdown of the mining industry. After the shutdown, electricity supply to the mining industry was curtailed to 90 % of historic demand. The recent changes in the global financial markets have led to a drastic drop in growth, and have effectively alleviated the electricity shortage in the short term. Nationally Eskom has embarked on a programme developing electrical supply to meet future growth in electrical demand.

Bokoni Mine does have standby electricity generating capacity able to support some critical operations, such as shaft winders and hoisting, however ventilation fans and the concentrators cannot be supported.

Bokoni Mine is currently self-sufficient in the supply of industrial and potable water. Potable water is drawn from a well-field on the Jagdlust property adjacent to the Olifants River which bounds the mining lease area on the north-west (**Figure 6**). This extraction is limited to 787,000 cubic metres per annum in accordance with the DWAF permit. The well-field has never run dry. However, permanent supply cannot be guaranteed, and the existing water use permit is subject to review by the DWAF from time to time.

There is ingress of groundwater into the underground workings, estimated at nearly 11,000 cubic metres per day. There is currently no shortage of available industrial water.

The available potable water is however limited and could be an issue in terms of any future planned expansions at Bokoni Mine. These potential water shortages have been considered and addressed on a regional scale by affected mining and exploration companies, who have developed a Northern and Eastern Limb water scheme which forms part of the long-term strategy to ensure adequate water supplies to all the various Northern and Eastern Limb mines, including Bokoni Mine.

There are two concentrators at Bokoni Mine, namely the Merensky Concentrator commissioned in 1991 and the UG2 Concentrator commissioned in 2003. They are located adjacent to the Vertical Shaft (**Figure 6**).

There are two tailings dams at LPM, namely the Merensky tailings dam and the UG2 tailings dam. These are located near the Merensky and UG2 Concentrators, respectively. The Merensky tailings dam has an area of approximately 70 ha and is known as the Consolidated Tailings Dam, being five previous dams, combined into a single facility. The UG2 tailings dam is relatively new (commissioned in 2003), with an area covering approximately 63 ha. There are physical provisions for future tailings dams, known as Site B for Merensky and Site D for the UG2, these tailings storage facilities will be adequate for the Life of Mine.

Waste rock dumps are located adjacent to the various shafts to accommodate the broken waste rock hoisted from underground. The inert waste rock is used for construction and in future may be used to clad the slopes of the tailings dams.

Prior to the decision to place the Bokoni operation on care and maintenance, Bokoni Mine's organisational structure was similar to other South African mines, whereby production was divided into the departments of Mining and Engineering and services were provided through Technical Services, Administration/Finance and Safety/Training. In each instance, a Head of Department reported to the Managing Director. As required by South African statute, various persons are legally appointed to their positions, including the Production Manger's at the various Investment Centres, their immediate sub-ordinates as well as the Engineering Manager and his sub-ordinates. Appointed managers are obliged to ensure that the mining activities are carried out according to the Minerals Act regulations and/or codes of practice/standard procedures drafted and adopted by Bokoni Mine.

A decision to place mine on full care and maintenance was taken on 1st of August 2017 and will be effective from the 1st of January 2018 following a Section 189 consultation process. A total of 2,652 employees will be retrenched, contractors have been given a two month notice of termination. A total of 102 employees will be retained for the management of the Care and Maintenance Programme.

There is currently no mining or processing infrastructure developed in the far eastern portions of the Bokoni Property (Ga-Phasha West area). Future mining operations on these portions of the Bokoni Property are likely to be similar to and extensions of the current Bokoni Mine.

6. HISTORY (ITEM 6)

6.1. Prior Ownership and Changes

The Bokoni Platinum Mine and Ga-Phasha West area have undergone several ownership and name changes since commissioning. The present day Bokoni Mine was commissioned as Atok Platinum Mine (Pty) Limited by Anglo Transvaal Consolidated Mines ("Anglovaal") in 1969 and was subsequently acquired by Rustenburg Platinum Mines ("RPM") Limited in 1977. RPM was a subsidiary of Johannesburg Consolidated Investments Limited ("JCI"), in which Anglo American Corporation ("AAC") held a significant equity interest.

In the mid-1990s, JCI was 'unbundled' and its platinum interests were listed separately as Lebowa Platinum Mines Ltd ("LPM"), which was later merged with Anglo Platinum's other mines to become a wholly owned subsidiary of Anglo Platinum Limited.

In terms of "old order" mining rights, i.e., those granted under legislation that pre-dated the Mineral and Petroleum Resources Development Act (Act No. 28 of 2002), Amplats owned the mineral rights to shallow ore resources for the Ga-Phasha area. The deeper deposits under these farms were owned by the South African Government. In 2002, following an agreement between the Government and Amplats it was decided to combine and name the combined Mineral Resource the Ga-Phasha PGM Project. Fifty percent would be allocated to a successful Black Economic Empowerment tenderer.

Following on from a tender process, Pelawan Investments (Pty) Ltd. (Pelawan) was awarded the mineral rights over the farms Avoca and De Kamp. Accordingly, Pelawan became entitled to a 50 % interest in the Ga-Phasha Project. Amplats, through its wholly owned subsidiary, Rustenburg Platinum Mines Ltd., held the balance of the 50 % ownership in the Project.

In 2004 Pelawan Investments Limited ("Pelawan") affected a reverse takeover of Anooraq Resources Corporation, a Canadian company listed on the Toronto Stock Exchange Venture market ("TSX-V") and the American Stock Exchange ("AMEX"). Pelawan affected the takeover by reversing its 50% interest in Ga-Phasha into Anooraq in exchange for a controlling shareholding.

In September 2004, Amplats and Anooraq formalised their Joint Venture Arrangement over the Ga-Phasha Project through an incorporated joint venture, utilizing a company called Micawber 277 (Pty) Ltd, in which Amplats and Anooraq each held a 50 % shareholding.

In 2008, Anooraq entered into a Transaction Framework Agreement with Anglo Platinum, whereby Anglo Platinum sold to Anooraq an effective 51 % of Lebowa Platinum Mine and an additional 1 % interest in each of the Ga-Phasha, Boikgantsho and Kwanda Joint Venture Projects, resulting in Anooraq holding a controlling interest in each of these projects, for a total cash consideration of ZAR3.6 billion (Lebowa Transaction). Lebowa Platinum Mine was renamed Bokoni Mine.

On February 2, 2012 Anooraq Resources and Anglo American Platinum Limited ("Amplats") announced an agreement ("Transaction") to refinance Anooraq, restructure and recapitalise the Bokoni Operations. A new strategic plan for Bokoni resulting in the disposal of undeveloped platinum group metals ounces to Amplats, recapitalisation and refinancing of Anooraq and Bokoni, together with accelerated production growth at Bokoni Platinum Mine.

Anooraq Resources Corporation ("Anooraq") (TSXV: ARQ; NYSE Amex: ANO; JSE: ARQ) announced the implementation of a name change, from Anooraq Resources Corporation to Atlatsa Resources Corporation ("Atlatsa"), effective from the 14th of May 2012 (TSXV: ATL; NYSE Amex: ATL; JSE: ATL).

On the 21st of July 2017 Atlatsa entered into a letter agreement with Amplats, which details a two-phased transaction, in terms of which Atlatsa will implement a Care and Maintenance strategy for the Bokoni Mine and a financial restructure plan for itself and its subsidiaries. A decision to place mine on a Full Care and Maintenance Programme was taken on 1 August 2017 and will be effective on 1 October 2017following a Section 189 consultation process with all effected parties.

6.2. Exploration

Platinum was first discovered in the Bushveld Complex in 1924 whilst panning in a dry river bed on the farm Maandagshoek, located west of the town of Burgersfort, and was traced to the dunite pipes of the Maandagshoek area. This led shortly afterwards to the discovery of the platiniferous horizon named the Merensky Reef on the farm Maandagshoek some 45 km south of the present day Bokoni Mine.

From 1925 to 1927 exploration was conducted by Northern Platinum Limited on both the platiniferous dunite pipes and the Merensky Reef in the Dwars and Olifants River areas resulting in some 700,000 tonnes of ore being mined from these early operations.

In the 1920s trenching and numerous small adits were excavated on both the Merensky and the UG2 chrome horizons, notably where these cropped out in the hills on the eastern side of the area. In the 1960s diamond drilling programmes were undertaken throughout the whole area to determine the basic characteristics of the ores. Geological comparisons with the Western Bushveld PGM deposits were unfavourable for the Eastern Bushveld and this, as well as market factors, contrived to reduce the level of exploration and development.

Anglovaal drilled fifteen shallow Merensky Reef drillholes on the farm Klipfontein during the 1960s. An extensive trenching programme along the UG2 Reef outcrop comprising 30 trenches was also conducted. The results of these programmes were obtained by RPM as part of the procurement of Anglovaal's Atok interests.

The farm Paschaskraal had been the focus of Anglovaal's drilling program in the 1960s prior to the acquisition of the mineral rights by RPM and included drillholes to intersect the Merensky Reef. JCI / RPM had, however, secured significant mineral rights over properties held in trust by the State for various indigenous tribes on the Eastern Limb and exploration was progressed in order to determine the geological extent and characteristics of the Merensky and UG2 mineralisation. In the 1980s JCI drilled additional drillholes to intersect the UG2 and Merensky Reefs.

Significant interest in the Eastern Limb was initiated in 1999 and was driven by the increasing demand (and robust forecast of demand) for PGM's. Since 2001 Anglo Platinum exploration activities have continued with a number of major exploration drilling programmes and related activities after a strategic decision to increase total PGM production. The UG2 was identified as a major target and the Middlepunt project was initiated on the basis of geological continuity, grade consistency and precious metal values. In addition, the Brakfontein Merensky Reef project was also initiated.

Recent exploration activities by Amplats (prior to 2008) have included the upgrading of the geological Mineral Resources for the area and diamond drilling to improve the overall coverage. No exploration has been conducted by Atlatsa (or its Joint Venture partner Amplats) since 2008.

Atlatsa recently completed a surface drilling project on the Klipfontein (Ga-Phasha West) property (**Figure 4**). A total of 52 mother drillholes with a total of 2142.47 m were drilled from June 2012 to September 2012. The drilling programme was specifically designed to upgrade a shallow outcropping strike length of Merensky Reef which is being considered for an opencast operation.

6.3. Historical Mineral Resource and Reserve Estimates

In 2016 ExplorMine Consultants completed a Mineral Resource estimate for Bokoni Mine (**Table 3**) following the principles of the Canadian Institute of Mining, Metallurgy and Petroleum ("CIM") Standards on Mineral Resources and Reserves and National Instrument 43-101 ("NI 43-101") developed by the Canadian Securities Administrators.

Table 3: Mineral Resource estimate for 2016 for the Merensky Reef and UG2 Reefs for Bokoni Mine. A 4E paylimit for the Merensky and UG2 Reefs respectively has been applied. (Tonnes and element kilogrammes have been rounded-off to the appropriate level of accuracy). The estimate is inclusive of any Mineral Reserve declared.

		Total 2016			
Mineral Resource Category	**Reef Type**	**Tonnes (million)**	**Grade 4E (g/t)**	**4E Kg's ('000)**	**4E (Moz)**
Measured	MR	98.1	4.83	474	15.2
Indicated	MR	48.3	4.85	234.4	7.5
Measured + Indicated	**MR**	**146.4**	**4.84**	**708.4**	**22.8**
Inferred	MR	200.8	5.02	1,007.7	32.4

		Total 2016			
Mineral Resource Category	**Reef type**	**Tonnes (million)**	**Grade 4E (g/t)**	**4E Kg's ('000)**	**4E (Moz)**
Measured	UG2	198.9	6.45	1,282.9	41.2
Indicated	UG2	92.2	6.58	607.1	19.5
Measured + Indicated	**UG2**	**291.1**	**6.49**	**1,890.0**	**60.8**
Inferred	UG2	173.8	6.71	1,165.7	37.5

Recent Mineral Reserve estimates for Bokoni Mine were compiled by Bokoni Mine personnel (2016) and Snowden (Snowden, 2015) and have been stated to be in accordance with NI43-101 and in compliance with The South African Code for Reporting of Mineral Resources and Mineral Reserves (**Table 4**), the SAMREC Code, 2007.

Table 4: Mineral Reserve estimates for the Merensky and UG2 Reefs in the Bokoni Mine area. Tonnes and element kilograms have been rounded-off to the appropriate level of accuracy. The 2014 Mineral Reserve estimate sourced from Snowden, 2015.

		Total 2016				Total 2014			
Mineral Reserve Category	**Reef Type**	**Tonnes (million)**	**Grade 4E (g/t)**	**4E Kg's ('000)**	**4E (Moz)**	**Tonnes (million)**	**Grade 4E (g/t)**	**4E Kg's ('000)**	**4E (Moz)**
Proven	MR	39.05	3.72	145.27	4.67	36.4	3.88	141.15	4.5
Probable	MR	1.69	3.90	6.59	0.21	7.2	4.33	31.25	1.0
Total	**MR**	40.74	3.73	151.86	4.88	43.7	3.95	172.40	5.5

		Total 2016				Total 2014			
Mineral Reserve Category	**Reef type**	**Tonnes (million)**	**Grade 4E (g/t)**	**4E Kg's ('000)**	**4E (Moz)**	**Tonnes (million)**	**Grade 4E (g/t)**	**4E Kg's ('000)**	**4E (Moz)**
Proven	UG2	27.32	5.11	139.61	4.49	26.1	5.15	134.57	4.3
Probable	UG2	15.23	5.06	77.06	2.48	17.6	5.11	90.09	2.9
Total	**UG2**	42.55	5.10	216.67	6.97	43.7	5.13	224.40	7.2

Prior to the exploration work conducted by Anglo Platinum and Anooraq, no historic NI43-101 or SAMREC compliant Mineral Resource declarations exist for the Klipfontein and Avoca Properties (formerly Ga-Phasha West Project area see **Figure 4**).

6.4. Production from Bokoni Mine

The recent production of Bokoni Mine as published by Atlatsa is presented in **Table 5** and **Table 6**. Recent statistics for metal recoveries are given in **Table 7**.

Table 5: Bokoni Mine production statistics for the first quarters of 2015, 2016 and 2017 (published by Atlatsa).

Operating results – Bokoni Mines	Unit	Q1 2015	Q1 2016	Q1 2017
Tonnes milled	Tonnes	372,661	319,205	296,366
Recovered grade	g/t milled, PGM	3.58	3.60	3.70
PGM ounces produced	Oz	42,875	36,609	35,338
UG2 mined to total output	%	30.10	44.2	-
Primary development	m	2,195	1,210	1,239
Operating cost/tonne milled	ZAR/t	1,381	1,389	1,620
Operating cost/PGM ounce	ZAR/PGM Oz	12,013	12,107	13,587

Prior to the decision to place the Bokoni Mine on care and maintenance in August 2017, the operating plan to 2020 targeted an output of 160 ktpm from underground operations to meet the current installed processing capacity at the Bokoni Mine. The Brakfontein Shaft and Middelpunt Hill Shaft were planned to ramp up to steady state levels of production of 100 ktpm and 60 ktpm by 2020 and 2018 respectively. The older UM2 and Vertical underground shafts was to be phased out by 2016 and 2018 respectively. The mill gap between the processing capacity (160 ktpm) and the underground production (130 ktpm) would be filled by the opencast operation. Material capital expenditure associated with the proposed UG2 and Merensky expansion plans at the Bokoni Mine, as well as a new UG2 Concentrator plant (100 ktpm), estimated at $180.0 million (ZAR1,722 million), has been deferred.

All production at Bokoni Mine will cease from the 1st of January 2018.

Table 6: Bokoni Mine monthly Mine Call Factor for 2016

F2016	Mine Call Factor (%)	
Month	Merensky MCF	UG2 Reef
Jan	89.96%	93%
Feb	73.42%	83.35%
Mar	128.24%	129.77%
Apr	85.93%	97.71%
May	98.65%	101.70%
Jun	93.37%	107.82%
Jul	86.78%	93.71%
Aug	87.63%	86.22%
Sep	123.24%	131.21%
Oct	86.39%	84.73%
Nov	111.20%	103.89%
Dec	43.97%	64.99%
MCF Over 12 Months	**90.82%**	**96.76%**

Table 7: Bokoni Mine metal recovery statistics for the financial periods from 2011.

	Merensky Reef						UG2 Reef						Merensky Opencast		
	F2011	F2012	F2013	F2014	F2015	F2016	F2011	F2012	F2013	F2014	F2015	F2016	F2013	F2014	F2015
Element	% Recovery						% Recovery						% Recovery		
4E	86	89	90	90	89	90	79	87	87	86	86	87	68	67	67
Pt	87	91	91	91	90	91	80	88	88	86	86	87	73	73	75
Pd	88	91	92	91	90	91	80	87	87	86	86	87	59	55	52
Rh	87	91	92	91	90	91	77	84	85	84	85	86	54	47	41
Au	65	71	70	72	72	75	71	84	80	80	74	77	70	66	70
Ni	55	50	53	51	57	63	34	41	41	33	35	33	43	21	21
Cu	87	70	90	81	85	78	80	85	87	82	80	82	33	35	33
Co	17	17	17	15	18	19	7	7	7	6	6	6	5	8	6

There is a significant opportunity for organic growth at Bokoni itself and by exploring synergies presented by the 26-km continuous strike length between Bokoni and the eastern portion of the property (Ga-Phasha West). Offtake agreements are in place with Anglo Platinum, and the company has an option to buy an interest in the Polokwane smelter complex.

7. GEOLOGICAL SETTING AND MINERALISATION (ITEM 7)

7.1. Regional Geology

The Bushveld Complex is situated in the northern half of South Africa and exists as an ellipse-shaped body consisting of five lobes (**Figure 2** and **Figure 7**). The Bushveld Complex is the world's largest known ultramafic igneous intrusion, and extends approximately 450 km east to west and approximately 250 km north to south. It occupies parts of Limpopo Province, North-West Province, Gauteng Province and the Mpumalanga Province. It is estimated to have been formed approximately 2,000 million years ago (Ma). The Bushveld Complex is host to PGM mineralisation in addition to chrome, vanadium, nickel and copper.

The five lobes are referred to as the Western, Eastern, Northern (includes both the Potgietersrus and Villa Nora compartments), South-Eastern, and Far-Western areas (**Figure 7**). The South-Eastern Bushveld Complex is completely covered by sedimentary successions of the Karoo Supergroup, while the remaining four lobes are variably exposed with some areas under extensive soil cover.

The Bushveld Complex contains the largest known example of A-type granite plutonism, the Lebowa Granite Suite (Kleeman, 1985; Kleeman and Twist, 1989), the largest known accumulation of siliceous volcanism, the Rooiberg Group (Twist and French, 1983), and the largest intrusions of layered mafic rocks, the Rustenburg Layered Suite (von Gruenewaldt and Harmer, 1992).

The various units and limbs of the Bushveld Complex are generally tabular and emplaced slightly discordant to the Pretoria Group of the Transvaal Supergroup. **Table 8** provides a brief summary of the currently accepted subdivisions of the Bushveld Complex. The volcanic Rooiberg Group is believed (Hatton and Schweitzer, 1995) to be the precursor to the mafic intrusions of the Rustenburg Layered Suite, which intruded into or below the Rooiberg Group. The Lebowa Granite Suite intruded above the Rustenburg Layered Suite. The Rashoop granophyres comprise intrusive and metamorphic types and can occur stratigraphically above and below the Lebowa Granite Suite.

The Rustenburg Layered Suite consists of mafic rocks (relatively low SiO_2 contents). It is preserved in the Western, Eastern, and Northern Limbs of the Bushveld Complex. Rocks comprising the Rustenburg Layered Suite are subdivided into several zones, termed, from base to top, Marginal, Critical, Main, and Upper Zones (SACS, 1980). It is generally accepted that the strata of the Rustenburg Layered Suite are a result of the injection of several magma pulses at relatively shallow (< 8 km) crustal levels (Harmer and Sharpe, 1985; Hatton and Sharpe, 1989; Hatton, 1989; Kruger, 1994).

Table 8: Generally accepted subdivisions and nomenclature of the Bushveld Complex.

Suite	Zone	Formation/Subzone	Dominant Rock Type/s
Lebowa Granite Suite		Nebo, Makhutso, Klipkloof, Bobbejankop and Verena	granites
Rashoop Granophyre Suite		Zwartbank	psuedogranophyre
		Rooikop	porphyritic granite
		Stavoren, Diepkloof	granophyres
Rustenburg Layered Suite	**Upper Zone**	Subzone C	olivine-apatite diorite
		Subzone B	olivine-magnetite gabbronorite
		Subzone A	magnetite gabbronorite
	Main Zone	Upper Subzone	gabbronorite
		Lower Subzone	gabbronorite, norite
	Critical Zone	Upper Pyroxenite	norite, anorthosite, pyroxenite
		Lower Subzone	pyroxenite
	Lower Zone	Upper Pyroxenite Subzone	
		Harzburgite Subzone	
		Lower Pyroxenite Subzone	
	Marginal Zone		Norite
Rooiberg Group		Schrikkloof	flow-banded rhyolite
		Kwaggasnek	massive rhyolite
		Damwal	dacite, rhyolite
		Dullsroom	basaltic andesite

The Lower and Middle Critical Zones contain major chromitite deposits, which are predominantly the LG6, MG1 and MG2 chromitites. Platinum Group Elements (PGE's) are derived from the UG2 and the Merensky Reef, chromitite and pyroxenite, respectively. These deposits are located in the Upper Critical Zone. Several magnetite layers are located in the Upper Zone, and these are also mined for their vanadium content.

Geological disruptions encountered during mining of the various chromitite layers and the Merensky Reef include dykes, faults, joints, pegmatoids, domes, and potholes. The latter, particularly, can cause major disruptions to mining. There are various theories and several studies that seek to explain the formation of these major precious and base metal repositories. Discussions of these works and theories are beyond the scope of this document.

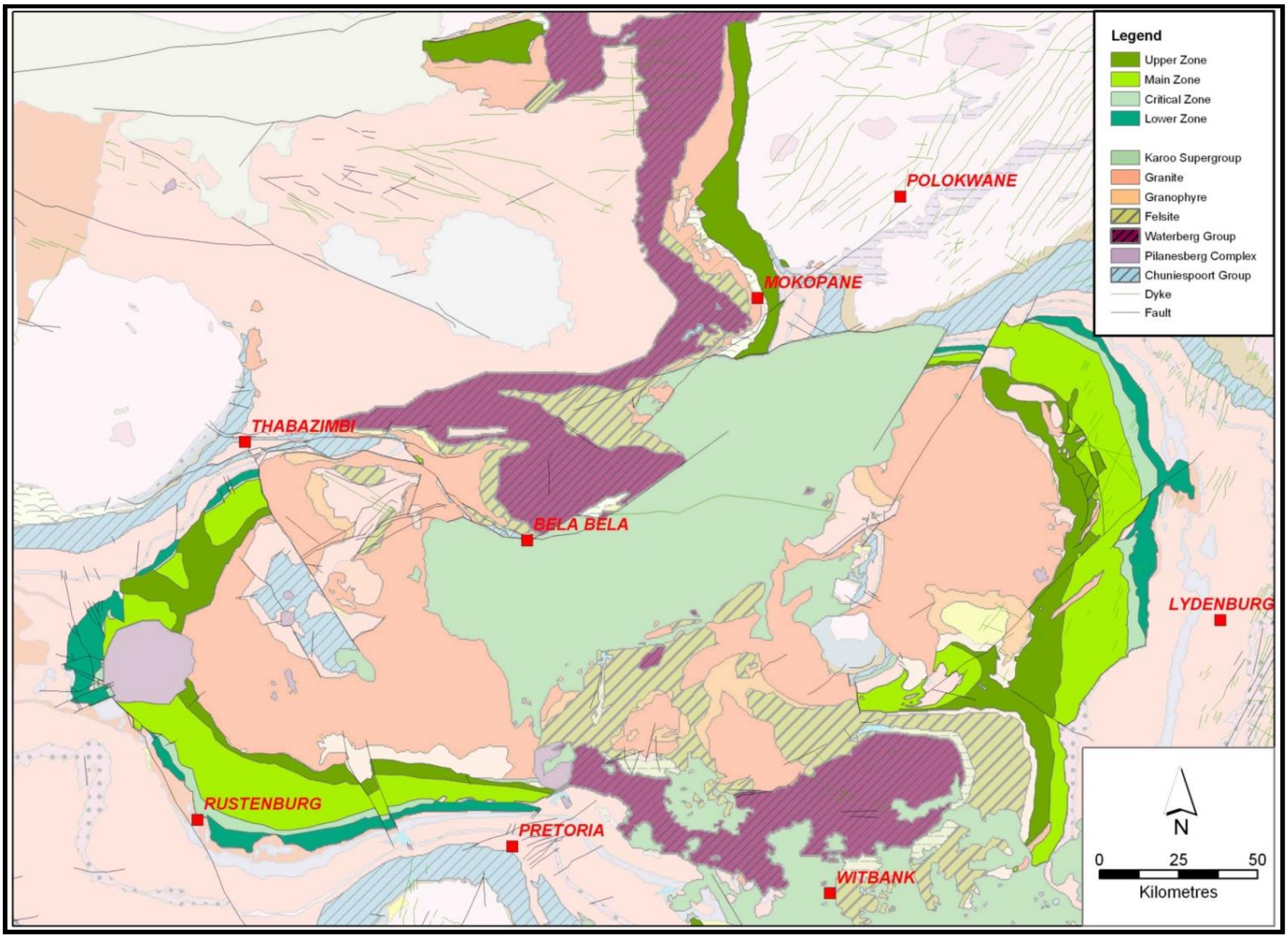


Figure 7: The Bushveld Complex location relative to regional population centres and geology.

7.2. Local Geology of the Eastern Limb of the Bushveld Complex

Bokoni Mine is located on the northern extremity of the Eastern Limb of the Bushveld Complex (**Figure 7**). The platiniferous horizons mined at Bokoni Mine are the Merensky and the UG2 reefs located in lithologies of the Critical Zone of the Rustenburg Layered Suite.

In the Eastern Limb (**Figure 8**), the Critical Zone is developed over about 150 km of strike length in three areas separated by regional faulted systems. The Merensky Reef and UG2 outcrop over about 130 km, but also occur in down-faulted blocks and erosional outliers. In the Eastern Limb, the Merensky Reef comprises facies somewhat different when compared to the equivalent reef that is developed within the Western Limb.

In common, however, is the fact that in both the Eastern and Western Limbs, the mineralisation is hosted within the pyroxenites and between relatively narrow (2 mm to 5 mm) chromitite layers. The chromitite forms useful mining contacts that visually define the position of the orebody.

Distinctive pegmatoidal pyroxenite, such as that which contains the bulk of the mineralisation of the Merensky Reef in the Western Limb is present beneath the lower chromitite stringer in the Eastern Limb and, whilst this unit does contain elevated PGE grades, the bulk of the continuous mineralisation is located within non-pegmatoidal ("porphyritic") pyroxenite, but between two chromitite stringers.

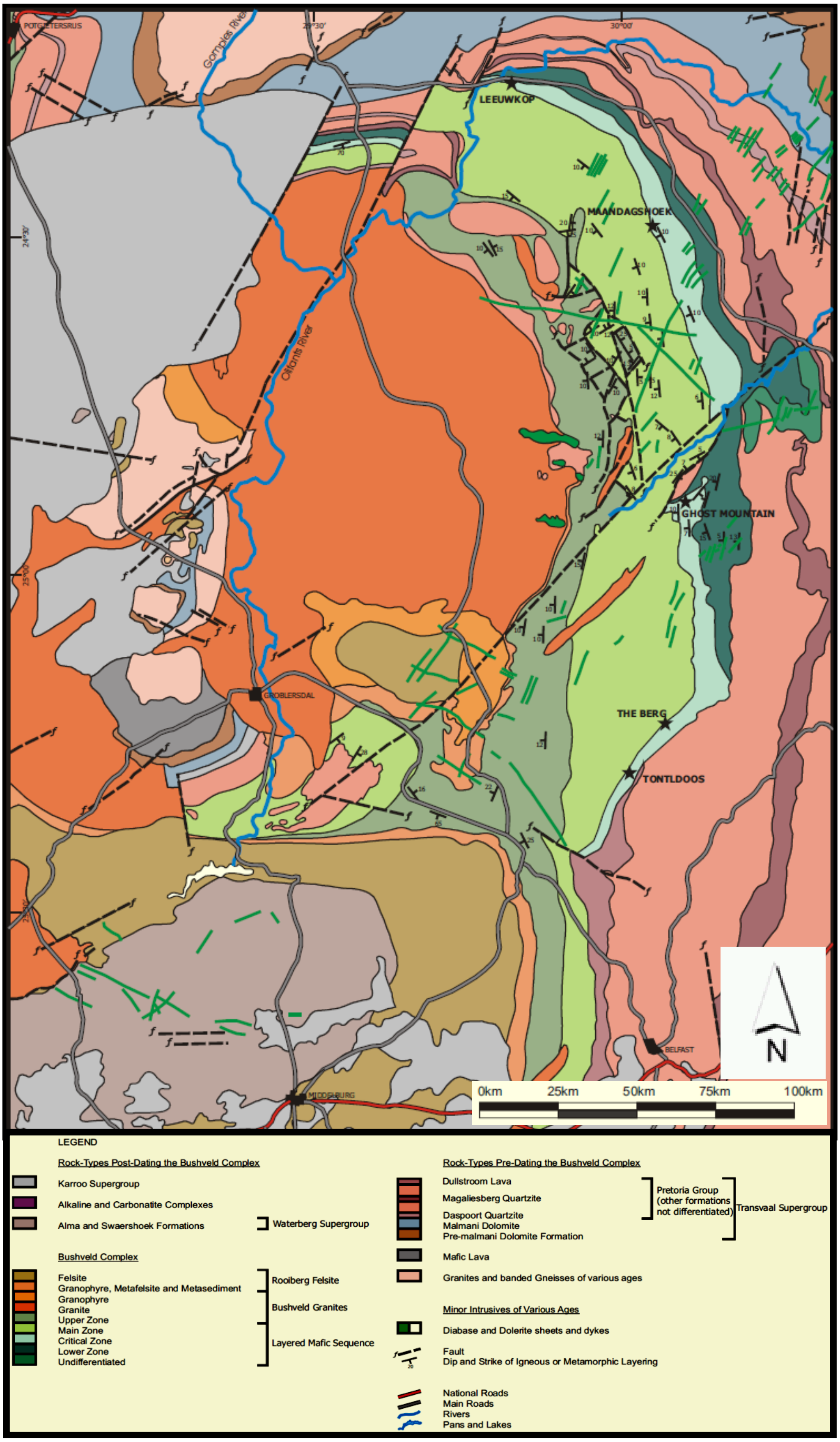


Figure 8: The geology of the Eastern Limb of the Bushveld Complex.

7.3. Property Geology of Bokoni Mine

7.3.1. Stratigraphy of Bokoni Mine

A generalised stratigraphic column has been constructed for the Bokoni area from the Bastard pyroxenite down to the UG1 horizon and is illustrated in **Figure 9**. A short description of the generalised stratigraphy follows from the immediate footwall of the UG1 to the Bastard cyclic unit, which demarcates the top of the Critical Zone.

7.3.1.1. UG1 Chromitite

The UG1 usually consists of a series of chromitite layers up to 1.2 m in thickness. In some cases, several layers or stringers of chromitite are "detached" from the bottom or top of the main layer. These appear to diverge into the footwall/hangingwall anorthosite, only to converge again and join the main layer. The lenses of anorthosite so formed are usually impregnated with numerous chromite grains. Below the main layer there is always a zone of anorthosite, up to 5 m in thickness, which contains elongated blebs and stringers of chromitite. These occur below the "detached" chromitite zone described above. Bifurcation of chromitite layers within the UG1 sequence is very common. The intimate association of chromitite and anorthosite is a characteristic of the UG1 chromitite unit throughout the Bushveld Complex. Layers of norite, leuconorite, anorthosite and pyroxenite approximately 80 m to 90 m thick, overlie the UG1 and are, in turn, overlain by the UG2 layer.

7.3.1.2. UG2 Footwall Marker (FWM)

This marker occurs from 7 m to 15 m below the UG2 Reef. Chromitite stringers are often associated with this poikilitic anorthosite. The average thickness of the UG2 Reef assemblage is 70 cm. Thin pyroxenitic to leuconoritic lenses of limited lateral extent occur within the UG2 Reef.

The immediate footwall of the UG2 is usually a pegmatoidal feldspathic pyroxenite (similar to the Merensky Main Reef in appearance), which varies in thickness from a few centimetres to 70 cm. The footwall pegmatoidal pyroxenite contains some base-metal sulphides, but its precious metal content is generally low with erratic high values. The contact between this coarse-grained, pegmatoidal pyroxenite and the underlying poikilitic pyroxenite is usually irregular and gradational over a few centimetres. A thin boundary chromitite stringer can be seen locally.

The UG2 is overlain by medium grained feldspathic pyroxenite almost 10 m in thickness, which may contain up to 6 thin 1 mm to 10 mm chromitite stringers. The separation distances between these chromitite stringers and the UG2 Reef have important implications with respect to geotechnical issues during mining operations. A thin anorthosite layer (1 cm to 3 cm thick) occurs above the chromitite stringers and is generally referred to as the Hangingwall Anorthositic Marker ("HAM").

There is no apparent difference in mineralogy in the wide zones of pyroxenite above and below the UG2 as is evidenced by the lack of mineralogical and textural variations.

7.3.1.3. UG3 Chromitite (UG3)

The UG3 Chromitite Layer is approximately 10 cm to 30 cm in thickness and generally occurs 20 m to 30 m above the UG2 Reef. The UG3 footwall normally comprises a poikilitic anorthosite typically 50 cm to 60 cm in thickness, below which norite grade into the hangingwall pyroxenites of the UG2 Reef. The UG3A and UG3B are usually thin (10 cm to 15 cm). Often poorly defined chromitite occurrences occur approximately 11 m above the UG3 and are of a more disseminated nature.

7.3.1.4. Merensky Reef

The Merensky cyclic sequence consists of a dark pyroxenite at the base after which the overlying rocks become progressively lighter in density and colour. The basal pyroxenite is termed the Merensky pyroxenite and the mineralised portion of the pyroxenite that is called the Merensky Reef is invariably associated with two very thin chromitite stringers (usually 5 mm to 20 mm in thickness). The Merensky Reef is usually defined as that portion contained between these chromitite stringers. This sandwiched pyroxenite to pegmatoidal pyroxenite varies in thickness between 50 cm and 200 cm. A 20 cm to 50 cm thick pegmatoidal pyroxenite usually occurs immediately below the lowermost chromitite stringer. Visible sulphides occur in variable amounts from above the uppermost chromitite stringer to below the pegmatoidal pyroxenite. The uppermost chromitite stringer is usually associated with the highest PGE grades. These chromitite stringers are not all present throughout the area, but at least one will be present.

A 40 cm to 70 cm thick poikilitic, plagioclase pyroxenite occurs above the upper chromitite stringer before grading into a norite. This norite contact is normally referred to as the top of the Merensky pyroxenite. This norite grades into a poikilitic pyroxene anorthosite followed by a second pyroxenite which is the Bastard Pyroxenite. This Bastard Pyroxenite has sometimes been confused with the Merensky Reef. It generally contains sporadic low mineralisation. A norite occurs above the Bastard Pyroxenite which grades into a poikilitic pyroxene anorthosite up to 60 m in thickness. This is referred to as the Giant Poikilitic Anorthosite and is generally accepted as the demarcation of the top of the Critical Zone.

7.3.2. Structural Setting of Bokoni Mine

Bokoni Mine is located on the northern extremity of the Eastern Limb of the Bushveld Complex. PGM mineralisation is specifically located within the UG2 and Merensky Reef horizons, which form part of the Upper Critical Zone of the Rustenburg Layered Suite (**Figure 9**). Both horizons outcrop in the area along a northwest-southeast trending strike length. The Bushveld Complex layering dips from northeast to southwest at approximately 25° in the north-western areas (Zeekoegat), and gradually decreases to approximately 18° in the south-eastern area (Brakfontein). The general structural geology is characterised by northeast and east trending dykes and faults with associated conjugate joint sets (**Figure 10** and **Figure 11**).

The mining area is located within the farms Zeekoegat, Middelpunt, Umkoanesstad and Brakfontein. The north-eastern portion of the mining area is located below a range of pyroxenite hills and the south-western portion is below the valley floor, overlain by black turf.

Several structural and lithological features occur locally on the Bokoni Mine property which remove or result in the disruption of normal Merensky and UG2 Reef occurrence and mineralisation, which include:

- Potholes, which occur in both the Merensky and UG2 Reefs
- Bifurcation recorded only in the UG2 Reef horizon
- Dykes including dolerite, diabase, lamprophyre and syenite dykes
- Structural breaks including faults, shears and joints
- Alteration features including veins and alteration zones
- Pegmatiods and dunite replacement of the reefs

Thus far, mining has been remarkably uncomplicated insofar as faulting is concerned. Based on existing Merensky workings, minor faulting is expected to occur, consisting of dextral and sinistral strike-slip faults, normal and reverse dip-slip faults, as well as faults of both components. Displacements have generally been, and are expected to be, less than one metre.

Major joint directions, measured from strong macro-lineament features evident from the Landsat TM Spacemap (**Figure 10**), show dominant strike directions to be in the order of 099° and 159°. Underground mapping has revealed two dominant joint directions, striking at 118° and 168°, and a subordinate set striking at 174°.

Dykes in this area are composed of primarily dolerite, which are generally fine-grained and are of good competence, with associated areas of dense jointing and alteration. Underground dyke intersections are generally less than 10 m in width. An airborne magnetic survey has successfully identified several swarms of northeast striking dolerite dykes. No serious problems were encountered during mining through these features, and no significant displacements were noted to be associated with them. The aeromagnetic response to these features exaggerates the actual width dimension as depicted in **Figure 10**. Not all dykes have magnetic responses and a few east-west orientated dykes are known to have no magnetic response.

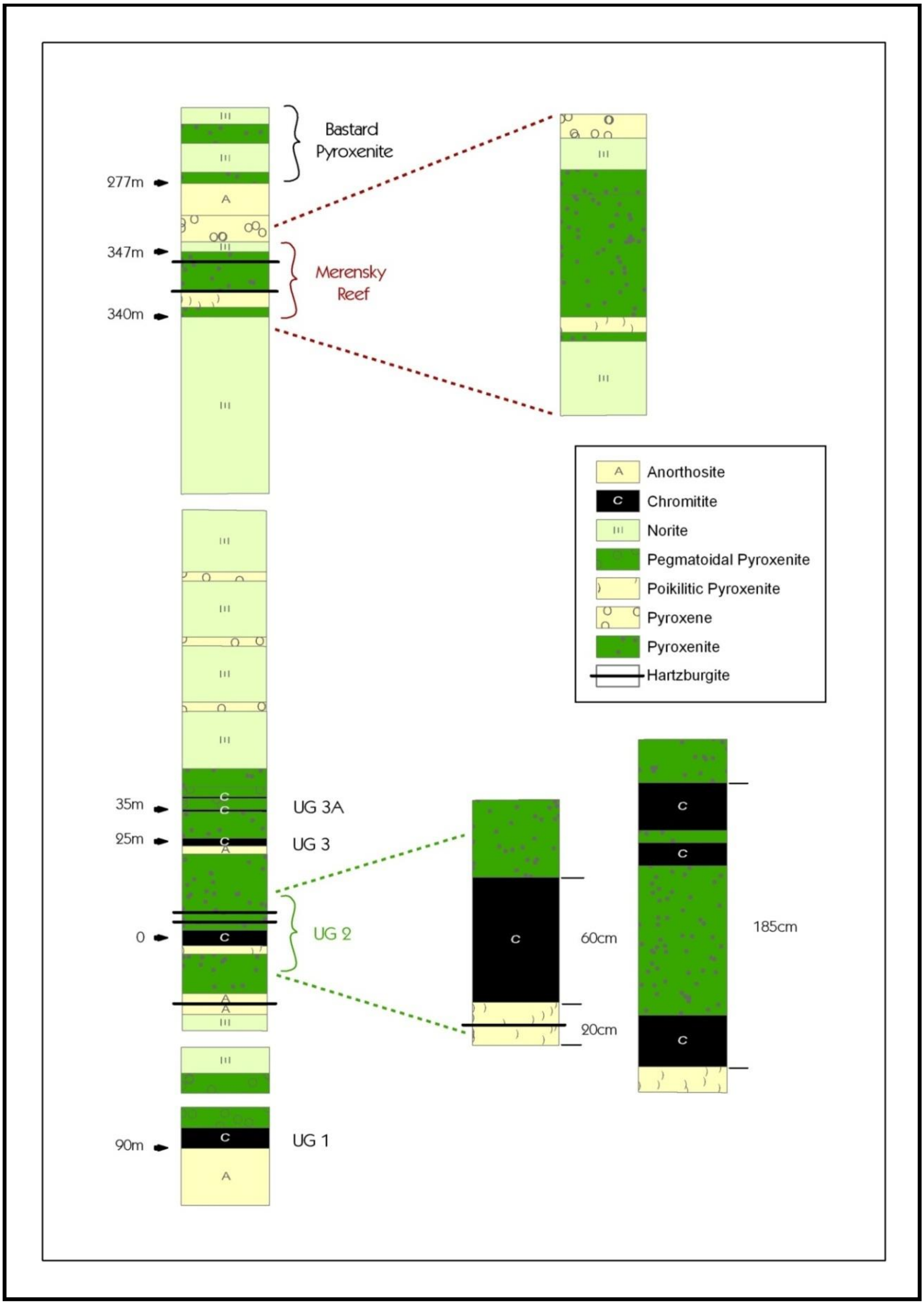


Figure 9: Typical lithostratigraphic column for the Bokoni Mine area.

Pothole intersections (**Figure 11** and **Figure 12**) are defined where the Merensky Reef or UG2 Reef has been completely destroyed and truncated by hangingwall lithologies. Edges of pothole intersections are those intersections that showed incomplete destruction of the Merensky Reef or UG2 Reef. In these instances, Cr-stringers (or chromitite bands in the case of the UG2 Reef) can be present, but the reef thickness and grade behaviour is disturbed. The normal metal profile of the associated reef is disrupted. As a result, grades within potholes are highly erratic and, invariably, sub-economic and therefore constitute unmined areas.

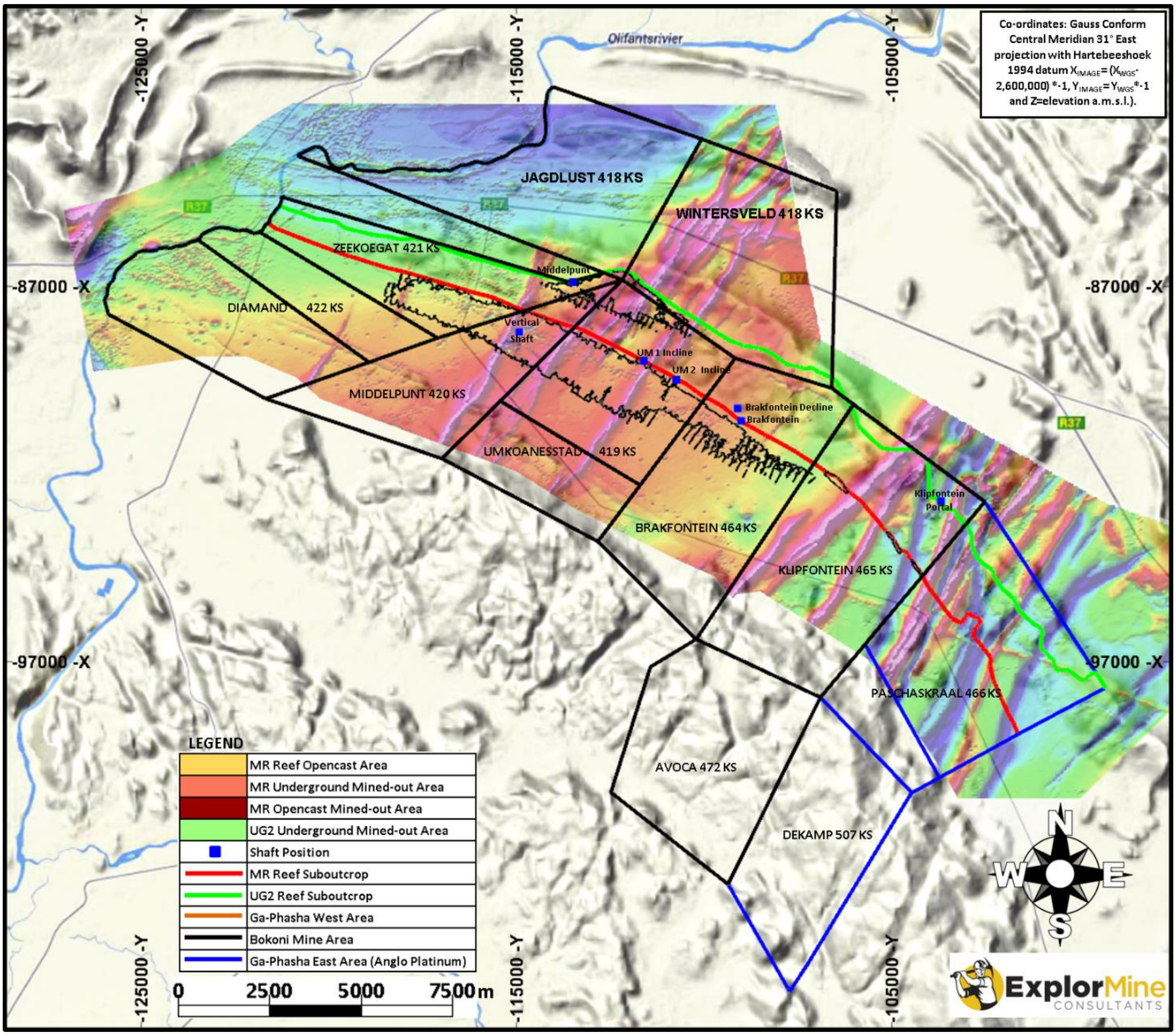


Figure 10: Aeromagnetic survey overlain on the Landsat TM Spacemap.

A regional pothole in the Brakfontein area has historically been interpreted as a 'destructive pothole area'. However, recent interpretation of existing drillhole intersections in the area indicate that a portion of the pothole area is 'non-destructive' i.e. where the Merensky Reef is partially preserved in the large slumped structure. Potholes account historically for approximately 15 % geological loss for both the Merensky Reef and 9 % for the UG2 Reef mining operations.

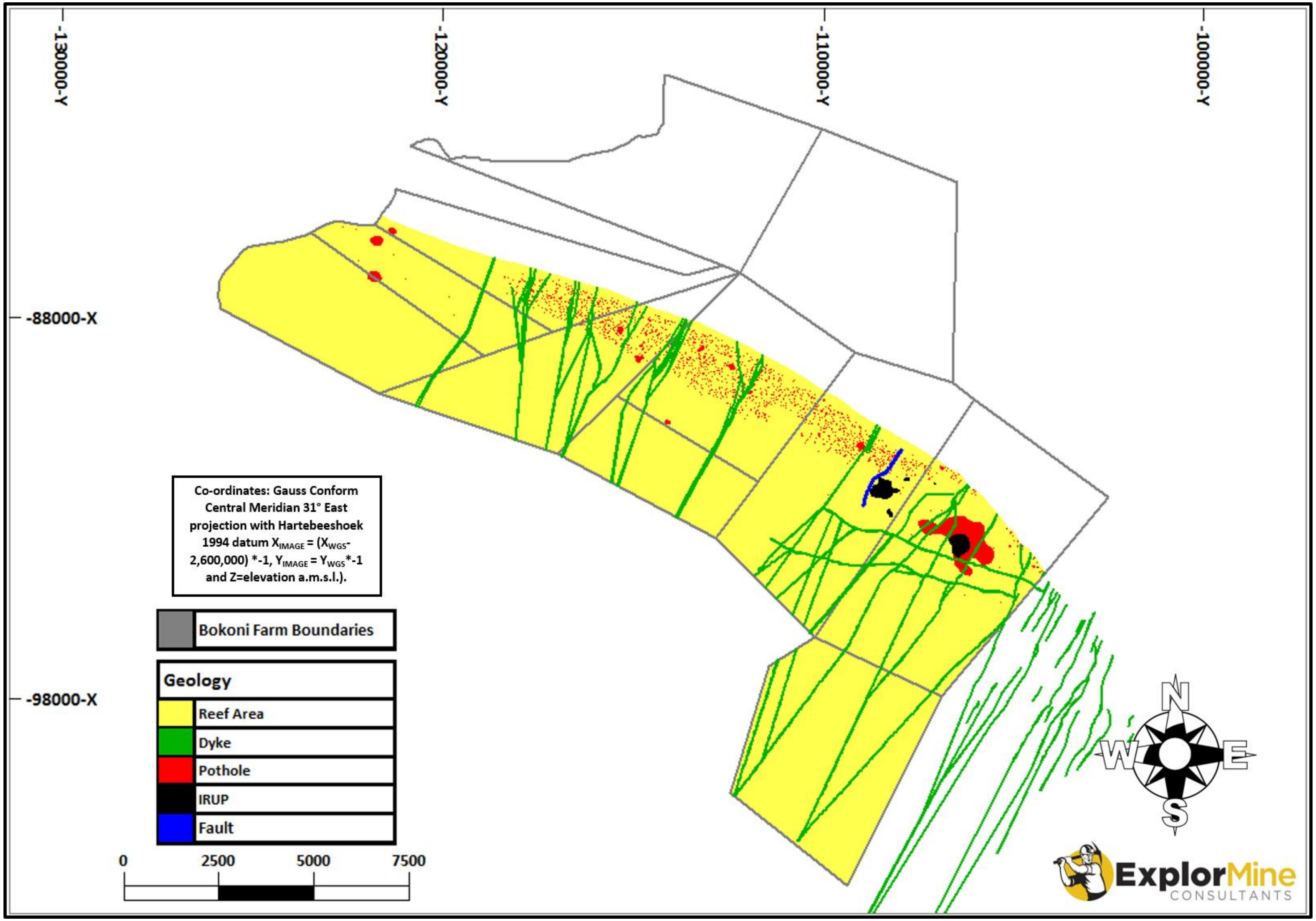


Figure 11: Plan showing distribution of mapped and drilled Merensky Reef structure and reef disturbances.

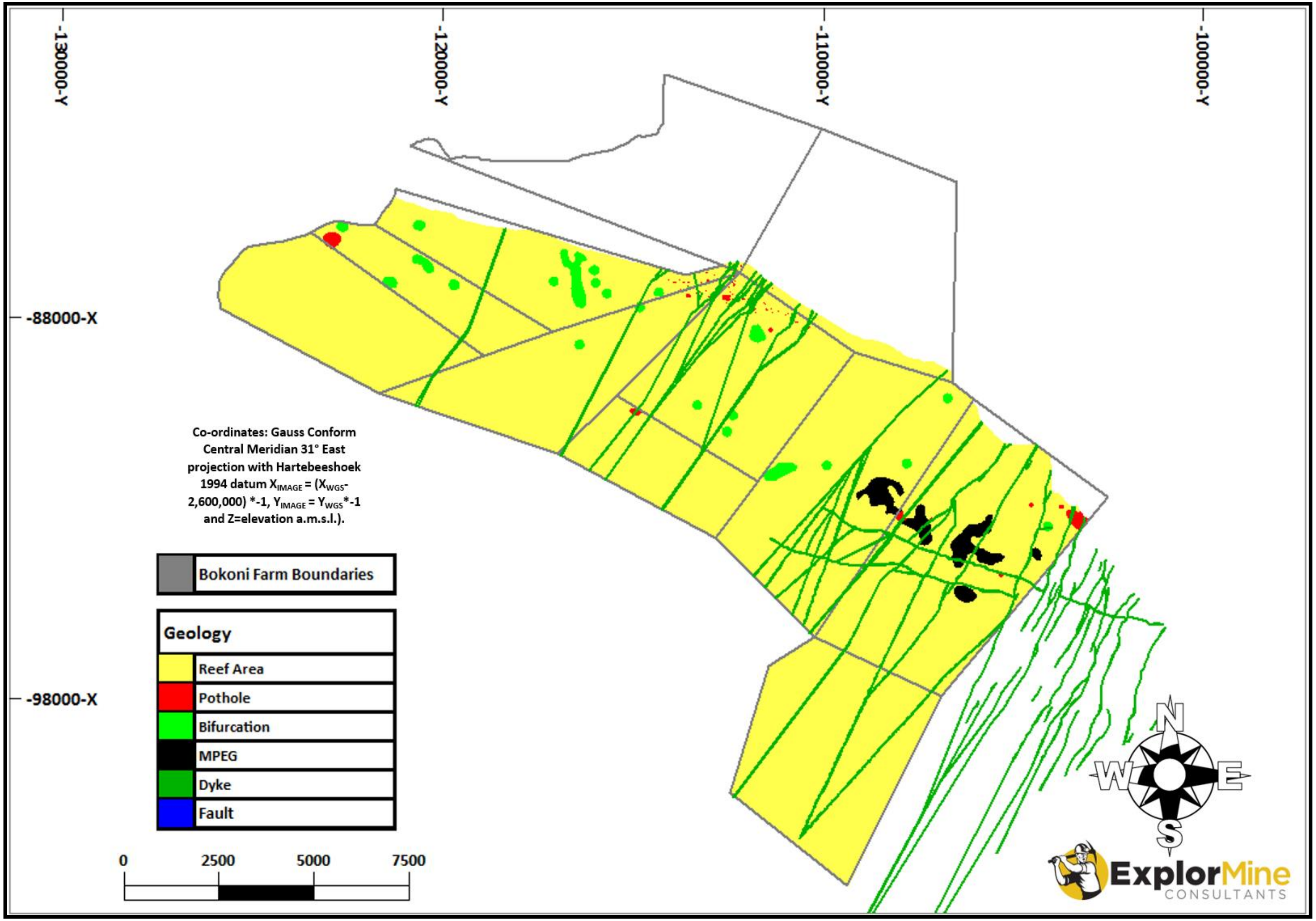


Figure 12: Plan showing distribution of mapped and drilled UG2 Reef structure and reef disturbances.

The UG2 occasionally exceeds a thickness of 95 cm (then referred to as 'bifurcated', **Figure 12**) as a direct result of internal xenoliths comprising anorthosite, feldspathic pyroxenite and norite. Although the total chromitite thickness remains constant, the width between the upper and lower UG2 contacts can exceed 2 m in places. These features can cause mining difficulties, due to the changes in the UG2 elevation, deteriorating ground conditions and dilution. It has been noted that more than half of all UG2 intersections have some form of inclusion 'waste' layers which are commonly a felspathic pyroxenite.

The Bushveld Complex stratigraphy is occasionally replaced by late-stage pegmatite bodies. These pegmatite bodies have a range of compositions from highly ultramafic to felsic. These features have been recorded at Bokoni Mine and geological losses are estimated at less than 2 %.

7.4. Mineralisation

The Merensky Reef and UG2 Chromitite Reef morphology and surrounding rocks are discussed in detail in Section 7.3. The PGM mineralisation is hosted within the UG2 and Merensky Reef packages.

7.4.1. Merensky Reef

The feldspathic pyroxenite rocks within the Merensky Reef package host chromite, base and precious metal sulphide accumulations. PGM mineralisation occurs as discrete metals that are typically associated with and enclosed within the base metal sulphides and silicates. These comprise PGM sulphides, sulpharsenides, arsenides, bismuthides, tellurides, bismuthotellurides and alloys. The base metal sulphides ("BMS") occur as discrete particles, sharing interstitial space with plagioclase feldspar, within a silicate framework of orthopyroxene. There is a strong association of the PGM's with the chromitite stringers usually demarcating the upper and lower contacts of the Merensky Reef. Significantly higher PGE values are found at these chromitite contacts. Mineralisation above and below the chromitite contacts taper off, generally within a metre or two, (to trace values) although higher values can be encountered.

The main PGM's encountered at Bokoni Mine are braggite (35 %), cooperite (24 %), laurite (13 %), moncheite (28 %) and a platinum-iron alloy. The distribution of the precious-metal phases appears to vary laterally and vertically through the Merensky Reef and immediately adjacent lithology.

With few exceptions pentlandite and chalcopyrite are the major base-metal sulphides with minor pyrrhotite and pyrite.

7.4.2. UG2 Chromitite Reef

The UG2 Reef occurs as a chromite cumulate, either as a pure chromite or a dense cumulate framework of chromite accompanied by fine crystalline interstitial plagioclase and/or orthopyroxene. Interstitial, base metal sulphides also occur and are sometimes visible; they generally indicate a higher concentration of PGE's. Mineralisation occurs throughout the UG2 Reef layer with usually significantly higher values associated at the lower and upper contacts. Mineralisation may also occur within the pegmatoidal pyroxenite footwall and is mainly associated with disseminated chromite and chromitite stringers/lenses. Hangingwall samples do not contain significant PGE values although occasionally values in excess of 5 g/t are found when associated with the chromitite stringers or disseminated chromitite.

In terms of PGM's the dominant phases are braggite, laurite and cooperite. The UG2 Reef has a lower platinum: palladium ratio and relatively higher rhodium content compared with the Merensky Reef.

The two major base-metal sulphides are pentlandite and chalcopyrite. UG2 has lower concentrations of copper and nickel compared with the Merensky Reef.

8. DEPOSIT TYPES (ITEM 8)

The mafic rocks of the Bushveld Complex constitute the most voluminous preserved mafic layered complex in the world. The world's largest Mineral Resources and Reserves of platinum group elements, chromium and vanadium are exploited in this intrusion.

Large Igneous Provinces such as the Bushveld have been defined by Coffin and Eldholm (1994) as 'massive crustal emplacements of predominantly mafic Mg and Fe rich extrusive and intrusive rock which originate via processes other than normal seafloor spreading and include continental flood basalts, volcanic passive margins, oceanic plateaus, submarine ridges, seamount groups and ocean basin flood basalts'. The Bushveld magmatic province is an unusual Layered Igneous Province. In spite of its Paleoproterozoic age, it is undeformed and it comprises in part voluminous volcanics that were predominantly felsic rather than basaltic in composition and it lacks associated dyke swarms. Indeed, the feeders to the province are a matter of debate. However, in common with other Layered Igneous Provinces, magmatism occurred over a very short time interval, of less than 10 Ma, and was very voluminous.

The origin of the PGE's in the Merensky and UG2 Chromitite remains contentious and several hypotheses explain some of the features observed.

The mining and exploration techniques employed at Bokoni Mine are well established within the Bushveld Complex style mineralisation. PGM mineralisation includes platinum (Pt), palladium (Pd), rhodium (Rh), and ruthenium (Ru), osmium (Os) and iridium (Ir).

The precious metals gold (Au) and silver (Ag) and the base metals chrome (Cr), iron (Fe), cobalt (Co), nickel (Ni) and copper (Cu) are often associated with PGM's.

The geological exploration and evaluation process of potentially mineralised magmatic horizons involves reconnaissance, planning, diamond drilling, core logging and sampling, trenching and sampling, soil sampling, aero-magnetic surveys, ground magnetic surveys, underground and surface mapping, data processing and interpretation and modelling.

9. EXPLORATION (ITEM 9)

Several sets of exploration and mining data and associated sampling and assay data have been acquired over time on the Bokoni property by previous and current owners. The standards applicable to the collection and interpretation of these data have largely remained consistent. The exploration data includes the following:

- Surface drillholes
- Underground drillholes
- Aeromagnetic surveys
- Underground channel sampling
- Surface geological mapping
- Underground geological mapping

Bokoni Mine has been the focus of various exploration activities since 1964, with six phases of exploration having been carried out, all involving diamond drilling. Diamond drilling and channel sampling represent by far the largest exploration datasets for the Bokoni Mine Property. Procedures for diamond drilling and channel sampling are presented in Section 11 in this Technical Report.

The exploration activities were all carried out by the property owner at the time, although diamond drilling contractors were used to drill surface and underground drillholes. Initially activities were centred on the Merensky Reef, and only since 1999 has considerable focus been directed at the UG2 Reef.

Older Landsat TM 5 or newer Landsat ETM 7 immediately reveal areas of outcrop and, after further processing, indicate the geological units, in particular the platiniferous Critical and the Main Zone of the Rustenburg Layered Suite. Airborne magnetic surveys are the subsequent dataset necessary for interpretation of the geology under surface cover.

An aeromagnetic survey over the Bokoni Mine was conducted by Anglo Platinum as part of a regional survey over its Eastern Limb Bushveld Complex interests. Anglo Platinum acquired the aeromagnetic survey with a flight height of 20 m and a line spacing of 50 m. The aeromagnetic surveys resulted in high-resolution imagery (**Figure 10**) crucial for dyke delineation and dip modelling, stratigraphic layer detection and possibly pothole discovery and fault delineation. However, the aeromagnetic surveys and the Landsat imagery reveal structures very much confined to the surface and may be hundreds of metres above the platiniferous reef horizons.

The UG2 has limited exposure along the hills located along the northern boundary of Bokoni Mine. UG2 outcrop where present exists on the Umkoanesstad and Wintersveld farms has been geologically mapped. A number of dolerite dykes which outcrop in these hills have also been mapped. During 2002, a trenching program was conducted along the western UG2 outcrop areas on the Zeekoegat farm. Twenty-six trenches were excavated across this property, resulting in an accurately mapped UG2 outcrop position.

Underground mapping of the development and stopes is conducted routinely by geologists employed by Atlatsa. There exist written protocols which detail the geological mapping process and recoding of data. The most important data recorded during the routine underground geological mapping, is the recording of the position and extent of pothole features and dykes (**Figure 11** and **Figure 12**).

The interpretation of the exploration data has historically (under the ownership of Anglo Platinum) culminated each year in a Mineral Resource and Reserve estimate detailed in a document entitled "Competent Persons Sign-off".

10. DRILLING (ITEM 10)

The bulk of the surface drilling (**Figure 13** and **Figure 14**) on the Bokoni Mine property has been conducted during ownership of Anglo Platinum. Anglo Platinum employed contractors to conduct the drilling activity although diamond core logging and sampling was conducted by Anglo Platinum staff at the Driekop Exploration Base (located approximately 50 km southeast of Bokoni Mine). No single drilling contractor was used to complete the drilling and contracts were put out to tender at the beginning of each exploration phase.

Generally, it was the responsibility of the drilling company to supply all the machinery, equipment, tools, consumables, and competent operating staff required for the defined drilling contract. Generally Anglo Platinum provided core trays, and if necessary, core depth marking blocks. Anglo Platinum staff marked the drilling sites, provided a source of drilling water and issued all drilling instructions (including the drillhole number).

The following activities were minimum standards and procedures that were performed by Anglo Platinum in drilling programs:

- Drilling instructions, locality of drillhole sites, drilling angles and directions, expected reef depths, reef recognition, end of hole depths (between 10 m and 30 m below reef), core size (unless otherwise instructed wireline BQ core size was used as the standard), deflection requirements, were issued by the staff geologist.
- Frequent inspection visits to active drill sites by the geologist or technician, including visits to the drill site after the mineralised zone has been intersected, so as to confirm this and be able to issue accurate deflection instructions.
- The drilling contractor was required to accurately determine drillhole depth at each core pull, and to record this depth in the operator's log, and on the core depth block in each case.
- The core was removed from core barrels and packed into core trays, ensuring that all pieces of core are facing the correct way. Depth blocks were inserted at the correct points amongst the core, i.e. at the end of each core run.
- Every core tray has the drillhole number, deflection number where appropriate, and core tray number clearly marked on it. The first piece of core in each tray also bears the drillhole number. The drilling contractor was generally responsible for marking the depth measurements on the core itself (i.e. at 1 m intervals).
- The mother drillhole is denoted as D0 (parent intersection) with the first deflection as D1, the second as D2, as so on.
- The convention in drillhole identification is: Farm/Area Code – Drillhole Number (this usually starts at 1 for the very first drillhole drilled on a particular farm, and increases consecutively from there on as subsequent holes are drilled) – Deflection Number (D0 = mother hole, D1 = first deflection, D2 = second deflection, D3 = third deflection, etc.).
- Core transport from the drill sites to the exploration camp was the responsibility of the drilling contractor. If core was not delivered to the satisfaction of the staff geologist, a deflection wedge was drilled at the appropriate depth interval.

- As standard, 3 non-directional deflections were drilled for each mother (primary) intersection. If the drillhole was greater than 400 m in depth but less than 1000 m, four non-directional wedges were drilled. If the drillhole exceeded 1000 m, 6 non-directional wedges were drilled. The first deflection (D1) is usually set at a TOW position of 5 m above the reef top contact / zone of interest, the second deflection (D2) at 10 m above, the third (D3) at 15 m, and so on.
- As a rule, downhole surveys were conducted by the drilling contractor. Occasionally, independent surveys were commissioned as a check. The downhole surveys were generally multi-shot electromagnetic ("EMS") surveys.
- Drillhole site surveys, i.e. the surveying of the X, Y and Z World Geodetic System (WGS84) co-ordinates of the drillhole collar positions, were conducted after the holes were completed by qualified surveyors.
- On completion of the drilling process, an identification beacon was installed, the drillhole was plugged and the site was rehabilitated.

Diamond drilling of recent years has ensured intersections for both the Merensky Reef and UG2 Reef. Only drillholes drilled down-dip of the Merensky outcrop have intersected both horizons. The Merensky and UG2 are separated by some 350 m of intermediate stratigraphy.

Atlatsa completed a surface drilling project on the Klipfontein (Ga-Phasha West) property. A total of 52 mother drillholes were drilled from June 2012 to September 2012. A total of 2,142 m was drilled. The drilling programme was specifically designed to upgrade a shallow outcropping strike length of Merensky Reef which is being considered for an opencast operation. The average depth of drillhole was 42 m and the deepest drillhole drilled was 70 m.

The logging, sampling and interpretation of drill cores are discussed in Section 10 and 11 of this Technical Report. A complete list of drillhole collars is presented in Appendix A.

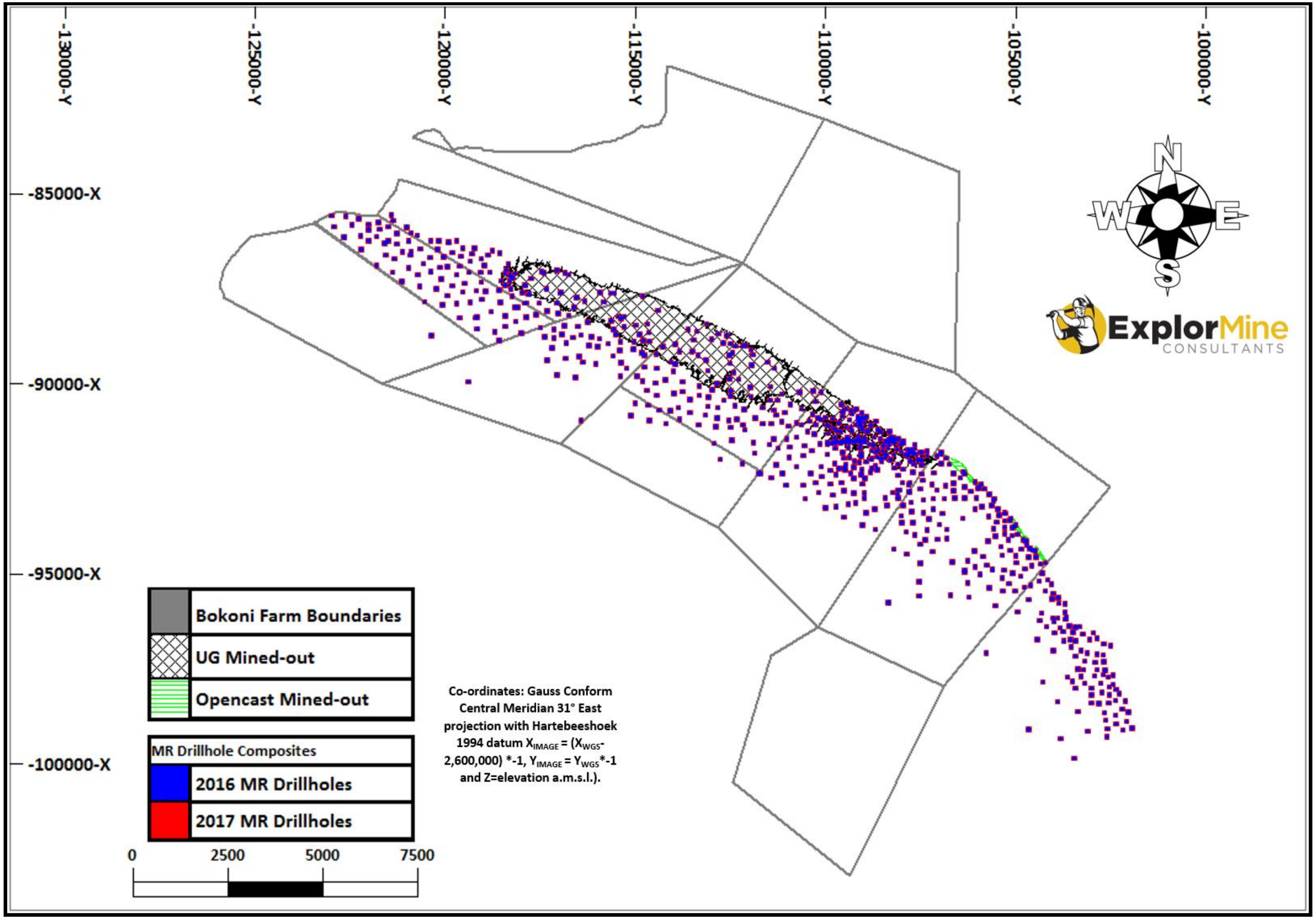


Figure 13: Plan showing distribution of Merensky Reef composite surface drillhole localities.

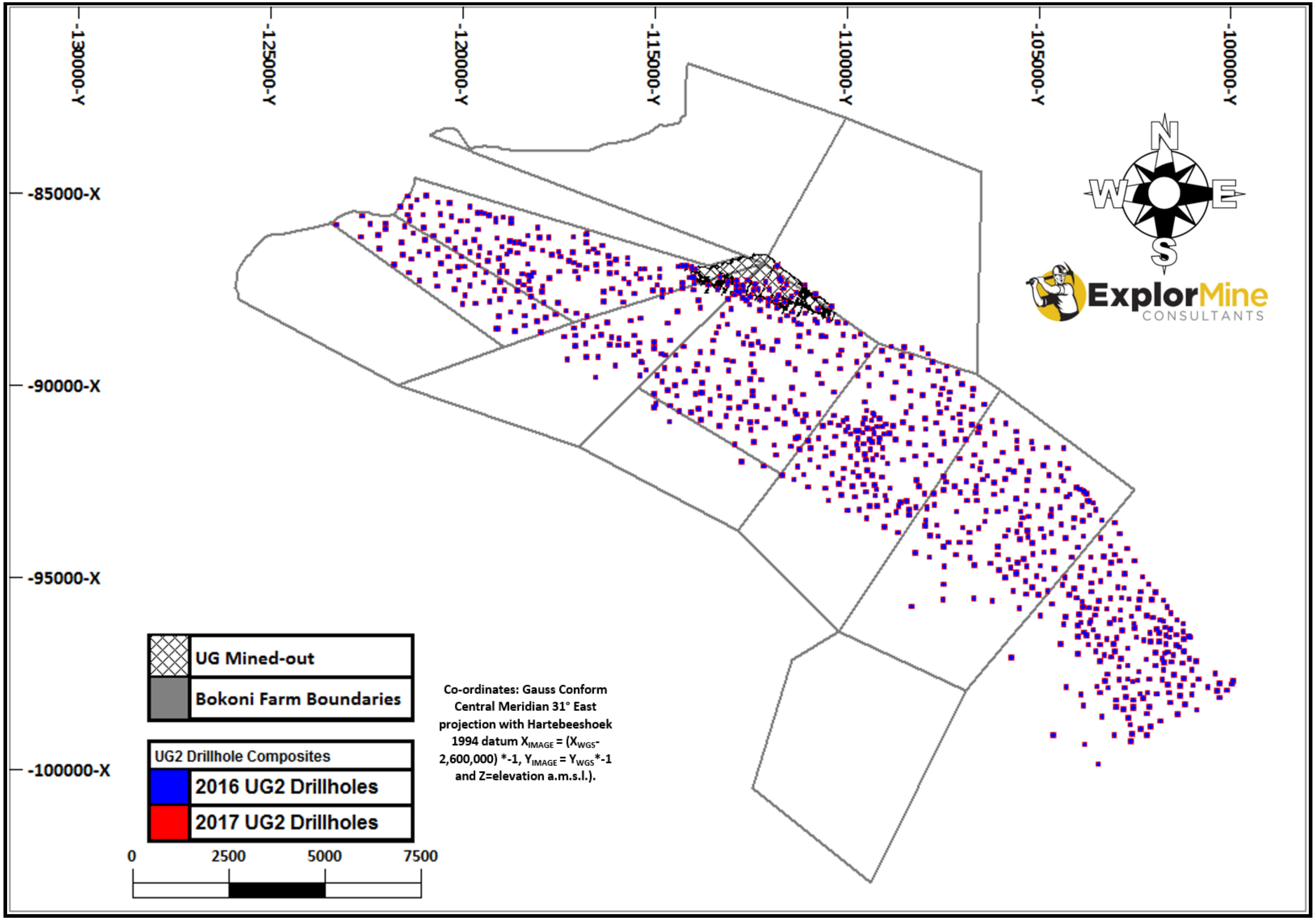


Figure 14: Plan showing distribution of UG2 composite surface drillhole localities.

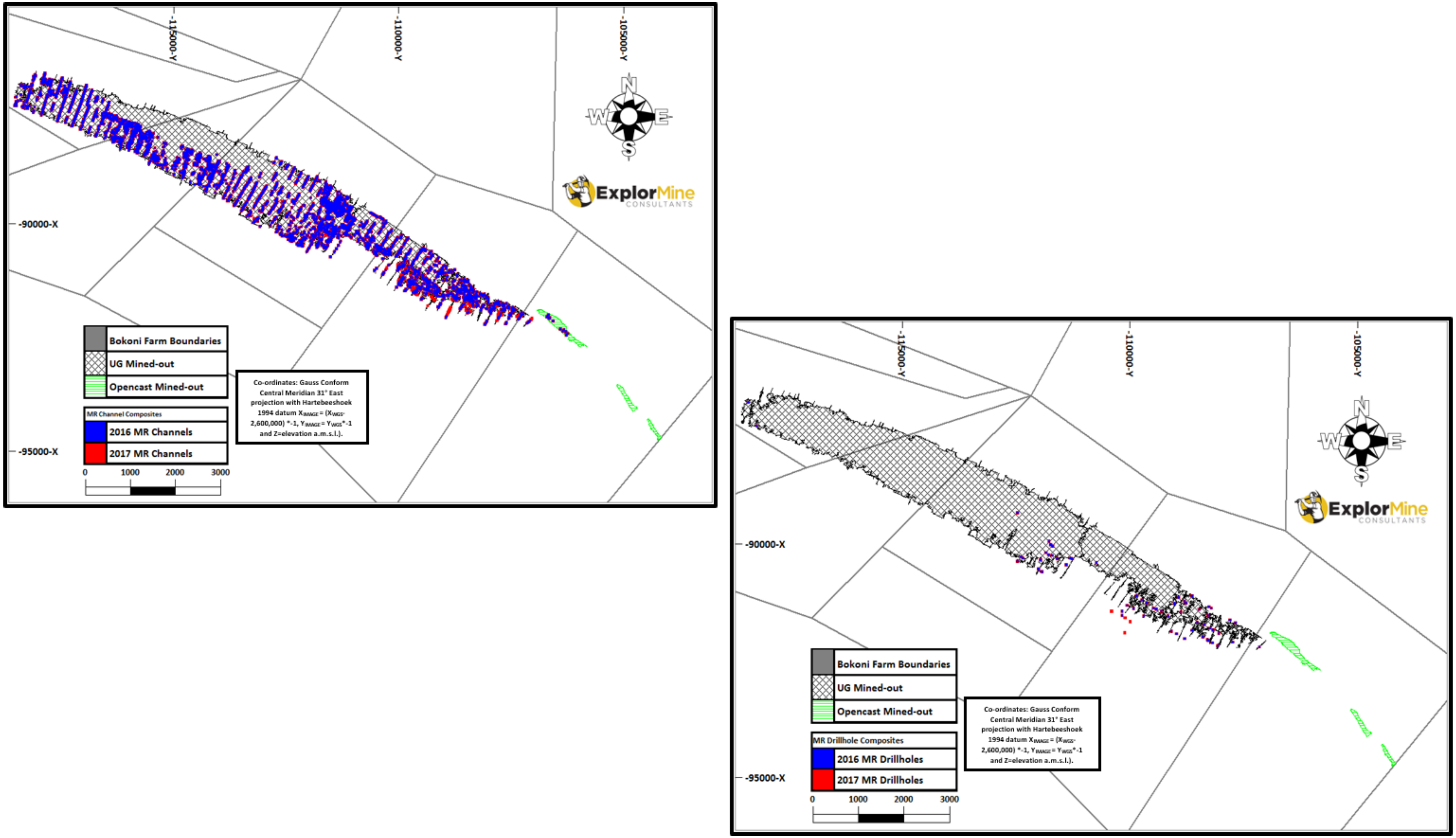
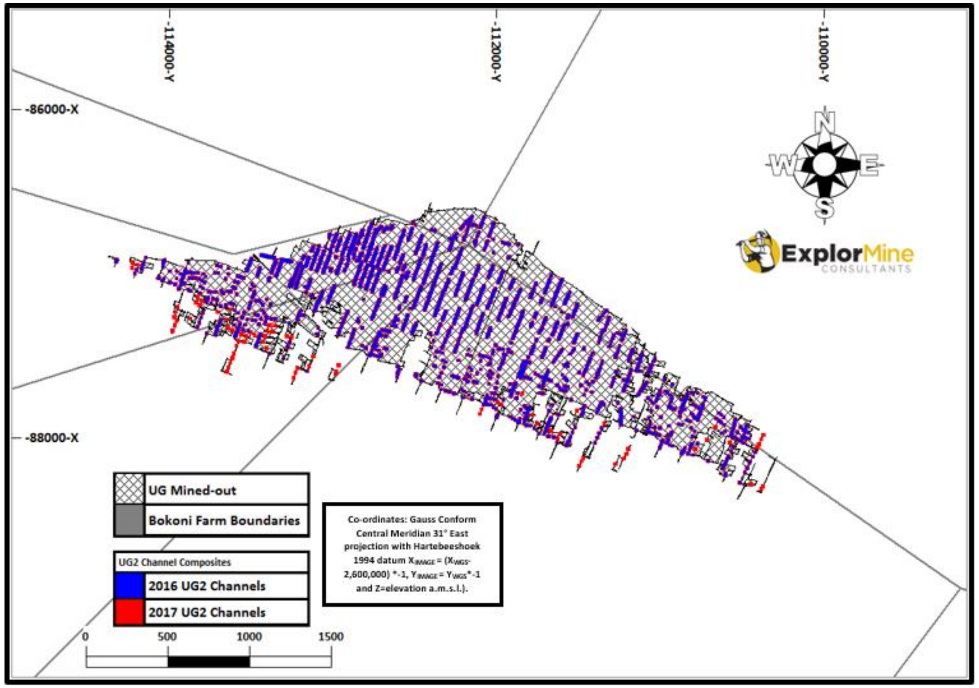


Figure 15: Plan showing distribution Merensky Reef mined areas, channel sampling and underground drillhole localities.



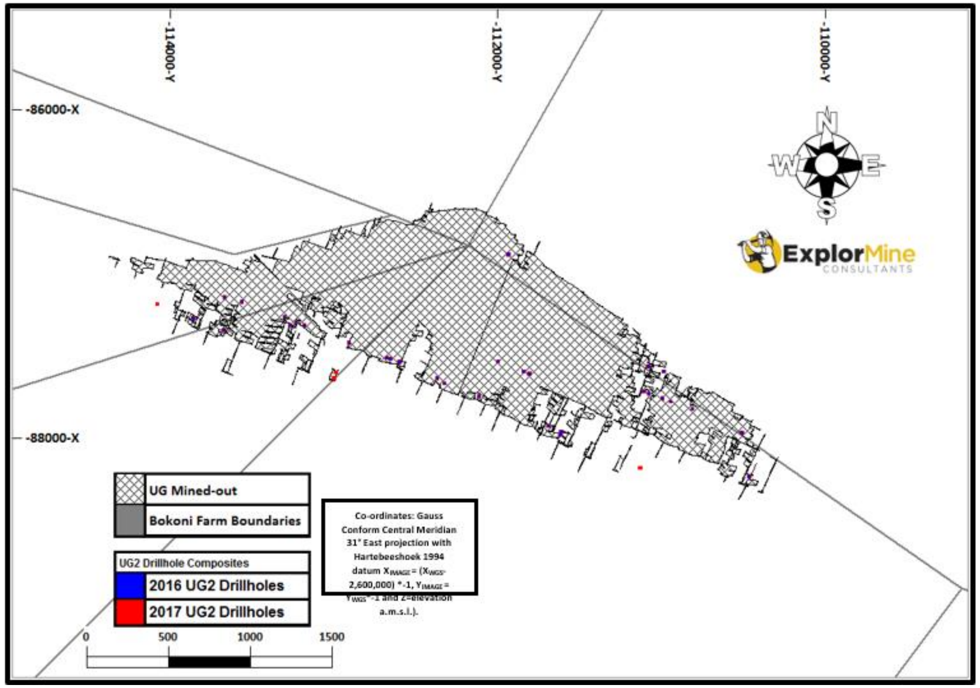


Figure 16: Plan showing distribution of UG2 mined areas, channel sampling and underground drillhole localities.

11. SAMPLE PREPARATION, ANALYSES AND SECURITY (ITEM 11)

11.1. Drillhole Logging and Sampling

Historically electronically stored surface drillhole data is of varying quality. Surface drillholes drilled prior to 2000 contain only 4E grades as opposed to individual prill grades. In addition, many of the deflections were not sampled or the sample grades are not stored.

Surface drilling has been historically undertaken by qualified Anglo Platinum geologists and contract geologists at the Driekop Exploration Base (located approximately 50 km southeast of Bokoni Mine) where all drillholes and their deflections are logged in terms of standard lithology, mineralisation, alteration and structure conventions. Logging details are entered directly into laptop computers, making use of the SABLE Data Works Warehouse™ Microsoft® SQL Server Database. Geotechnical and structural logging is also carried out by geotechnical staff and structural geologists.

The core logging procedure as reported by Anglo Platinum can be summarised as follows:

- Before core logging begins the geologist carefully inspects the core to ensure that the trays and core are marked with the correct drillhole number that the core is correctly orientated, that individual pieces fit together, that drillhole depth marking blocks are correctly inserted and that drillhole depth marking has been correctly and accurately done.
- Core losses are identified and estimated.
- Once core scrutiny and preparation is complete, the core logging is completed by the use of proprietary logging software SABLE™ Data Warehouse, where the logging data is entered directly into a laptop computer. Various aspects of a core succession are logged such as lithology, stratigraphy, texture, structure (layering angles, faults and joints) and mineralisation.
- A standard on rock identification is used.
- 10% of all core logging is reviewed by a suitably qualified supervisor where adherence to logging standards and accuracy of the geological log are verified.

The surface Drillhole sampling procedure used by Anglo Platinum is summarised below:

- Sampling was conducted on the entire mineralised zone with continuous sampling of equal width throughout; with sample suites aligned on a standardized zero stratigraphic datum, such as a top reef contact.
- Half core BQ diameter 15 cm (on average, but not more than 20 cm) samples were prepared to provide an adequate level of detail through a succession and sufficient material for assay (minimum of 100 g, and this sample size ~210 g).
- The mineralisation zone for both the Merensky and UG2 Reefs extends for variable distances beyond the reef boundaries into the hangingwall and footwall.
- The convention for sampling a reef layer was to extend the sampling interval from 2 cm above the top reef contact ("TRC") to 2 cm below the bottom reef contact ("BRC"), to ensure that all material that 'belongs' to the reef was completely sampled as such.
- Hangingwall sampling was completed from the TRC + 2 cm mark upwards at constant 15 cm sample widths through the mineralised zone. Similarly, footwall sampling commenced from BRC – 2 cm and extends downwards through the footwall mineralised zone, also at constant 15 cm sample widths.
- Sample marking is completed by the same geologist who initially logs the core, during the same logging exercise to ensure the lithological and sample logs match exactly.
- Sample boundaries are clearly marked on the core with a permanent ink marker and the depth measurement of every sample boundary is recorded. Each sample is assigned a unique code comprising the drillhole number and a sample number.
- Once the core has been completely marked-off for sampling, the sample section core is removed from the trays and the core cut longitudinally in half with a diamond blade core cutter.
- The top half that was originally marked out with samples is then laid next to the bottom half, and the sample intervals and numbers are exactly duplicated onto the flat side of the bottom half.
- This bottom half is retained and returned to its correct position in the core trays.

- The top half is then sampled, where individual samples are separated with a sharp chisel. The surface on which this is done must be properly cleaned between each sample to avoid any cross contamination.
- Once the sample has been prepared it is labelled and bagged. The open end of the bag is then folded over twice and stapled closed. The full sample number is also written onto the outside of the plastic bag with a permanent ink marker pen. Once a complete suite of samples has been prepared these are all placed into a larger plastic bag labelled with the drillhole number and the sample number range and tied closed with string or twine.

The samples are maintained in a chain of custody from the sampled site to the laboratory by a sample dispatch note and sample request forms.

After the Bokoni Mine property core had been logged and sampled according the standards and procedures it was stored at the Driekop Exploration Base. Core trays are packed in an orderly and logical fashion. The trays from any one drillhole are stacked together and in tray number order. Core tray stacks are packed in blocks of the same origin, i.e. the farm or project area as denoted by the farm/project code, and in order according to drillhole number.

A list of the final composites sourced from the surface drilling data is presented in Appendix B. Surface drilling has been completed on the Bokoni Mine properties on an average 300 m by 300 m spacing. The area covered by the surface drilling programmes to date is approximately half of the total area covered by the Mining Permits (~19,000 ha).

ExplorMine Consultants undertook a site visit to Anglo Platinum's Driekop Exploration Base and viewed several randomly selected drill cores from the Bokoni Mine property. In general core recoveries were excellent and the logging and sampling protocols have been adhered to. Samples can, in ExplorMine Consultants opinion, be regarded as representative and it is evident from the sampling procedure that sampling bias is avoided as far as is reasonably possible.

Underground AXT (32.15 mm) diameter diamond drilling is conducted by the mine based geological staff at Bokoni Mine to define the local elevation of reefs underground (**Figure 15** and **Figure 16**). These geologists are also responsible for the logging and sampling of the underground drill cores. The basic logging methodology is identical to that applied to the drill cores from surface drilling. The sampling method is also similar with the exception that whole cores are sampled at approximately 20 cm intervals for both the Merensky Reef and UG2 Reef mineralised intersections. ExplorMine Consultants is of the opinion that the overall methodology in terms of the underground drilling is acceptable. In previous Mineral Resource estimations conducted by ExplorMine the underground drilling has largely been excluded from the estimates, however since 2015 much of the underground drilling has been corrected, verified and updated in the Bokoni database, and has been included in the current estimation.

ExplorMine Consultants has established that the sample support size for the surface and underground drill cores is similar, and comparable to the average size of the channel samples collected from underground reef exposures.

11.2. Underground Channel Sampling

Routine mine evaluation sampling is usually done using the channel sampling method, which is normally carried out at specific intervals in raises and other advance on-reef development. A plan showing the distribution of mined areas and underground channel sampling is given in **Figure 15** and **Figure 16**.

A basic summary of the underground channel sample method at Bokoni Mine is as follows:

- Channels are cut at 10 m intervals in raises and advance scraper gullies.
- Channels are only cut where full reef exposure exists.
- Channel cuts are strictly orientated at 90° to the dip of the reef exposure.
- Channels are marked with a 4.5 cm to 5 cm width on the exposure face.
- Latitudinal zero sample datum lines are drawn 2 cm above the TRC and 2 cm below the BRC.

- Samples are then marked at approximately 15 cm intervals between the datum lines until the entire channel is marked out. Hangingwall and footwall samples are then sampled at 10 cm and 15 cm intervals respectively, generally until the entire face exposure has been sampled.
- Samples are not less than 8 cm in length.
- Sample cutting is done from the bottom of the channel upwards and the associate sample numbers are numbered from the top of the channel down.
- The actual dimensions of the samples are recorded, and the samples are placed in clean plastic bags and unique bar codes are pasted on the bag, which is then sealed.
- Samples are co-ordinated by the sampling team using underground survey pegs.
- The sampling team records geological features such as lithology (including reef, hangingwall and footwall), dykes, faults, potholes and alteration.

Samples are captured in the Mineral Resources Management ("MRM") database by the sampler on the same day. The sampler is responsible for ensuring that his sections are captured correctly. The sample bags are then sealed with an impulse sealer and the bar code scanned. The samples are then packed into containers and sent to the Eastern Bushveld Robotic Laboratory ("EBRL") via courier. The samples are maintained in a chain of custody from the sampled site to the laboratory by a sample dispatch note and sample request forms.

The basic channel sampling method used at Bokoni Mine is similar to channel sampling methodology employed historically in South African Gold and Platinum Mines. Historically channels samples were collected using chisels using a so-called 'H-cut' method. However recently a 'V-cut' method has been used where a compressed rotary diamond saw is utilised. The new method reportedly results in a considerable reduction in sample contamination, samples are also more continuous and the dimensions more accurate.

ExplorMine is satisfied that the underground channel sampling is as per industry best practice. Regular planned task observations are conducted by supervisors to ensure channel sampling procedures are adhered to. A complete list of underground channel samples is given in Appendix B.

11.3.Analyses and Security

The surface and underground sample preparation procedure is detailed in Section 11. The bulk of the samples sourced from surface exploration diamond drilling, underground diamond drilling and underground channel sampling were prepared and collected by employees of Anglo Platinum the previous owners of Bokoni Mine.

11.3.1. Drillhole Samples

Surface exploration drillhole samples (as from 2000) were submitted to Anglo Research Analytical Services Laboratory ("AR") located in Crown Mines Johannesburg, previously known Anglo American Research Laboratories ("AARL"). AR is a South African National Accreditation System ("SANAS") accredited analytical facility with Facility Accredited Number T0051. AR Laboratory operates in accordance to international management and quality standards (ISO: 17025). The laboratory first obtained accreditation status in May 1996.

At AR the flow of samples through the laboratory from sample receipt, in primary sample preparation, through processing at both primary and secondary sample preparation to instrumental analysis and final sample disposal is tracked in a Laboratory Information System ("STARLIMS®"). Care is taken during the handling of samples to avoid potential cross contamination or misplacement of samples. High and low-grade materials are processed in completely separate areas throughout the laboratory, using dedicated and clearly labelled equipment. An audit trail is maintained throughout sample handling.

Drillhole core samples are analysed for gold, platinum and palladium ("3E") using lead collection fire assay Inductively Coupled Plasma Optical Emission Spectroscopy ("ICP-OES"). Where the 3E grade exceeds 1.5 g/t samples are further assayed for rhodium content. All 3E and rhodium assays are performed in duplicate and the process is twin-streamed. Copper and nickel are determined by wavelength dispersive X-Ray Fluorescence spectrometry ("XRF"). All samples are analysed for specific gravity ("SG") using a gas Pycnometer on pulped samples. Replication of XRF and SG determinations are performed at a rate of ten per cent.

A summary of the assay process is as follows:

- The client is informed of the arrival of the samples, and method is confirmed.
- Samples are uploaded into STARLIMS® using the sample names as recorded on the client's Analytical Request Form, sample list ("ARF"). The client is notified of any discrepancies between actual samples received and the information on the ARF.
- A Batch Report ("BR") is generated from STARLIMS®. The batch of samples is checked against the BR to ensure that it is a true and accurate reflection of the batch. The BR accompanies the batch of samples throughout the laboratory.
- The batch is then made available for Primary Sample Preparation. Wet samples are transferred to clean, stainless steel dishes and dried overnight at 80ºC in sealed ovens.
- Samples are weighed prior to and after primary sample preparation procedures (crushing and milling).
- Samples are crushed using jaw crushers to ≤ 3 mm particle size. The crushed sample is collected in clean stainless-steel dishes, labelled, covered and stored for further processing. The crusher is cleaned manually with compressed air between samples and dust extraction is affected by a down draught airflow system. Quartz is used for cleaning at the beginning and end of each batch. The crusher product size is also checked.
- Samples are pulverised to at least 80 % < 75 µm using Labtechnik LM mills and low - chrome pulverizing vessels. Conformance is checked and recorded on ten per cent (10 %) of samples in a batch. Where non-conformance is detected, the relevant samples are re-pulverized. Mill pots are cleaned manually between each sample by brushing, blowing with compressed air or vacuuming. Quarry quartz is milled between individual batches and certain samples for cleaning purposes. In addition, an aliquot of the quarry quartz is milled as a sample at the beginning and the end of each batch. These milled quartz portions are treated as "quartz blanks" to monitor the contribution of the mill pots to the samples and are analysed with the batch of samples. The data is reported to the client.
- Gold (Au), platinum (Pt), palladium (Pd) and rhodium (Rh) are analysed in duplicate. Rhodium (Rh) in a sample is only determined when the sum of Au, Pt and Pd ≥ 1.5 g/t. Samples are analysed using a fire assay lead collection fusion technique, followed by acid dissolution of the resulting precious metal prills and determination of Au, Pt, Pd and Rh by ICP-OES.
- The lower limit of detection for this method is 20 ppb (0.02 g/t). A 50 g aliquot is used for the analysis of Merensky Reef material and 30 g for UG2 material.
- Ag is used as a co-collector for the Au, Pt and Pd analyses whereas Pd is used for the Rh analysis.
- Special flux mixtures are used and are modified as per sample matrix requirement.
- Total copper and nickel are routinely analysed. Cr_2O_3 analysis is done on selected samples requested by the client.
- A pressed powder XRF technique is used and samples are analysed on the Philips PW 2400 and an AXIOS sequential spectrometer.
- The lower limit of detection for Cu and Ni is 5 g/t and for Cr_2O_3 is 100 g/t. Sample mass used per disc is 27 g.
- Specific densities are carried out on pulped samples using the Grabner analyser.
- Results are transmitted electronically to the client with security if requested.

11.3.2. Drillhole Samples - Laboratory Quality Control

AR is an ISO 17025 registered (Laboratory number T0051) and operates according to international quality standards. Consistent and stringent standards of analytical practice are applied. Each procedure is executed according to well-documented procedures. A complete audit trail is maintained in the laboratory to ensure traceability, transparency and ISO compliance. Care is taken during the handling of samples to avoid potential cross contamination or misplacement of samples.

Certified reference material ("CRM"), as well as internal reference material ("IRM") of matched matrices is used. These results are reported along with the sample data. A reagent blank, one CRM as well the internal standard is used per tray of 28 fusions. Fire assay pots are used once to avoid the possibility of cross-contamination of samples.

The precision of the analysis is monitored by the twin stream analysis of precious metals as well as the ten per cent replication of base metal and density measurements. A full calibration of the ICP-OES instrumentation is performed prior to sample analysis, and a synthetic check sample is included after every 10 to 15 samples to ensure that the calibrations are still valid.

Worksheets will be accepted or rejected based on the quality control data of the standards, replicates and blanks. A comprehensive monthly Quality Report is prepared by AR Quality Section and is issued to the client. The report contains information on the blanks, CRM's, in-house reference materials, twin stream and replicate result performance.

Ten per cent of samples analysed at AR are selected and submitted for quality control check assays by Genalysis, Australia. Samples are analysed at Genalysis for; precious metals by the nickel sulphide fire assay collection method with an ICP-MS finish, for base metals (Cu and Ni) by peroxide fusion with an ICP-OES finish and for density measurements by gas Pycnometer.

11.3.3. Drillhole Samples - Internal Quality Control

Anglo Platinum surface drillhole sampling protocol included a quality control and assurance ("QA / QC") procedure which included:

- Insertion CRM's, IRM's and blanks to determine the accuracy (bias) and internal precision of the laboratory. A comparison of the blind QC's (analysed as unknown) with the same laboratory QC's (analysed as known) is done. Blanks were inserted as unknown samples between the normal 10 % check samples to determine whether there was any contamination present during the analyses of the batch. The blank was usually washed silica sand with trace values for PGE, Cu and Ni.
- Duplicates of randomly selected sample pulps (from samples that have already been analysed and returned from the laboratory) are added to an analysis batch to evaluate internal laboratory precision at various grades.

As AR returned assay results to Anglo Platinum, dedicated individuals are responsible for analysing the assay results and associated QA / QC controls. Any deviations from the QA / QC protocols are queried with the exploration site and AR. If accepted, the assay results are processed through clearing tables and migrated into the final SABLE Data Warehouse™.

11.4. Underground drillhole and Channel Samples

The underground diamond drilling samples and underground channel samples are routinely submitted to the Eastern Bushveld Regional Laboratory ("EBRL") situated at the Polokwane Smelter Complex, owned by Anglo Platinum. EBRL is a SANAS (ISO 17025 registered) accredited laboratory with Facility Accreditation Number T0414. Original date of accreditation was 8 October 2009. The bulk of the assay results for the underground drilling and channel sampling are therefore dated prior to the accreditation of EBRL.

The basic sample preparation and assay methods are similar to the AR method described in Section 11.4 with minor differences.

Underground drillhole core samples and channel samples are analysed for platinum, palladium and rhodium ("3E") using lead collection fire assay Inductively Coupled Plasma Optical Emission Spectroscopy ("ICP-OES"). Lower detection limits are 0.25 g/t for Pt and 0.05 g/t for Pd and Rh. Copper and nickel are determined by wavelength dispersive X-Ray Fluorescence spectrometry ("XRF") with a lower detection limit of 10 ppm. All samples are analysed for specific gravity ("SG") using a gas Pycnometer on pulped samples.

11.4.1. Underground drillhole and Channel Samples - Laboratory Quality Control

EBRL is an ISO 17025 registered (Laboratory number T0414) and operates according to international quality standards. Consistent and stringent standards of analytical practice are applied. Each procedure is executed according to well-documented procedures. A complete audit trail is maintained in the laboratory to ensure traceability, transparency and ISO compliance. Care is taken during the handling of samples to avoid potential cross contamination or misplacement of samples.

Certified reference material ("CRM"), as well as internal reference material ("IRM") of matched matrices is used. These results are reported along with the sample data. A reagent blank, one CRM as well the internal standard is used per tray of fusions. Fire assay pots are used once to avoid the possibility of cross-contamination of samples.

A summary of the quality control protocol is as follows:

- Blanks are run every 20 samples
  - Blanks are clean silica sand samples
  - Loaded at Locked Input manually
  - Check for contamination
- CRM samples are run every 20 samples
  - Certified control samples
  - Loaded automatically
  - Check for Precision and Bias
  - Both OES and XRF cycle
- Instrument QC for stability checks every 2 hours for OES and 4 hours for XRF
- Manual equipment checks
  - Scale verification
  - Mill grind and losses
  - Mortar crusher grind and losses
  - Crusher grind and losses
  - Temperature checks

The quality assurance protocol can be summarised as follows:

- Monthly Internal Sample Checks for Repeatability
  - Precision
    - – >80 % < 10 % P = Acceptable
    - – 70 % - 80 % <10 % P = Investigate
    - – <70 % <10 P = Unacceptable, immediate action
  - Bias
    - – <5 % = Acceptable
    - – 5 % > and <10 % = Investigate
    - – >10 % = Unacceptable, immediate action
- External Evaluation against Check Assay Laboratory
  - 10% of all Samples
  - Administrated by GEMA
  - Criteria: Same as above
- Round Robin Participation

11.4.2. Underground Drillhole and Channel Samples - Internal Quality Control

Bokoni Mine inserts internal CRM's and blanks into its underground drillhole and channel sampling streams as per a protocol detailing the use of standards and blanks.

Table 9 gives a list of the CRM's and blank material that is used by Bokoni to monitor its own quality control. Initially Bokoni made use of CRM's derived from Anglo American Research Laboratories ("AARL"), or the "G" series (G1 – G6) CRM's. However, in 2014 Bokoni began using several African Mineral Standards ("AMIS") CRM's. Bokoni Mine staff use the CRM's to monitor analytical accuracy. For a particular sample batch to be passed for upload to the MRM sample results database, all the CRM analyses must be within the third standard deviation. If the respective analytical result is beyond the third standard deviation, the results are communicated with the management at the laboratory, who then check on the laboratory internal standards and advices on the possible re-assaying of the relevant batch.

A blank material comprising clean crushed quartz is also inserted into the sampling stream by Bokoni to test for contamination in the sample preparation circuit. Results which indicate more than 10 times the detection limit are flagged, and the associated batch is failed and cannot be considered for upload to the MRM sample database.

EBRL as part of its analytical procedure runs a dual-stream assay system, which results in every assay having a laboratory replicate value. The repeats are also monitored by Bokoni with scatter plots and Thompson-Howarth plots to test for repeatability of the analytical method. Prior to 2016, Bokoni did not insert field duplicates as part of the quality control procedure. However, in 2016 a total of 72 pulp duplicates (allocated new sample labels and submitted blindly to the laboratory together with each sample batch) were submitted for analysis. For pulp duplicates, a precision plot is used to monitor the precision of the analytical facility by Bokoni staff. If the percentage difference between the original analysis and pulp duplicate analysis is greater than 10 %, the sample results are failed, and the results are communicated with the laboratory management for re-analysis.

ExplorMine has reviewed the results of the Bokoni quality control programme up to and including the 2015 results. In general, the assays of the CRM's demonstrate reasonable accuracy, with a negative overall bias for Pt, Pd or Rh assays (and therefore total 4E). ExplorMine does however note that the percentage failures (assay values greater or less than the accepted value plus or minus the third standard deviation) appears excessive, with 37 % of AMIS CRM's reporting failures and 19 % of the G-series CRM's reporting failures. Analysis of the CRM's used for the underground diamond drilling samples indicates that, in general, there may be a slight bias in the assay results, which report values slightly lower than the accepted values for the relevant CRM's. The percentage of failures of CRM's associated with the underground drilling is also fairly high at 22 % for the G-series CRM's and 6% for AMIS CRM's. The 2016 results appear to be much improved with no overall bias apparent and 9 % of the CRM analyses being reported as beyond the third standard deviation. The results of the assays for the clean quartz crush or blank material demonstrates clearly that the level of contamination is within expected limits, returning an average grade of less than 0.3 g/t 4E. In addition, the time series plot of blank values indicates the recent blank material assays have improved dramatically. Results of the duplicate assays appear to be reasonable with 93 % of the duplicate analysis reporting values with less than 10 % difference with the original result, indicating a reasonable degree of repeatability.

ExplorMine has reviewed the replicate analytical results for Pt, Pd, Rh and Au returned from EBRL. All the replicates for Pt, Pd and Rh returned correlation coefficients of 0.99 and better for both the channel sampling and underground drilling samples, for both UG2 and Merensky Reef intersections. Regressions for Au are excellent with regressions of 0.98 and better. The Thompson-Howarth plots (absolute difference between replicate assays versus the mean of the replicates) demonstrate that for Pt and Pd the bulk of replicates differ less than 10 %. Rh and Au assays tend to have a wider spread of replicate assay results.

11.5. Comment on adequacy of sampling and assay procedures

Prior to 2000, a variety of analytical techniques have been used in assaying samples for Bokoni Mine:

- Lead-collection fire assay; total 4E PGE was reported with low confidence due to a high temperature cupellation step in the process that caused the loss of the majority of Rh in the samples. This technique has not been employed since 2000.
- Lead-collection fire assay gravimetric prill; individual PGM's determined with similar levels of confidence as above.
- Nickel-Sulphur dissolution; individual PGE's determined with high confidence and accuracy.

Since the overwhelming bulk of the data used in the current and recent Mineral Resource estimations is sourced after 2000, the assay results prior to 2000 are not considered significant.

ExplorMine Consultants has not conducted an audit of the analytical laboratories and accepts that accreditation with SANAS is valid at the date of this Technical Report.

In terms of the surface diamond drilling, the sampling and assay procedures and associated QA / QC protocols are of a high standard and in ExplorMine Consultants opinion in line with industry norms and standards.

The standards for sampling in terms of the underground channel sampling and underground drillhole sampling are in line with industry norms. Results from the quality control programme indicate that sampling and assay data derived from these sources is of sufficient quality for use in Mineral Resource estimation. ExplorMine notes that there may be an overall negative bias of in analytical results relative to the CRM's utilised by Bokoni Mine in its QA / QC programme. Prior to 2016, ExplorMine has recommended additional actions to be taken should CRM's and blanks be returned as "failures" from the laboratories, to improve the efficacy of the quality control, these recommendations have now been fully implemented.

It should be noted that the EBRL analytical laboratory only recently (October 2009) achieved SANAS accreditation. Therefore, the assay results prior to the date of accreditation were not subject to the stringent controls that such an accreditation demands. ExplorMine however accepts that assay results prior to this date are of sufficient quality to be used in Mineral Resource estimation.

12. DATA VERIFICATION (ITEM 12)

In terms of geological and sampling data, the overwhelming bulk of the data is from two sources; surface diamond drilling and underground channel sampling. The quality control measures for the collection and assay of these data is described in Section 11.

ExplorMine Consultants processed several sets of data in the Mineral Resource estimation process. The following data sources were considered:

- Surface diamond drilling sourced from Anglo Platinum's SABLE Data Warehouse™;
- Underground diamond drilling – sourced from Bokoni Mine;
- Channel sampling – sourced from Bokoni Mine MineRP™ MRM software;
- Geological data including surface outcrops and reef potholes, faulting and intrusive features in underground excavations – sourced from Bokoni Mine MicroStation® software;
- Geophysical aeromagnetic interpretations – sourced from Bokoni Mine;
- Mining outlines including stoping and development - sourced from Bokoni Mine MicroStation® software and
- Mineral rights and surface rights boundaries - sourced from Bokoni Mine MicroStation® software.

Table 9: Details of certified reference materials used by Bokoni Mine.

Certified Reference Material	Source	Use	Accepted Value Pt	2nd Standard Deviation Pt	Accepted Value Pd	2nd Standard Deviation Pd	Accepted Value Rh	2nd Standard Deviation Rh	Accepted Value Au	2nd Standard Deviation Au
AMIS089	African Mineral Standards	Diamond Drilling/Channel Sampling	1.090	0.120	0.700	0.060	0.220	0.020	0.040*	0.012
AMIS099	African Mineral Standards	Channel Sampling	0.565	0.060	0.231	0.024	0.029*	0.004	0.085*	0.022
AMIS192	African Mineral Standards	Channel Sampling	7.930	0.400	4.040	0.180	1.010	0.080	1.680	0.120
AMIS209	African Mineral Standards	Channel Sampling	1.120	0.100	0.630	0.060	0.090*	0.020	0.090*	0.010
AMIS252	African Mineral Standards	Channel Sampling	2.890	0.280	1.530	0.140	0.600*	0.080	0.042*	0.012
AMIS253	African Mineral Standards	Diamond Drilling/Channel Sampling	4.030	0.320	2.340	0.180	0.820*	0.080	0.070*	0.010
AMIS254	African Mineral Standards	Channel Sampling	2.190	0.160	1.120	0.080	0.160*	0.040	0.200	0.020
AMIS256	African Mineral Standards	Diamond Drilling/Channel Sampling	4.860	0.220	2.500	0.120	0.390*	0.050	0.340	0.040
AMIS326	African Mineral Standards	Channel Sampling	1.050	0.080	1.260	0.080	0.081	0.010	0.170	0.020
AMIS328	African Mineral Standards	Channel Sampling	2.140	0.180	1.380	0.120	0.250*	0.040	0.140	0.010
AMIS416	African Mineral Standards	Channel Sampling	1.540*	0.240	0.800	0.060	0.290*	0.040	0.130*	0.040
G1	Anglo Platinum	Diamond Drilling/Channel Sampling	2.980	0.130	1.850	0.038	0.158	0.036	0.249*	0.036
G2	Anglo Platinum	Diamond Drilling/Channel Sampling	1.870	0.148	0.820	0.058	0.107	0.014	0.194*	0.034
G3	Anglo Platinum	Diamond Drilling/Channel Sampling	8.760	0.882	2.880	0.202	0.428	0.170	0.626*	0.120
G4	Anglo Platinum	Diamond Drilling/Channel Sampling	0.200	0.034	0.140	0.014	0.070	0.048	0.005*	0.004
G5	Anglo Platinum	Diamond Drilling/Channel Sampling	0.480	0.080	0.290	0.030	0.083	0.042	0.008*	0.010
G6	Anglo Platinum	Diamond Drilling/Channel Sampling	3.030	0.816	2.180	0.238	0.660	0.224	0.051*	0.024
BLANK	Quartz Crush	Diamond Drilling/Channel Sampling	0.01#	0.001	0.01#	0.001	0.01#	0.001	0.01#	0.001

Notes

1. * Provisional Concentrations
2. # Internal Limit

12.1.Nature of Data Processing and Verification

Each source dataset was processed and verified by ExplorMine Consultants before being accepted for the Mineral Resource modelling and estimate. **Table 10** and details the total number of drillholes and channel sections as reported by the Bokoni Mine datasets.

Table 10: Total number of data generated for each data source and exclusions for the Bokoni Mine Mineral Resource modelling and estimation process.

Source (Based on raw collar data received)	Total Number of Data Considered (2017)	Total Number of Data Considered (2016)	Total Number of Data Considered (2015)
Surface Drillholes - Mother Holes	1,742[5]	1,742[5]	1,557
Surface Drillholes - Deflections	3,058	3,058	3,059
Underground Diamond Drilling	498	477	440
Underground channel sampling	9,064	8,915	8,557
Total	14,362	14,192	13,213

Source (Based on raw collar data received)	Total Number of Data Excluded (2017)
Surface Drillholes – Mother Holes	81[1]
Surface Drillholes - Deflections	37[2]
Underground Diamond Drilling	393[3]
Underground Channel Sampling	2,195[4]
Total	2,706

Notes

1. [1]Generally excluded due to - reef positioning (66), missing or incomplete collar co-ordinates (15) issues.
2. [2]Generally excluded due to - reef positioning (29), missing or incomplete collar co-ordinates (8) issues.
3. [3]Generally excluded due to - cover drillholes (226); pothole drillholes (132); prospect drillholes reef positioning (29) and missing or incomplete assay results (6) issues.
4. [4]Generally excluded due - reef positioning, duplicate positions or no assay results available (2017: 11 Mr and 14 UG2 Z issue – resolved by projection).
5. [5](186) RC opencast drillholes added to dataset, utilised in the 3-D modelling of the MR Reef top reef contact exclusively.

In the previous Mineral Resource estimates (2009-2013) completed by ExplorMine several datasets were excluded from the estimate due to various data issues. Some data from underground diamond drilling has been corrected and verified and brought into the estimate. Similarly, the underground channel sampling which was excluded from the previous Mineral Resource estimate has been corrected, verified by ExplorMine and a large proportion of this data is included in the estimate presented in this Report. An "exception" list has been generated detailing all data excluded from the estimation process with the attendant reason for the exclusion.

The datasets were verified in terms of the following elements:

- All surface drillhole and channel data was verified. All data is recorded in World Geodetic System ("WGS") co-ordination protocol (Gauss Conform Central Meridian 31° projection with Hartebeeshoek 1994 datum).
- The validity of orientation surveys/information for all data was verified.
- Sample validity was confirmed for elements such as sample overlaps and invalid values. Trace values were set to half laboratory detection limit.
- Missing values (Pt, Pd, Rh, Au, 4E, Cu, Ni and SG) were populated using relevant regressions.
- A core bedding angle ("CBA") field is also created which is sourced from both the SABLE™ logs. Missing CBA values were populated using an algorithm which utilises existing data and if necessary angle of intersection with modelled reef wireframes.
- Reef coding was reconstituted using the existing reef coding, lithological / stratigraphic information and sampling/assay data. To assist with reef coding or identification background 'waste' values were excluded below 0.75 g/t 4E.
- All potholed (Merensky and UG2 Reef) and bifurcated (UG2 Reef) intersections were coded separately from normal reef intercepts.
- True channel widths were determined in a process using the CBA field.

- Drillholes were desurveyed utilising the Datamine™ HOLES3D desurvey process. An error log was generated as part of this process. Errors were repaired as far as possible. Where errors could not be repaired, the data was excluded and returned to Bokoni Mine staff as an exception list for future correction.

Table 11 details the final total number of accepted Merensky and UG2 Reef composite intersections that were generated by the verification process for use in the Mineral Resource estimation. Intersections with potholed Merensky and potholed and bifurcated UG2 intersections were uniquely coded so as to distinguish them from normal reef intersections (**Table 11**). While the potholed intersections were excluded from both the Merensky and UG2 Reef accepted composites, the upper portions (up to a maximum width of 150 cm) bifurcated UG2 Reef was coded and included in the accepted composites as this portion of the UG2 Reef is mined in a normal mining-cut during stoping operations.

Table 11: Composites generated for each data source and reef accepted for the Bokoni Mine Mineral Resource estimation process. The numbers of reef disturbances are also tabulated.

Source 2015	Total	Number of Composites MR 2017[1]			Number of Composites UG2 2017[2]			
		Total	Potholed[3]	IRUP's[3]	Total	Potholed	Bifurcated[3]	MPEG's
Surface Drillholes - Mother Holes	1,518	690	99	-	828	13	25	-
Surface Drillholes - Deflections	1,970	756	74	-	1,214	9	43	-
Underground Diamond Drilling	102	67	9	-	35	4	1	-
Underground channel sampling	6,889	4,807	409	-	2,082	40	4	-
Total	**10,479**	**6,320**	**591**	**-**	**4,159**	**61**	**73**	**-**

Notes
1. A number MR[1] and UG2[2] drillhole composites where added to the existing composites in 2016 due to Bokoni Mine Staff.
2. [3]Changes due to pothole, IRUP, MPEG and bifurcation polygons changes made by Bokoni Mine Staff.

All the Qualified Persons responsible for this Technical Report have verified the accepted composites used in the estimation process described in this Technical report.

12.2. Nature and Extent of Limitation on Data Verification

Certain data, such as the geological and geophysical data and mining and property string data has already been subject to a certain degree of interpretation or processing by Bokoni Mine staff. ExplorMine Consultants has accepted that these data are the product of competent work and has not performed additional verification.

ExplorMine Consultants has performed a detailed study of the QA / QC procedures or adherence thereto in terms of the channel sampling and underground drilling assay data received from the analytical laboratories. The QA / QC procedures are summarised in this Technical Report. The surface drilling QA / QC procedures and results are detailed in documentation complied by Anglo Platinum (S. Malenga, 2008). In reviewing the available documentation, ExplorMine has accepted that these procedures are within industry norms and that they have been adhered to and that the conclusions of the Anglo Platinum Report are reasonable.

13. MINERAL PROCESSING AND METALLURGICAL TESTING (ITEM 13)

Mineral processing at Bokoni Mine has been described in detail in a Technical Report compiled by Minxcon "An Independent Qualified Persons' Report on the Bokoni Platinum Mine, Limpopo Province, South Africa" 28 November 2012. The reader is referred to this Technical Report filed on Canadian Securities Administrators ("CSA") in the SEDAR filing system. A summary is provided below;

Item 13 (a) NATURE AND EXTENT OF TESTING AND ANALYTICAL PROCEDURES

The PGE economic units of interest in the UCZ in this area are the Merensky Reef and the UG2. The mineralogy of both the Merensky and UG2 Reefs is well known and the ores are treated at different plants designed to effectively recover PGEs from the two.

Item 13 (b) BASIS OF ASSUMPTIONS

The Merensky reef processing plant comprises of a crushing and milling and flotation circuit. The concentrates are filtered and transported by road to the platinum refinery owned and operated by Anglo Platinum.

The processes that are employed at Bokoni are typical for this ore body and a wide database of empirical data exists for similar operations in the area. This, combined with abundant historical data for Bokoni, forms a solid basis for assumptions regarding (amongst others) important parameters such as throughput, recovery and recovery grade.

Item 13 (c) REPRESENTATIVENESS OF SAMPLES

The Complex is well known and it is believed that the samples are a good representation of the ore body as a whole.

Item 13 (d) DELETERIOUS ELEMENTS FOR EXTRACTION

The UG2 ore body contains chrome which unavoidably ends up in the concentrate. The presence of chrome in the concentrate incurs a processing penalty, but does not prevent the processing of concentrate in the smelting furnaces.

14. MINERAL RESOURCE ESTIMATE AND RESERVE ESTIMATES (ITEM 14)

The Mineral Resource estimates reported in this section are based on validated data sets supplied by Atlatsa ("Bokoni Mine"). Messer's Deiss and Mitchell and Dr Northrop have verified the final composite data accepted for the estimate. All the geological data used in the estimation process including data which determines the extent, continuity and disturbance of the mineralised horizons has been collected and collated by qualified and suitably experienced geologists, surveyors and other mineral resource practitioners employed currently and historically at Bokoni Mine and Anglo Platinum.

Mr D. Mudau is the Bokoni Mine Geologist responsible for the geology, logging, collecting and interpretation of geological data. The estimation has been conducted by and under the supervision of Dr W.D. Northrop PhD, GDE, Pr.Sci.Nat. FGSSA, FSAIMM) who is independent of Atlatsa and any of its associated entities.

The Mineral Resources estimates presented here are inclusive of the Mineral Reserves and are also reported for areas outside of current mining plans (although within mineral title boundaries). The Mineral Resources reported for Bokoni Mine, including those not reported as Mineral Reserves have a reasonable prospect of eventual economic extraction given the fact mining operations with several shafts have historically been conducted on the property and significant Mineral Resources remain to be exploited given favourable economic and financial factors.

14.1. Geological Modelling

14.1.1. Reef Zones

Two zones based on reef width were identified for UG2 Reef. An area of the UG2 Reef on the Klipfontein Property was identified as having lower grade reef (4E g/t) when compared to the remainder of Bokoni Property. Two statistical zones were also identified for the UG2 Reef in terms of the Cu and Ni distributions. The various reef zones are shown in **Figure 22**. A single zone was modelled for the Merensky Reef.

14.1.2. Reef Wireframe Surfaces

A combination of desurveyed surface drillhole reef intercepts, channel samples and previous structural interpretations, topography and an interpreted aeromagnetic survey were used by ExplorMine Consultants to complete a first principles structural interpretation (**Figure 10**).

The top contacts, as determined during the reef coding process, of the Merensky and UG2 Reefs were wireframed as continuous surfaces honouring intersections. All valid intersections were utilised irrespective of whether the grade information was valid or not.

Utilising boundary polygons and the intersections, wireframe surfaces were gridded. Mother surface drillholes were always used as the dominant indication of the surface as these intersections have downhole surveys. Where the mother drillhole intersection was not available the next sequential intersection was utilised.

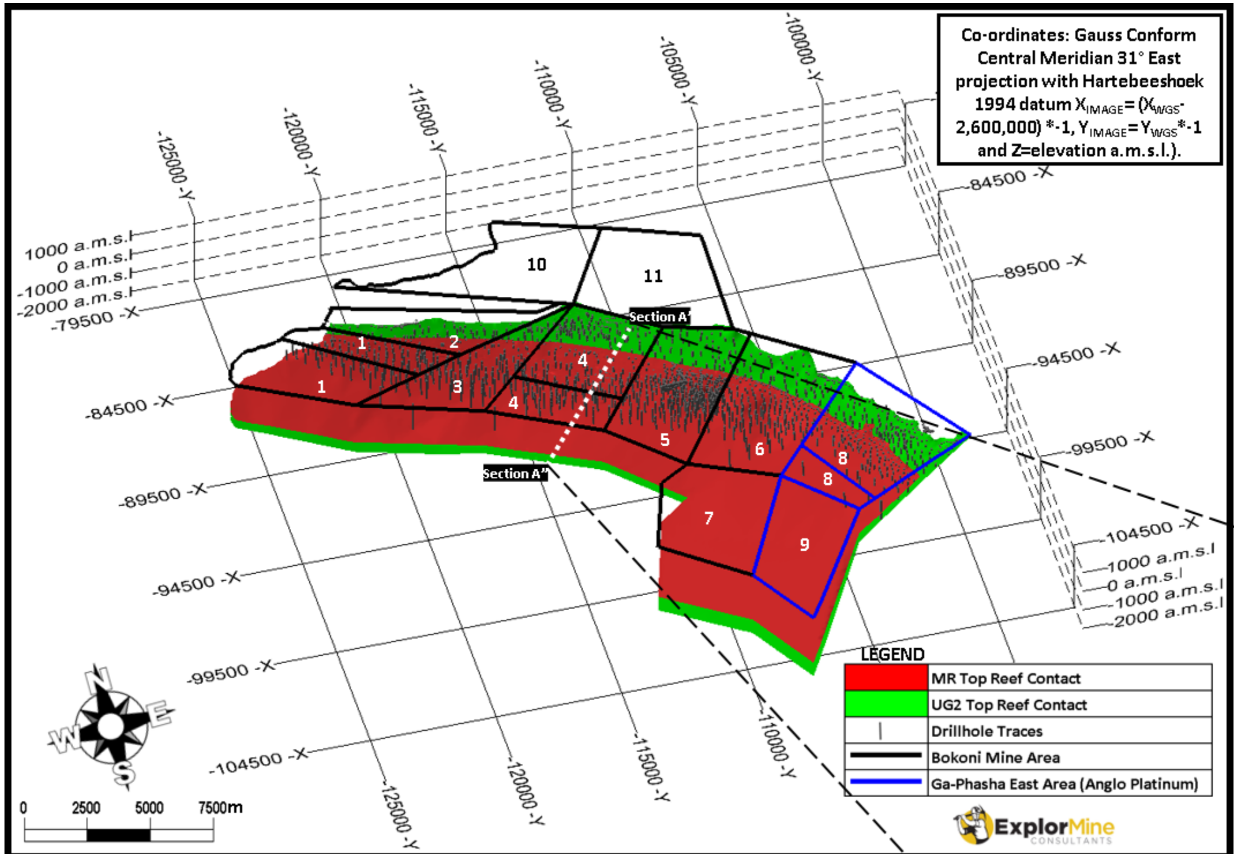
A pothole prediction model was created for the Merensky Reef by analysing the pothole distributions in the mined-out area. Point semi-variograms were generated for the areas (m^2) of potholes. In addition, the number of potholes per unit area (200 m by 200 m) was calculated and a corresponding point semi-variogram was generated. The resultant variograms models provided a basis for estimating the area of potholes and the number of potholes to be expected for a given block.

Potholes intersected by the surface drillholes and dykes as interpreted from the aeromagnetic image have been projected to the wireframe surface and 'cut out' of the final estimated model to indicate areas on the reef horizon where mineralisation is not expected to be normal. Pothole intersections were modelled at the localities indicated by surface drillhole information. The dimensions of these potholes were determined utilising the pothole intersection model.

14.1.3. Block Model Creation

A block modelling process was undertaken to allow estimation of the Merensky and UG2 Reefs in Datamine™.

Two types of block models were constructed to allow estimation. The first and main Resource model type facilitated estimation of the main mineralised "interval" for both the Merensky and UG2 Reefs. The secondary type of model facilitated the estimation of multiple 10 cm reef hangingwall and footwall layers. The top reef contact was used as a datum for the various block models as per discussions with Atlatsa.



Farms							
		3	Middelpunt 420 KS	6	Klipfontein 465 KS	9	Dekamp 507 KS
1	Diamand 422 KS	4	Umkoanesstad 419 KS	7	Avoca 472 KS	10	Jagdlust 418 KS
2	Zeekoegat 421 KS	5	Brakfontein 464 KS	8	Paschaskraal 466 KS	11	Wintersveld 418 KS

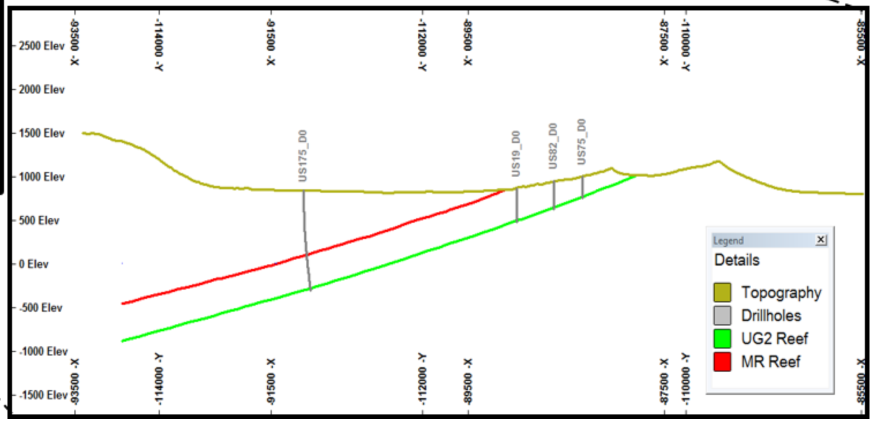


Figure 17: Schematic 3D rendition of the wireframes representing the interpreted Merensky and UG2 Reef surfaces and type section.

In terms of the primary block model for both the Merensky and UG2 Reefs, four orthogonal block models were created on a zero elevation average plane, including Measured (3-Year Mine Plan Area X=25 m, Y=25 m and Z=10 m; Life of Mine Area X=200 m, Y=200 m and Z=10 m), Indicated (Life of Mine Area X=400 m, Y=400 m and Z=10 m) and Inferred (Life of Mine Area X=800 m, Y=800 m and Z=10 m) parent cell block models. These cell sizes where determined by conducting kriging neighbourhood studies. The 25 m by 25 m was incorporated in 2016 Mineral Resource estimate to facilitate 3-year mine planning area selectivity (**Figure 48** and **Figure 59**). Kriging neighbourhood studies where completed on this particular block size to determine the effect on the geostatistical parameters. The spread in confidence increased marginally, but remained within industry accepted Measured Resource tolerance in historical Measured Mineral Resource areas. The R Slope and kriging efficiency decreased marginally. However, these parameters remained within industry accepted Measured Resource tolerance in historical Measured Mineral Resource areas. The 200 m by 200 m dimension also approximates the smallest mining unit ("SMU") as determined by the Bokoni Mine raise line spacing. Parent cell ordinary kriging estimates were done for 4E (g/t), Pt (g/t), Pd (g/t), Rh (g/t), Au (g/t), Cu (%), Ni (%), channel width (cm), and density ("SG").

The UG2 Reef was split into two zones as defined by a study into the relationship between channel width and grade and metal content. No zonal split was applied to the Merensky Reef. Two additional zones, which do not coincide with the primary zonal split, were also identified for the UG2 Reef and applied in the estimation of Ni (%) and Cu (%) (**Figure 21** and **Figure 22**).

In terms of the secondary block models for both the Merensky and UG2 Reefs, for each successive 10 cm reef hangingwall and footwall layer, three orthogonal block models were created initially on a zero-elevation average plane, in the same dimensions as those constructed for the primary block model and constructed in the same geographical locations. Parent cell ordinary kriging estimates were done for 4E (g/t), Pt (g/t), Pd (g/t), Rh (g/t), Au (g/t), Cu (%), Ni (%) and density ("SG").

The top surface (zero elevation) of the primary block model was then used as a basis for 'stacking' the secondary block models to create a multiple vertical cell hangingwall. The basal contact of the primary block model was utilised as the zero point for 'stacking' of the footwall secondary block models (**Figure 18**). Composites were calculated from the stacked block models by the use of a process called MODTRA in Datamine™ to simulate a vertical single celled block model such that various iterations of Mineral Resource width could be generated.

The average local dip (SDIP° - on a 400 m: X 400 m: Y grid) of the relevant reef wireframe was estimated into the block model and used to correct the volume (tonnage) increase required for an orthogonal block model produced on an inclined plane. The factor 1/cos(SDIP°) was applied to the output of the Mineral Resource estimates.

Six types of mining pillars were coded into the Merensky block model as indicated in **Figure 19**, namely:

- A 9 m lease boundary pillar (as prescribed by the DME);
- a river pillar along the Olifants River (prevent mine flooding);
- an opencast crown pillar (surrounds historically mined opencast areas for rock engineering purposes);
- a water pillar (for protection of water pipes infrastructure);
- a 75° isotherm pillar, which occurs at a 2400 m below surface topography (the point at which current mining technology does not support mining due to the ambient rock temperature); and
- An oxidised reef zone (limited to a maximum of 60 m below surface topography i.e. a weathered zone).

All pillars except the oxide pillars are excluded from the Mineral Resource declaration. The oxidised zone immediately adjacent to mined-out areas was also included as part of the Mineral Resources. It should be noted that some of these pillars could be considered as part of the Mineral Resource on special application to the DME or by improved mining technology that supports mining in high ambient rock temperatures.

Four types of mining pillars were coded into the UG2 block model as indicated in **Figure 20**, namely:

- A 9 m lease boundary pillar (as prescribed by the DME);
- a river pillar along the Olifants River (prevent mine flooding);
- a 75° isotherm pillar, which occurs at a 2400 m below surface topography (the point at which current mining technology does not support mining due to the ambient rock temperature); and
- An oxidised reef zone (limited to a maximum of 60 m below surface topography i.e. a weathered zone).

All pillars except the oxide pillars are excluded from the Mineral Resource declaration. The oxidised zone immediately adjacent to mined-out areas was included as part of the Mineral Resources. It should be noted that some of these pillars could be considered as part of the Mineral Resource on special application to the DME or by improved mining technology that supports mining in high ambient rock temperatures.

Geological losses were applied to the Merensky and the UG2 Reef models. Losses include potholes, dykes, faults, shears, MPEG's (Mafic Pegmatoidals) and IRUP's (Iron Replacement Ultramafic Pegmatoids only applicable to the farms Brakfontein, Klipfontein and Avoca for the MR).

Geological losses related to the Merensky Reef potholes were estimated into 200 m by 200 m parent cells on the same model origin as the grade model estimate. A geostatistical study of the distribution of the areas and distribution of potholes was undertaken and semi-variogram models were created and modelled. The resultant of the Merensky Reef pothole estimate, the product of the number of potholes per block (200 m by 200 m) and the average area of those potholes was obtained. The total area of potholes versus the total area of the block could be calculated, thus providing a proxy for the potential geological loss related to potholes (**Figure 23**). This estimated pothole factor was only applied to the 3-year mine plan area (25 x 25 m SMU area), a global factor of 15 % (derived from actual mined-out areas) was applied to the remaining Mineral resource areas. Due to the low number of potholes recorded in the UG2 mining at the Middlepunt Decline, a similar UG2 pothole estimation model could not be developed. A geological discount factor due to potholes of 9 % was applied to the UG2 Reef based on historical mining data.

Geological losses related to dykes have been coded into the final composite models using the spatial distribution of dykes from the interpreted aeromagnetic data and from underground geological mapping. Historical geological losses related to faulting and shearing have been used to adjust the final volume outputs from the block model estimates. All large-scale faults have been modelled into the wireframe surfaces.

Table 12: Summary of applied geological losses for the Merensky and UG2 Reef Mineral Resource estimates.

Geological Loss Type	Merensky Reef	Source/Comment	UG2 Reef	Source/Comment
Potholes	Estimate / Actual (~15%)[1]	Historically 18.5%	9%	Historically 9%
Structure (Faults and Shears)	1%	Historically 1%	1%	Historically 1%
IRUPS / MPEGS	2% [1]	Historical Data	1%	Historically 1%
Dykes	~1%	Historically 1%	~1.1%	Historically 4%
Total Geological Discount	**~18 to 20%**	**Estimated, Domains and Historical**	**~12%**	**Domains and Historical**

Notes

1. Actual potholes removed from Mineral Resource for MR and UG2.
2. Actual IRUPS's (MR) and MPEG's (UG2) removed from Mineral Resource.
3. Actual dykes removed from Mineral Resource for MR and UG2 to a resolution of 0.5 m.
4. UG2 Bifurcations (1.5 % by 3-D area) included within Mineral Resource (top 120 cm portion included).
5. [1]MR Pothole factor only estimated within the 25 SMU area, default of 15 % applied to the remaining area.
6. [2]MR IRUP factor applied to Brakfontein, Klipfontein and Avoca.

The relative densities for each reef unit were estimated into the primary block models using the variography and values from the composite data. Average relative density values from the reef composites are 3.387 and 4.169 for the Merensky and UG2 Reefs respectively.

Mineral Resource estimates are categorised and detailed in Section 14.5.

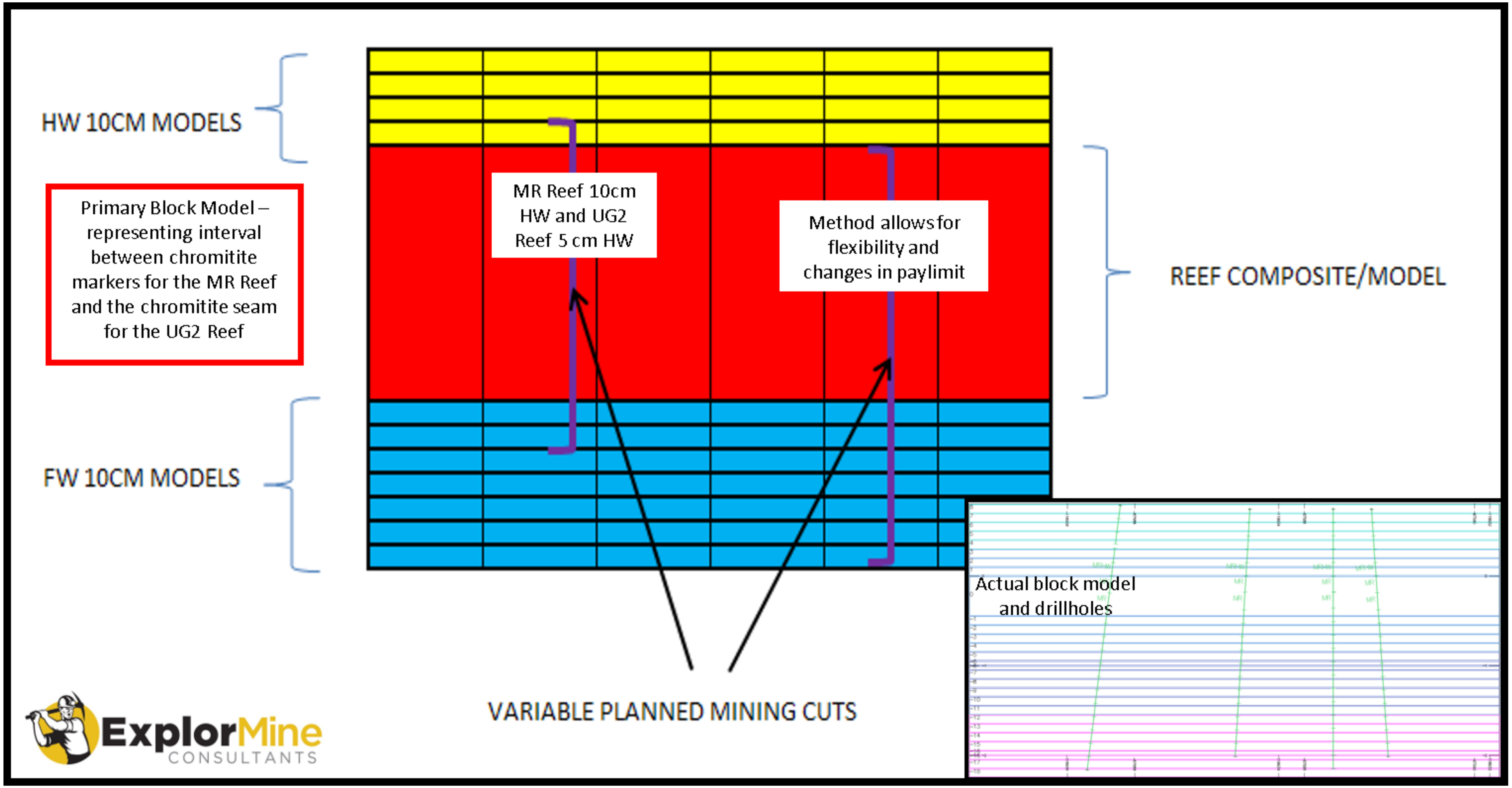


Figure 18: Cross section through the Merensky Reef Block Model indicating the spatial relationship between the primary (mineralised zone) and secondary 10 cm vertical block models. Four drillholes with corresponding stratigraphic codes and sample intervals are also shown. The top of the primary block model (corresponding to the top chromitite seam) is set at zero elevation.

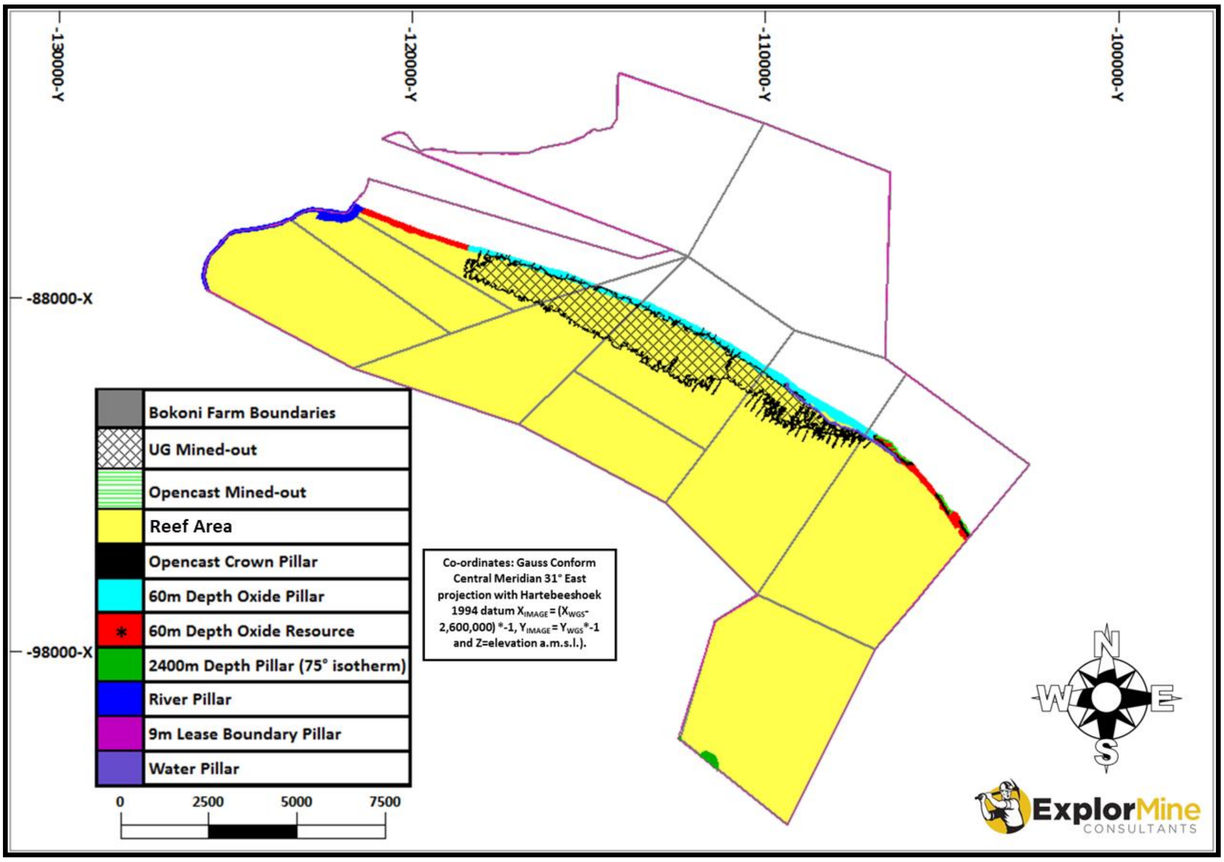


Figure 19: Geotechnical pillars coded into the Merensky Block Model (*included in Mineral Resource).

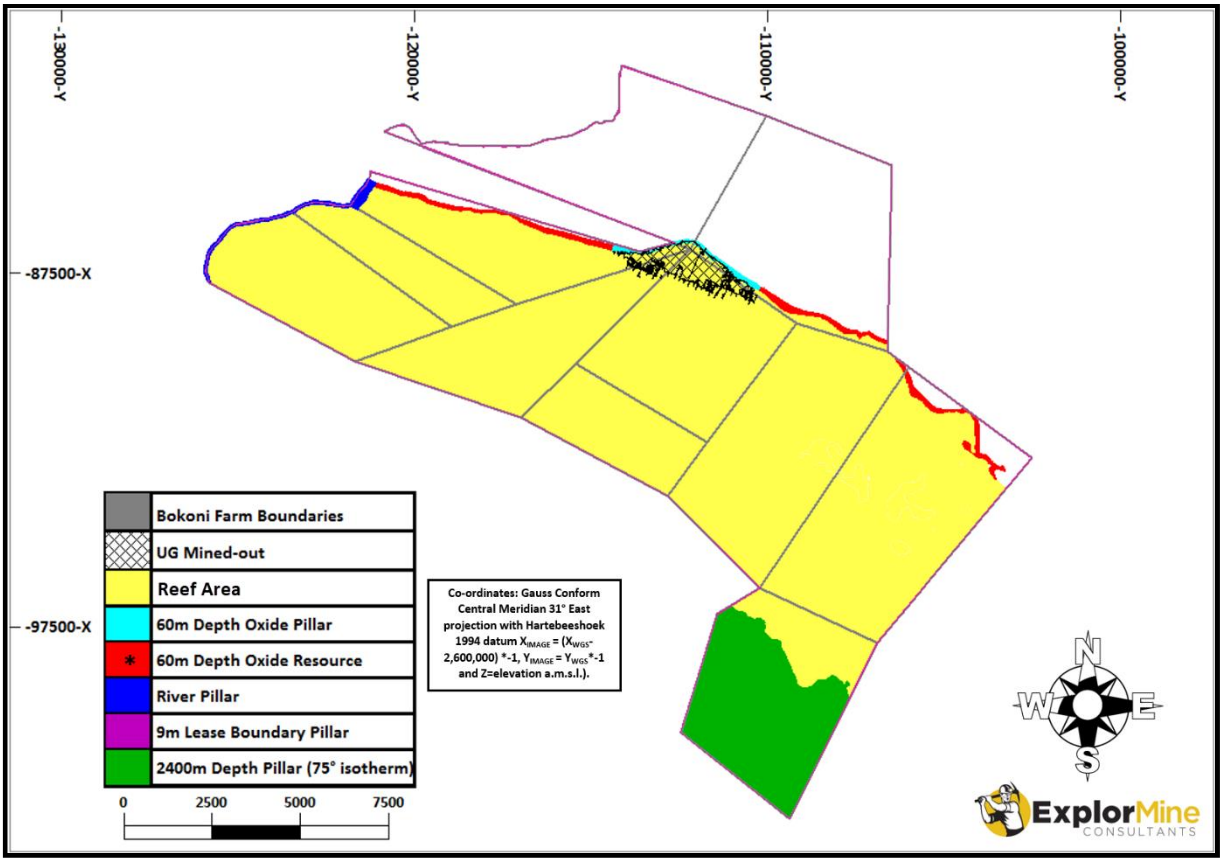


Figure 20: Geotechnical pillars coded into the UG2 Block Model (*included in Mineral Resource).

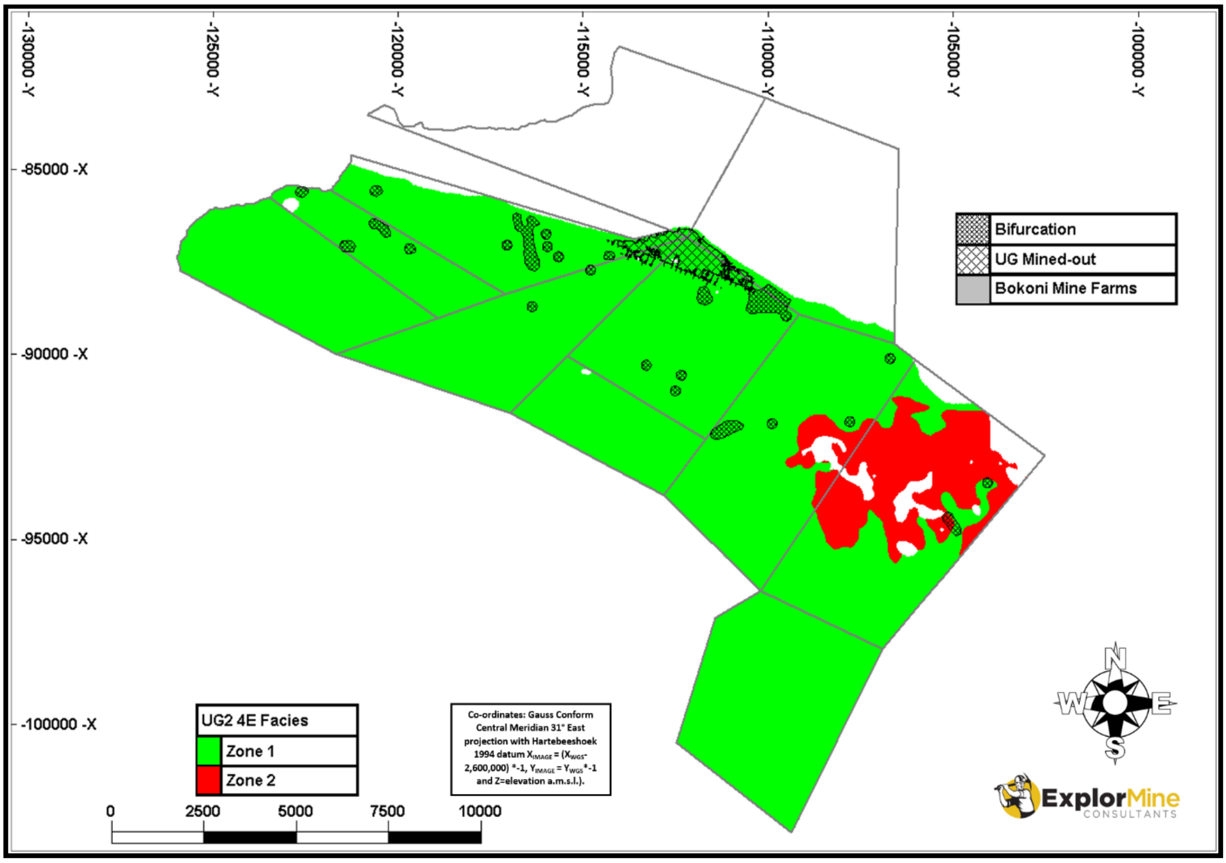


Figure 21: Geostatistical zones modelled for the UG2 Reef for Pt, Pd, Rh and Au (“4E”).

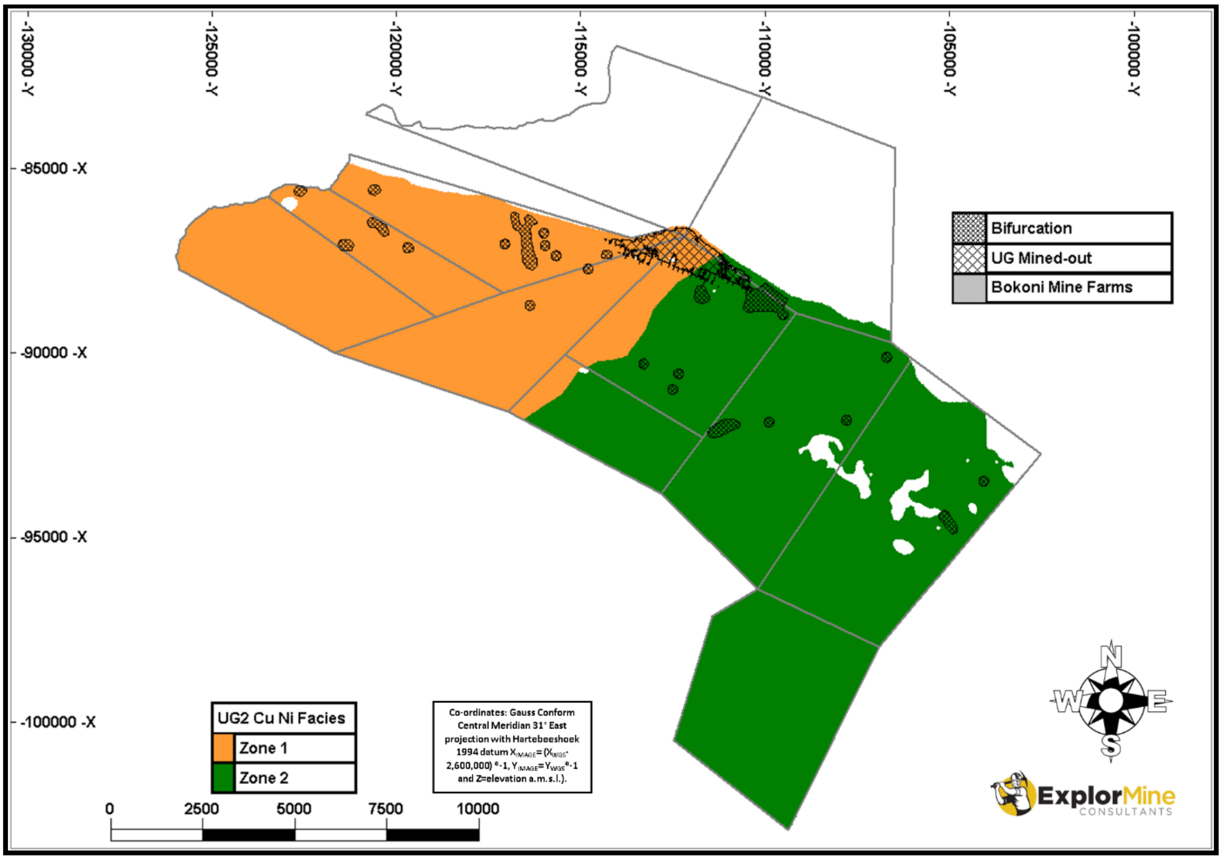


Figure 22: Geostatistical zones modelled for the UG2 Reef for Ni and Cu.

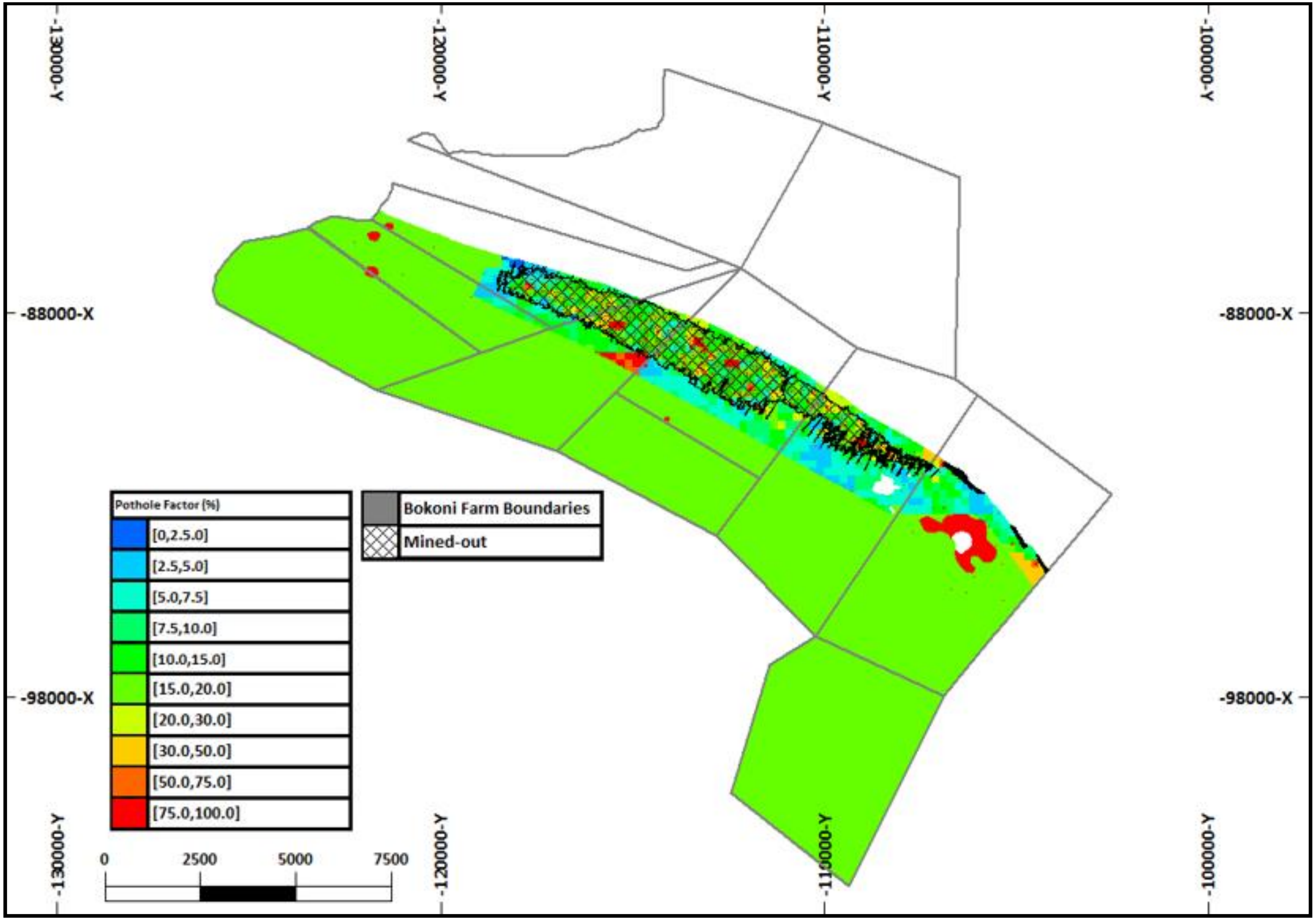


Figure 23: Estimated factor representing potential pothole loss factor for the Merensky Reef.

The identification of undulating calcite breaks ("UCB") in the hangingwall of the respective reefs is imperative to prevent fall of grounds. UCB's can be defined as pervasive and consistent undulating shallow dipping (less than 45°) discontinuities above the reef, that have calcite infilling ranging 1-3cm, not to be confused with calcite joints, which are ubiquitous throughout the Merensky and UG2 operations. Since 2016 an attempt has been made to model and estimate the risk associated with such structures (**Figure 24** and **Figure 25**). Geotechnical block models were developed to assist mine planning to avoid such areas or adjust the mining method and / or support in these high-risk areas. Where a UCB is within 0.5 m of a respective TRC, there is a high risk of a fall of ground.

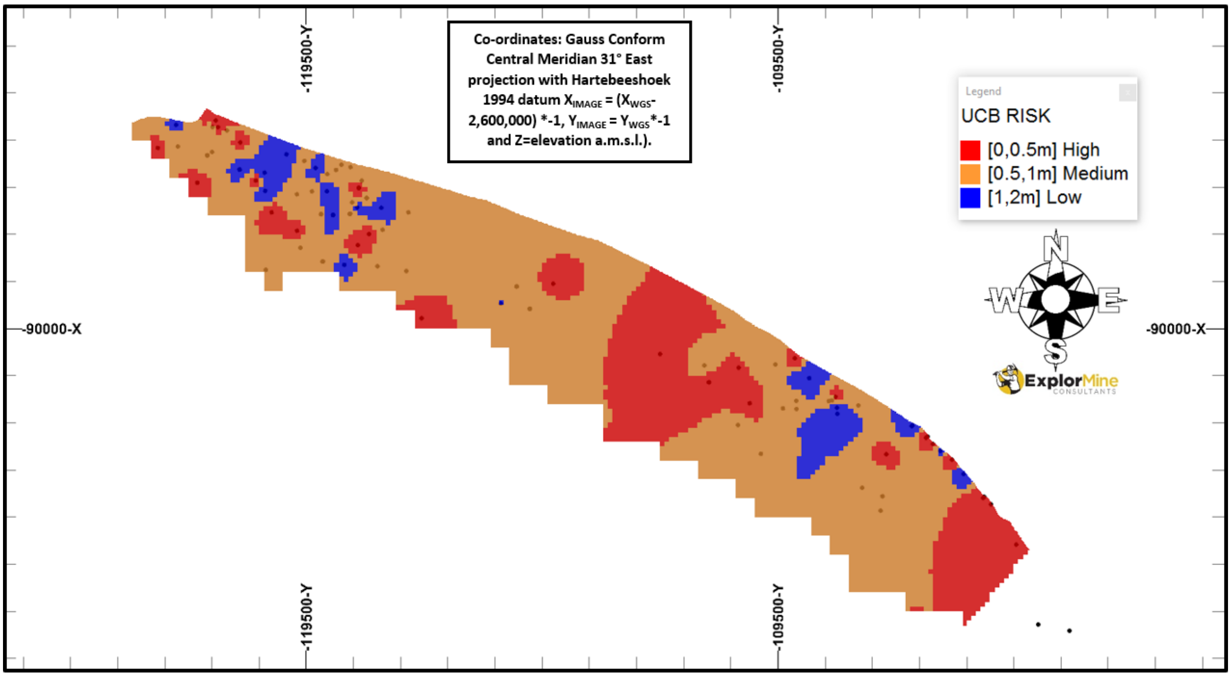


Figure 24: MR UCB geotechnical risk block model.

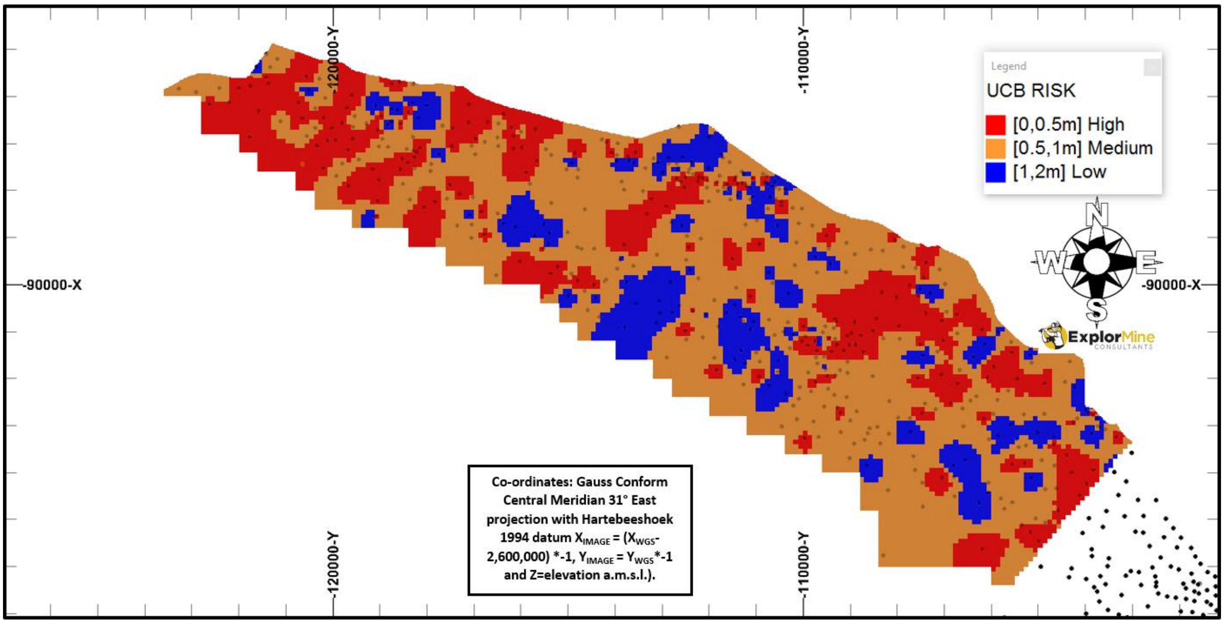


Figure 25: UG2 UCB geotechnical risk block model.

The L1 is a chromite stringer that lies in the hangingwall of the UG2 reef. Where this stringer is within 0.1 m of the UG2 TRC there is a high risk of a fall of ground. The middling between the L1 and the UG2 TRC was estimated to assist mine planning to avoid such areas or adjust the mining method and / or support in these high-risk areas (**Figure 26**).

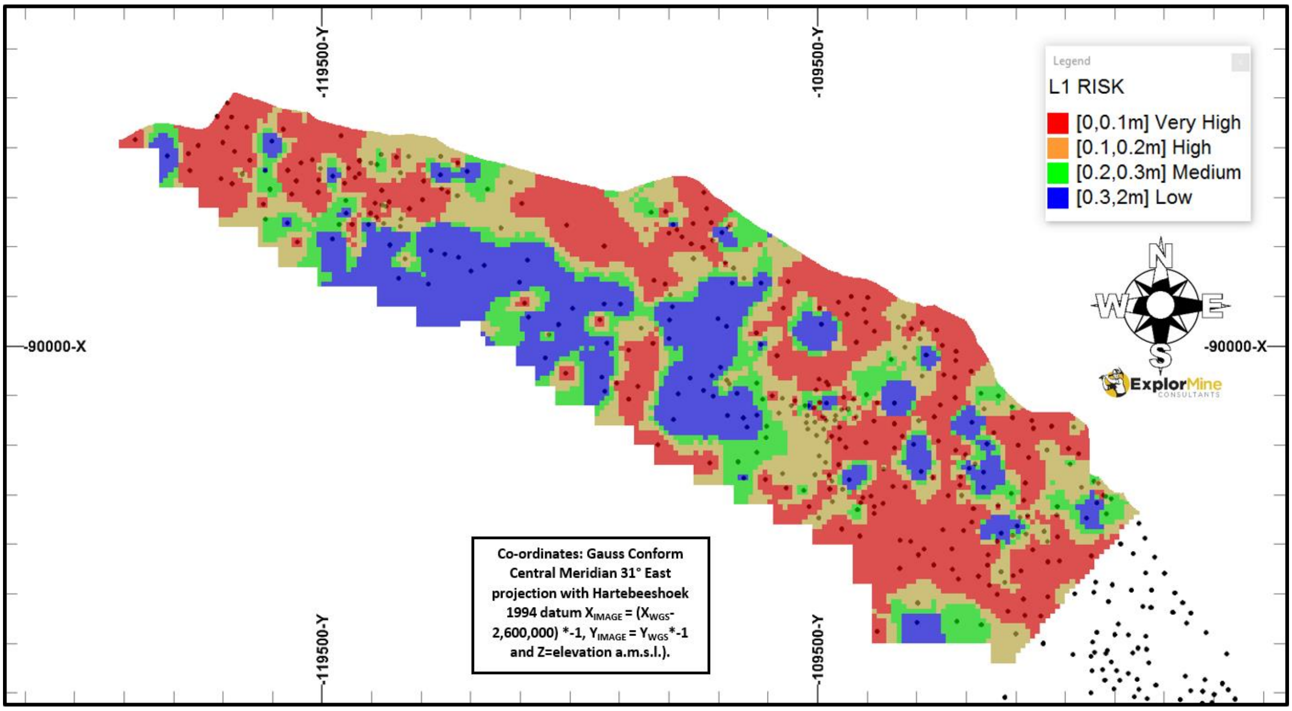


Figure 26: UG2 L1 geotechnical risk model.

14.2. Mineral Resource Estimation – Summary of Geostatistical Process

A complete re-evaluation of the Mineral Resources has been performed based on a database that has been completely checked and corrected for entry errors. ExplorMine have accepted that the initial database supplied by Atlatsa and Anglo Platinum has been validated in terms of the standard QA / QC protocols. The estimations are intended to perform an evaluation that will give a spatial expression of value distribution, so that the extraction of the PGM Mineral Resources can be planned efficiently. Hangingwall and footwall mineralization was estimated into 10 cm layers, so mine management can decide what mining widths are most lucrative.

The 4E g/t value and attendant variography was utilised for the purposes of Mineral Resource categorisation because it is more representative of the elements present. Irrelevant hangingwall and footwall data was coded out (zone coding) of the data before initial composites were made for the purpose of experimental variograms. These limits were defined by obvious breaks in 4E g/t mineralisation.

The traditional acceptance of the hangingwall and footwall chromitite seams as markers for the limits of the Merensky Reef zone was continued as a guide for this evaluation, but studies show that these chromitite markers are transgressive across the main mineralised zone in parts of the ore body. This is probably the one of the reasons for exceedingly poor correlations (**Figure 27** and **Figure 28**) between the grade of the elements and the widths of the reef zone. This in turn produced erratic steep experimental variograms of the accumulations with a large nugget component, the use of which in the weighting process for the kriging, would have produced estimates akin to implementing the arithmetic mean. The decision was therefore taken in the interests of producing a model that is a true representation of the spatial distribution of grades to utilise the 4E and Pt, Pd, Rh, Au, Cu, Ni, and perpendicular length values for the experimental variograms.

A classic example of a similar situation where irrelevant width information only was available, resulting in the necessity to use the grades and widths for the variography is given in the SAIMM Monograph Series Geostatistics 1 (Lognormal de Wijsian Geostatistics for Ore Evaluation by D.G. Krige) page 49 section 3.4.3 'Metal grades versus accumulations'. Quote "A practical consideration in dealing with Prieska data is that of using copper grades (percentages) over the selected bore-hole widths instead of the theoretically correct measures of accumulations as is customary for a two-dimensional problem." A more detailed explanation of the reason for doing this follows in the reference.

Both the Merensky Reef and UG2 Reef exhibited outliers when the distributions were checked (**Figure 29** and **Figure 30**). Therefore, top and bottom capping or cutting of outliers was necessary during the generation of the experimental semi-variograms for the various variables. A theoretical explanation to the background of the methodology used for the calculation of the various parameters used for resource categorisation is given below.

Ordinary kriging was affected into a two-dimensional geological block model, which produced a two-dimensional spatial distribution of low and high grade in inclined reef structural blocks, which enables the design of single reef mining. Ordinary kriging was applied to all categories of resources.

Ordinary kriging with a search equivalent to the 1 and 1.5 times the range of the variogram model, with a minimum and maximum number of samples, determined by kriging neighbourhood studies, in the first search volume for Measured and second search volume for Indicated respectively, was done utilising variogram models from respective reefs and zones.

The minimum and maximum number of samples in the search volume was chosen to not access irrelevant samples.

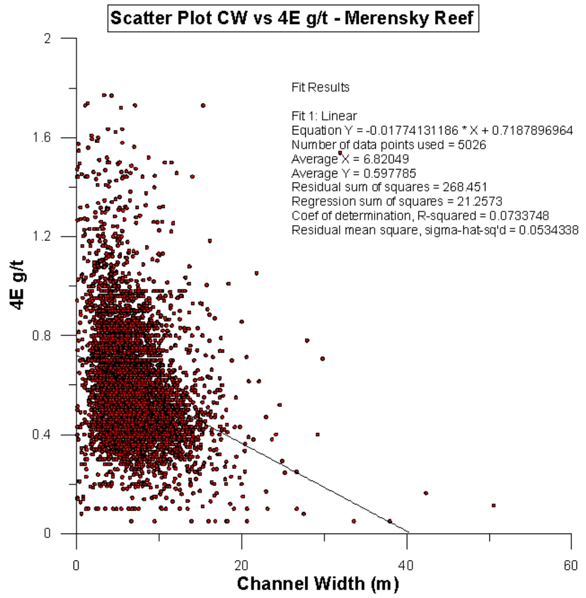


Figure 27: Scatter plot of channel width versus 4E (g/t) values for the main channel composites for the Merensky Reef.

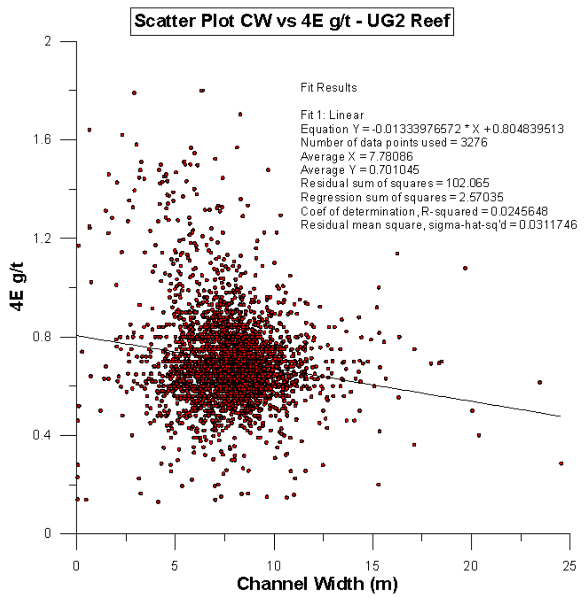


Figure 28: Scatter plot of channel width versus 4E (g/t) values for the main channel composites the UG2 (Zone 1) Reef.

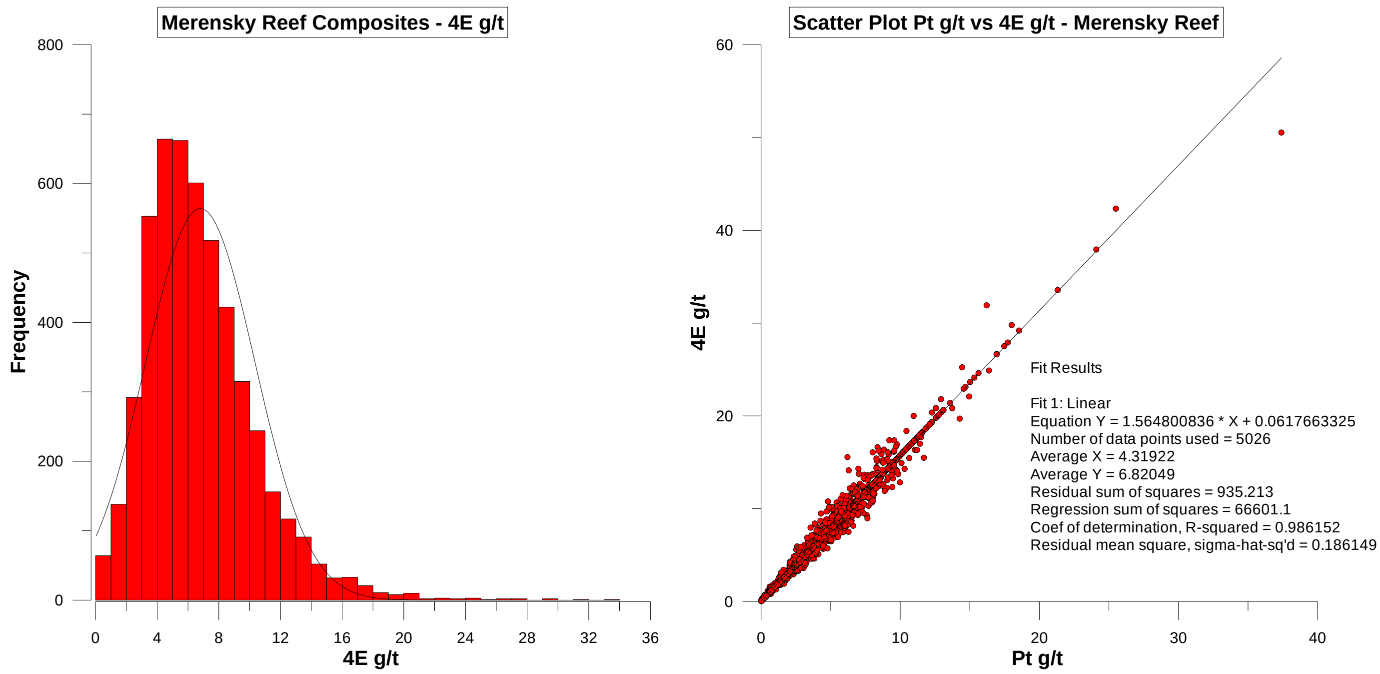


Figure 29: Examples of the routine statistical analysis performed on composite data for the Merensky composite samples.

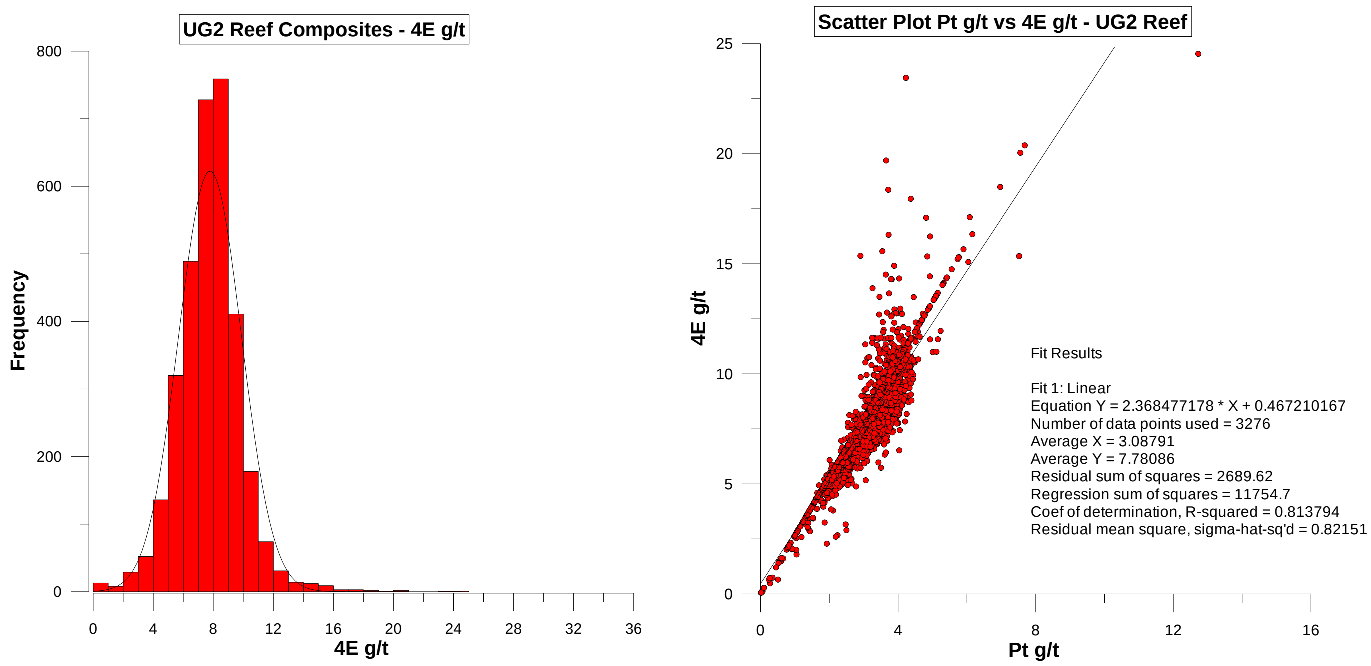


Figure 30: Examples of the routine statistical analysis performed on composite data for the UG2 composite samples.

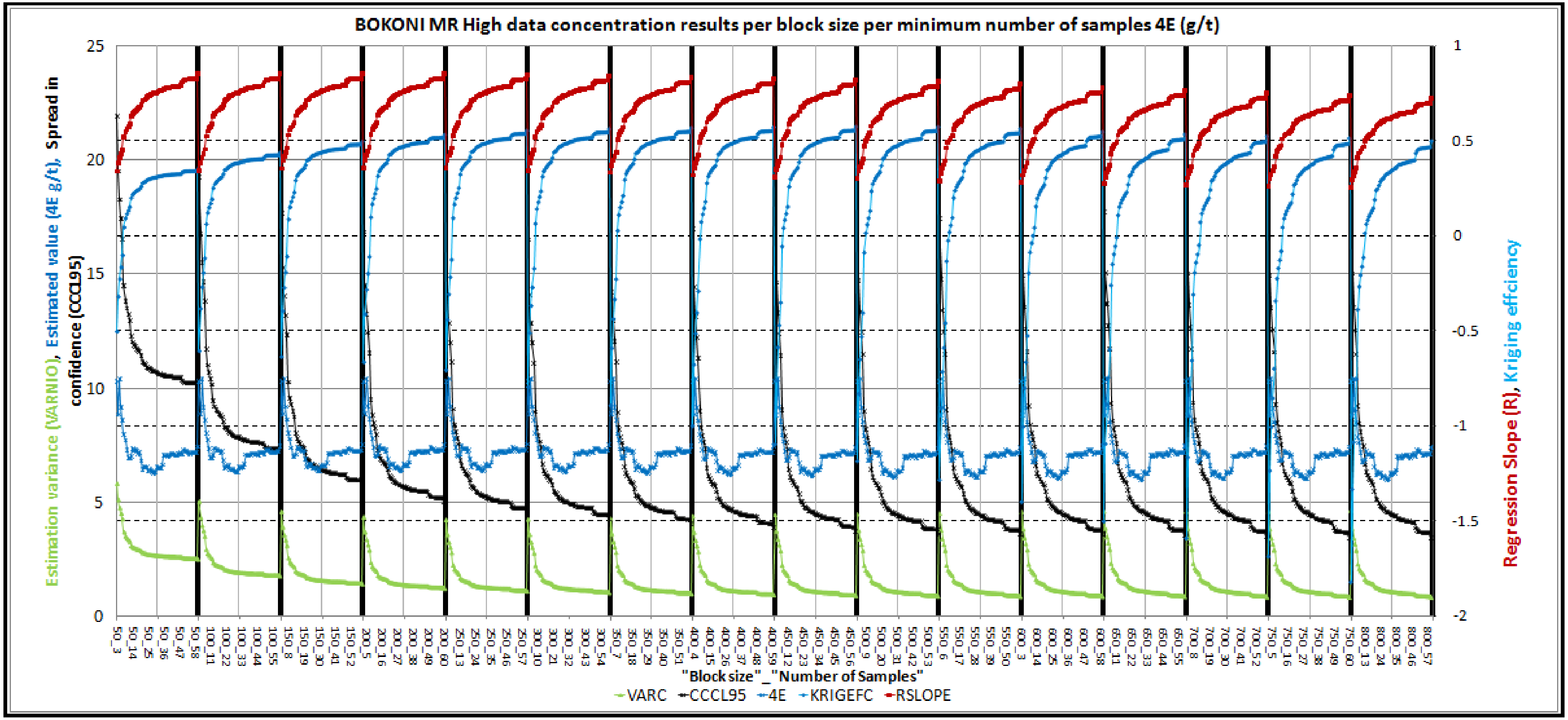


Figure 31: An example of a kriging neighbourhood study used to determine the optimal block size and minimum and maximum number of samples required for a given estimate. The graph presented is for the Merensky Reef at a point selected where there is a relative h high density of data. The interaction of various geostatistical parameters are utilised to determine the most suitable block size for the estimate.

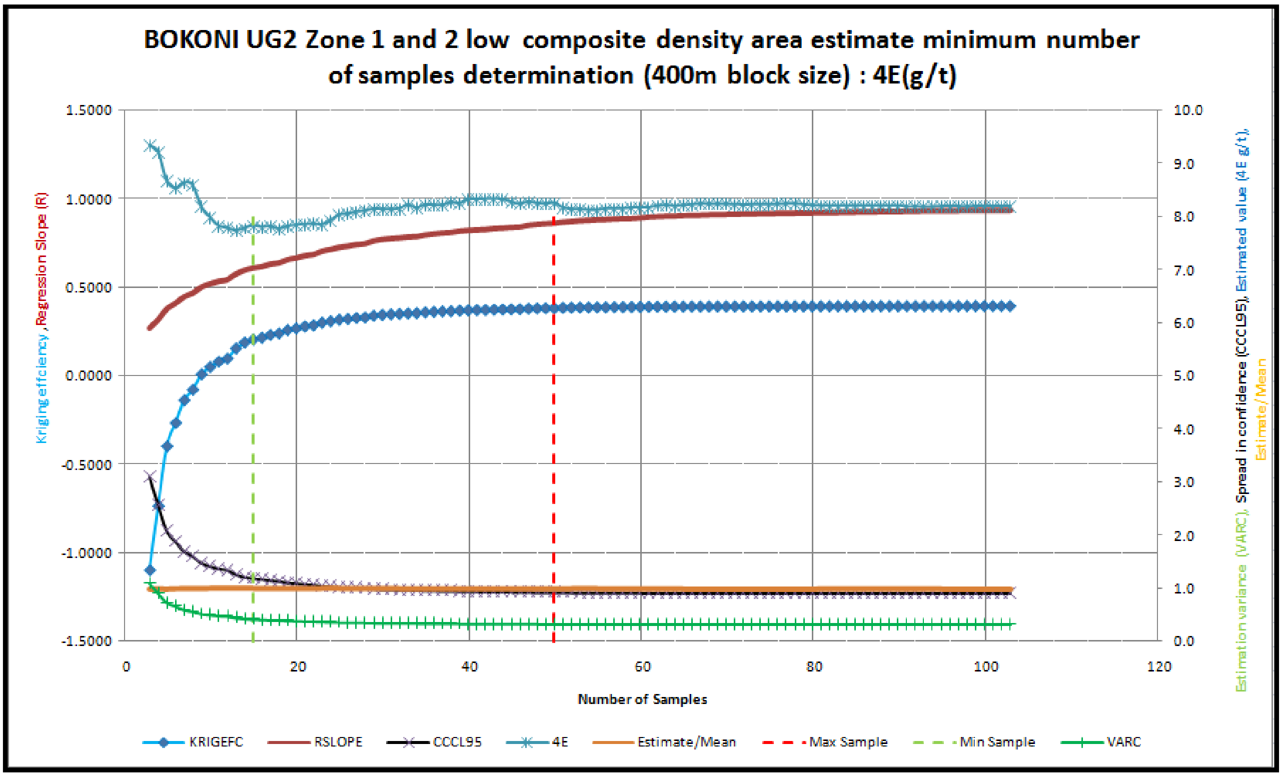


Figure 32: An example of an additional kriging neighbourhood study used to determine the minimum and maximum number of samples required for a given block size for an estimate. The graph presented is for the UG2 Reef at a point selected where there is a relative l low density of data. The interaction of various geostatistical parameters is used to determine the most suitable number of samples to be used for the search volume parameters.

A step-by-step preparation of the geostatistical database with attendant kriging parameters can be followed below:

- Additional fields were created in the data files to delineate zones defined in the UG2 Reef.
- These samples were then selected out of the database and the capping process to rid the database of all element value outliers was performed. This selection corresponded with visual examination of the tails of the skewed distributions.
- The composited database was then created based on the zone coding for 4E value and width. Outliers as defined by the distributions for the widths (cm) were capped.
- Further capping and cutting of outliers was done at this stage to fit the normal distributions.
- The variogram models for the ordinary kriging were created using the relevant reef and facies. Acceptable models were obtained on the natural variograms.
- The channel widths were estimated into the models by ordinary kriging in a similar fashion.
- The relative density database was utilised to make experimental variograms to which models were fitted for the use in geostatistical estimation of the relative density.

The optimum block size for the different resource categories was determined by completing a series of kriging neighbourhood studies for the 4E (g/t) variable for each reef.

In the example of a kriging neighbourhood study in **Figure 31** the Measured block size was fixed on the decrease in spread in confidence and the stabilisation of kriging variance. In the example of the selection of minimum and maximum samples in **Figure 32** the maximum samples were selected on the stabilisation of the kriging efficiency and the minimum number of samples on spread in confidence limits minimisation. In all instances the interaction of all the calculated and estimated geostatistical parameters are considered before a selection is made.

Eight examples of modelled variograms are presented in **Figure 33** to **Figure 40**. All modelled variogram parameters are presented in Appendix C.

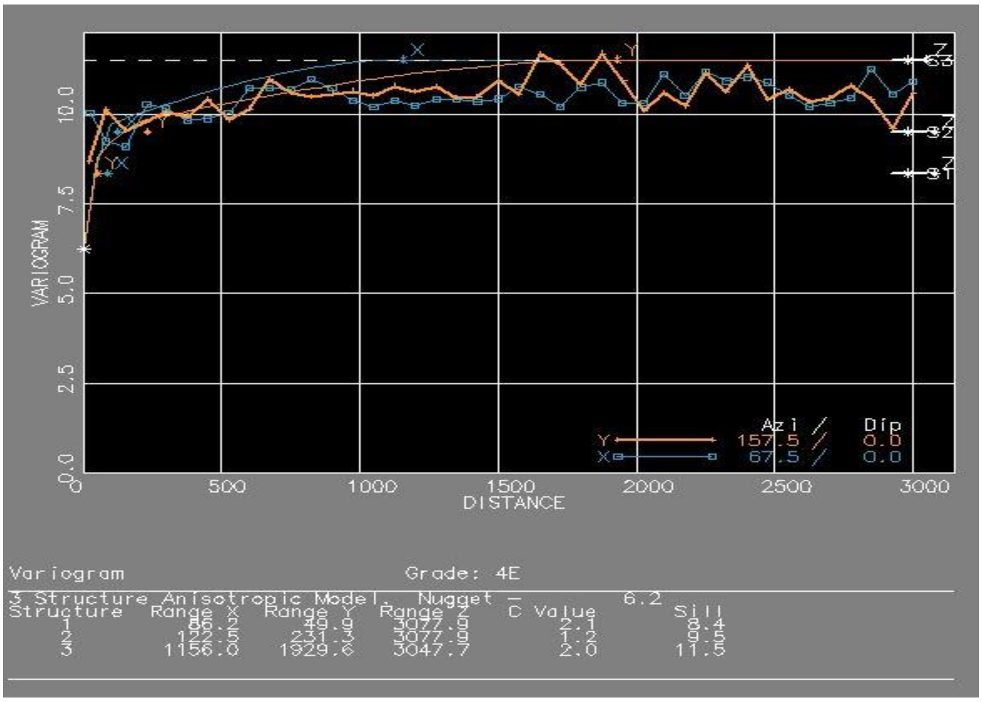


Figure 33: 4E (g/t) point variogram model for the Merensky Reef composite data.

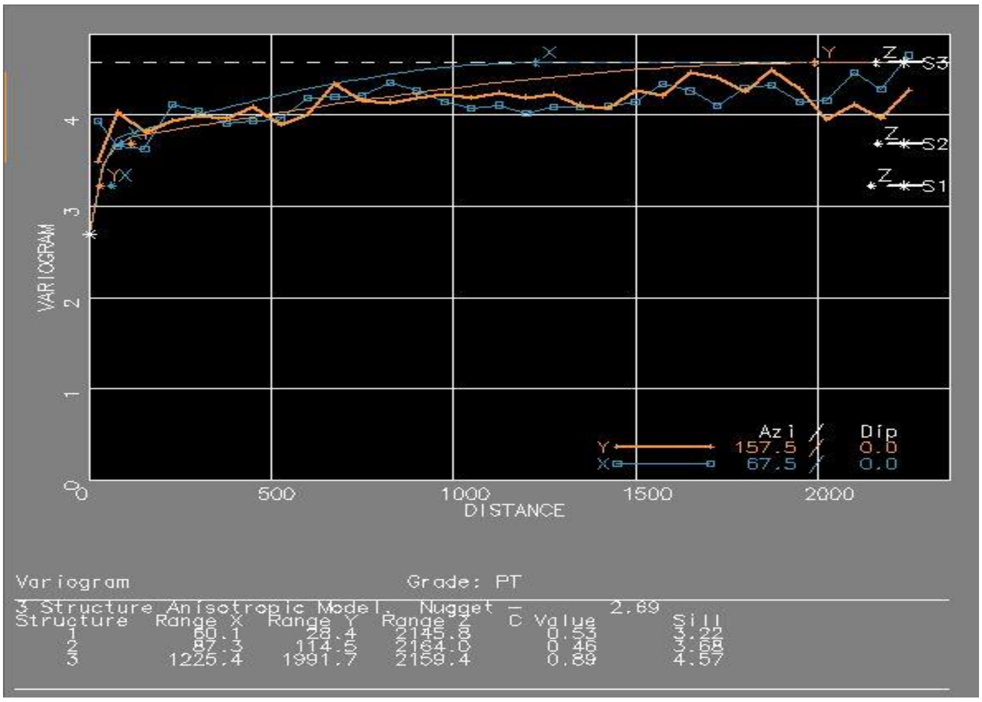


Figure 34: Pt (g/t) point variogram model for the Merensky Reef composite data.

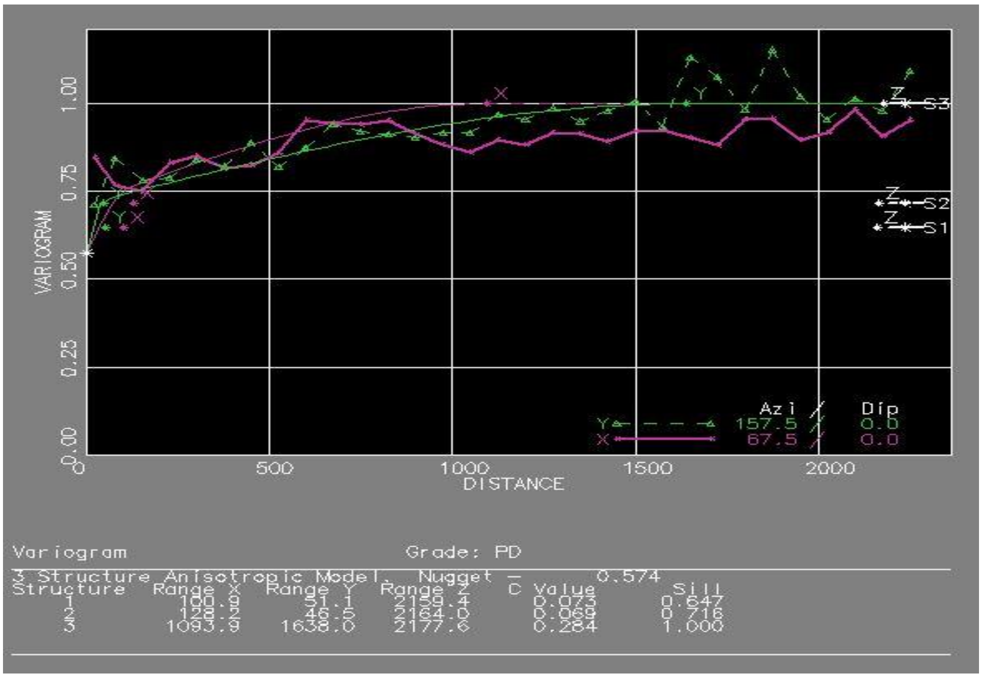


Figure 35: Pd (g/t) point variogram model for the Merensky Reef composite data.

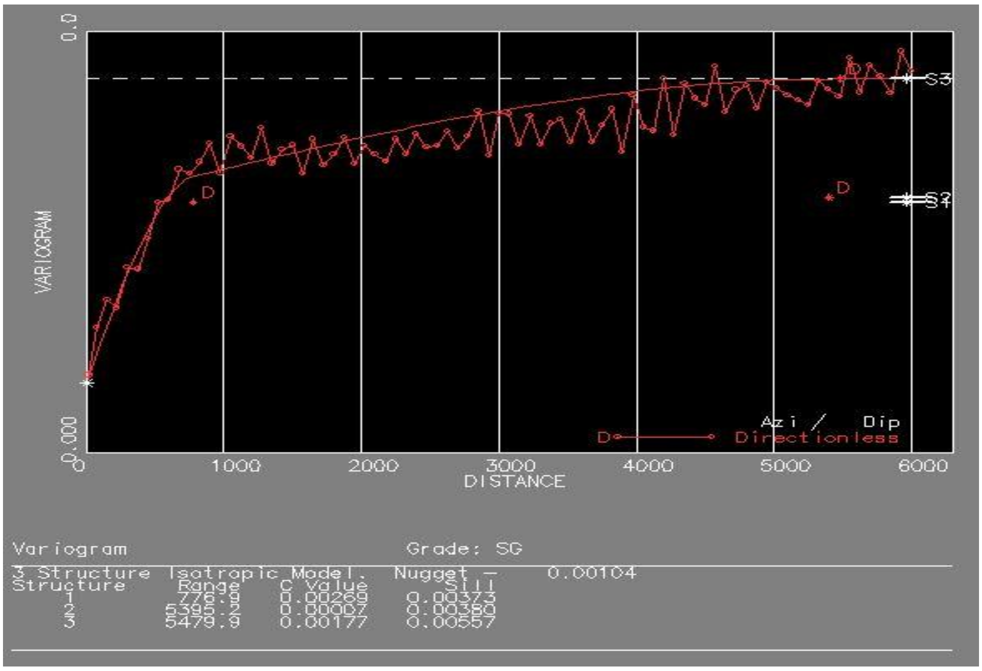


Figure 36: Density point variogram model for the Merensky Reef composite data.

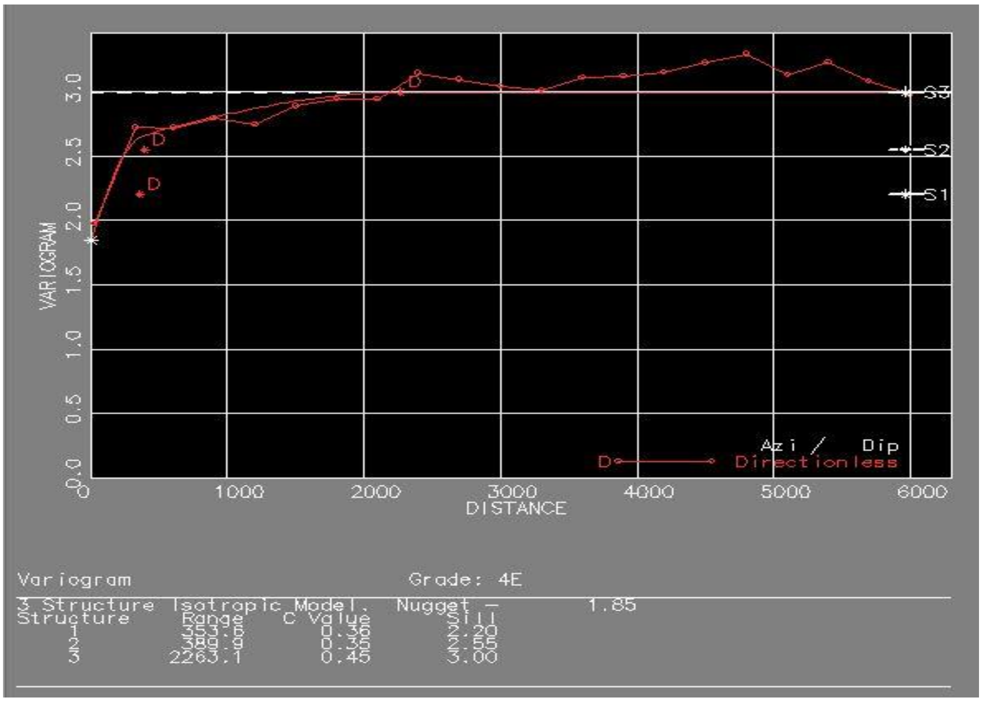


Figure 37: 4E (g/t) point variogram model for the UG2 composite data for Zone 1.

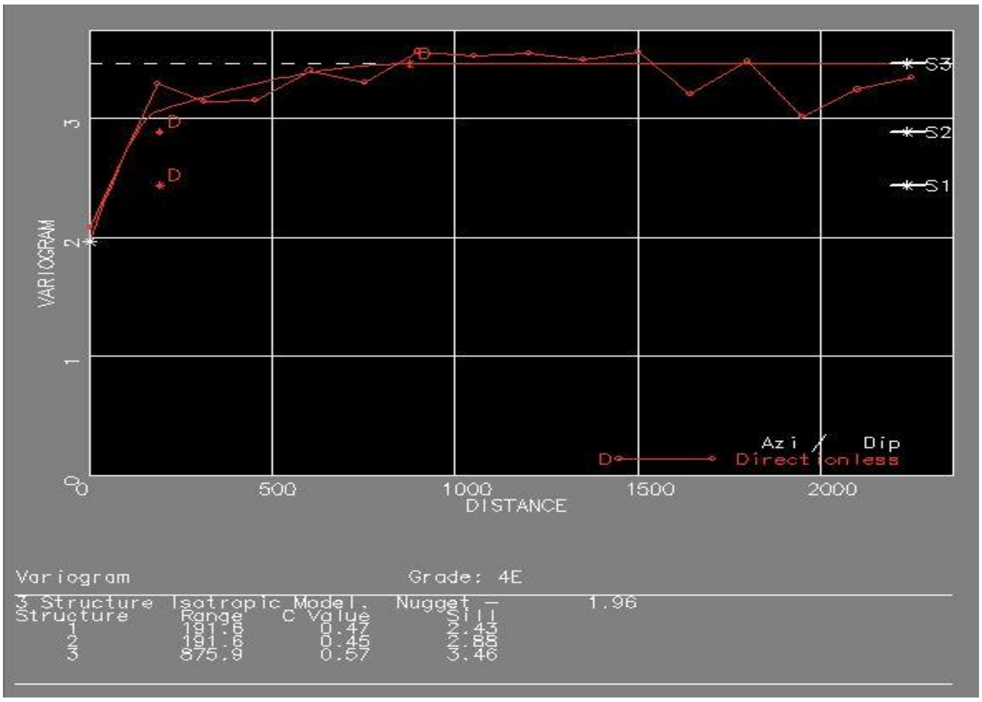


Figure 38: 4E (g/t) point variogram model for the UG2 composite data for Zone 2.

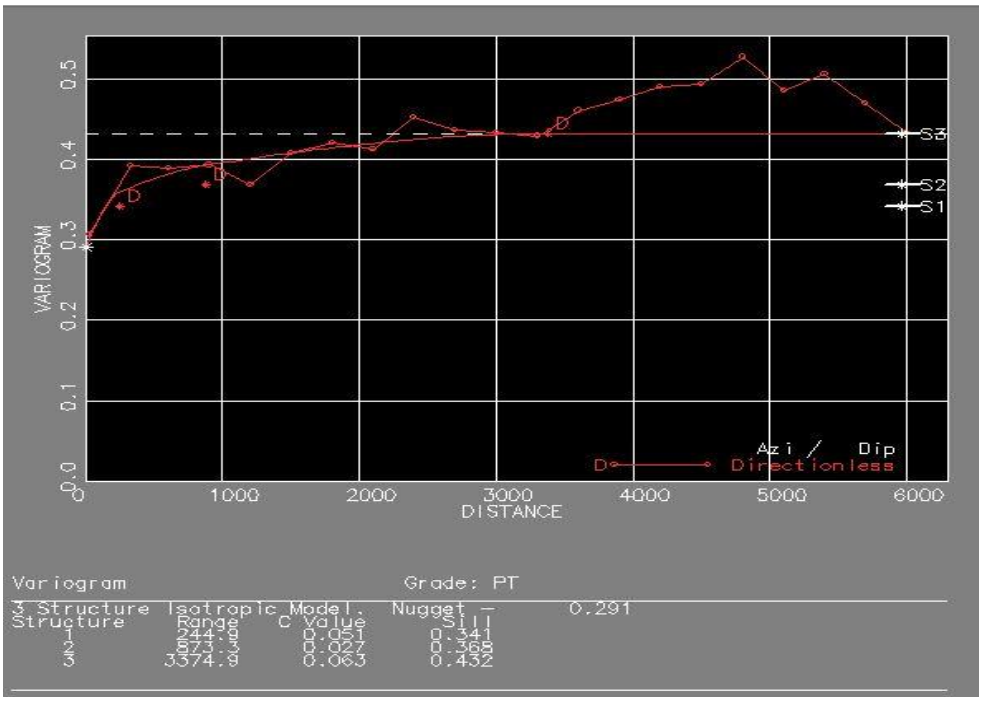


Figure 39: Pt (g/t) point variogram model for the UG2 composite data for Zone 1.

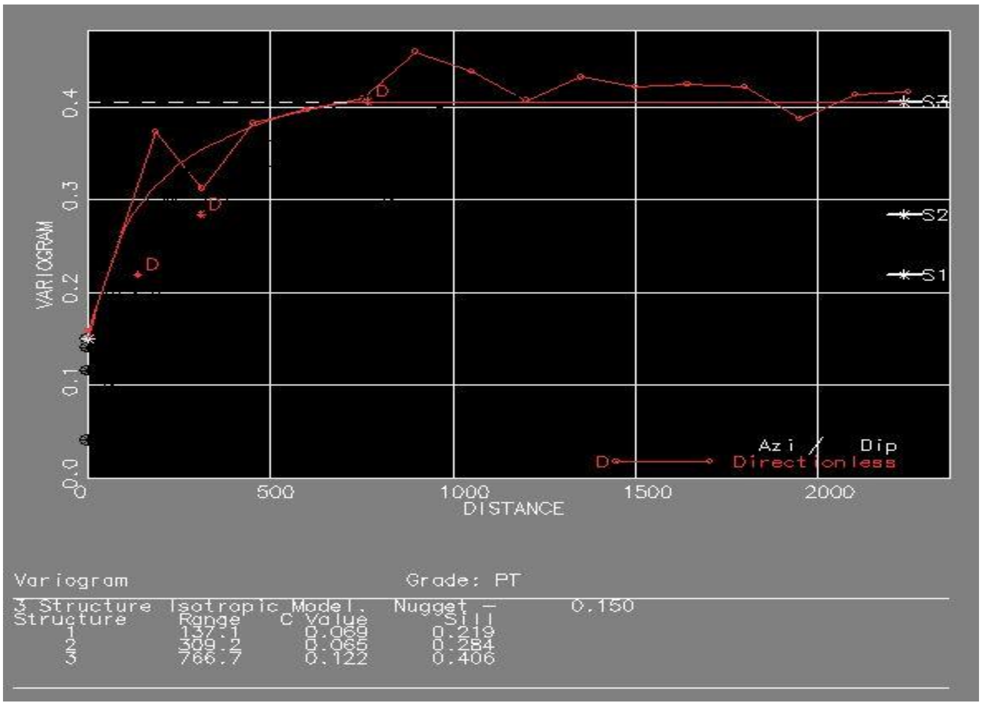


Figure 40: Pt (g/t) point variogram model for the UG2 composite data for Zone 2.

Audit trails in the form of Datamine™ JavaScript scripts document the formation of the Resource estimations, including all the data transforms. Each reef model estimate was inspected for conformity with the composite data used for the respective estimate.

14.3. Depletion of Model

The estimation process as detailed resulted in a global non-depleted Resource model. The outlines of mining on the Merensky and UG2 Reef in the Bokoni Mine area were therefore applied to deplete each modelled reef horizon.

14.4. Model Reconciliation

ExplorMine conducted two types of data-model reconciliation.

In the estimations completed, each block or cell contained a kriged estimate and an arithmetic mean estimate sourced from the relevant data. These estimates were regressed, and the results are presented in **Table 13**. All the regressions indicated high to moderate degrees of regression.

The second type of reconciliation conducted was swath analysis. Block model estimation reconciliation was completed by comparing the average drillhole composite values versus the block model estimate for 1,000 m swaths orientated approximately parallel to the strike and dip of the Merensky and UG2 Reef surfaces.

The swath analysis for each reef was completed with combined Mineral Resource categories on the primary block model and for the corresponding first hangingwall block model and first three footwall block models.

The swath analysis included all estimated g/t values for 4E, Pt, Pd, Rh, Au, Cu, Ni, and density ("SG").

Table 13: Regression results (correlation coefficient "R") for Ordinary kriged and arithmetic mean estimates for the Merensky and UG2 Reefs.

ALL Mineral Resource Categories									
REEF	**4E**	**Pt**	**Pd**	**Rh**	**Au**	**Cu**	**Ni**	**SG**	**CW**
MR ALL	0.95	0.83	0.64	0.73	0.65	0.81	0.81	0.86	0.91
UG2 ALL	0.96	0.97	0.96	0.98	0.95	0.97	0.91	0.99	0.92

A comparison of model parent cells to composites utilised in the estimate indicates that the model parent cells produce a similar distribution. However, the tails of the distribution are reduced i.e. smoothed due to kriging estimation process (**Figure 41**). The results of the swath analysis show a good correlation between the average drillhole composite values and block model estimate per 1,000 m swath band (**Figure 42** to **Figure 45**).

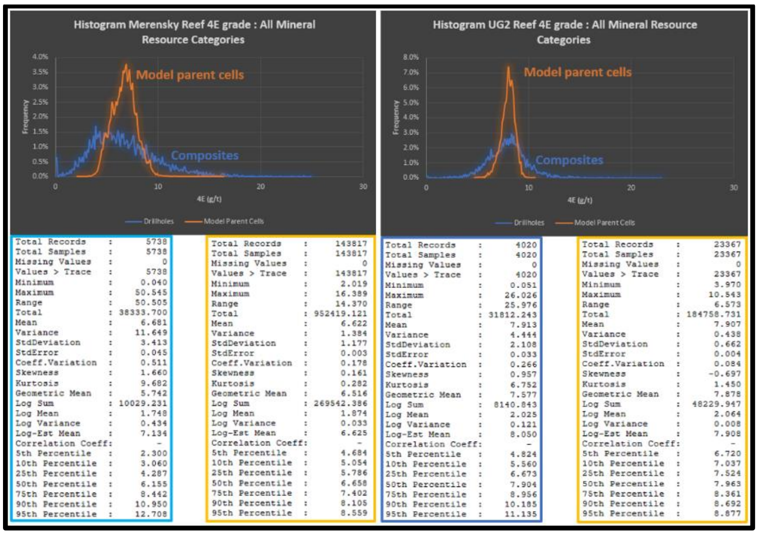


Figure 41: 4E estimated block model parent cells to composites distribution comparison.

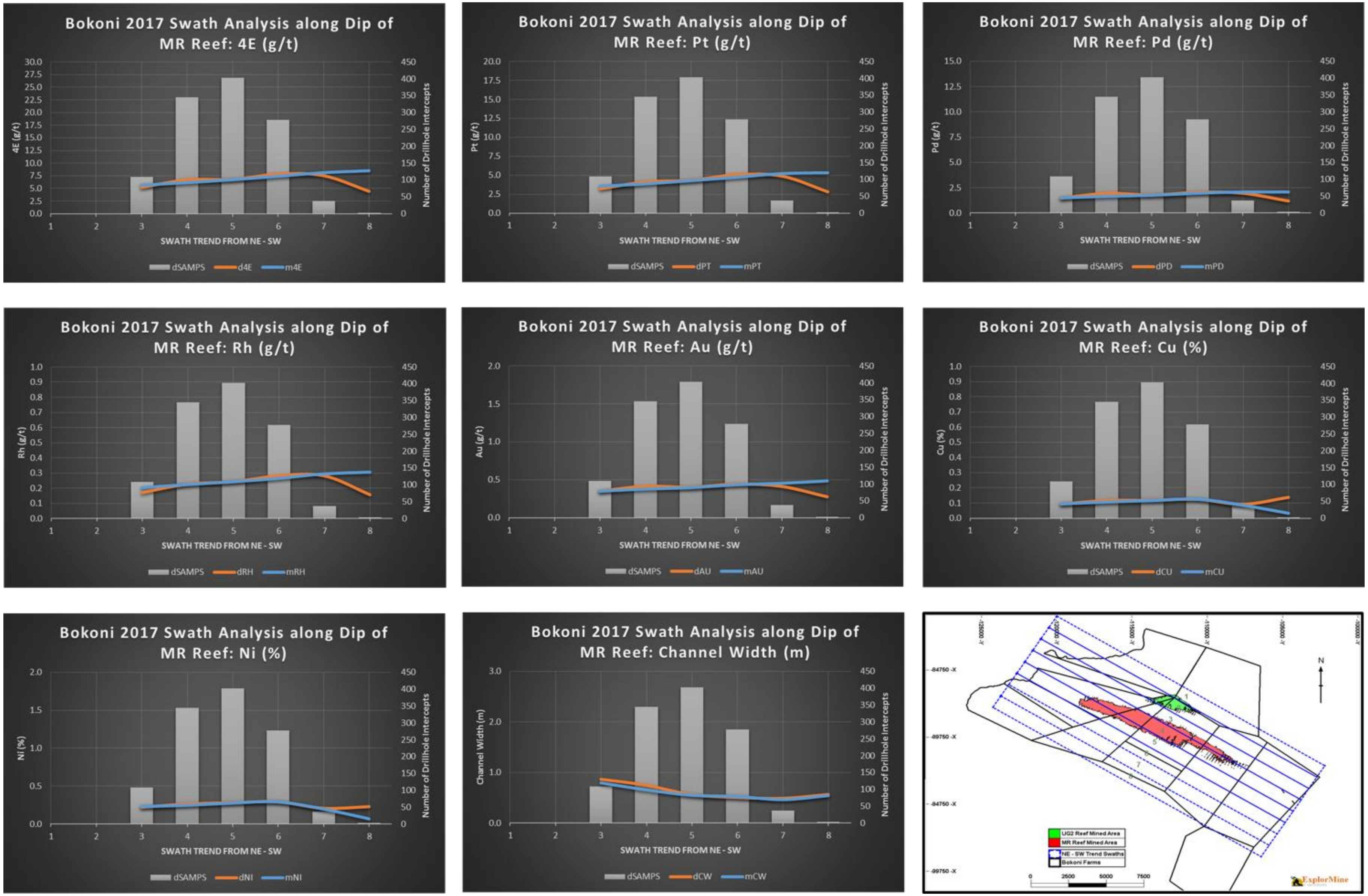


Figure 42: Results of dip swath analysis for the Merensky Reef primary block model estimate.

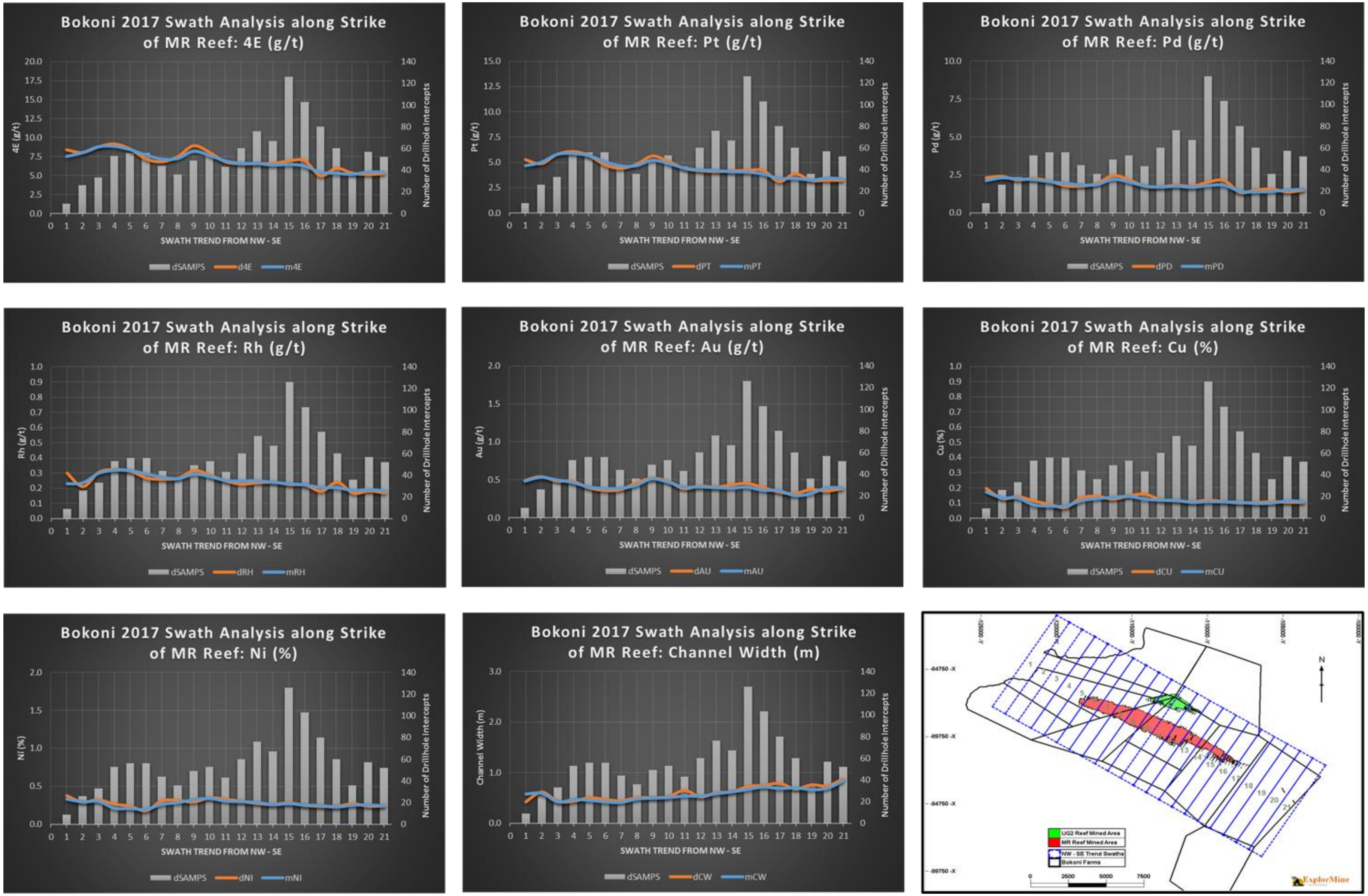


Figure 43: Results of strike swath analysis for the Merensky Reef primary block model estimate.

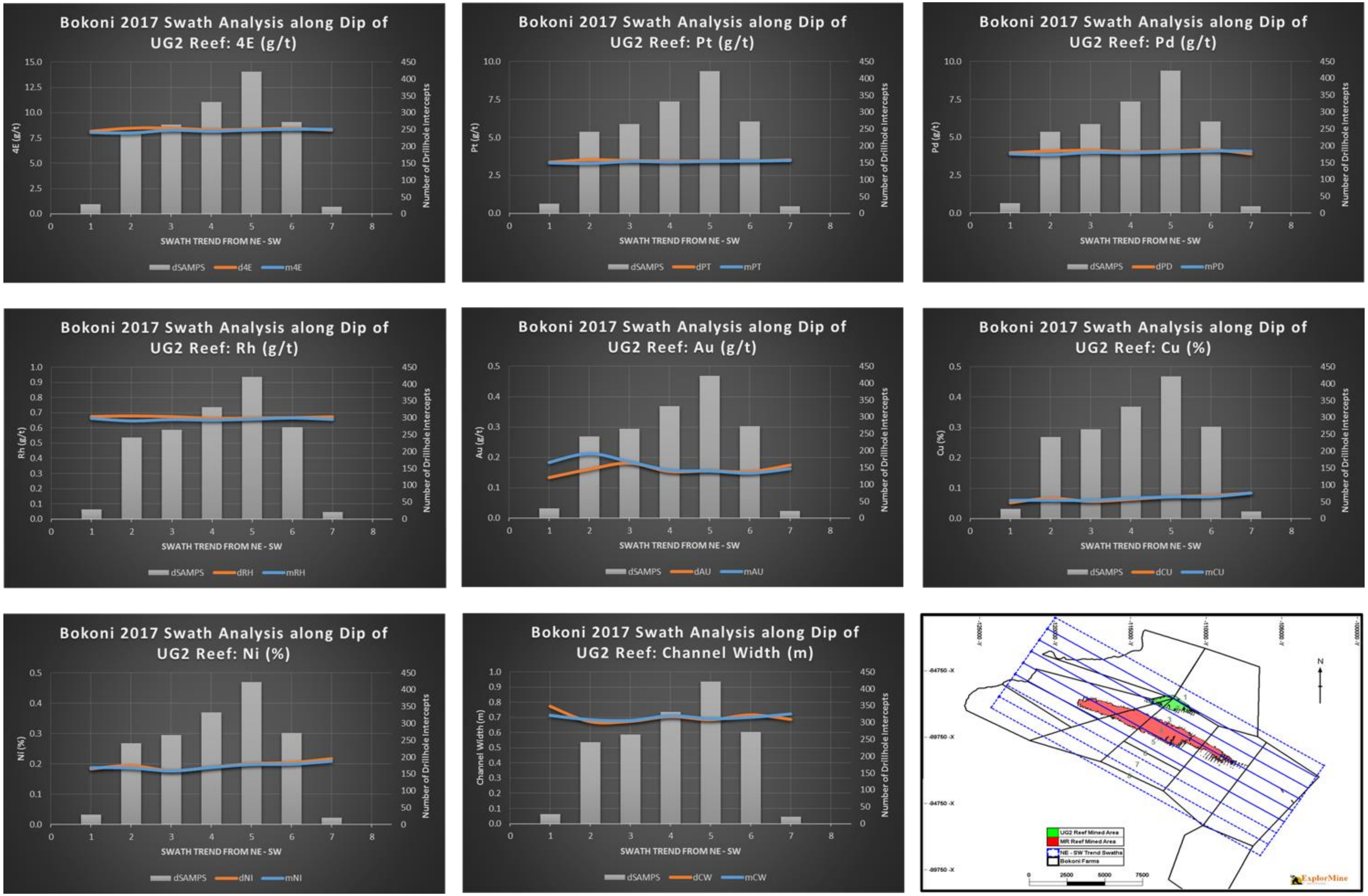


Figure 44: Results of dip swath analysis for the UG2 Reef primary block model estimate.

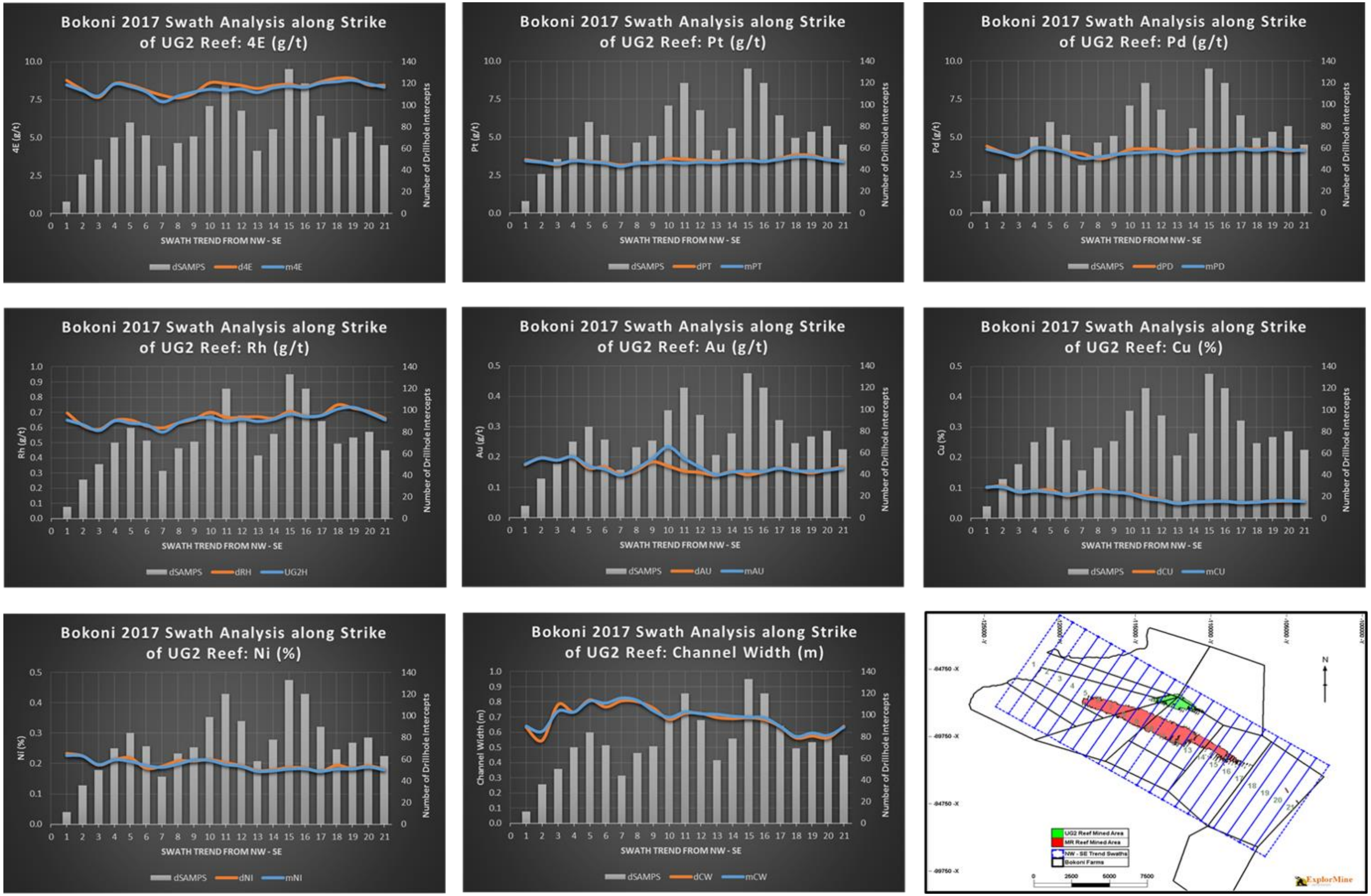


Figure 45: Results of strike swath analysis for the UG2 Reef primary block model estimate.

14.5. Mineral Resource Categorisation

Delineation of Mineral Resource category was determined through a matrix of categorisation criterion.

In the first instance, geological continuity is required, and is provided by the geological modelling process as described above. Secondly a kriging neighbourhood study determined the minimum number of samples required for a Measured, Indicated or Inferred estimate. Thirdly the search volume number utilised in the estimate of each block determines whether that estimate can be considered for classification as Measured or Indicated material. The first search volume demarcated a potential Measured Mineral Resource, which equates to the range of the respective 4E g/t modelled variogram, the second search volume equivalent to 1.5 times the range of the respective 4E g/t modelled variogram demarcated a potential Indicated Mineral Resource and search volumes greater than 1.5 times search volume demarcated Inferred Mineral Resources.

Finally Measured Mineral Resources were demarcated by a geostatistical R-Slope of greater than 0.82 for the Merensky Reef and greater than 0.85 for the UG2 Reef (this equated to an average kriging efficiency of 0.57 for the Merensky and 0.53 for the UG2 Reefs respectively). Indicated Mineral Resources were defined by an R Slope of 0.50 and 0.56 for the Merensky and UG2 Reefs respectively (this equated to average kriging efficiencies of 0.28 and 0.35 for the Merensky and UG2 Reefs respectively). The remainder of the estimate was classified as Inferred material.

The paylimits used to declare the Mineral Resource were calculated for each investment centre and are presented in **Table 14** and **Table 15** for the Merensky and UG2 Reefs respectively. Paylimits of this order is well within accepted PGE producing mines' norms. The Mineral Resource categorisation and totals are shown in **Table 16** for the Merensky and for UG2 Reefs. **Table 17** details the proportion of underground and opencast Merensky Reef Mineral Resources. The opencast area is only located on the farm Klipfontein and has been taken to a 50m maximum high-wall.

An optimised mining width or cut has been applied to the Mineral Resource blocks to calculate a realistic in-situ mining grade in grams per tonne by selecting increments of 10 cm from the footwall models which satisfy a minimum economic hurdle or paylimit. The MR has a standard 10 cm hangingwall included due to geotechnical reasons, in the optimised width based on current underground mining practice. The UG2 has 5 cm hangingwall included in the optimised cut, as this is the expected overbreak during mining operations.

An algorithm is calculated which compares incremental composites to one another. For underground Resources the composite width which maximizes content and satisfies the economic hurdle is selected with a minimum width of 90 cm for both the Merensky and UG2 Reefs, and a maximum of 115 cm for the Merensky Reef and 100 cm for the UG2 Reef respectively. The minimum width is the lowest possible mining cut and the maximum widths are based on sensitivity studies completed that determine the relationship between tonnage and ounces with an increase in mining width.

Similarly, the tonnages have been adjusted for non-productive pothole areas and areas that have been excluded from mining due to geotechnical reasons. Tonnage has been further reduced through geological loss adjustments as given in **Table 12**.

Reef areas which occur below 2,400 m have been removed from the Mineral Resource classification as the virgin rock temperature at these depths is above 75^{o} C. Ventilation and mining technology and related costs currently prevent mining operations at these temperatures.

ExplorMine Consultants is of the opinion that the Bokoni Mine Mineral Resource estimate on the Merensky and the UG2 meets the requirement of "reasonable prospects for eventual economic extraction" and in ExplorMine Consultants opinion is representative of the 4E + Cu / Ni mineralisation as its occurs in the Bokoni Mine area.

The distribution of Mineral Resource categories is shown in **Figure 49** for the Merensky Reef. The estimated distributions of 4E (g/t), Pt (g/t), Pd (g/t), Rh (g/t), Au (g/t), Cu (%), Ni (%) and density (g/cm^3) are presented in **Figure 50** to **Figure 57** for the Merensky Reef. **Figure 58** shows the estimated channel width distribution for the primary block model i.e. reef channel.

Table 14: The determination of a 4E paylimit used for Merensky Reef per Investment Centre (Cost 3 includes working cost only).

Merensky			
Description	Prill Split	Unit	Value
Price Pt	0.60	US$/oz	1,171
Price Pd	0.30	US$/oz	798
Price Rh	0.04	US$/oz	1,424
Price Au	0.06	US$/oz	1,184
Basket Price 4E		US$/oz	1,070
Exchange Rate		R/US$	14.50
Basket Price		R/4E oz	14,733
Conversion Factor		oz/kg	32.15
Price		R/kg	473,681
Price		R/g	473.68
Plant Recovery		%	88.95%
Unit	Brakfontein		
Cost 3			
Cost 3 - R/t			645
Pay-limit - g/t			1.43
Pay-limit after recovery - g/t			1.53
Cost 4			
Cost 4 - R/t			728
Pay-limit - g/t			1.62
Pay-limit after recovery - g/t			1.73

Table 15: The determination of a 4E paylimit used for UG2 Reef per Investment Centre (Cost 3 includes working cost only).

UG2			
Description	Prill Split	Unit	Value
Price Pt	0.42	US$/oz	1,171
Price Pd	0.48	US$/oz	798
Price Rh	0.09	US$/oz	1,424
Price Au	0.02	US$/oz	1,184
Basket Price 4E		US$/oz	1,016
Exchange Rate		R/US$	14.50
Basket Price		R/4E oz	13,987
Conversion Factor		oz/kg	32.15
Price		R/kg	449,700
Price		R/g	449.70
Plant Recovery		%	86.49%
Unit	Middelpunt		
Cost 3			
Cost 3 - R/t			557
Pay-limit - g/t			1.24
Pay-limit after recovery - g/t			1.43
Cost 4			
Cost 4 - R/t			627
Pay-limit - g/t			1.39
Pay-limit after recovery - g/t			1.61

The distribution of Mineral Resource categories is shown in **Figure 60** for the UG2 Reef. The estimated distributions of 4E (g/t), Pt (g/t), Pd (g/t), Rh (g/t), Au (g/t), Cu (%), Ni (%) and density (g/cm^3) are presented in **Figure 61** to **Figure 68** for the UG2 Reef. **Figure 69** shows the estimated channel width distribution for the primary block model.

Table 16: Mineral Resource estimates for the Merensky Reef and UG2 Reef at Bokoni Mine. A 4E paylimit for the Merensky and UG2 Reefs respectively has been applied. (Tonnes and element kilogrammes have been rounded-off to the appropriate level of accuracy). The estimate is inclusive of any Mineral Reserve declared. The 2016 ExplorMine Mineral Resource estimate has been included for comparison.

		Total 2017[1,2]				Total 2016[2,3]									
Mineral Resource Category[#]	**Reef Type**	**Tonnes (million)**	**Grade 4E (g/t)[1]**	**4E Kg's ('000)**	**4E (Moz)**	**Tonnes (million)**	**Grade 4E (g/t)**	**4E Kg's ('000)**	**4E (Moz)**	**Pt grade (g/t)**	**Pd grade (g/t)**	**Rh grade (g/t)**	**Au grade (g/t)**	**Cu grade (%)**	**Ni grade (%)**
Measured	MR	92.8	4.82	447.1	14.4	98.1	4.83	474.0	15.2	2.97	1.37	0.17	0.30	0.08	0.21
Indicated	MR	47.8	4.85	231.7	7.4	48.3	4.85	234.4	7.5	2.98	1.39	0.17	0.30	0.08	0.20
Measured + Indicated	**MR**	140.6	4.83	678.8	21.8	146.4	4.84	708.4	22.8	2.97	1.38	0.17	0.30	0.08	0.21
Inferred	MR	205.8	5.02	1,033.4	33.2	200.8	5.02	1,007.7	32.4	3.08	1.45	0.18	0.30	0.08	0.20

Notes

1. No Klipfontein MR Opencast Mineral Resources declared in 2017 as not economically extractable. Economically extractable areas mined pre-2017.
2. Underground best-cut based on a minimum 90 cm and maximum 115 cm width, including 10 cm hangingwall.
3. 2016 Opencast best-cut method based on a minimum 120 cm and maximum 180 cm with 10 cm hangingwall included (based on Investment Centre approximately 50 m highwall).

		Total 2017[1,2]				Total 2016[1,2]									
Mineral Resource Category	**Reef type**	**Tonnes (million)**	**Grade 4E (g/t)**	**4E Kg's ('000)**	**4E (Moz)**	**Tonnes (million)**	**Grade 4E (g/t)**	**4E Kg's ('000)**	**4E (Moz)**	**Pt grade (g/t)**	**Pd grade (g/t)**	**Rh grade (g/t)**	**Au grade (g/t)**	**Cu grade (%)**	**Ni grade (%)**
Measured	UG2	198.6	6.43	1,277.9	41.1	198.9	6.45	1,282.9	41.2	2.65	3.13	0.52	0.13	0.05	0.17
Indicated	UG2	92.3	6.57	606.5	19.5	92.2	6.58	607.1	19.5	2.71	3.21	0.53	0.13	0.05	0.17
Measured + Indicated	**UG2**	290.9	6.48	1,884.4	60.6	**291.1**	**6.49**	**1,890.0**	**60.8**	2.67	3.15	0.52	0.13	0.05	0.17
Inferred	UG2	174.6	6.71	1,171.1	37.7	173.8	6.71	1,165.7	37.5	2.73	3.31	0.54	0.12	0.06	0.18

Notes

1. Marginal paylimit applied to UG2HW and UG2FW for UG2 for best-cut generation, per Investment Centre.
2. Underground best-cut based on a minimum 90 cm and maximum 100 cm width, including 5 cm hangingwall.

Table 17: Mineral Resource estimate for the Merensky Reef for the Klipfontein Opencast Project. A 4E paylimit for the Merensky Reef has been applied. (Tonnes and element kilograms have been rounded-off to the appropriate level of accuracy). The estimate is inclusive of any Mineral Reserve declared. The 2016 ExplorMine Mineral Resource estimate has been included for comparison.

		Total 2017[1 2 3]				Total 2016[1 2 3]									
Mineral Resource Category[#]	**Reef Type**	**Tonnes (million)**	**Grade 4E (g/t)**	**4E Kg's ('000)**	**4E (Moz)**	**Tonnes (million)**	**Grade 4E (g/t)**	**4E Kg's ('000)**	**4E (Moz)**	**Pt grade (g/t)**	**Pd grade (g/t)**	**Rh grade (g/t)**	**Au grade (g/t)**	**Cu grade (%)**	**Ni grade (%)**
Measured	MR	92.8	4.82	447.1	14.4	96.0	4.86	466.9	15.0	2.97	1.37	0.17	0.30	0.08	0.21
Indicated	MR	47.8	4.85	231.7	7.4	48.3	4.85	234.4	7.5	2.98	1.39	0.17	0.30	0.08	0.20
Measured + Indicated	**MR**	140.6	4.83	678.8	21.8	**144.3**	**4.86**	**701.3**	**22.5**	2.97	1.38	0.17	0.30	0.08	0.21
Inferred	MR	205.8	5.02	1,033.4	33.2	200.8	5.02	1,007.7	32.4	3.08	1.45	0.18	0.30	0.08	0.20

Notes

1. Klipfontein Merensky Reef opencast excluded.
2. Marginal paylimit applied to MRHW and MRFW 4E for best-cut generation, per Investment Centre.
3. Underground best-cut based on a minimum 90 cm and maximum 115 cm width, including 10 cm hangingwall.

		Total 2017[1]				Total 2016[2 3]									
Mineral Resource Category – Opencast	**Reef type**	**Tonnes (million)**	**Grade 4E (g/t)[1]**	**4E Kg's ('000)**	**4E (Moz)**	**Tonnes (million)**	**Grade 4E (g/t)**	**4E Kg's ('000)**	**4E (Moz)**	**Pt grade (g/t)**	**Pd grade (g/t)**	**Rh grade (g/t)**	**Au grade (g/t)**	**Cu grade (%)**	**Ni grade (%)**
Measured	MR					2.1	3.38	7.1	0.228						
Indicated	MR														
Measured + Indicated	**MR**					**2.1**	**3.38**	**7.1**	**0.228**						
Inferred	**MR**														

Notes

1. No Klipfontein MR Opencast Mineral Resources declared as not economically extractable. Economically extractable areas mined pre-2017.
2. Marginal paylimit applied to MRHW and MRFW 4E for best-cut generation, per respective Investment Centre.
3. Opencast 2016 best-cut based on a minimum 120 cm and maximum 180 cm width, including 10 cm hangingwall (based on Investment Centre paylimit and 50 m maximum high-wall).

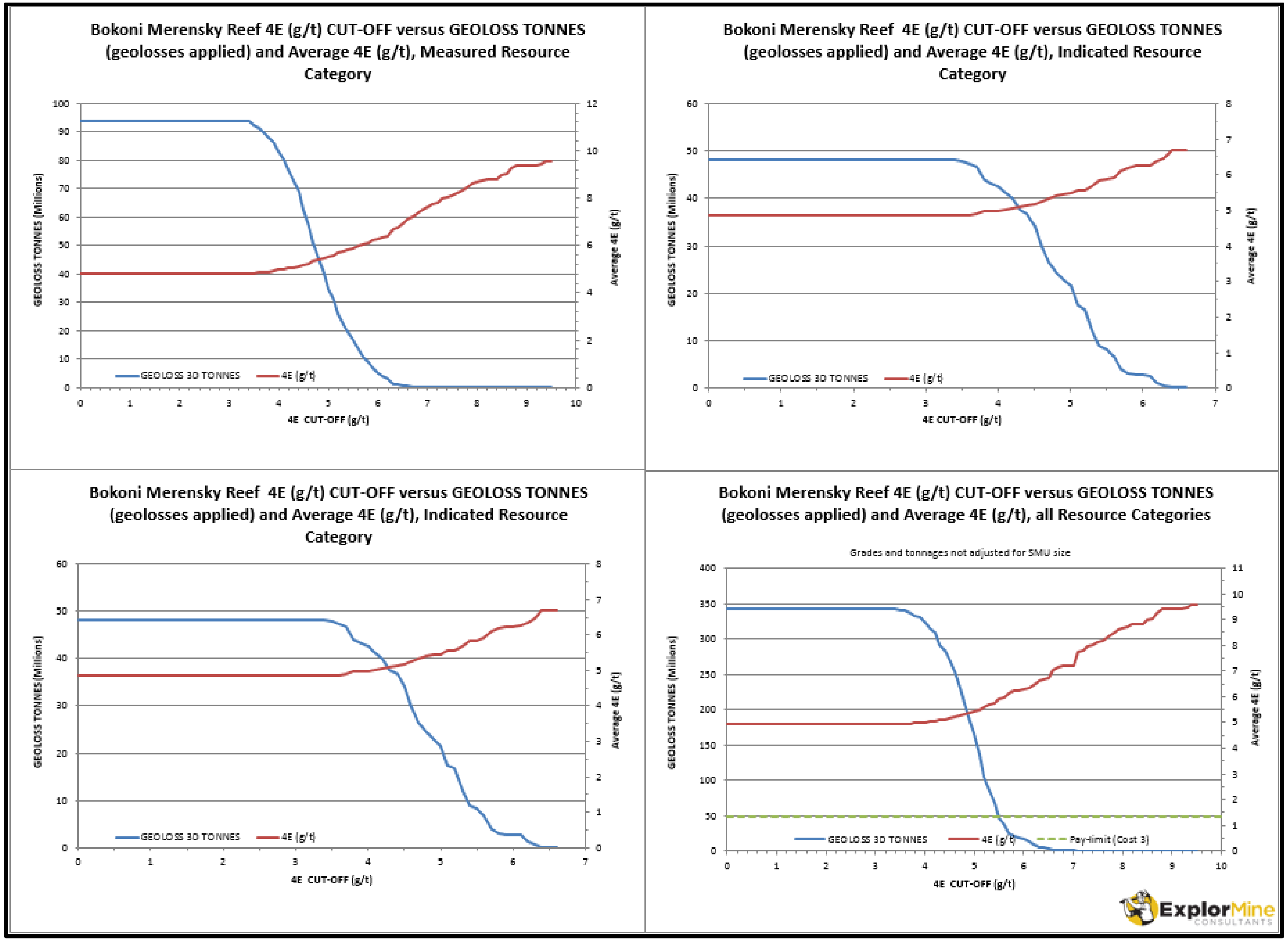


Figure 46: Grade-Tonnage curves for the Merensky Reef estimated Mineral Resources per Mineral Resource category and total Mineral Resource.

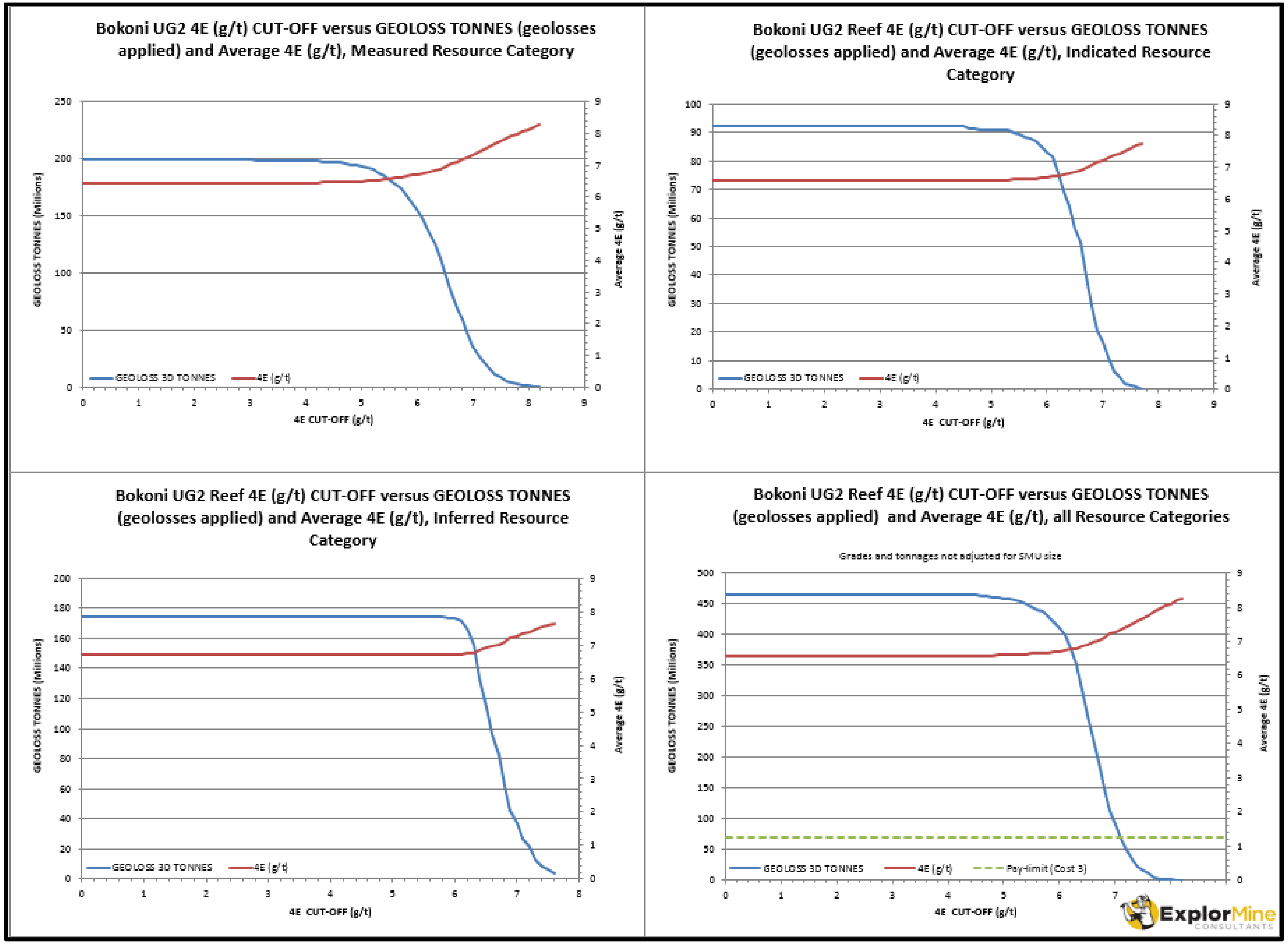


Figure 47: Grade-Tonnage curves for the UG2 Reef estimated Mineral Resources per Mineral Resource category and total Mineral Resource.

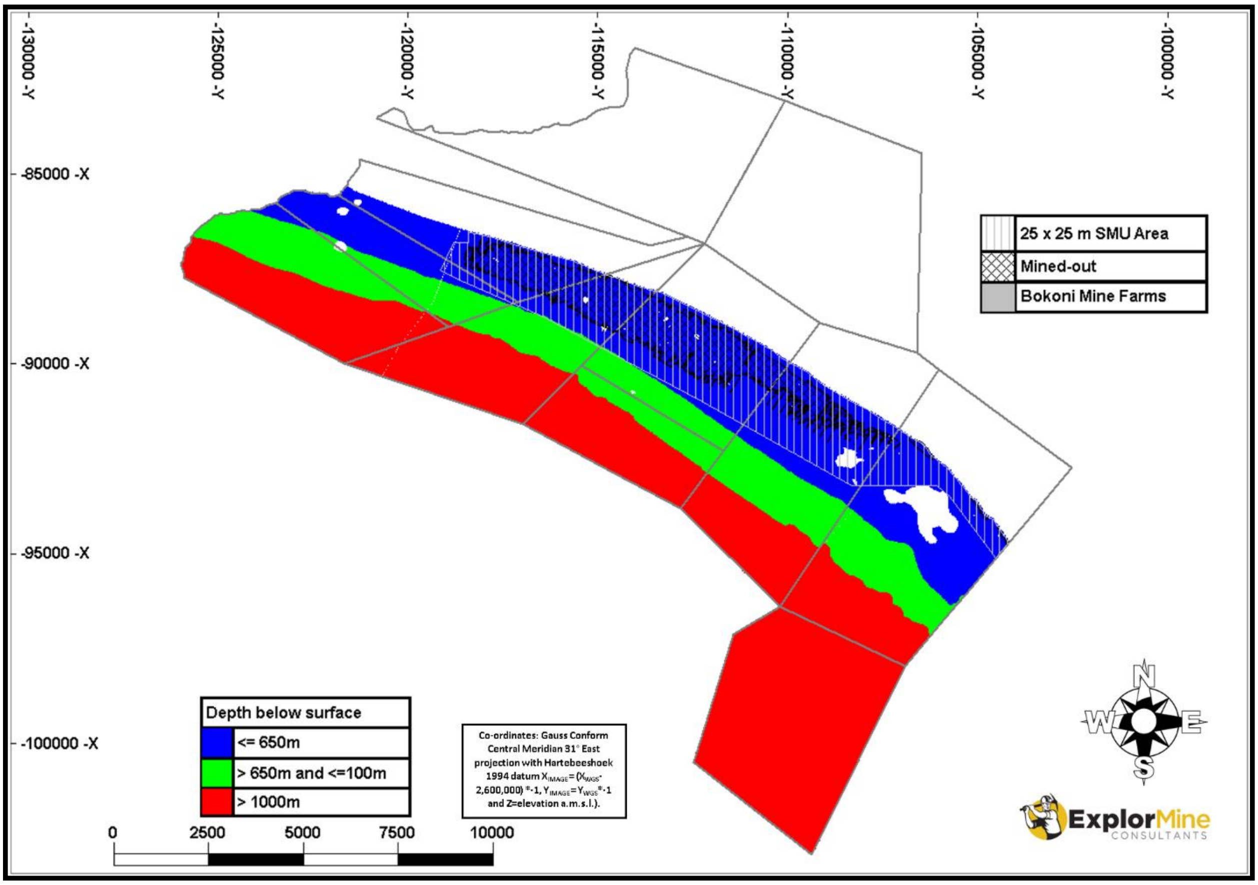


Figure 48: Merensky Reef depth below surface.

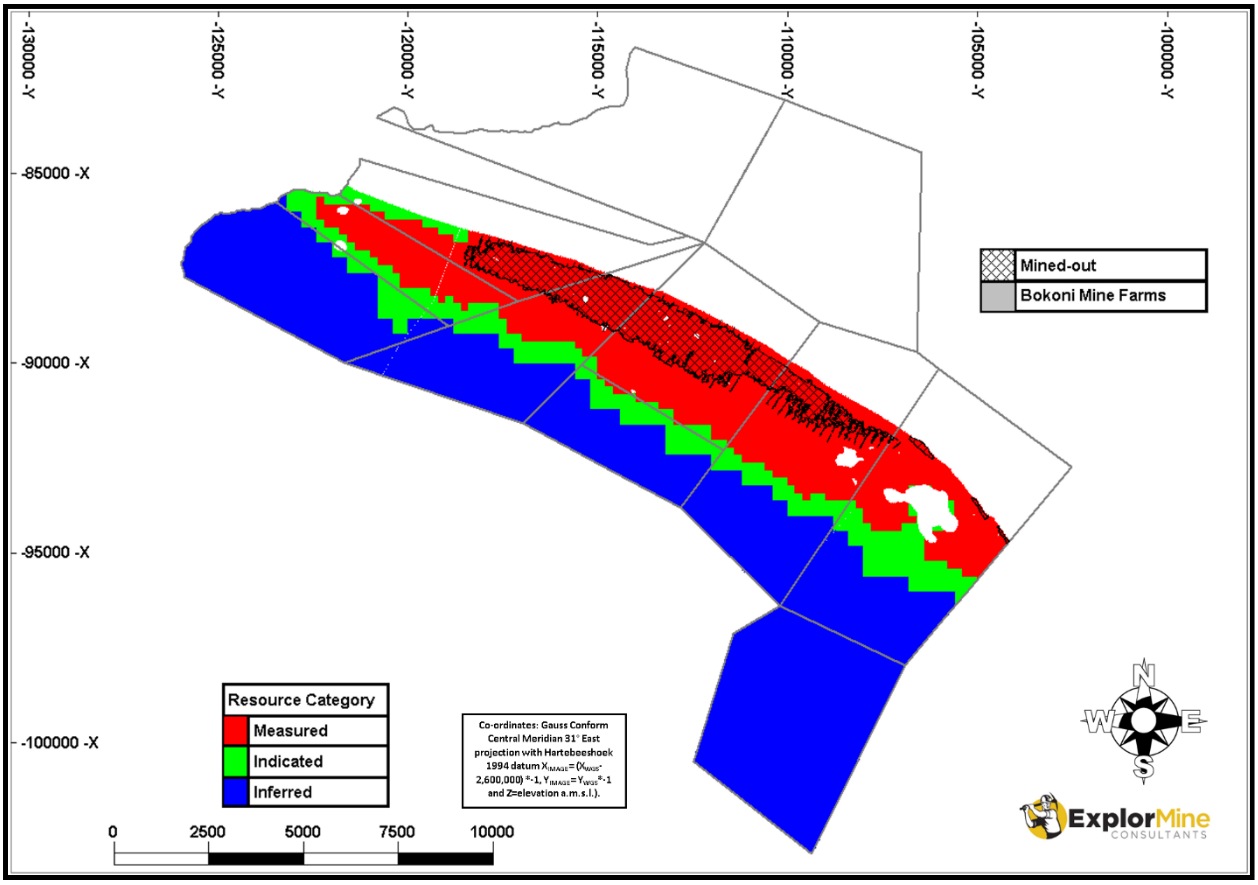


Figure 49: Plot of the estimated distribution of Mineral Resource categories at Bokoni Mine for the Merensky reef. White areas represent potholes and dykes.

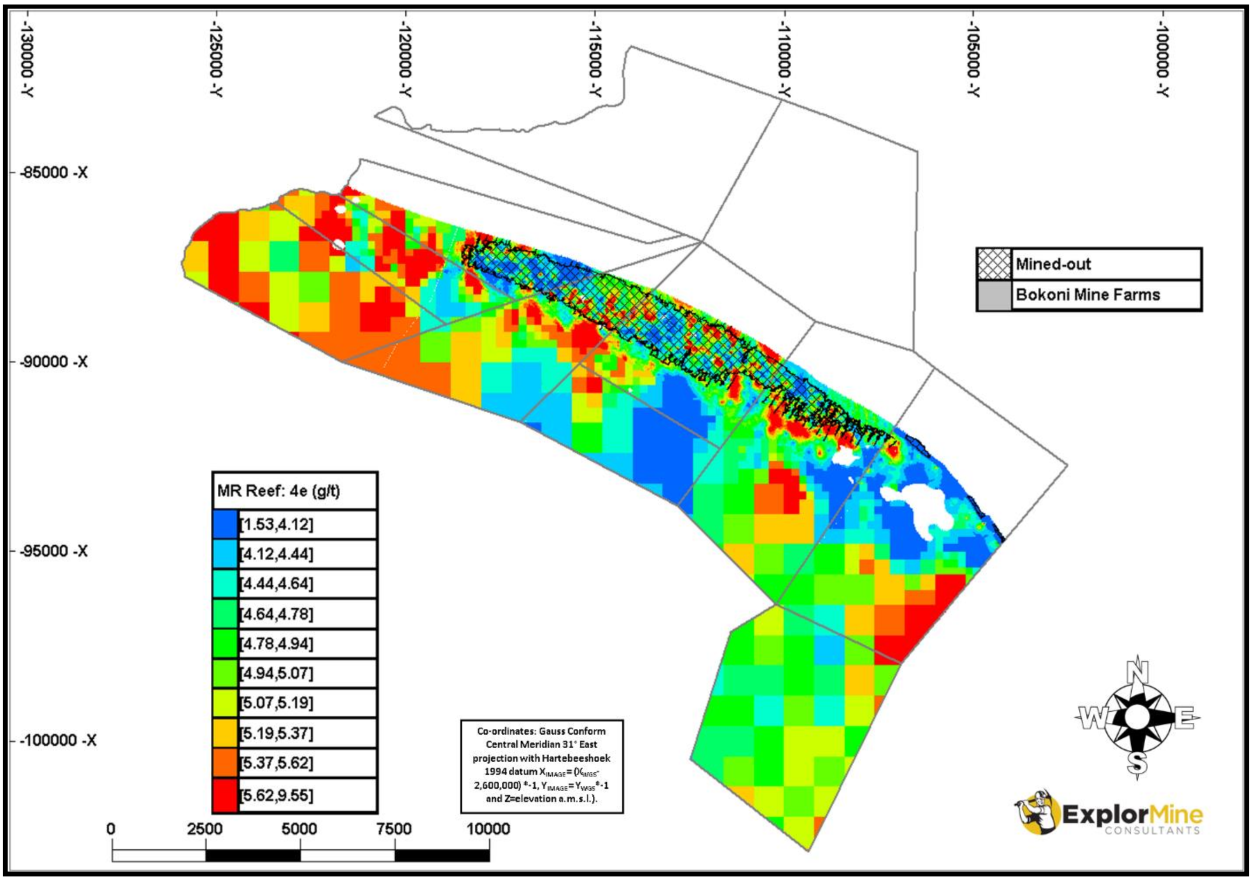


Figure 50: Plot of the distribution of 4e (g/t) estimate at Bokoni Mine for the Merensky Reef.

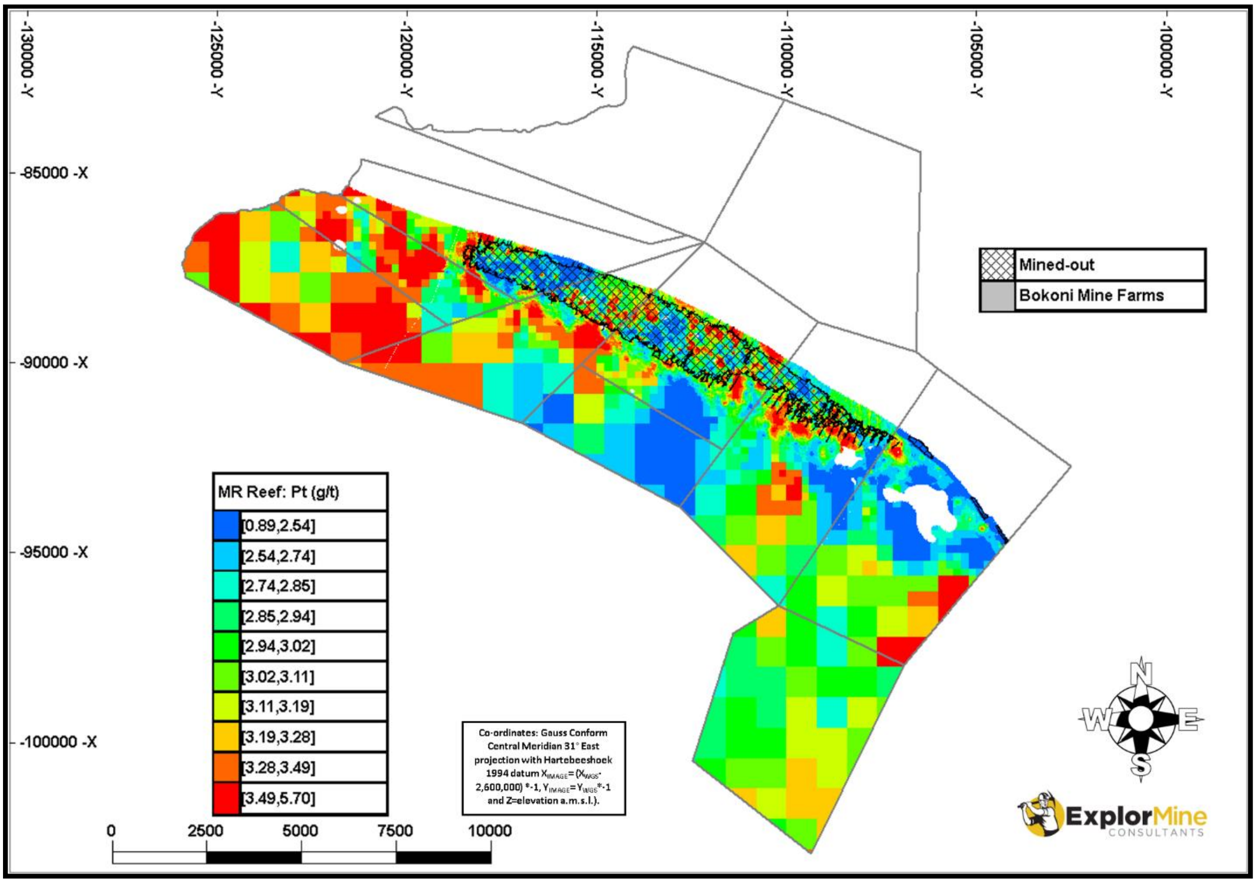


Figure 51: Plot of the distribution of Pt (g/t) estimate at Bokoni Mine for the Merensky Reef.

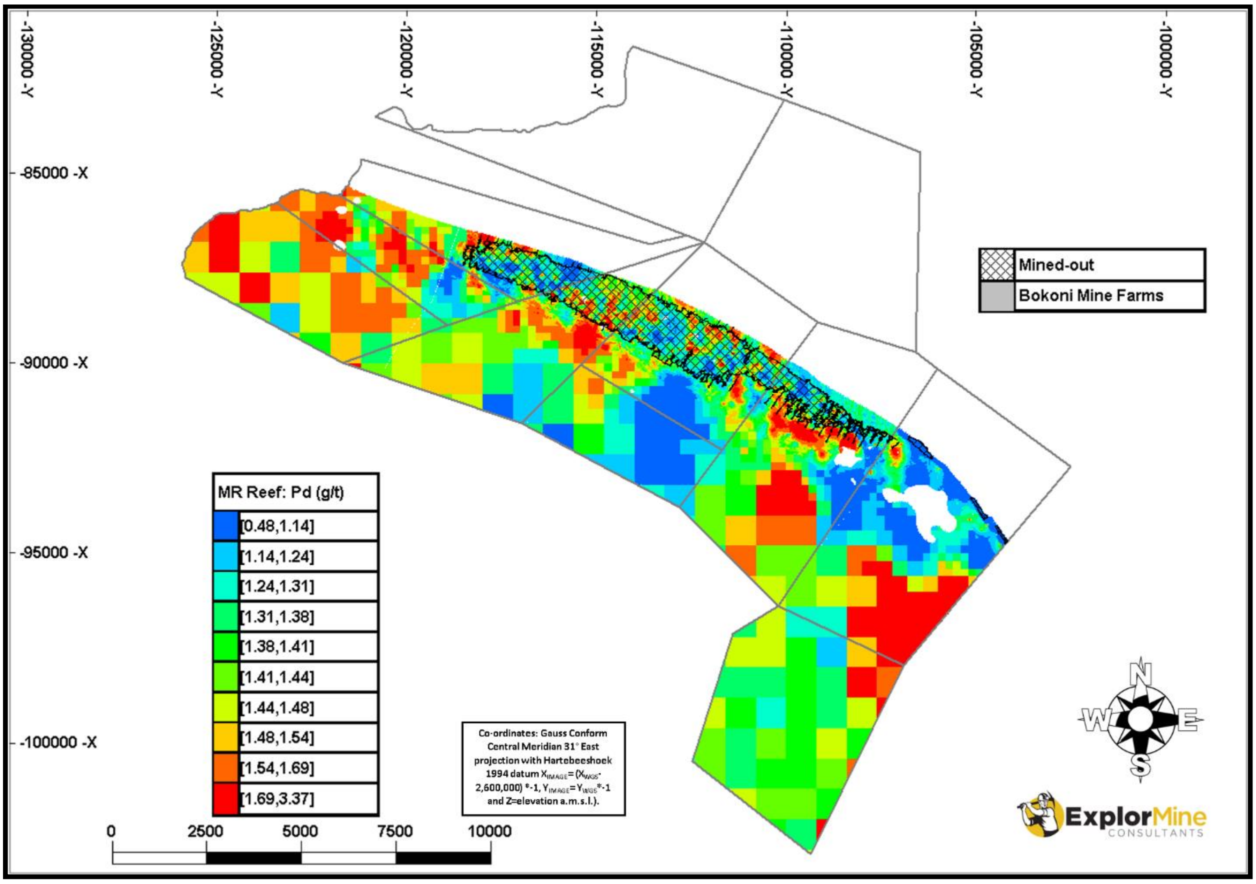


Figure 52: Plot of the distribution of Pd (g/t) estimate at Bokoni Mine for the Merensky Reef.

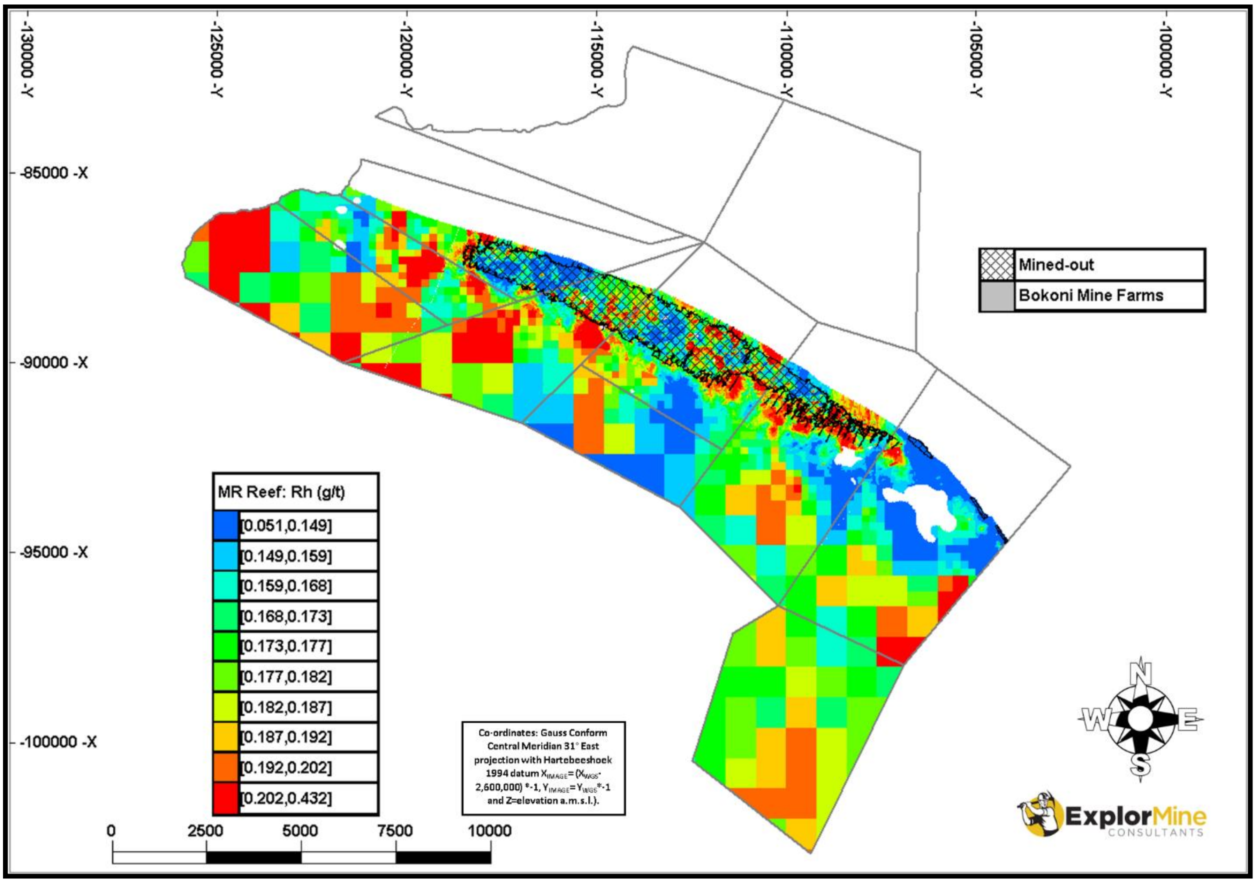


Figure 53: Plot of the distribution of Rh (g/t) estimate at Bokoni Mine for the Merensky Reef.

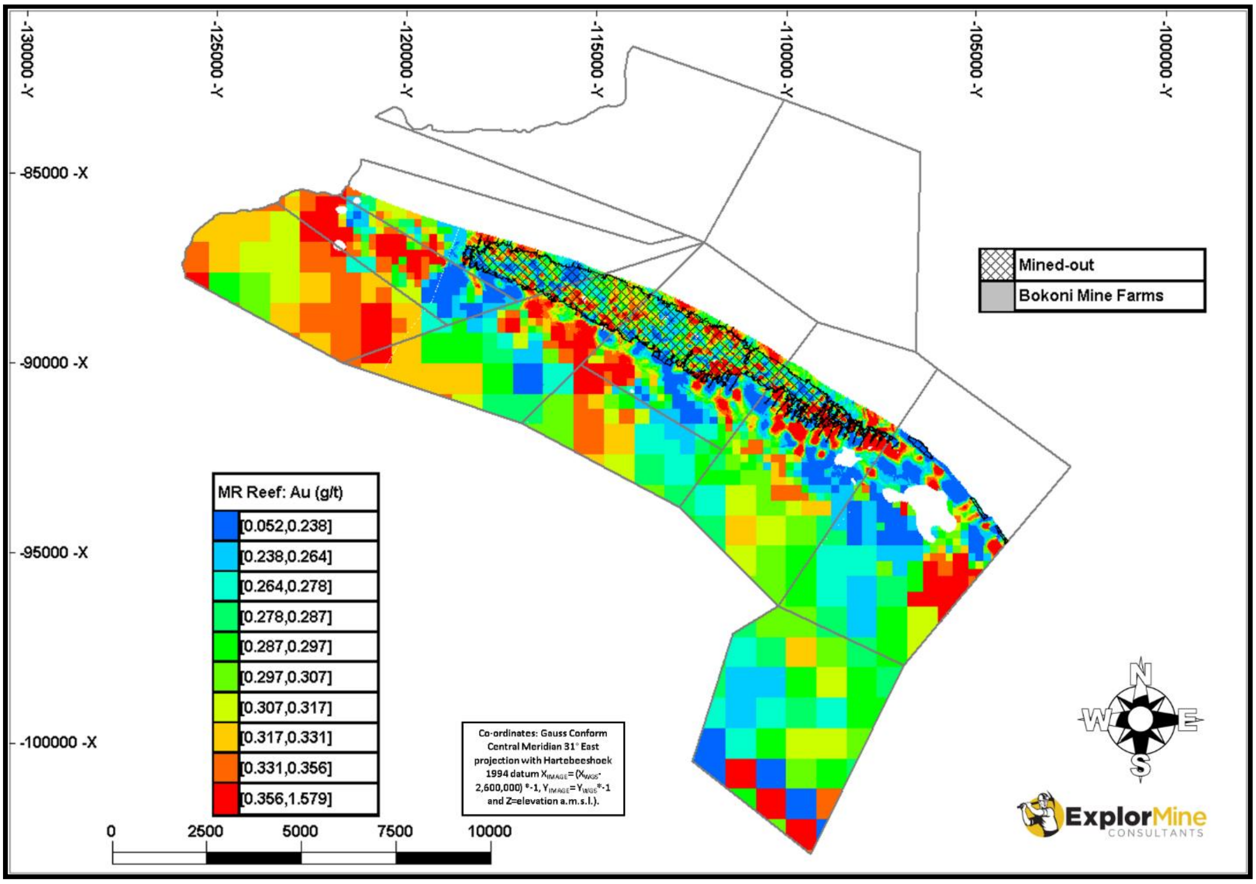


Figure 54: Plot of the distribution of Au (g/t) estimate at Bokoni Mine for the Merensky Reef.

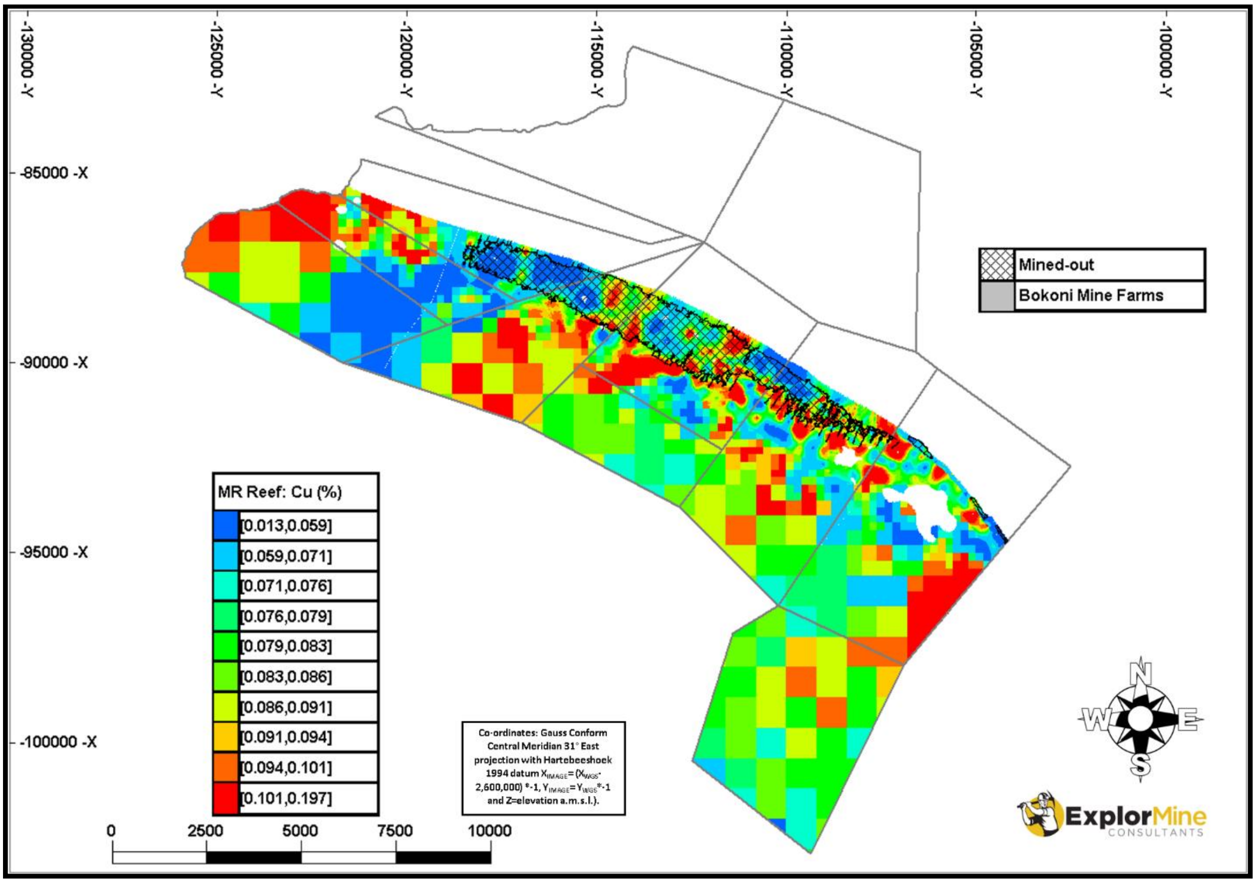


Figure 55: Plot of the distribution of Cu (%) estimate at Bokoni Mine for the Merensky Reef.

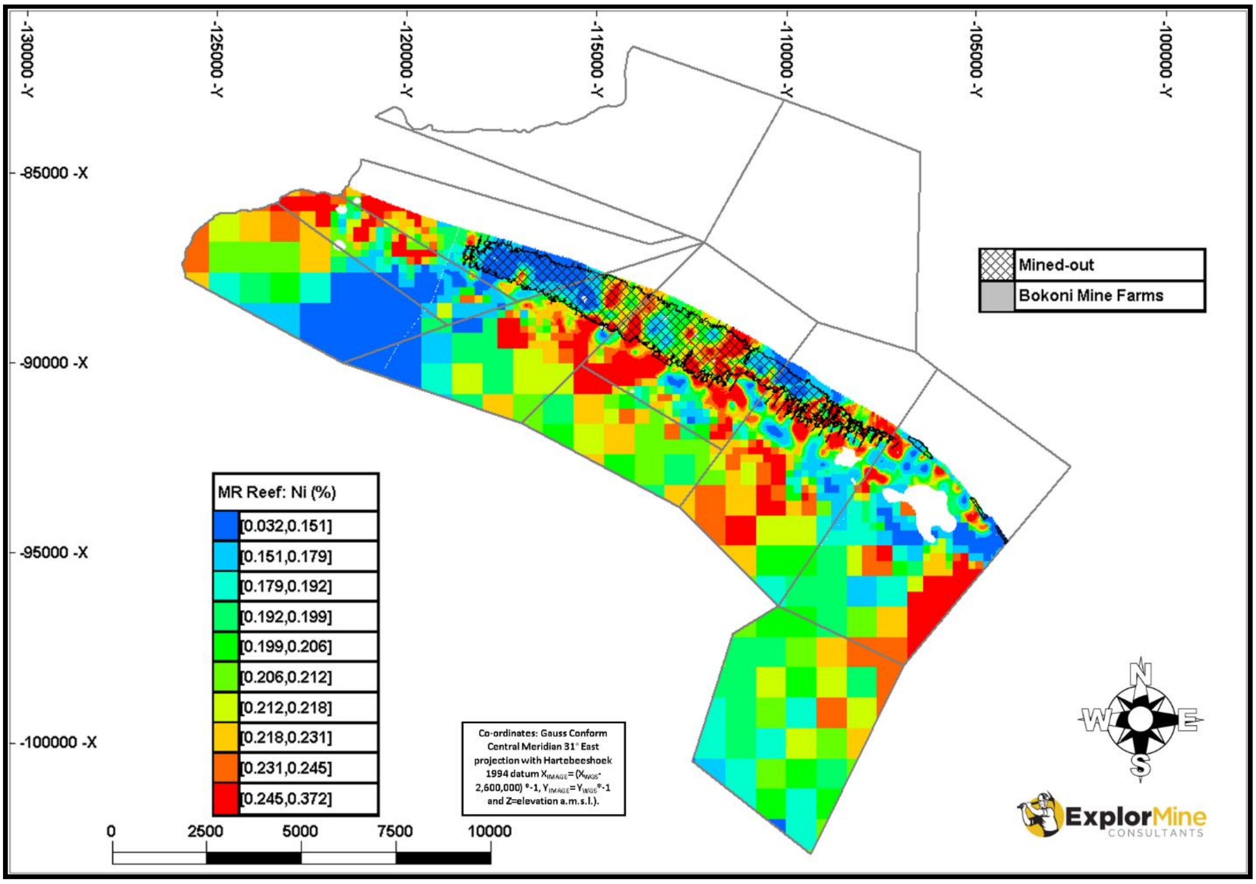


Figure 56: Plot of the distribution of Ni (%) estimate at Bokoni Mine for the Merensky Reef.

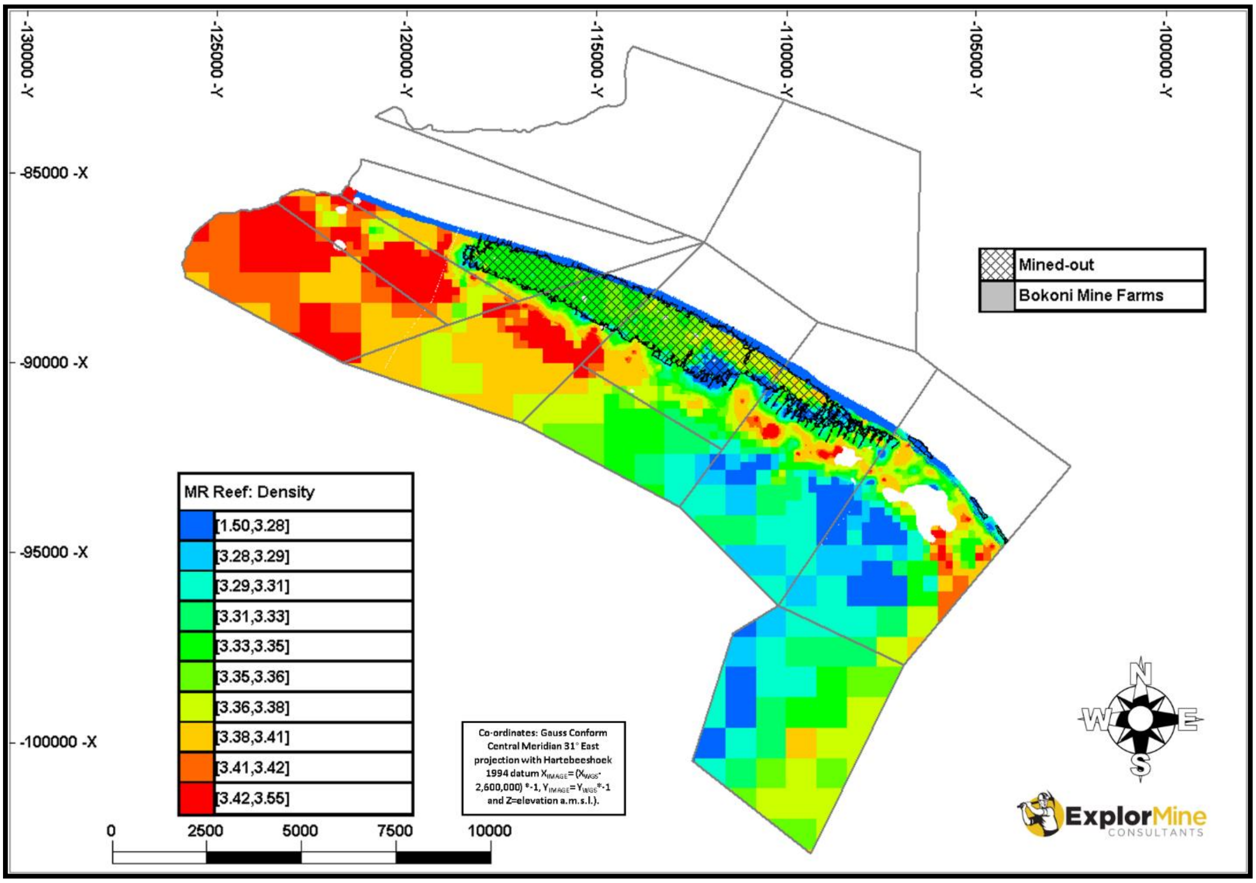


Figure 57: Plot of the distribution of the density estimate at Bokoni Mine for the Merensky Reef.

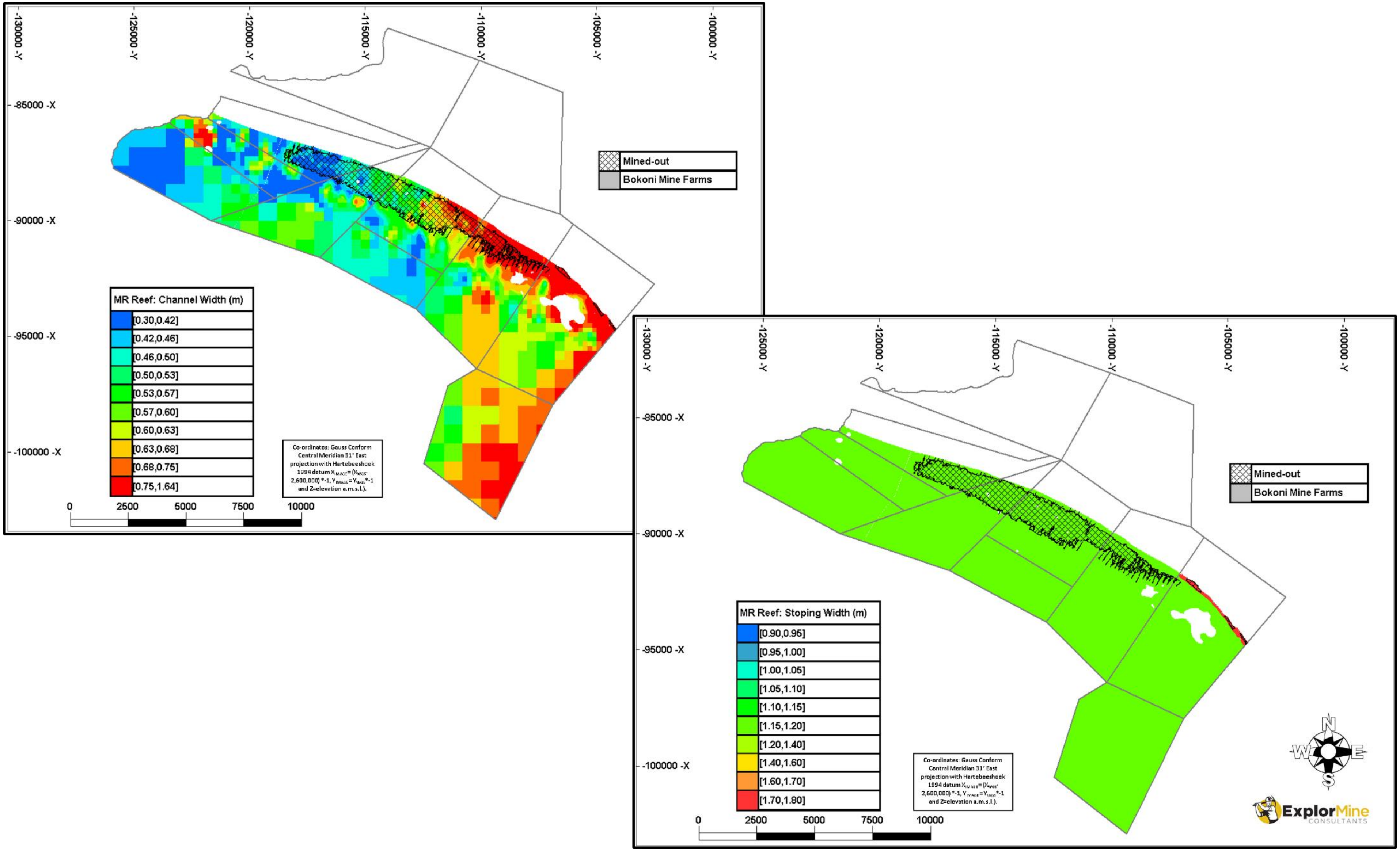


Figure 58: Plot of the distribution of channel width (m) estimate for the Merensky Reef primary channel (left) and optimised mining width (m) (right), at Bokoni Mine.

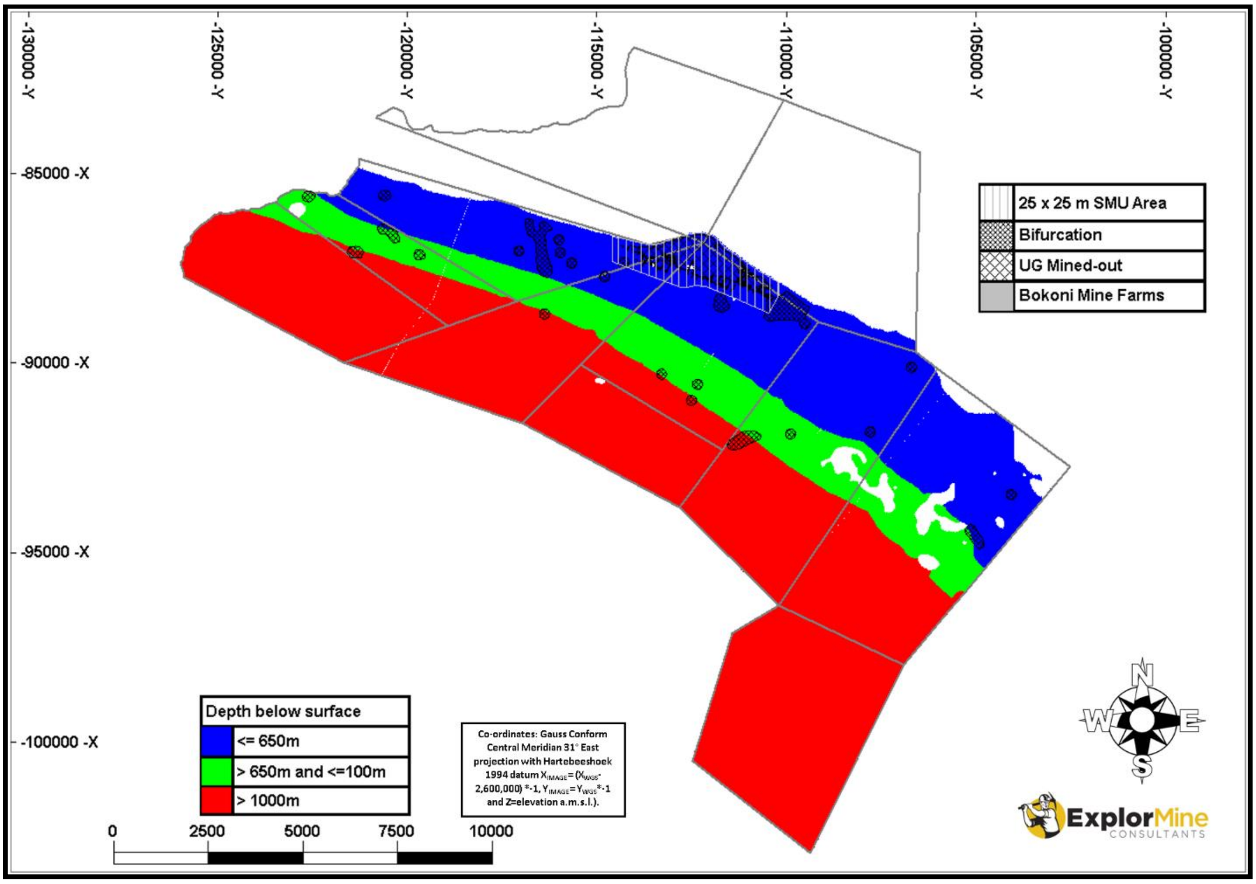


Figure 59: UG2 Reef depth below surface.

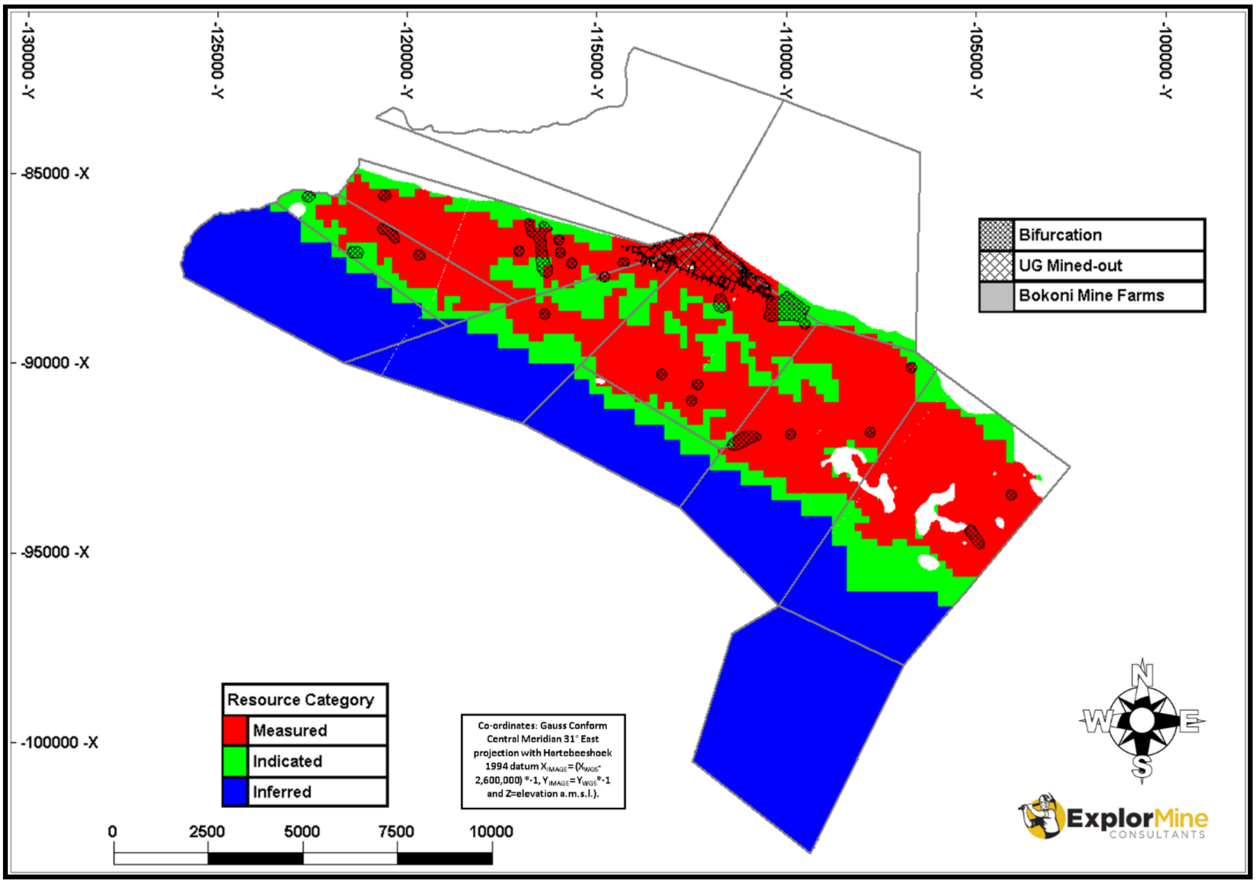


Figure 60: Plot of the estimated distribution of Mineral Resource categories at Bokoni Mine for the UG2 reef. White areas represent potholes and dykes.

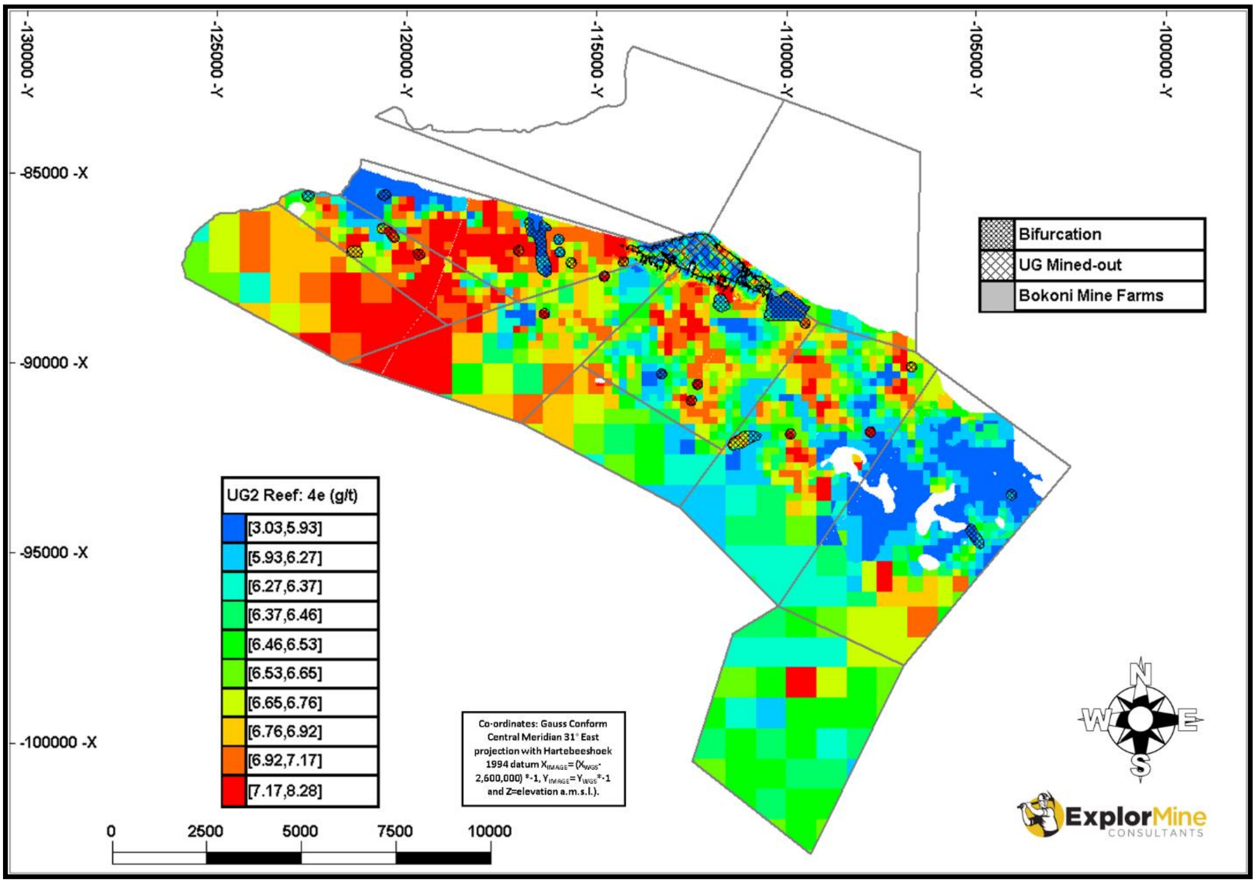


Figure 61: Plot of the distribution of 4e (g/t) estimate at Bokoni Mine for the UG2 Reef.

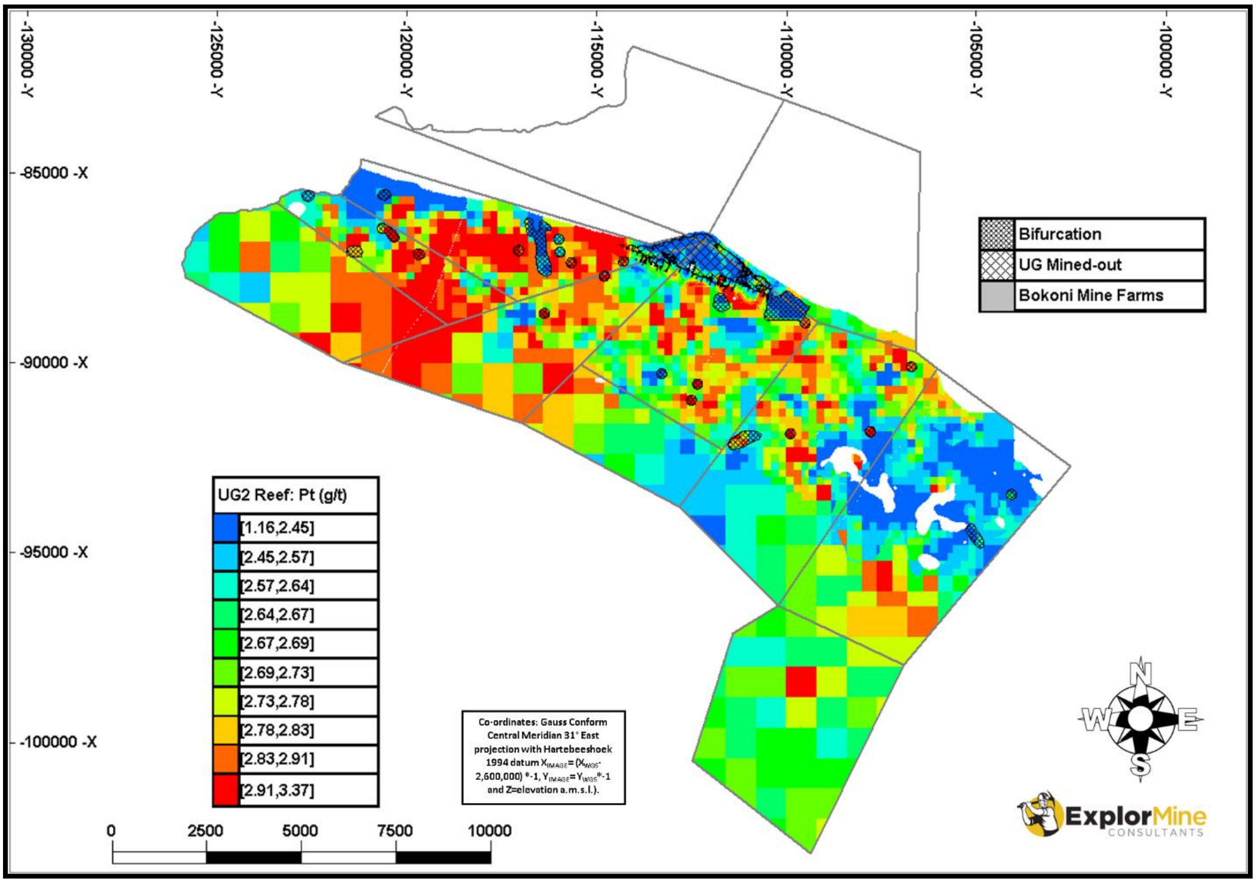


Figure 62: Plot of the distribution of Pt (g/t) estimate at Bokoni Mine for the UG2 Reef.

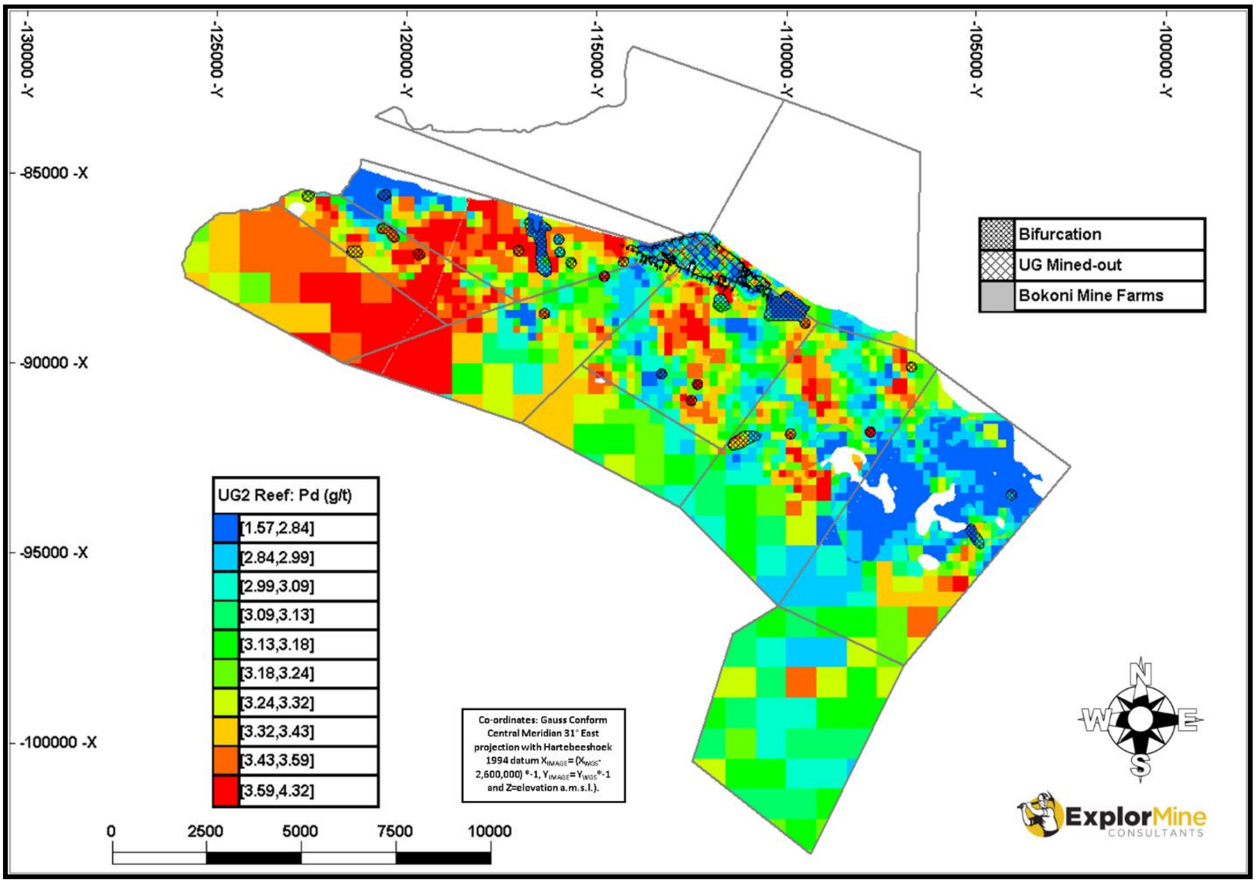


Figure 63: Plot of the distribution of Pd (g/t) estimate at Bokoni Mine for the UG2 Reef.

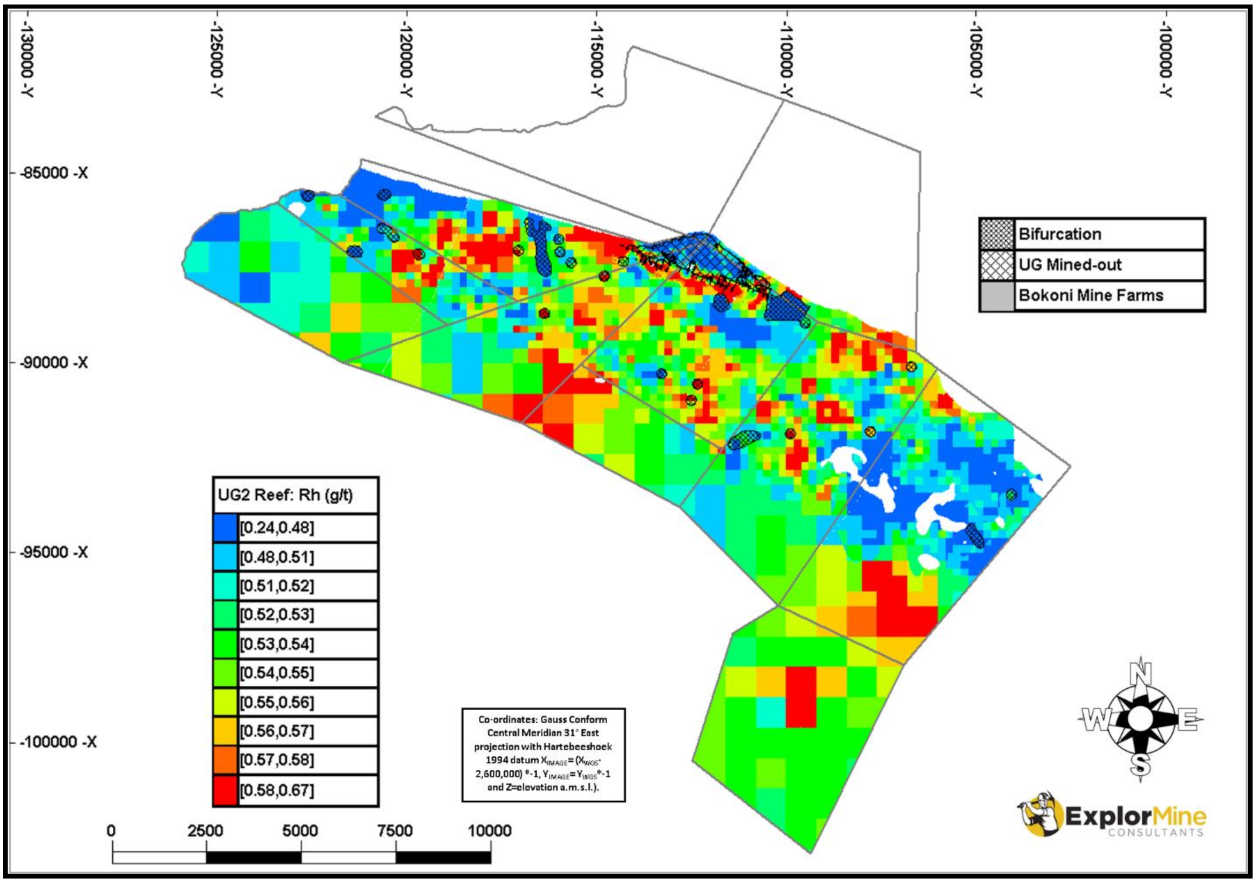


Figure 64: Plot of the distribution of Rh (g/t) estimate at Bokoni Mine for the UG2 Reef.

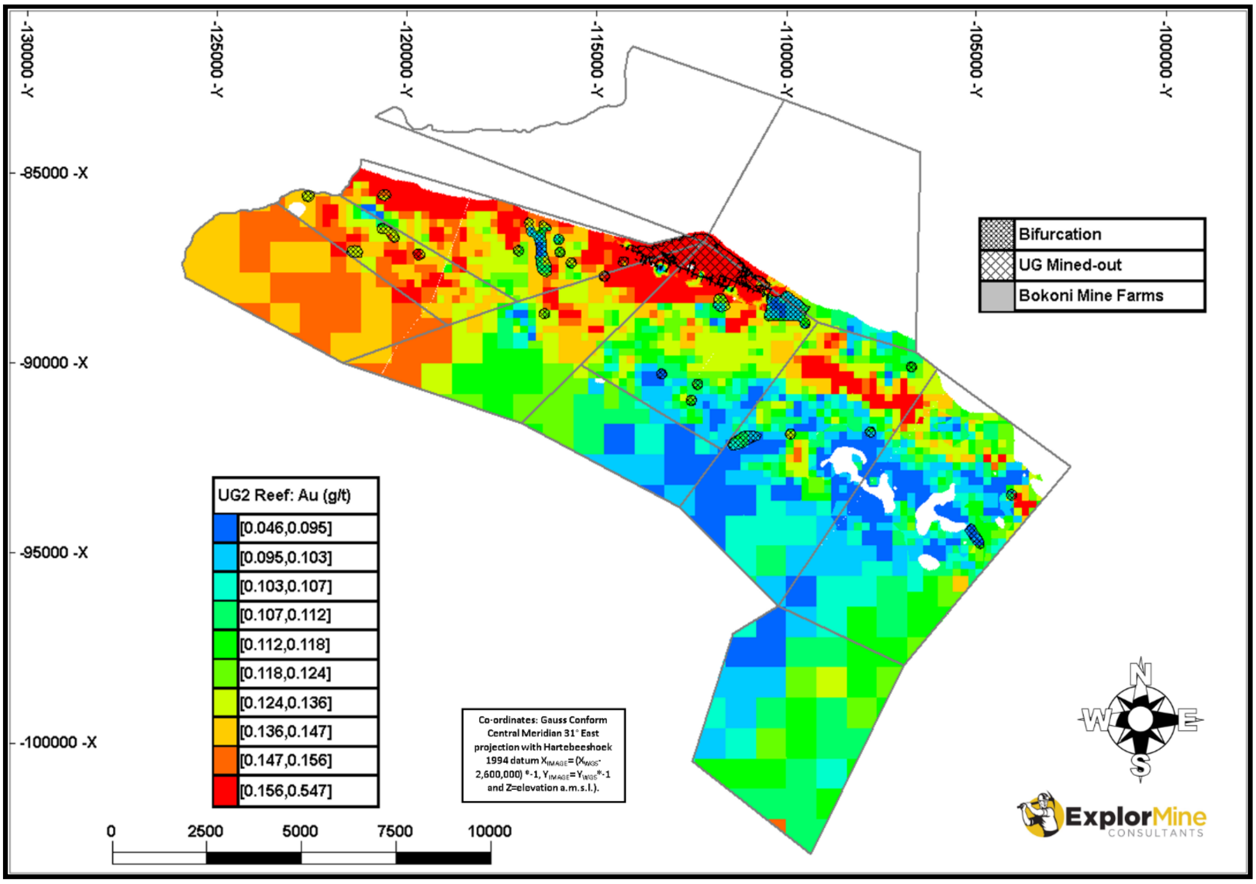


Figure 65: Plot of the distribution of Au (g/t) estimate at Bokoni Mine for the UG2 Reef.

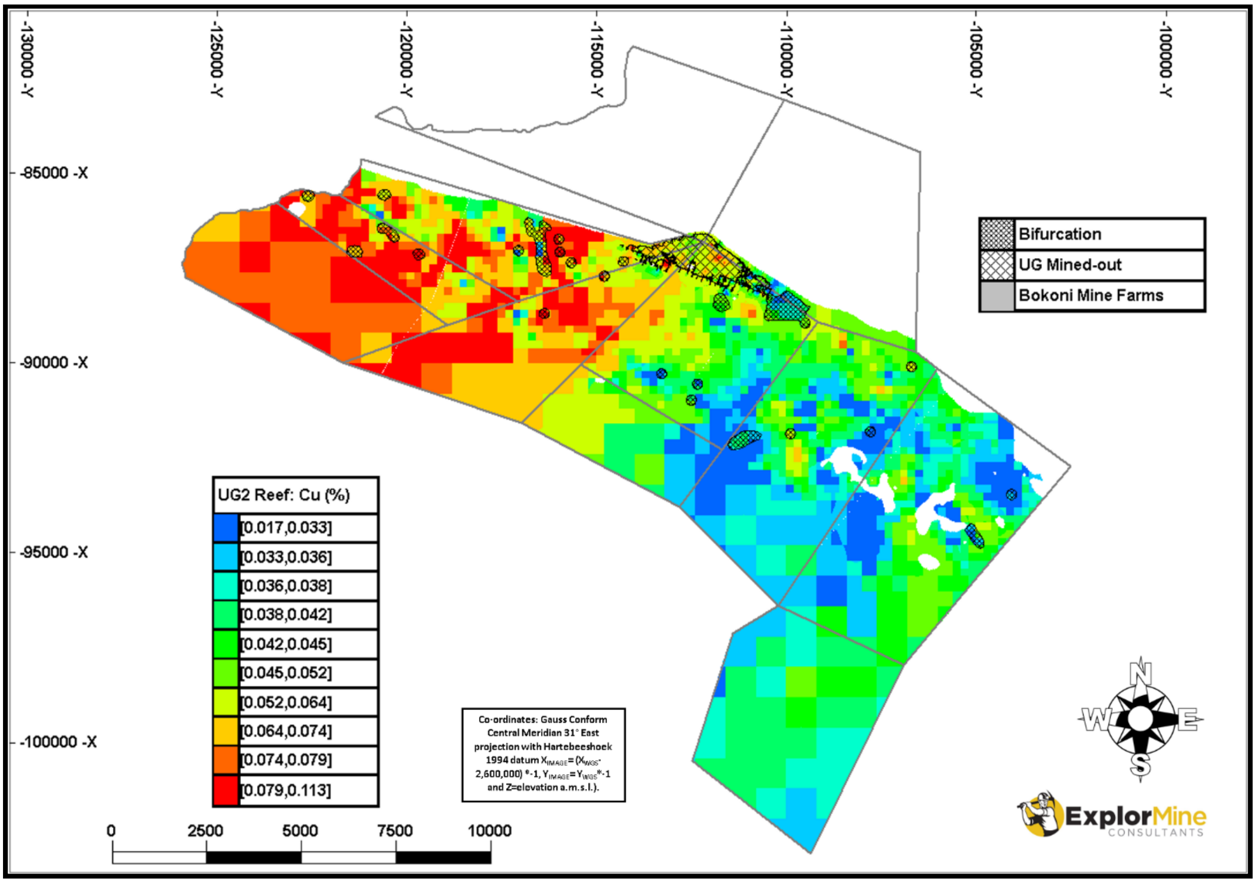


Figure 66: Plot of the distribution of Cu (%) estimate at Bokoni Mine for the UG2 Reef.

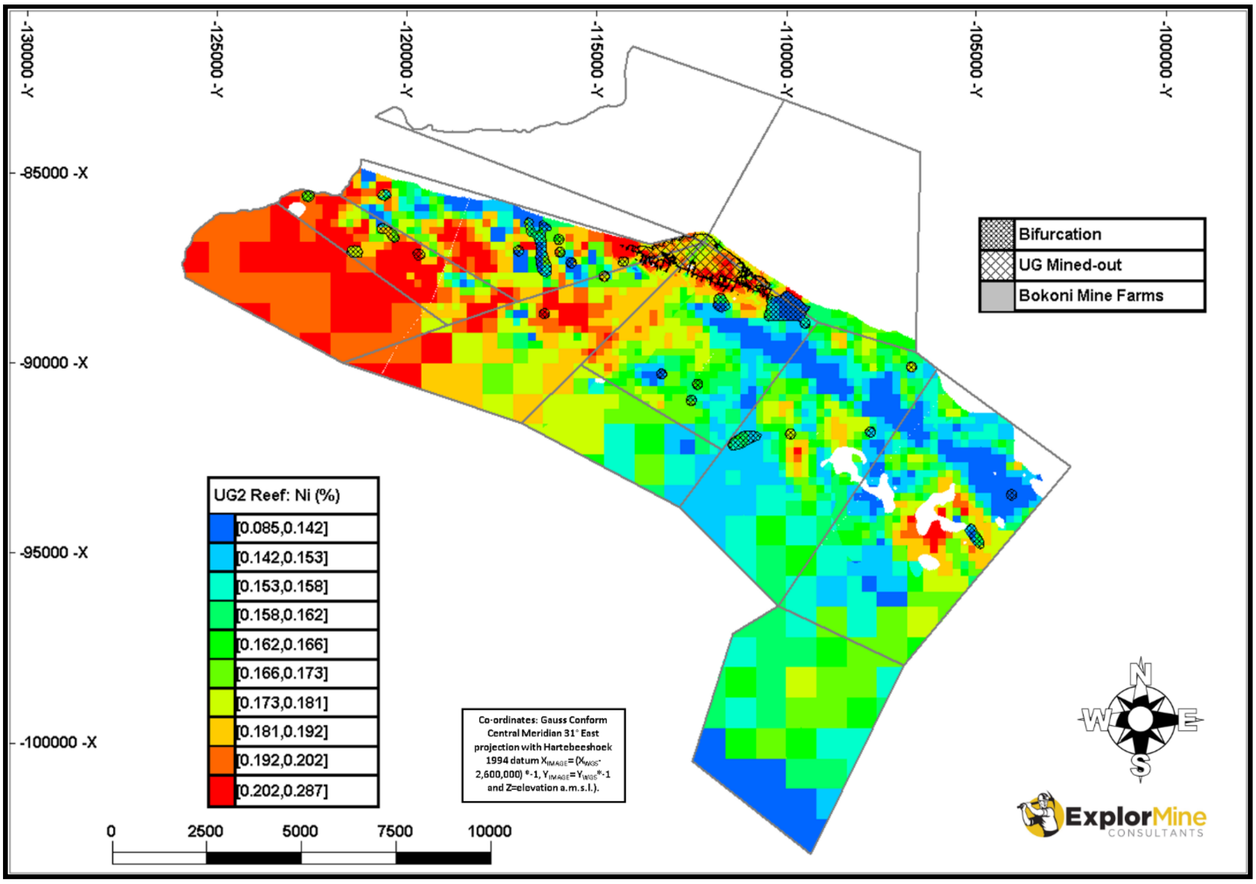


Figure 67: Plot of the distribution of Ni (%) estimate at Bokoni Mine for the UG2 Reef.

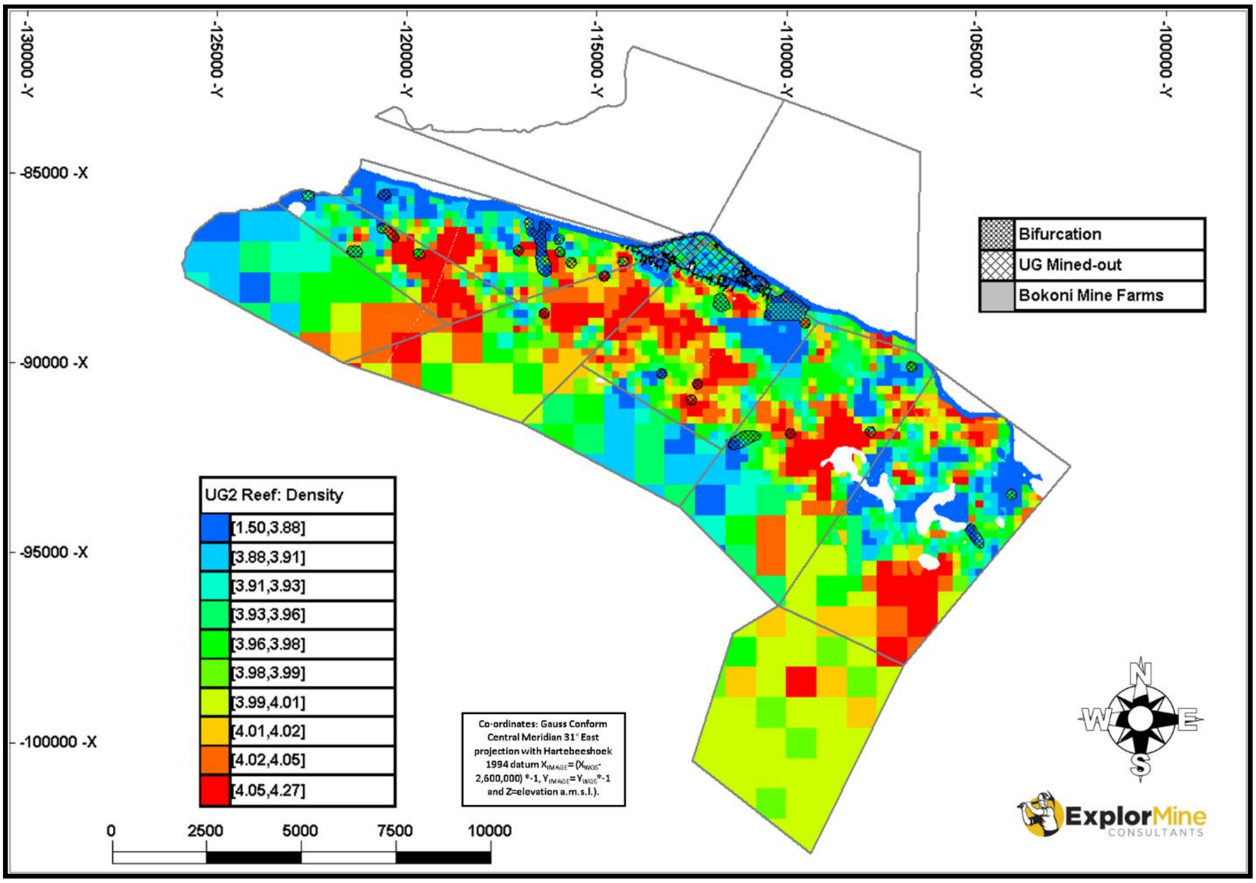


Figure 68: Plot of the distribution of the density estimate at Bokoni Mine for the UG2 Reef.

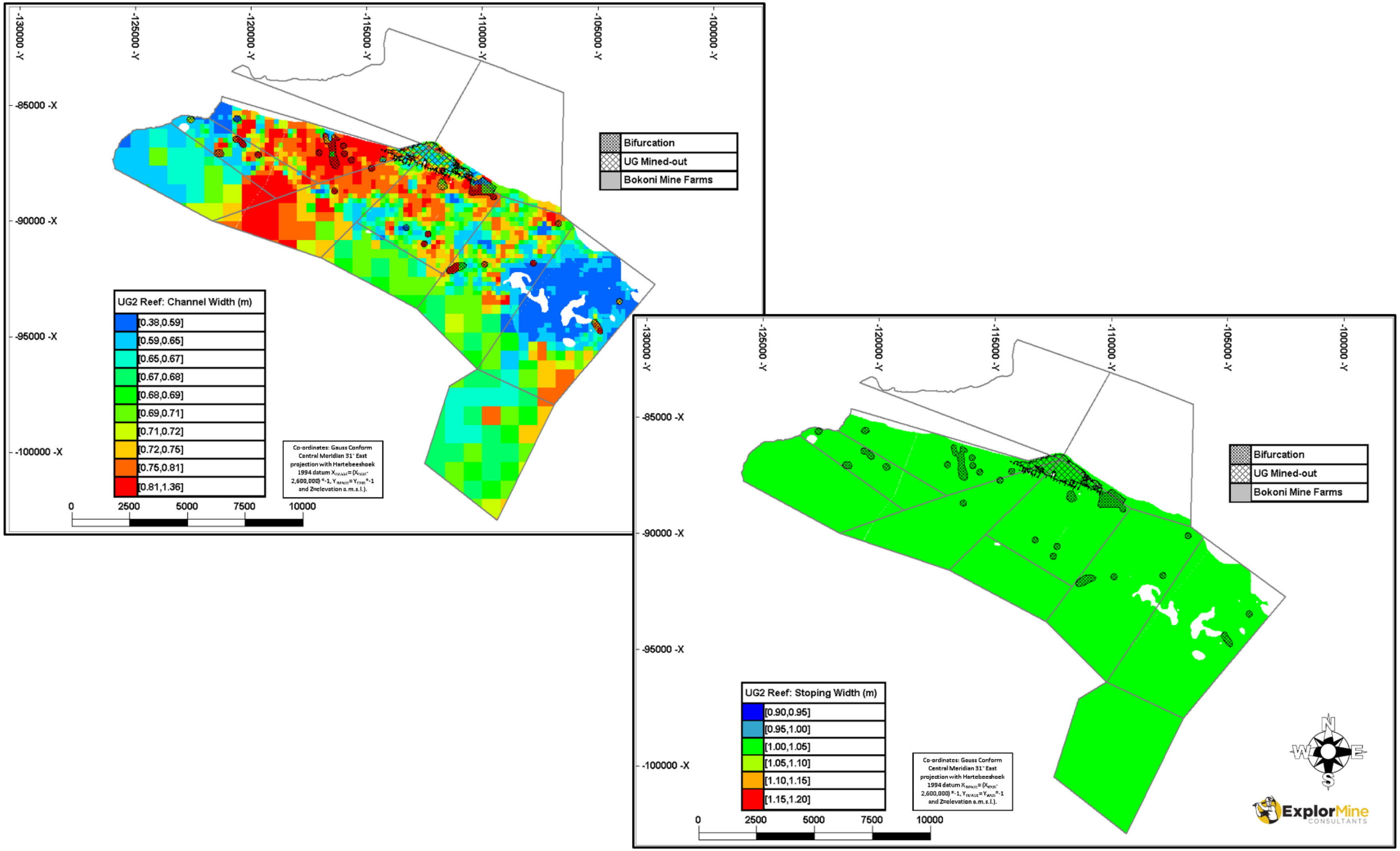


Figure 69: Plot of the distribution of channel width (m) estimate for the UG2 Reef primary channel (left) and optimised mining width (m) (right), for Bokoni Mine area.

15. MINERAL RESERVE ESTIMATES (ITEM 15)

No Mineral Reserves are declared for Bokoni Mine given the planned Care and Maintenance Programme which will be fully implemented by January 2018.

16. MINING METHODS (ITEM 16)

Mining Methods employed at Bokoni Mine has been described in detail in a Technical Report compiled by Minxcon "An Independent Qualified Persons' Report on the Bokoni Platinum Mine, Limpopo Province, South Africa" 28 November 2012. The reader is referred to this Technical Report filed on Canadian Securities Administrators ("CSA") in the SEDAR filing system.

17. RECOVERY METHODS (ITEM 17)

Recovery Methods employed at Bokoni Mine has been described in detail in a Technical Report compiled by Minxcon "An Independent Qualified Persons' Report on the Bokoni Platinum Mine, Limpopo Province, South Africa" 28 November 2012. The reader is referred to this Technical Report filed on Canadian Securities Administrators ("CSA") in the SEDAR filing system.

18. PROJECT INFRASTRUCTURE (ITEM 18)

Project Infrastructure at Bokoni Mine has been described in detail in a Technical Report compiled by Minxcon "An Independent Qualified Persons' Report on the Bokoni Platinum Mine, Limpopo Province, South Africa" 28 November 2012. The reader is referred to this Technical Report filed on Canadian Securities Administrators ("CSA") in the SEDAR filing system.

19. MARKET STUDIES AND CONTRACTS (ITEM 19)

The Technical Report compiled by Minxcon "An Independent Qualified Persons' Report on the Bokoni Platinum Mine, Limpopo Province, South Africa" 28 November 2012, contains a detailed description of market conditions and current contractual agreements. The Reader is referred to this Report.

20. ENVIRONMENTAL STUDIES, PERMITTING AND SOCIAL OR COMMUNITY IMPACT (ITEM 20)

Environmental, social and community issues are described in detail in the Technical Report compiled by Minxcon "An Independent Qualified Persons' Report on the Bokoni Platinum Mine, Limpopo Province, South Africa" 28 November 2012. The Reader is referred to this Report.

Environmental liability provisioning in the South African mining industry is a requirement of the MPRDA and must be agreed with the relevant regulatory authorities (mainly the DMR and the DWAF). For existing mines such as the Bokoni Mine operations, monies are accrued based on the estimated environmental rehabilitation costs, should the mine have to close over the operating life of a mine. Contributions are made to an environmental trust fund in this regard, which are approved by the South African Revenue Service.

The mining infrastructure in the immediate area surrounding the Bokoni Mine is well established. The Bokoni Mine area is the subject of an Environmental Management Program ("EMPR") approved as part of the conversion to a "New Order Mining Right" by all relevant interested and affected parties.

The EMPR includes a detailed 'Environmental Closure Assessment' detailing all areas of environmental liability. It is understood that Atlatsa will ensure that the Rehabilitation Trust Fund is funded to cover the total environmental liability on closure of operations.

21. CAPITAL AND OPERATING COSTS (ITEM 21)

The Reader is referred to the Technical Report compiled by Minxcon "An Independent Qualified Persons' Report on the Bokoni Platinum Mine, Limpopo Province, South Africa" 28 November 2012, for a detailed assessment of capital and cash operating costs for Bokoni Mine.

22. ECONOMIC ANALYSIS (ITEM 22)

The Reader is referred to the Technical Report compiled by Minxcon "An Independent Qualified Persons' Report on the Bokoni Platinum Mine, Limpopo Province, South Africa" 28 November 2012, for a detailed economic analysis for Bokoni Mine.

23. ADJACENT PROPERTIES (ITEM 23)

To the northwest, immediately beyond the Bokoni Mine boundary, the strike extent of the Merensky and UG2 Reefs is truncated by large scale faulting (**Figure 7**). These faults on adjacent northwest properties do not affect the geology of the Bokoni Mine area.

The Merensky and UG2 Reefs developed in the Bokoni area extend in a south-easterly direction onto the neighbouring Twickenham Mine property (**Figure 2**).

Amplats' Twickenham Platinum Mine is located to the south-east of the Ga-Phasha Area. Twickenham Platinum Mine was recently commissioned and is a 100 % UG2 Reef operation. The project is now focused on unlocking the backbone of Twickenham Platinum Mine by converting the operational component of the project into capital development work. Twickenham concentrator was commissioned in 2015. The project will reach steady state of three million tonnes per annum in 2019. (www.angloplatinum.com). A toll concentrating agreement has been entered into with Atlatsa's Bokoni Mine to treat ore from Twickenham.

No data or information relating to mineralisation from adjacent properties other than the Paschaskraal farm have been used in the Mineral Resource estimation. Historical estimates with respect to adjacent properties are not relevant to Bokoni Mine or future planned mining or expansions and are therefore not included in this Report.

24. OTHER RELEVANT DATA AND INFORMATION (ITEM 24)

The Mineral Resource estimation methodology as presented in this Report has been subject to several audits.

The 2010 Mineral Resource estimate and process was independently reviewed by SRK Consulting ("SRK"). The 2015 Mineral Resource estimation process is identical to that used in 2010, however many of the data issues have now been resolved resulting in much improved data for the estimate. Although the Mineral Resource estimate has now been updated, the comments with respect to methodology are still valid.

In performing its audit in 2010, SRK was of the following opinion "SRK have checked the processes utilised by ExplorMine to select the mineralised units and to generate composites of the mineralised units. SRK conducted verification of the generation of the experimental semi-variograms, the modelling of the semi-variograms, and the search parameters used by ExplorMine. SRK have checked the accuracy of the Mineral Resource estimates by comparing the estimation results to the original data used in the estimate. This was done globally, as well as in a spatially related manner, by comparing the estimate and source data in parallel slices along the strike and dip of the orebody. SRK consider there to be a reasonable agreement between the source data and the final estimates."

SRK also concluded that "The Mineral Resources are reported in accordance with the Canadian Institute of Mining, Metallurgy and Petroleum ("CIM") guidelines and definitions. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability."

In May 2014 Worley Parsons was approached by Bokoni Platinum to conduct a third-party audit of the processes and methods employed for reporting of the mine's resources and reserves. The audit was conducted in two phases: the first was an on-site review of methods and the second a review of the model generated by ExplorMine.

In completing their review Worley Parsons concluded "No issues or problems were identified in the geological block model. All approaches and methods employed by ExplorMine are inline or considered to be the standard methods and approaches used in industry. Spot checks were conducted to verify some elements in the block model." Worley Parsons stated further that "The Resources and Reserves stated for the Financial Year 2014/2015 are considered to be in line with best practice and the estimates are both considered SAMREC compliant."

The most recent review of the Mineral Resource estimate was completed by Snowden in September 2015. Snowden had the following comments pertaining to the Mineral Resource at Bokoni Mine:

- The data collection procedures employed are considered appropriate and in line with industry standards;
- The analytical techniques currently used, and those used for the majority of the assaying, are industry standard and are considered appropriate. The databases used are industry standard and appropriate;
- The QA / QC results and reports reviewed show that, although laboratory accuracy is not ideal, there is no bias in the results. Precision plots reviewed indicate acceptable precision and no bias between umpire laboratory and twin stream assay results. Although ongoing recommendations have been made, Snowden considers the database suitable for use in a Mineral Resource estimate;
- Snowden's independent database validation indicates that while some discrepancies exist between the raw data and the database, these are unlikely to materially affect the Mineral Resource estimate;
- The geological modelling reflects the current structural and geological understanding and considers all appropriate items;
- The geological losses applied are appropriate and reflect the current mining experiences;
- Processes employed for estimation are repeatable and are considered generally appropriate; although some improvements could be made, these are unlikely to affect the Mineral Resource estimate;
- Although some over-smoothing of block grade estimates appears to have occurred for some elements, independent validations of the block grade estimates indicate that they are reproducing the composite grade trends and data, especially on a global scale. They are therefore considered appropriate;
- Confidence classification has considered both geological and statistical confidence and is acceptable; and
- The Mineral Resource statements and cut-off grade calculations are repeatable and considered appropriate.

25. INTERPRETATION AND CONCLUSIONS (ITEM 25)

25.1.Conclusions

This Technical Report is intended to fulfil two basic objectives:

- To compile a NI43-101 compliant Mineral Resource Estimate for the Merensky and UG2 Reefs for the Bokoni Platinum Mine.
- To guide management in the identification of potential mining and exploration target areas by providing a spatial expression to estimated Mineral Resource.

This Technical Report and the technical work on which it is based provide a compliant Mineral Resource estimate. An estimated block model has been constructed and can be used as a tool to guide future exploration and mining decision making.

ExplorMine Consultants and Atlatsa geologists collectively have extensive experience in the geology of the Bokoni Mine Bushveld Complex style of mineralisation and the estimation thereof. The estimation was based on all available historic and recent exploration and mining data.

A combination of historic and recent desurveyed surface drillhole reef intercepts and an aeromagnetic survey completed by Anglo Platinum were used by ExplorMine Consultants in a complete first principles structural interpretation.

The Mineral Resource estimate presented in this Report for the Merensky and UG2 Reefs is based on several sets of data. This data was collected over an extended period of time from the 1960s through to present. The data set includes surface and underground diamond drillholes represented by electronic databases, geophysical data and underground channel sampling data. ExplorMine Consultants has completed its own assessment and validations on primary data, and considers the validity and quality of the historic and recent data to be reasonable. The data complies with acceptable standards and norms and is considered of sufficient quality for use in Mineral Resource estimates.

Geological modelling recognises two distinct geological zones in the UG2 Reef. The Merensky has only a single zone identified. These zones have been used as a basis for geostatistical modelling.

ExplorMine Consultants has in preparation of this Report on the Mineral Resource estimate collated and compiled a single comprehensive composite database consisting of surface and underground drillhole composites and chip sampling composites. All composite data has been corrected for dip and therefore true width has been accounted for. All the composites were coded for project area, source type (drillholes and channel sampling), reef type (Merensky or UG2 Reef), facies and reef disturbance (pothole or bifurcation).

The majority of the drillhole data, historic and recent, is already stored in electronic format. Database codes and protocols are standardised. However additional standardisation should be done between the assay and lithological drillhole logs. The channel sampling database on site has been upgraded to store individual prill splits. Historically only 4E / 3E values were stored.

A block modelling process was undertaken to allow estimation of the Merensky and UG2 Reefs in Datamine™. The resultant block models are designed to facilitate the use of mineral optimisation software.

A complete re-evaluation of the Mineral Resources has been performed based on the database that has been electronically captured, completely checked and corrected. It is intended to perform an evaluation that will give a spatial expression of value distribution, so that the extraction of the Mineral Resources can be planned efficiently.

Kriging was affected into a geological block model, which produced a spatial distribution of low and high grade in reef structural blocks, which enables the design of single reef mining. Ordinary kriging was applied to Measured, Indicated and Inferred Mineral Resource categories.

25.2. Differences with Respect to Previous Mineral Resource Estimates

Previous estimates of Mineral Resource and Reserve estimates have been declared as NI43-101 compliant for Bokoni Mine, most recently by Atlatsa in 2016. Summaries of the previous Mineral Resource and Reserve Estimates are presented in Section 6.3. A brief reconciliation between the ExplorMine 2016 and 2017 Mineral Resource estimates is provided in **Table 18**, **Table 19** and **Table 20** for the Merensky and UG2 Reefs respectively.

Table 18: Reconciliation of the 2017 Bokoni Mine Mineral Resource estimate and the 2016 declaration for the Merensky Reef

		Total 2017				Total 2016				Reconciliation					
Mineral Resource Category	Reef Type	Tonnes (million)	Grade 4E (g/t)	4E Kg's ('000)	4E (Moz)	Tonnes (million)	Grade 4E (g/t)	4E Kg's ('000)	4E (Moz)	Tonnes (million) Change	Tonnes % Change	Grade 4E (g/t)	Grade % Change	4E Kg's ('000)	Content % Change
Measured	MR	92.8	4.82	447.1	14.4	98.1	4.80	474.0	15.1	-5.3	-5.4	-0.01	-0.3	-26.9	-5.7
Indicated	MR	47.8	4.85	231.7	7.4	48.3	4.79	234.4	8.1	-0.5	-1.0	-0.01	-0.1	-2.7	-1.2
Measured + Indicated	**MR**	140.6	4.83	678.8	21.8	146.4	4.84	708.4	22.8	-5.8	-4.0	-0.01	-0.2	-29.6	-4.2
Inferred	MR	205.8	5.02	1,033.4	33.2	200.8	5.01	1,007.7	31.4	5.0	2.5	0.00	0.1	25.7	2.6

Table 19: Reconciliation of the 2017 Bokoni Mine Mineral Resource estimate and the 2016 declaration for the UG2 Reef.

		Total 2017				Total 2016				Reconciliation					
Mineral Resource Category	Reef type	Tonnes (million)	Grade 4E (g/t)	4E Kg's ('000)	4E (Moz)	Tonnes (million)	Grade 4E (g/t)	4E Kg's ('000)	4E (Moz)	Tonnes (million) Change	Tonnes % Change	Grade 4E (g/t)	Grade % Change	4E Kg's ('000)	Content % Change
Measured	UG2	198.6	6.43	1,277.9	41.1	198.9	6.45	1,282.9	41.2	-0.3	-0.2	-0.02	-0.2	-5.0	-0.4
Indicated	UG2	92.3	6.57	606.5	19.5	92.2	6.58	607.1	19.5	0.1	0.1	-0.01	-0.2	-0.6	-0.1
Measured + Indicated	**UG2**	290.9	6.48	1,884.4	60.6	291.1	6.49	1,890.0	60.8	-0.2	-0.1	-0.01	-0.2	-5.6	-0.3
Inferred	UG2	174.6	6.71	1,171.1	37.7	173.8	6.71	1,165.7	37.5	0.8	0.5	0.00	0.0	5.4	0.5

Table 20: Details of changes between the 2017 and 2016 Bokoni Mine Mineral Resource Estimate.

Composites	2016	2017	Additional	Absolute % Change
MR	6,245	6,320	75	1.2%
MRHW	24,590	24,770	180	0.7%
MRFW	66,292	66,961	669	1.0%
UG2	4,092	4,159	67	1.6%
UG2HW	19,716	19,723	7	0.0%
UG2FW	52,363	53,265	902	1.7%

Notes
1.Minor Changes in local grades and channel width's due to the addition of composites for the respective estimates.

Paylimits (R/t)	2016 (R/t)	2017 (R/t)	Change (R/t)	Absolute % Change
MR	751	645	-106	-14.1%
UG2	883	557	-326	-36.9%

Notes
1.Increase in tonnage of U/G material due to lower paylimits.
2.MR Decrease in tonnage due to the removal of Klipfontein Opencast as not Economically extractable (180cm cut reduction to 1.15cm, and material reclassed for U/G).
3.Minor grade changes due to decreased paylimits.

Geological Loss Factor (%)	2016 (%)	2017 (%)	Change (%)	Absolute % Change
MR	16.28	16.48	0.2	1.2%
UG2	11.00	11.00	0.00	0.0%

Notes
1.IRUP factor of 0.2 added to Klipfontein and Avoca.
2.Changes and additions to polygons (IRUP and Potholes).
3.Updated MR Pothole estimate variogram (weighted average Pothole Factor increase from 15.0 to 15.1%).
4.MR pothole factor estimate limited to SMU25 area and a global factor applied to the area outside SMU25 area, based on actual values encountered in the mined area (rounded-up i.e. 15 %).

2-D Reef Boundary Area (m^2)	2016 (m^2)	2017 (m^2)	Change (m^2)	Absolute % Change
MR	121,804,506	121,682,323	-122,184	-0.1%
UG2	149,892,973	149,744,794	-148,180	-0.1%

Notes
1.River-pillar adjustments made due to re-survey by Bokoni.
2.Certain Farm boundaries adjusted by Bokoni.

Dip changes (°)	2016 (°)	2017 (°)	Change (°)	Absolute % Change
MR	14.998	14.840	-0.158	-1.1%
UG2	17.317	17.393	0.076	0.4%

Notes
1.Added additional drillhole composites as well as Reef pegs affecting the average dip of the respective gridded surfaces (channel sample not utilised due to positioning errors, Bokoni Sampling Department in conjunction with MineRP are resolving the issue).
2.MR Reef pegs increased by 533 from by 21,961 to 22,494.
3.UG2 Reef pegs increased by 612 from by 6,923 to 7,535.

Mined 3-D Area (m^2)	2016 (m^2)	2017 (m^2)	Change (m^2)	Absolute % Change
MR	11,466,213	11,785,866	319,653	2.8%
UG2	2,294,133	2,465,612	171,479	7.5%

Notes
1.MR and UG Reefs mined resulting in a decrease in Measured Resources. Not apparent in UG2 due to the limited mining during 2016 and the effect of rounding to million tonnes.
2. Adjusted for mining from January to end September 2017.

25.3. Risks

Several risks have been identified which need to be addressed in the next iteration of the Mineral Resource estimate for Bokoni as follows:

- UCB's located within 0.5 m of both the MR and UG2 TRC pose potential fall of ground conditions.
- The UG2 is known to have partings in the hangingwall in certain areas of the Bokoni Property. These partings are known to cause mining dilution in these areas. In 2014 the L1 to UG2 parting has been modelled.
- An area to the east of the Middlepunt Decline is known to have abnormally bifurcated and developed UG2 Reef. This area requires additional geological investigation to fully understand the geological continuity of the UG2 Reef.
- The Klipfontein and Brakfontein regional potholes represent areas of risk in terms of the continuity of the Merensky Reef (and UG2 Reef in the Klipfontein pothole area). These areas require an in depth geological study to confirm continuity.

ExplorMine is of the opinion that these risks are not likely to cause significant changes to the current Mineral Resource estimate.

26. RECOMMENDATIONS (ITEM 26)

As a consequence of the Mineral Resource estimate and associated review of source data for the estimate, as detailed in this report, ExplorMine Consultants recommend the following:

- In terms of the SABLE Data Works Warehouse™ surface drillhole database;
  1) The SABLE™ drillhole database has exceptions which need to be resolved, including:
     a) Missing collar co-ordinates
     b) Missing deviation surveys
     c) Missing assays
     d) Conflicting stratigraphy between assay and lithological logs
  2) The stratigraphic coding in the SABLE™ database requires further stratigraphic codes for geotechnical risk purposes.
  3) The identification of pothole and bifurcate Merensky Reef and UG2 Reef intersections is not clearly indicated in the SABLE™ database.
  4) The identification of the Merensky and UG2 Reef mining cuts is not standardised and have several iterations which differ.
  5) The flags in the database which indicate the status of the data for use/non-use need to be revised. Additional flags should be introduced to indicate whether the data can be used for estimation and or geological modelling.
  6) Composites from previous resource estimations should be stored in the database.
  7) Regular database audits (internal/external) should be conducted to ensure exceptions are eliminated.

- In terms of the underground channel sampling;
  1) Resolve exceptions due to positioning or assay result issues to reduce the number of composites discarded during the Mineral Resource estimate. If these cannot be resolved the channel sample should be removed as it will produce erroneous results when panel values are reconciled utilising the current MineRP "Histogram" process.
  2) The continuation of the practice of underground channel sampling should be reviewed in context of other possible alternatives such as underground drilling programmes from underground development.
  3) The final accepted channel samples for estimation should be stored in the SABLE Data Warehouse™.

- In terms of the geological zone / facies definition;
    1) Although at least two geological zones or facies were defined for the UG2 Reef, ExplorMine recommends that mine geological staff attempt to define more detailed subdivisions for both the Merensky and UG2 Reefs based on geological attributes. If successful, geostatistical analysis and variography studies are likely to be improved.
    2) ExplorMine Consultants recommends that a study of the vertical mineralisation profile for the Merensky Reef versus the lithology or stratigraphic profile be initiated. It is clear from initial studies that the mineralisation profile relative to the lithology profile changes from one geographic area to another. This may have implications for the determinations of "mining profiles or cuts".
- In terms of the polygons and polylines;
    1) Bokoni Mine should update the Cadsmine polygons and polylines annually with the edited ExplorMine final estimation versions to prevent version control issues.
- In terms of the quality control and assurance;
    1) ExplorMine recommends that additional actions be taken should CRM's and blanks be returned as "failures" from the laboratories, to improve the efficiency of the quality control. The sample batch containing a failed QA / QC sample should be returned for re-assay.

Additional reconciliation protocols (grade control) should be introduced where the annual Mineral Resource estimate is compared to actual mining results to ensure that resource estimation parameters are optimised.

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28. DATE AND SIGNATURES

The effective date of this report is 31st December 2017.

WD Northrop

AM Deiss

GR Mitchell

29. CERTIFICATES

CERTIFICATE of QUALIFIED PERSON

(Bill Northrop)

I, Dr William Northrop, Pr. Sci. Nat. do hereby certify that:

1) I am an Independent Geostatistical Consultant:

    10 Alexandria Road

    Bushmans River

    Eastern Cape Province, South Africa

2) I graduated from Rhodes University - BSc. (1968) and obtained a GDE (1989), MSc (1991) and PhD (1996) from the University of the Witwatersrand.
3) I am a member in good standing of the South African Council for Natural Scientific Professions (SACNASP), registration number 400164/87
4) I have worked as a geoscientist for a total of 48 years since my graduation from university with experience in the mining and exploration industry in various commodities including gold, PGM's oil, base metals, and diamonds. I have been involved in mines and projects throughout Southern and Eastern Africa for numerous large multinational mining companies. I have a wide range of geological, geophysical and geostatistical experience. I am the person responsible for the estimation and reporting of the Mineral Resource.
5) I have read the definition of "qualified person" set out in National Instrument 43-101 ("NI 43-101") and certify that by reason of my education, affiliation with the professional associations (as defined by NI 43-101) and past relevant work experience, I fulfil the requirements to be a "qualified person" for the purposes of NI 43-101.
6) I am co-responsible for the compilation of the Technical Report of the Mineral Resource estimate for the Merensky and UG2 reefs at the Bokoni Platinum Mine, Limpopo Province, Republic of South Africa.
7) I have not had prior involvement with the property that is the subject of the Report.
8) To the best of my knowledge, information and belief, the opinion contains all scientific and technical information required to be disclosed to make the report not misleading.
9) I am independent of the issuer applying all of the tests in Section 1.5 of National Instrument 43-101.
10) I have read National Instrument 43-101 and Form 43-101F1, and the Technical Report has been prepared in compliance with that instrument and form.

BILL NORTHROP

BSc. (Hons), GDE, MSc, PhD

Pr. Sci. Nat., FSAIMM, FGSSA,

Dated the 31st day of December 2017.

CERTIFICATE of QUALIFIED PERSON

(Andre Deiss)

I, Mr Andre Deiss, Pr. Sci. Nat. do hereby certify that:

1) I am an Independent Geological Consultant:

    Unit 20 Villa Grande, Riverside Road

    Beverley A.H.

    Gauteng Province, South Africa

2) I graduated from the University of the Witwatersrand - BSc. (1992) and BSc. Hons (1993).
3) I am a member in good standing of the South African Council for Natural Scientific Professions (SACNASP), registration number 400007/97.
4) I have worked as a geoscientist for a total of 23 years since my graduation from university with experience in geology and geostatistics in Southern Africa, and have worked for numerous large South African and International mining companies as a geologist. In acting in a consulting capacity, I have provided geological and geostatistical services to mining companies in Southern Africa active in a wide scope of commodities. I am responsible for the geological modelling, assay and geological database compilation, data integrity, and quality control and assurance.
5) I have read the definition of "qualified person" set out in National Instrument 43-101 ("NI 43-101") and certify that by reason of my education, affiliation with the professional associations (as defined by NI 43-101) and past relevant work experience, I fulfil the requirements to be a "qualified person" for the purposes of NI 43-101.
6) I am co-responsible for the compilation of the Technical Report of the Mineral Resource estimate for the Merensky and UG2 reefs at the Bokoni Platinum Mine, Limpopo Province, Republic of South Africa.
7) I have not had prior involvement with the property that is the subject of the Report. I have visited the Bokoni Mine property on several occasions from December 2009 to January 2015.
8) To the best of my knowledge, information and belief, the opinion contains all scientific and technical information required to be disclosed to make the report not misleading.
9) I am independent of the issuer applying all of the tests in Section 1.5 of National Instrument 43-101.
10) I have read National Instrument 43-101 and Form 43-101F1, and the Technical Report has been prepared in compliance with that instrument and form.

ANDRE DEISS

BSc. (Hons)

Pr. Sci. Nat., MSAIMM

Dated the 31st day of December 2017.

CERTIFICATE of QUALIFIED PERSON

(Garth Mitchell)

I, Mr Garth Mitchell, Pr. Sci. Nat. do hereby certify that:

1) I am an Independent Geological Consultant:

Dalkeith

Winburg

Free State, South Africa

2) I graduated from the University of the Witwatersrand - BSc. (1992) and BSc. Hons (1993) and University of South African BCom. (2000).
3) I am a member in good standing of the South African Council for Natural Scientific Professions (SACNASP), registration number 400014/97.
4) I have worked as a geoscientist for a total of 23 years since my graduation from university in the mining and exploration industry and have been responsible for the reporting of Mineral Resources on various properties in South Africa during the past 15 years. I have been employed with major South African gold mining companies since 1993 as a Mining Geologist, Exploration Geologist and have 6 years of senior mine management experience as an Ore Reserve Manager. I have been consulting and contracting for numerous companies in the past 13 years. I am responsible for the geological modelling, assay and geological database compilation, data integrity, and quality control and assurance.
5) I have read the definition of "qualified person" set out in National Instrument 43-101 ("NI 43-101") and certify that by reason of my education, affiliation with the professional associations (as defined by NI 43-101) and past relevant work experience, I fulfil the requirements to be a "qualified person" for the purposes of NI 43-101.
6) I am co-responsible for the compilation of the Technical Report of the of the Mineral Resource estimate for the Merensky and UG2 reefs at the Bokoni Platinum Mine, Limpopo Province, Republic of South Africa.
7) I have not had prior involvement with the property that is the subject of the Report. I have visited the Bokoni Mine property on several occasions from December 2009 to January 2015.
8) To the best of my knowledge, information and belief, the opinion contains all scientific and technical information required to be disclosed to make the report not misleading.
9) I am independent of the issuer applying all of the tests in Section 1.5 of National Instrument 43-101.
10) I have read National Instrument 43-101 and Form 43-101F1, and the Technical Report has been prepared in compliance with that instrument and form.

GARTH MITCHELL

BSc. (Hons), BCom.

Pr. Sci. Nat., MSAIMM, MGSSA

Dated the 31st day of December 2017.

30. GLOSSARY

Adit	A horizontal or nearly horizontal passage driven from the surface for the working or dewatering of a mine. If driven through the hill or mountain to the surface on the opposite side, it would be a tunnel.
Aliquot	A known portion of a whole.
Assay	The chemical analysis of rock or ore samples to determine the proportions of metals.
Audit	Verification of the validity of results.
Base Metal	A classification of metals usually considered to be of low value and higher chemical activity when compared with the noble metals (gold, silver, platinum, etc.). This non-specific term generally refers to the high-volume, low-value metals copper, lead, tin, and zinc.
Channel Sample	A method of sampling rock exposures where a regular series of chips are broken along a defined line on the rock face.
Channel Width	Width of reef channel measured perpendicular to the ore body.
Chromite	Chromite is an iron chromium oxide: $FeCr_2O_4$. It is an oxide mineral belonging to the spinel group.
Chromitite	Chromitite is an igneous cumulate composed mostly of the mineral chromite. It is found in layered intrusions such as the Bushveld Igneous Complex in South Africa and the Stillwater igneous complex in Montana.
Competent Person	A 'Competent Person' is a person who is registered with SACNASP, ECSA or PLATO, or a Member or Fellow of the SAIMM, the GSSA or a 'Recognised Overseas Professional Organisation' (ROPO). The complete list is promulgated by the SAMREC/SAMVAL Committee from time to time. The Competent Person must comply with the provisions of the relevant Acts.
Concentrate	The clean product recovered from froth flotation, bearing payable metals in a comparatively high concentration. The metals are recovered by smelting and refining.
Concentrator	A plant where ore is separated into values (concentrates) and rejects (tails). An appliance in such a plant, e.g., flotation cell, jig, electromagnet, shaking table. Also called mill; reduction works; cleaning plant.
Cut-off grade	Lowest grade of mineralised material considered to be economically viable to extract.
Dip	The angle that a surface, bedding or structure makes with the horizontal measured perpendicular to strike or down its steepest slope.
Dolerite	Dark igneous rock composed of iron and magnesium silicates and minor feldspar.
Drillhole\Borehole	Invasive mechanical method of sampling rock.
Dyke	A tabular igneous intrusion that cuts across the bedding of foliation of the country rock.
Exploration	Prospecting, sampling, mapping, drilling and any other method used in the search for mineralization.
Facies	A rock assemblage defined by composition, shape and internal geometry or physical properties.
Fault	A fracture within rock along which movement has occurred.

Feasibility	A comprehensive study of a mineral deposit in which all geological, engineering, legal, operating, economic, social, environmental and other relevant factors are considered in sufficient detail that it could reasonably serve as the basis for a final decision by a financial institution to finance the development of the deposit for mineral production.
Fire Assay	The assaying of ore by furnace or fire methods.
Footwall	In metal mining, the part of the country rock that lies below the ore deposit. Also the underlying side of a fault, orebody, or mine working; esp. the wall rock beneath an inclined vein or fault.
Grade	The relative quantity or percentage of ore mineral content in an orebody.
Hangingwall	The overlying side of an orebody, fault, or mine working, esp. the wall rock above an inclined vein or fault.
Hydrothermal	Process of injection of hot, aqueous, mineral-rich solutions into existing rocks or structural breaks.
Independent	A qualified person is independent of an issuer if there is no circumstance that could, in the opinion of a reasonable person aware of all relevant facts, interfere with the qualified person's judgment regarding the preparation of the technical report.
Indicated Resource	Indicated Mineral Resource is that part of the Mineral Resource for which quantity grade or quality, densities, shape and physical characteristics, can be estimated with a level of confidence sufficient to allow the appropriate application of technical and economic parameters to support mine planning and evaluation of the economic viability of the deposit. The estimate is based on detailed and reliable exploration and testing information gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings and drillholes that are spaced closely enough for geological and grade continuity to be reasonably assumed.
Inferred Resource	Inferred Mineral Resource is that part of the Mineral Resource for which quantity grade or quality can be estimated on the basis of geological evidence and limited sampling and reasonably assumed, but not verified, geological and grade continuity. The estimate is based on limited information and sampling gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings and drillholes.
Intrusion	A unit of igneous rock, which is emplaced within pre-existing rocks as magma and then solidifies below surface.
JORC Code	The Australasian Code for Reporting of Mineral Resources and Ore Reserves prepared by the Joint Ore Reserves Committee of the Australian Institute of Mining and Metallurgy, Australian Institute of Geoscientists and Mineral Council of Australia, as amended.
Kriging	Best linear unbiased estimate. In particular kriging employs the variogram model as the weighting function because of this kriging weights are assigned in a way that reflects the spatial correlation of the grades themselves.
Measured Resource	Measured Mineral Resource is that part of the Mineral Resource for which quantity grade or quality, densities, shape, physical characteristics are so well established that they can be estimated with confidence sufficient to allow the appropriate application of technical and economic parameters to support production planning and evaluation of the economic viability of the deposit. The estimate is based on detailed and reliable exploration and testing information gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings and drillholes that are spaced closely enough to confirm geological and grade continuity.
Metamorphism	The mineralogical, chemical and structural adjustment of solid rocks in response to physical and chemical conditions which differ from the conditions under which the rocks originated.
Mineable	Those parts of the orebody, both economic and uneconomic, that can be extracted during the normal course of mining.
Mineralisation	The process(es) whereby a mineral/minerals are introduced into a rock, resulting in a valuable or potentially valuable

	deposit. The presence of a mineral of economic interest.
Mineral Reserve	Is the economically mineable part of a Measured or Indicated Mineral Resource demonstrated by at least a Preliminary Feasibility Study. The Study must include adequate information on mining, processing, metallurgical, economic and other relevant factors that demonstrate, at the time of reporting, that economic extraction can be justified. A Mineral Reserve includes diluting materials and allowances for losses that may occur when material is mined.
Mineral Resource	Is a concentration or occurrence of natural, solid, inorganic or fossilised organic material in or near the Earth's crust in such form and quantity and of such a grade or quality that is has reasonable prospects for economic extraction. The location, quantity, grade, geological characteristics and continuity of a Mineral Resource are known, estimated or interpreted from specific geological evidence and knowledge.
Modifying Factors	'Modifying Factors' include mining metallurgical economic marketing legal environmental, social and governmental considerations.
Ore	The naturally occurring material from which a mineral(s) can be extracted at a reasonable profit.
Orebody	A continuous well-defined mass of material to sufficient ore content to make extraction economically feasible.
Pre-Feasibility Study	A comprehensive study of the viability of a mineral project that has advanced to a stage where the mining method, in the case of underground mining, or the pit configuration, in the case of an open pit, has been established and an effective method of mineral processing has been determined, and includes a financial analysis based on reasonable assumptions of technical, engineering, legal, operating, economic, social, and environmental factors and the evaluation of other relevant factors which are sufficient for a qualified person, acting reasonably, to determine if all or part of the mineral resource may be classified as a mineral reserve.
Probable Mineral Reserve	'Probable Mineral Reserve' is the economically mineable part of the Indicated and, in some circumstances, a Measured Mineral Resource demonstrated by at a Preliminary Feasibility Study. This study must include adequate information on mining, processing, metallurgical, economic, and other relevant factors that demonstrate, at the time of reporting, that economic extraction is justified.
Proven Mineral Reserve	'Proven Mineral Reserve' is the economically mineable part of the Measured Mineral Resource demonstrated by at least a Preliminary Feasibility Study. This study must include adequate information on mining, processing, metallurgical, economic, and other relevant factors that demonstrate, at the time of reporting, that economic extraction is justified.
Porphyritic	Relating to or denoting a rock texture, typically found in volcanic rocks, containing distinct crystals or crystalline particles embedded in a fine-grained ground mass
Pyrite	A common, pale bronze or brass yellow mineral, FeS_2.
Qualified Person	Means an individual who is an engineer or geoscientist with at least five years of experience in mineral exploration, mine development, production activities and project assessment, or any combination thereof, including experience relevant to the subject matter of the project or report and is a member in good standing of a Self-Regulating Organisation.
Raise	An inclined excavation developed on reef elevation between development levels.
Reef	A generic term for a metalliferous mineral deposit, especially gold bearing quartz.
Sampling	Taking small representative pieces of rock or material along exposed mineralisation or diamond drill core for assay.
SAMREC Code	South African Code for reporting of Mineral Resources and Mineral Reserves.

Sedimentary	Refers to rocks formed by deposition of detrital or chemical material that originates from the weathering of rock, and is transported from a source to a site of deposition.
Semi-variogram	Spatial expression of the average variance between points in a particular direction at a particular distance apart.
Slimes dam	Storage facility for tailings discharged from a processing plant after valuable fractions have been recovered.
Stope	A void created underground by mining and the removal or ore.
Stratigraphy	The arrangement of strata, with reference to geographical position and chronological order of sequence.
Strike	Direction along slopping strata or surface, which is at right angles to dip.
Sulphide	A chemical compound of sulphur.
Technical Report NI43-101	A report prepared and filed in accordance with Canadian National Instrument 43-101 and Form 43-101F1 Technical Report that does not omit any material scientific and technical information in respect of the subject property as of the date of the filing of the report
Tectonic	Said of or pertaining to the forces involved or the resulting features of tectonics.
Trenching	The act of excavating a narrow, shallow ditch cut across a mineral deposit to obtain samples or to observe character.
Unconformity	A substantial break or gap in the geological record where a rock unit is overlain by another that is not in stratigraphic succession.

Abbreviations

3E	Platinum plus palladium plus gold
4E	Platinum plus palladium plus rhodium plus gold
AAS	Atomic Absorption Spectroscopy
AR	Anglo Research Analytical Services Laboratory
Au	Chemical Symbol for Gold
CIM	Canadian Institute of Mining and Petroleum
CP	Competent Person
CPR	Competent Persons Report
Cu	Chemical Symbol for Copper
DMR	Department of Mineral Resources (South African Government Ministry)
EBRL	Eastern Bushveld Regional Laboratory
ISO	International Organisation for Standardisation
JORC	Joint Ore Reserves Committee (Australasian equivalent of the SAMREC Code)
JSE	Johannesburg Securities Exchange
Ma	Mega-annum (million years ago)
Ni	Chemical Symbol for Nickel
NI43-101	Canadian National Instrument 43-101, Standards of Disclosure for Mineral Projects. Public disclosures by listed entities must comply with these standards.
QP	Qualified Person
Pd	Chemical Symbol for Palladium
PGE	Platinum Group Element
PGM	Platinum Group Metal
Pr. Sci. Nat.	A suitably qualified and experienced professional registered as a professional Natural Scientist with the South African Council for Natural Scientific Professions (SACNASP)
Pt	Chemical Symbol for Platinum
Rh	Chemical Symbol for Rhodium
SACNASP	South African Council for Natural Scientific Professions
SAIMM	South African Institute for Mining and Metallurgy
SAMREC	South African Code for reporting of Exploration Results, Mineral Resources and Mineral Reserves
SANAS	South African National Accreditation System
UG2	Upper Group2 Chromitite Layer
XRF	X-Ray Fluorescence

Units

cm	Centimetre
cmg/t	Centimetre grams per tonne
g	Grammes
g/t	Grammes per metric tonne
Ha	Hectare
kg	Kilogramme
km	Kilometres
Ktpm	Kilo tonnes per month
m	Metres
mg/t	Metre grams per tonne
Moz	Million troy ounces
Mt	Million tonnes
MVA	Megavolt ampere
Oz	Fine troy ounce (31.10348 grammes)
Ppm	Parts per million
t	Metric tonne
tpm	Tonnes per month
%	Percent
°	Degrees
‘	Minutes
ZAR	South African currency, the Rand

APPENDIX A – BOKONI MINE AREA – DRILLHOLE COLLARS (PLEASE REFER TO DOCUMENT ENTITLED "APPENDIX A.PDF")

APPENDIX B – BOKONI MINE AREA – COMPOSITES (PLEASE REFER TO DOCUMENT ENTITLED "APPENDIX B.PDF")

APPENDIX C – BOKONI MINE AREA – VARIOGRAM PARAMETERS

Table C 1: Variogram Parameters.

REEF	ZONE	ELEMENT	VREFNUM	VANGLE1	VANGLE2	VANGLE3	VAXIS1	VAXIS2	VAXIS3	NUGGET	ST1	ST1PAR1	ST1PAR2	ST1PAR3	ST1PAR4	ST2	ST2PAR1	ST2PAR2	ST2PAR3	ST2PAR4	ST3	ST3PAR1	ST3PAR2	ST3PAR3	ST3PAR4
MRHW	-	PT	1	45	0	0	3	2	1	1.3162	1	10	508	10	0.6844	1	207	331	10	0.8325	0	-	-	-	-
MRHW	-	PD	2	45	0	0	3	2	1	0.4167	1	6	588	10	0.1321	1	242	271	10	0.3714	0	-	-	-	-
MRHW	-	RH	3	67.5	0	0	3	2	1	0.0021	1	11	239	10	0.0020	1	107	170	10	0.0008	0	-	-	-	-
MRHW	-	AU	4	67.5	0	0	3	2	1	0.0188	1	8	461	10	0.0144	1	158	415	10	0.0106	0	-	-	-	-
MRHW	-	CU	5	67.5	0	0	3	2	1	0.0018	1	2	222	10	0.0015	1	489	1194	10	0.0007	0	-	-	-	-
MRHW	-	NI	6	0	0	0	0	0	0	0.0129	1	244	244	10	0.0025	1	1926	1926	10	0.0027	0	-	-	-	-
MRHW	-	4E	7	45	0	0	3	2	1	3.3685	1	5	447	10	2.3985	1	195	309	10	2.2309	0	-	-	-	-
MRHW	-	SG	9	0	0	0	0	0	0	0.0071	1	314	314	10	0.0070	1	1231	1231	10	0.0023	0	-	-	-	-
MR	-	PT	1	-22.5	0	180	3	2	1	2.6922	1	60	28	10	0.5308	1	87	115	10	0.4610	1	1225	1992	10	0.8884
MR	-	PD	2	-22.5	0	180	3	2	1	0.5739	1	101	51	10	0.0727	1	128	47	10	0.0693	1	1094	1638	10	0.2838
MR	-	RH	3	-22.5	0	180	3	2	1	0.0083	1	236	69	10	0.0017	1	96	37	10	0.0039	1	1098	1847	10	0.0028
MR	-	AU	4	-22.5	0	180	3	2	1	0.0201	1	373	205	10	0.0255	1	414	831	10	0.0334	1	432	894	10	0.0083
MR	-	CU	5	-22.5	0	180	3	2	1	0.0009	1	993	993	10	0.0021	1	2957	2957	10	0.0011	0	-	-	-	-
MR	-	NI	6	-22.5	0	180	3	2	1	0.0033	1	987	987	10	0.0117	1	2951	2951	10	0.0059	0	-	-	-	-
MR	-	4E	7	-22.5	0	180	3	2	1	6.2448	1	86	50	10	2.1084	1	122	231	10	1.1596	1	1156	1930	10	2.0113
MR	-	4ECLASS	712	-22.5	0	180	3	2	1	6.2448	1	86	50	10	2.1084	1	122	231	10	1.1596	1	1156	1930	10	2.0113
MR	-	4EMGT	8	-22.5	0	180	3	2	1	2.0944	1	86	74	10	1.4506	1	1887	1404	10	0.2469	1	1924	2474	10	0.8025
MR	-	SG	9	0	0	0	0	0	0	0.0010	1	777	777	10	0.0027	1	5395	5395	10	0.00007	1	5480	5480	10	0.0018
MR	-	CW	10	0	0	0	0	0	0	0.0081	1	5528	5323	10	0.0083	1	3280	6133	10	0.0181	1	4489	5903	10	0.0147
MR	-	AREAN	11	-45	0	180	3	2	1	1333	1	126	92	10	102327	1	74	141	10	81260	1	1031	1477	10	30436
MR	-	NPOINTS	12	-67.5	0	180	3	2	1	2.3517	1	461	394	10	11.8481	1	715	727	10	11.8481	1	500	3512	10	16.9878
MRFW	-	PT	1	0	0	0	0	0	0	7.9704	1	138	138	10	5.5477	1	297	297	10	2.3580	0	-	-	-	-
MRFW	-	PD	2	0	0	0	0	0	0	2.7214	1	115	115	10	0.4638	1	269	269	10	0.4092	0	-	-	-	-
MRFW	-	RH	3	0	0	0	0	0	0	0.0487	1	2	2	10	0.0201	1	183	183	10	0.0166	0	-	-	-	-
MRFW	-	AU	4	-45	0	180	3	2	1	0.0561	1	4	351	10	0.0173	1	124	548	10	0.0184	1	410	425	10	0.0146

REEF	ZONE	ELEMENT	VREFNUM	VANGLE1	VANGLE2	VANGLE3	VAXIS1	VAXIS2	VAXIS3	NUGGET	ST1	ST1PAR1	ST1PAR2	ST1PAR3	ST1PAR4	ST2	ST2PAR1	ST2PAR2	ST2PAR3	ST2PAR4	ST3	ST3PAR1	ST3PAR2	ST3PAR3	ST3PAR4
MRFW	-	CU	5	0	0	0	0	0	0	0.0015	1	82	82	10	0.0009	1	519	519	10	0.0005	1	674	674	10	0.0009
MRFW	-	NI	6	0	0	0	0	0	0	0.0065	1	802	802	10	0.0020	1	462	462	10	0.0024	1	378	378	10	0.0032
MRFW	-	4E	7	0	0	0	0	0	0	24.6992	1	254	254	10	4.1170	1	1124	1124	10	0.9687	1	1516	1516	10	9.1988
MRFW	-	SG	9	0	0	0	0	0	0	0.0075	1	145	145	10	0.0022	1	115	115	10	0.0019	1	2086	2086	10	0.0090
UG2HW	1	PT	1	0	0	0	0	0	0	0.0650	1	86	86	10	0.0175	1	1568	1568	10	0.0332	1	1575	1575	10	0.0242
UG2HW	1	PD	2	0	0	0	0	0	0	0.3689	1	1997	1997	10	0.0174	1	2015	2015	10	0.0130	1	2130	2130	10	0.0784
UG2HW	1	RH	3	0	0	0	0	0	0	0.0040	1	231	231	10	0.0002	1	2136	2136	10	0.00005	1	2136	2136	10	0.0013
UG2HW	1	AU	4	0	0	0	0	0	0	0.0014	1	147	147	10	0.0004	1	268	268	10	0.0004	1	1392	1392	10	0.00019
UG2HW	1	CU	5	0	0	0	0	0	0	0.0007	1	485	485	10	0.00005	1	1222	1222	10	0.0002	1	1796	1796	10	0.000124
UG2HW	1	NI	6	0	0	0	0	0	0	0.0009	1	1463	1463	10	0.00008	1	1892	1892	10	0.0003	1	1959	1959	10	0.000104
UG2HW	1	4E	7	0	0	0	0	0	0	0.3798	1	104	104	10	0.0831	1	1495	1495	10	0.1206	1	1507	1507	10	0.2702
UG2HW	1	SG	9	0	0	0	0	0	0	0.0086	1	153	153	10	0.0020	1	268	268	10	0.0034	1	1864	1864	10	0.0053
UG2	1	PT	1	0	0	0	0	0	0	0.2906	1	245	245	10	0.0506	1	873	873	10	0.0269	1	3375	3375	10	0.0635
UG2	1	PD	2	0	0	0	0	0	0	0.8583	1	305	305	10	0.1893	1	849	849	10	0.0833	1	3351	3351	10	0.0802
UG2	1	RH	3	0	0	0	0	0	0	0.0062	1	293	293	10	0.0040	1	728	728	10	0.0041	1	3149	3149	10	0.0030
UG2	1	AU	4	0	0	0	0	0	0	0.0029	1	390	390	10	0.0022	1	1091	1091	10	0.0007	1	4789	4789	10	0.0006
UG2	1	CU	5	0	0	0	0	0	0	0.0006	1	458	458	10	0.0003	1	421	421	10	0.0003	1	856	856	10	0.0002
UG2	1	NI	6	0	0	0	0	0	0	0.0009	1	403	403	10	0.0008	1	421	421	10	0.0008	1	1182	1182	10	0.0005
UG2	1	4E	7	0	0	0	0	0	0	1.8461	1	354	354	10	0.3559	1	390	390	10	0.3461	1	2263	2263	10	0.4489
UG2	1	4ECLASS	712	0	0	0	0	0	0	1.8930	1	402	402	10	0.6087	1	475	475	10	0.2095	1	2154	2154	10	0.4787
UG2	1	4EMGT	8	0	0	0	0	0	0	1.9644	1	511	511	10	0.2570	1	305	305	10	0.5239	1	2215	2215	10	0.3051
UG2	1	SG	9	0	0	0	0	0	0	0.0151	1	547	547	10	0.0090	1	329	329	10	0.0083	1	1913	1913	10	0.0114
UG2	1	CW	10	0	0	0	0	0	0	0.0136	1	438	438	10	0.0110	1	499	499	10	0.0089	1	2807	2807	10	0.0055
UG2FW	1	PT	1	0	0	0	0	0	0	0.2428	1	139	139	10	0.0596	1	685	685	10	0.0665	0	-	-	-	-
UG2FW	1	PD	2	-45	0	180	3	2	1	0.1965	1	83	217	10	0.0919	1	125	604	10	0.0255	0	-	-	-	-
UG2FW	1	RH	3	-45	0	180	3	2	1	0.0133	1	258	258	10	0.0039	1	392	392	10	0.0023	0	-	-	-	-
UG2FW	1	AU	4	-45	0	180	3	2	1	0.0004	1	1512	1512	10	0.00008	1	666	666	10	0.00006	0	-	-	-	-
UG2FW	1	CU	5	0	0	0	0	0	0	0.0003	1	382	382	10	0.00011	1	988	988	10	0.0002	1	753	753	10	0.000087
UG2FW	1	NI	6	0	0	0	0	0	0	0.0022	1	946	946	10	0.0007	1	474	474	10	0.0007	0	-	-	-	-

REEF	ZONE	ELEMENT	VREFNUM	VANGLE1	VANGLE2	VANGLE3	VAXIS1	VAXIS2	VAXIS3	NUGGET	ST1	ST1PAR1	ST1PAR2	ST1PAR3	ST1PAR4	ST2	ST2PAR1	ST2PAR2	ST2PAR3	ST2PAR4	ST3	ST3PAR1	ST3PAR2	ST3PAR3	ST3PAR4
UG2FW	1	4E	7	0	0	0	0	0	0	0.5881	1	1381	1381	10	0.1857	1	779	779	10	0.1390	0	-	-	-	-
UG2FW	1	SG	9	0	0	0	0	0	0	0.0121	1	219	219	10	0.0097	1	343	343	10	0.0029	1	1478	1478	10	0.0049
UG2HW	2	PT	1	0	0	0	0	0	0	0.0395	1	394	394	10	0.0085	1	1202	1202	10	0.0087	1	1685	1685	10	0.0107
UG2HW	2	PD	2	0	0	0	0	0	0	0.1449	1	327	327	10	0.0363	1	587	587	10	0.0154	1	695	695	10	0.0266
UG2HW	2	RH	3	0	0	0	3	2	1	0.0018	1	10	10	10	0.0003	1	458	458	10	0.0005	1	710	710	10	0.0005
UG2HW	2	AU	4	0	0	0	0	0	0	0.0004	1	255	255	10	0.000094	1	780	780	10	0.000047	1	798	798	10	0.00009
UG2HW	2	CU	5	0	0	0	0	0	0	0.0002	1	321	321	10	0.000128	1	716	716	10	0.00005	0	-	-	-	-
UG2HW	2	NI	6	0	0	0	0	0	0	0.0005	1	340	340	10	0.000131	1	356	356	10	0.00013	1	477	477	10	0.00014
UG2HW	2	4E	7	0	0	0	0	0	0	0.4087	1	315	315	10	0.1018	1	563	563	10	0.0863	1	774	774	10	0.0622
UG2HW	2	SG	9	0	0	0	0	0	0	0.0077	1	424	424	10	0.0024	1	442	442	10	0.0023	1	526	526	10	0.0024
UG2	2	PT	1	0	0	0	0	0	0	0.1500	1	137	137	10	0.0690	1	309	309	10	0.0650	1	767	767	10	0.1217
UG2	2	PD	2	0	0	0	0	0	0	1.0252	1	70	70	10	0.0865	1	308	308	10	0.2916	1	395	395	10	0.1234
UG2	2	RH	3	0	0	0	0	0	0	0.0080	1	187	187	10	0.0041	1	373	373	10	0.0041	1	1265	1265	10	0.0043
UG2	2	AU	4	0	0	0	0	0	0	0.0015	1	273	273	10	0.0007	1	196	196	10	0.0009	1	273	273	10	0.0003
UG2	2	CU	5	0	0	0	0	0	0	0.0002	1	225	225	10	0.0001	1	257	257	10	0.0002	1	1214	1214	10	0.0001
UG2	2	NI	6	0	0	0	0	0	0	0.0005	1	150	150	10	0.0007	1	631	631	10	0.0006	1	1311	1311	10	0.0002
UG2	2	4E	7	0	0	0	0	0	0	1.9629	1	192	192	10	0.4701	1	192	192	10	0.4487	1	876	876	10	0.5741
UG2	2	4ECLASS	712	0	0	0	0	0	0	1.8930	1	402	402	10	0.6087	1	475	475	10	0.2095	1	2154	2154	10	0.4787
UG2	2	4EMGT	8	0	0	0	0	0	0	1.0366	1	165	165	10	0.3456	1	314	314	10	0.3118	1	290	290	10	0.1242
UG2	2	SG	9	0	0	0	0	0	0	0.0128	1	432	432	10	0.0046	1	663	663	10	0.0114	1	794	794	10	0.0146
UG2	2	CW	10	0	0	0	0	0	0	0.0042	1	210	210	10	0.0025	1	314	314	10	0.0027	1	386	386	10	0.0010
UG2FW	2	PT	1	0	0	0	0	0	0	0.2282	1	417	417	10	0.1044	1	283	283	10	0.0328	0	-	-	-	-
UG2FW	2	PD	2	0	0	0	0	0	0	0.4761	1	428	428	10	0.1791	1	225	225	10	0.1671	0	-	-	-	-
UG2FW	2	RH	3	0	0	0	0	0	0	0.0117	1	392	392	10	0.0055	1	280	280	10	0.0024	0	-	-	-	-
UG2FW	2	AU	4	0	0	0	0	0	0	0.00039	1	339	339	10	0.000052	1	244	244	10	0.00011	0	-	-	-	-
UG2FW	2	CU	5	0	0	0	0	0	0	0.000131	1	446	446	10	0.000027	1	653	653	10	0.000043	0	-	-	-	-
UG2FW	2	NI	6	0	0	0	0	0	0	0.0012	1	638	638	10	0.0009	1	523	523	10	0.0008	0	-	-	-	-
UG2FW	2	4E	7	0	0	0	0	0	0	1.3831	1	225	225	10	0.4653	1	230	230	10	0.5947	0	-	-	-	-
UG2FW	2	SG	9	0	0	0	0	0	0	0.0167	1	186	186	10	0.0084	1	523	523	10	0.0308	0	-	-	-	-

APPENDIX D – BOKONI MINE AREA – ESTIMATION AND SEARCH VOLUME PARAMETERS

Table D 1: Estimation Parameters.

REEF	ZONE	VALUE_IN	VALUE_OU	NUMSAM_F	SVOL_F	VAR_F	MINDIS_F	SREFNUM	IMETHOD	POWER	VREFNUM	TOL	MAXITER	KRIGNEGW	KRIGVARS
MRHW	-	PT	PT	NSPT	SVPT	VARPT	MDPT	1	3	0	1	0.01	3	1	1
MRHW	-	PT	AVGPT					1	2	0	-	0.01	3	1	1
MRHW	-	PT	FFUNCPT					1	101	0	1	0.01	3	1	1
MRHW	-	PT	LGMPT					1	102	0	1	0.01	3	1	1
MRHW	-	PT	NNPT					1	1	0	-	0.01	3	1	1
MRHW	-	PD	PD	NSPD	SVPD	VARPD	MDPD	2	3	0	2	0.01	3	1	1
MRHW	-	PD	AVGPD					2	2	0	-	0.01	3	1	1
MRHW	-	PD	FFUNCPD					2	101	0	2	0.01	3	1	1
MRHW	-	PD	LGMPD					2	102	0	2	0.01	3	1	1
MRHW	-	PD	NNPD					2	1	0	-	0.01	3	1	1
MRHW	-	RH	RH	NSRH	SVRH	VARRH	MDRH	3	3	0	3	0.01	3	1	1
MRHW	-	RH	AVGRH					3	2	0	-	0.01	3	1	1
MRHW	-	RH	FFUNCRH					3	101	0	3	0.01	3	1	1
MRHW	-	RH	LGMRH					3	102	0	3	0.01	3	1	1
MRHW	-	RH	NNRH					3	1	0	-	0.01	3	1	1
MRHW	-	AU	AU	NSAU	SVAU	VARAU	MDAU	4	3	0	4	0.01	3	1	1
MRHW	-	AU	AVGAU					4	2	0	-	0.01	3	1	1
MRHW	-	AU	FFUNCAU					4	101	0	4	0.01	3	1	1
MRHW	-	AU	LGMAU					4	102	0	4	0.01	3	1	1
MRHW	-	AU	NNAU					4	1	0	-	0.01	3	1	1
MRHW	-	CU	CU	NSCU	SVCU	VARCU	MDCU	5	3	0	5	0.01	3	1	1
MRHW	-	CU	AVGCU					5	2	0	-	0.01	3	1	1
MRHW	-	CU	FFUNCCU					5	101	0	5	0.01	3	1	1
MRHW	-	CU	LGMCU					5	102	0	5	0.01	3	1	1
MRHW	-	CU	NNCU					5	1	0	-	0.01	3	1	1

REEF	ZONE	VALUE_IN	VALUE_OU	NUMSAM_F	SVOL_F	VAR_F	MINDIS_F	SREFNUM	IMETHOD	POWER	VREFNUM	TOL	MAXITER	KRIGNEGW	KRIGVARS
MRHW	-	NI	NI	NSNI	SVNI	VARNI	MDNI	6	3	0	6	0.01	3	1	1
MRHW	-	NI	AVGNI					6	2	0	-	0.01	3	1	1
MRHW	-	NI	FFUNCNI					6	101	0	6	0.01	3	1	1
MRHW	-	NI	LGMNI					6	102	0	6	0.01	3	1	1
MRHW	-	NI	NNNI					6	1	0	-	0.01	3	1	1
MRHW	-	4E	4E	NS4E	SV4E	VAR4E	MD4E	7	3	0	7	0.01	3	1	1
MRHW	-	4E	AVG4E					7	2	0	-	0.01	3	1	1
MRHW	-	4E	FFUNC4E					7	101	0	7	0.01	3	1	1
MRHW	-	4E	LGM4E					7	102	0	7	0.01	3	1	1
MRHW	-	4E	NN4E					7	1	0	-	0.01	3	1	1
MRHW	-	SG	SG	NSSG	SVSG	VARSG	MDSG	9	3	0	9	0.01	3	1	1
MRHW	-	SG	AVGSG					9	2	0	-	0.01	3	1	1
MRHW	-	SG	FFUNCSG					9	101	0	9	0.01	3	1	1
MRHW	-	SG	LGMSG					9	102	0	9	0.01	3	1	1
MRHW	-	SG	NNSG					9	1	0	-	0.01	3	1	1
MR	-	PT	PT	NSPT	SVPT	VARPT	MDPT	1	3	0	1	0.01	3	1	1
MR	-	PT	AVGPT					1	2	0	-	0.01	3	1	1
MR	-	PT	FFUNCPT					1	101	0	1	0.01	3	1	1
MR	-	PT	LGMPT					1	102	0	1	0.01	3	1	1
MR	-	PT	NNPT					1	1	0	-	0.01	3	1	1
MR	-	PD	PD	NSPD	SVPD	VARPD	MDPD	2	3	0	2	0.01	3	1	1
MR	-	PD	AVGPD					2	2	0	-	0.01	3	1	1
MR	-	PD	FFUNCPD					2	101	0	2	0.01	3	1	1
MR	-	PD	LGMPD					2	102	0	2	0.01	3	1	1
MR	-	PD	NNPD					2	1	0	-	0.01	3	1	1
MR	-	RH	RH	NSRH	SVRH	VARRH	MDRH	3	3	0	3	0.01	3	1	1
MR	-	RH	AVGRH					3	2	0	-	0.01	3	1	1
MR	-	RH	FFUNCRH					3	101	0	3	0.01	3	1	1
MR	-	RH	LGMRH					3	102	0	3	0.01	3	1	1

REEF	ZONE	VALUE_IN	VALUE_OU	NUMSAM_F	SVOL_F	VAR_F	MINDIS_F	SREFNUM	IMETHOD	POWER	VREFNUM	TOL	MAXITER	KRIGNEGW	KRIGVARS
MR	-	RH	NNRH					3	1	0	-	0.01	3	1	1
MR	-	AU	AU	NSAU	SVAU	VARAU	MDAU	4	3	0	4	0.01	3	1	1
MR	-	AU	AVGAU					4	2	0	-	0.01	3	1	1
MR	-	AU	FFUNCAU					4	101	0	4	0.01	3	1	1
MR	-	AU	LGMAU					4	102	0	4	0.01	3	1	1
MR	-	AU	NNAU					4	1	0	-	0.01	3	1	1
MR	-	CU	CU	NSCU	SVCU	VARCU	MDCU	5	3	0	5	0.01	3	1	1
MR	-	CU	AVGCU					5	2	0	-	0.01	3	1	1
MR	-	CU	FFUNCCU					5	101	0	5	0.01	3	1	1
MR	-	CU	LGMCU					5	102	0	5	0.01	3	1	1
MR	-	CU	NNCU					5	1	0	-	0.01	3	1	1
MR	-	NI	NI	NSNI	SVNI	VARNI	MDNI	6	3	0	6	0.01	3	1	1
MR	-	NI	AVGNI					6	2	0	-	0.01	3	1	1
MR	-	NI	FFUNCNI					6	101	0	6	0.01	3	1	1
MR	-	NI	LGMNI					6	102	0	6	0.01	3	1	1
MR	-	NI	NNNI					6	1	0	-	0.01	3	1	1
MR	-	4E	4E	NS4E	SV4E	VAR4E	MD4E	7	3	0	7	0.01	3	1	1
MR	-	4E	AVG4E					7	2	0	-	0.01	3	1	1
MR	-	4E	FFUNC4E					7	101	0	7	0.01	3	1	1
MR	-	4E	LGM4E					7	102	0	7	0.01	3	1	1
MR	-	4E	NN4E					7	1	0	-	0.01	3	1	1
MR	-	4EMGT	4EMGT	NS4EMGT	SV4EMGT	VAR4EMGT	MD4EMGT	8	3	0	8	0.01	3	1	1
MR	-	4EMGT	AVG4EMGT					8	2	0	-	0.01	3	1	1
MR	-	4EMGT	FFUNC4EM					8	101	0	8	0.01	3	1	1
MR	-	4EMGT	LGM4EMGT					8	102	0	8	0.01	3	1	1
MR	-	4EMGT	NN4EMGT					8	1	0	-	0.01	3	1	1
MR	-	SG	SG	NSSG	SVSG	VARSG	MDSG	9	3	0	9	0.01	3	1	1
MR	-	SG	AVGSG					9	2	0	-	0.01	3	1	1
MR	-	SG	FFUNCSG					9	101	0	9	0.01	3	1	1

REEF	ZONE	VALUE_IN	VALUE_OU	NUMSAM_F	SVOL_F	VAR_F	MINDIS_F	SREFNUM	IMETHOD	POWER	VREFNUM	TOL	MAXITER	KRIGNEGW	KRIGVARS
MR	-	SG	LGMSG					9	102	0	9	0.01	3	1	1
MR	-	SG	NNSG					9	1	0	-	0.01	3	1	1
MR	-	CW	CW	NSCW	SVCW	VARCW	MDCW	10	3	0	10	0.01	3	1	1
MR	-	CW	AVGCW					10	2	0	-	0.01	3	1	1
MR	-	CW	FFUNCCW					10	101	0	10	0.01	3	1	1
MR	-	CW	LGMCW					10	102	0	10	0.01	3	1	1
MR	-	CW	NNCW					10	1	0	-	0.01	3	1	1
MR	-	AREAN	AREAN	NSPA	SVPA	VARPA	MDPA	11	3	0	11	0.01	3	1	1
MR	-	AREAN	AVGCW					11	2	0	-	0.01	3	1	1
MR	-	AREAN	FFUNCCW					11	101	0	11	0.01	3	1	1
MR	-	AREAN	LGMCW					11	102	0	11	0.01	3	1	1
MR	-	AREAN	NNCW					11	1	0	-	0.01	3	1	1
MR	-	NPOINTS	NPOINTS	NSPA	SVPA	VARPA	MDPA	12	3	0	12	0.01	3	1	1
MR	-	NPOINTS	AVGPA					12	2	0	-	0.01	3	1	1
MR	-	NPOINTS	FFUNCPA					12	101	0	12	0.01	3	1	1
MR	-	NPOINTS	LGMPA					12	102	0	12	0.01	3	1	1
MR	-	NPOINTS	NNPA					12	1	0	-	0.01	3	1	1
MRFW	-	PT	PT	NSPT	SVPT	VARPT	MDPT	1	3	0	1	0.01	3	1	1
MRFW	-	PT	AVGPT					1	2	0	-	0.01	3	1	1
MRFW	-	PT	FFUNCPT					1	101	0	1	0.01	3	1	1
MRFW	-	PT	LGMPT					1	102	0	1	0.01	3	1	1
MRFW	-	PT	NNPT					1	1	0	-	0.01	3	1	1
MRFW	-	PD	PD	NSPD	SVPD	VARPD	MDPD	2	3	0	2	0.01	3	1	1
MRFW	-	PD	AVGPD					2	2	0	-	0.01	3	1	1
MRFW	-	PD	FFUNCPD					2	101	0	2	0.01	3	1	1
MRFW	-	PD	LGMPD					2	102	0	2	0.01	3	1	1
MRFW	-	PD	NNPD					2	1	0	-	0.01	3	1	1
MRFW	-	RH	RH	NSRH	SVRH	VARRH	MDRH	3	3	0	3	0.01	3	1	1
MRFW	-	RH	AVGRH					3	2	0	-	0.01	3	1	1

REEF	ZONE	VALUE_IN	VALUE_OU	NUMSAM_F	SVOL_F	VAR_F	MINDIS_F	SREFNUM	IMETHOD	POWER	VREFNUM	TOL	MAXITER	KRIGNEGW	KRIGVARS
MRFW	-	RH	FFUNCRH					3	101	0	3	0.01	3	1	1
MRFW	-	RH	LGMRH					3	102	0	3	0.01	3	1	1
MRFW	-	RH	NNRH					3	1	0	-	0.01	3	1	1
MRFW	-	AU	AU	NSAU	SVAU	VARAU	MDAU	4	3	0	4	0.01	3	1	1
MRFW	-	AU	AVGAU					4	2	0	-	0.01	3	1	1
MRFW	-	AU	FFUNCAU					4	101	0	4	0.01	3	1	1
MRFW	-	AU	LGMAU					4	102	0	4	0.01	3	1	1
MRFW	-	AU	NNAU					4	1	0	-	0.01	3	1	1
MRFW	-	CU	CU	NSCU	SVCU	VARCU	MDCU	5	3	0	5	0.01	3	1	1
MRFW	-	CU	AVGCU					5	2	0	-	0.01	3	1	1
MRFW	-	CU	FFUNCCU					5	101	0	5	0.01	3	1	1
MRFW	-	CU	LGMCU					5	102	0	5	0.01	3	1	1
MRFW	-	CU	NNCU					5	1	0	-	0.01	3	1	1
MRFW	-	NI	NI	NSNI	SVNI	VARNI	MDNI	6	3	0	6	0.01	3	1	1
MRFW	-	NI	AVGNI					6	2	0	-	0.01	3	1	1
MRFW	-	NI	FFUNCNI					6	101	0	6	0.01	3	1	1
MRFW	-	NI	LGMNI					6	102	0	6	0.01	3	1	1
MRFW	-	NI	NNNI					6	1	0	-	0.01	3	1	1
MRFW	-	4E	4E	NS4E	SV4E	VAR4E	MD4E	7	3	0	7	0.01	3	1	1
MRFW	-	4E	AVG4E					7	2	0	-	0.01	3	1	1
MRFW	-	4E	FFUNC4E					7	101	0	7	0.01	3	1	1
MRFW	-	4E	LGM4E					7	102	0	7	0.01	3	1	1
MRFW	-	4E	NN4E					7	1	0	-	0.01	3	1	1
MRFW	-	SG	SG	NSSG	SVSG	VARSG	MDSG	9	3	0	9	0.01	3	1	1
MRFW	-	SG	AVGSG					9	2	0	-	0.01	3	1	1
MRFW	-	SG	FFUNCSG					9	101	0	9	0.01	3	1	1
MRFW	-	SG	LGMSG					9	102	0	9	0.01	3	1	1
MRFW	-	SG	NNSG					9	1	0	-	0.01	3	1	1
UG2HW	1	PT	PT	NSPT	SVPT	VARPT	MDPT	1	3	0	1	0.01	3	1	1

REEF	ZONE	VALUE_IN	VALUE_OU	NUMSAM_F	SVOL_F	VAR_F	MINDIS_F	SREFNUM	IMETHOD	POWER	VREFNUM	TOL	MAXITER	KRIGNEGW	KRIGVARS
UG2HW	1	PT	AVGPT					1	2	0	-	0.01	3	1	1
UG2HW	1	PT	FFUNCPT					1	101	0	1	0.01	3	1	1
UG2HW	1	PT	LGMPT					1	102	0	1	0.01	3	1	1
UG2HW	1	PT	NNPT					1	1	0	-	0.01	3	1	1
UG2HW	1	PD	PD	NSPD	SVPD	VARPD	MDPD	2	3	0	2	0.01	3	1	1
UG2HW	1	PD	AVGPD					2	2	0	-	0.01	3	1	1
UG2HW	1	PD	FFUNCPD					2	101	0	2	0.01	3	1	1
UG2HW	1	PD	LGMPD					2	102	0	2	0.01	3	1	1
UG2HW	1	PD	NNPD					2	1	0	-	0.01	3	1	1
UG2HW	1	RH	RH	NSRH	SVRH	VARRH	MDRH	3	3	0	3	0.01	3	1	1
UG2HW	1	RH	AVGRH					3	2	0	-	0.01	3	1	1
UG2HW	1	RH	FFUNCRH					3	101	0	3	0.01	3	1	1
UG2HW	1	RH	LGMRH					3	102	0	3	0.01	3	1	1
UG2HW	1	RH	NNRH					3	1	0	-	0.01	3	1	1
UG2HW	1	AU	AU	NSAU	SVAU	VARAU	MDAU	4	3	0	4	0.01	3	1	1
UG2HW	1	AU	AVGAU					4	2	0	-	0.01	3	1	1
UG2HW	1	AU	FFUNCAU					4	101	0	4	0.01	3	1	1
UG2HW	1	AU	LGMAU					4	102	0	4	0.01	3	1	1
UG2HW	1	AU	NNAU					4	1	0	-	0.01	3	1	1
UG2HW	1	CU	CU	NSCU	SVCU	VARCU	MDCU	5	3	0	5	0.01	3	1	1
UG2HW	1	CU	AVGCU					5	2	0	-	0.01	3	1	1
UG2HW	1	CU	FFUNCCU					5	101	0	5	0.01	3	1	1
UG2HW	1	CU	LGMCU					5	102	0	5	0.01	3	1	1
UG2HW	1	CU	NNCU					5	1	0	-	0.01	3	1	1
UG2HW	1	NI	NI	NSNI	SVNI	VARNI	MDNI	6	3	0	6	0.01	3	1	1
UG2HW	1	NI	AVGNI					6	2	0	-	0.01	3	1	1
UG2HW	1	NI	FFUNCNI					6	101	0	6	0.01	3	1	1
UG2HW	1	NI	LGMNI					6	102	0	6	0.01	3	1	1
UG2HW	1	NI	NNNI					6	1	0	-	0.01	3	1	1

REEF	ZONE	VALUE_IN	VALUE_OU	NUMSAM_F	SVOL_F	VAR_F	MINDIS_F	SREFNUM	IMETHOD	POWER	VREFNUM	TOL	MAXITER	KRIGNEGW	KRIGVARS
UG2HW	1	4E	4E	NS4E	SV4E	VAR4E	MD4E	7	3	0	7	0.01	3	1	1
UG2HW	1	4E	AVG4E					7	2	0	-	0.01	3	1	1
UG2HW	1	4E	FFUNC4E					7	101	0	7	0.01	3	1	1
UG2HW	1	4E	LGM4E					7	102	0	7	0.01	3	1	1
UG2HW	1	4E	NN4E					7	1	0	-	0.01	3	1	1
UG2HW	1	SG	SG	NSSG	SVSG	VARSG	MDSG	9	3	0	9	0.01	3	1	1
UG2HW	1	SG	AVGSG					9	2	0	-	0.01	3	1	1
UG2HW	1	SG	FFUNCSG					9	101	0	9	0.01	3	1	1
UG2HW	1	SG	LGMSG					9	102	0	9	0.01	3	1	1
UG2HW	1	SG	NNSG					9	1	0	-	0.01	3	1	1
UG2HW	2	PT	PT	NSPT	SVPT	VARPT	MDPT	1	3	0	1	0.01	3	1	1
UG2HW	2	PT	AVGPT					1	2	0	-	0.01	3	1	1
UG2HW	2	PT	FFUNCPT					1	101	0	1	0.01	3	1	1
UG2HW	2	PT	LGMPT					1	102	0	1	0.01	3	1	1
UG2HW	2	PT	NNPT					1	1	0	-	0.01	3	1	1
UG2HW	2	PD	PD	NSPD	SVPD	VARPD	MDPD	2	3	0	2	0.01	3	1	1
UG2HW	2	PD	AVGPD					2	2	0	-	0.01	3	1	1
UG2HW	2	PD	FFUNCPD					2	101	0	2	0.01	3	1	1
UG2HW	2	PD	LGMPD					2	102	0	2	0.01	3	1	1
UG2HW	2	PD	NNPD					2	1	0	-	0.01	3	1	1
UG2HW	2	RH	RH	NSRH	SVRH	VARRH	MDRH	3	3	0	3	0.01	3	1	1
UG2HW	2	RH	AVGRH					3	2	0	-	0.01	3	1	1
UG2HW	2	RH	FFUNCRH					3	101	0	3	0.01	3	1	1
UG2HW	2	RH	LGMRH					3	102	0	3	0.01	3	1	1
UG2HW	2	RH	NNRH					3	1	0	-	0.01	3	1	1
UG2HW	2	AU	AU	NSAU	SVAU	VARAU	MDAU	4	3	0	4	0.01	3	1	1
UG2HW	2	AU	AVGAU					4	2	0	-	0.01	3	1	1
UG2HW	2	AU	FFUNCAU					4	101	0	4	0.01	3	1	1
UG2HW	2	AU	LGMAU					4	102	0	4	0.01	3	1	1

REEF	ZONE	VALUE_IN	VALUE_OU	NUMSAM_F	SVOL_F	VAR_F	MINDIS_F	SREFNUM	IMETHOD	POWER	VREFNUM	TOL	MAXITER	KRIGNEGW	KRIGVARS
UG2HW	2	AU	NNAU					4	1	0	-	0.01	3	1	1
UG2HW	2	CU	CU	NSCU	SVCU	VARCU	MDCU	5	3	0	5	0.01	3	1	1
UG2HW	2	CU	AVGCU					5	2	0	-	0.01	3	1	1
UG2HW	2	CU	FFUNCCU					5	101	0	5	0.01	3	1	1
UG2HW	2	CU	LGMCU					5	102	0	5	0.01	3	1	1
UG2HW	2	CU	NNCU					5	1	0	-	0.01	3	1	1
UG2HW	2	NI	NI	NSNI	SVNI	VARNI	MDNI	6	3	0	6	0.01	3	1	1
UG2HW	2	NI	AVGNI					6	2	0	-	0.01	3	1	1
UG2HW	2	NI	FFUNCNI					6	101	0	6	0.01	3	1	1
UG2HW	2	NI	LGMNI					6	102	0	6	0.01	3	1	1
UG2HW	2	NI	NNNI					6	1	0	-	0.01	3	1	1
UG2HW	2	4E	4E	NS4E	SV4E	VAR4E	MD4E	7	3	0	7	0.01	3	1	1
UG2HW	2	4E	AVG4E					7	2	0	-	0.01	3	1	1
UG2HW	2	4E	FFUNC4E					7	101	0	7	0.01	3	1	1
UG2HW	2	4E	LGM4E					7	102	0	7	0.01	3	1	1
UG2HW	2	4E	NN4E					7	1	0	-	0.01	3	1	1
UG2HW	2	SG	SG	NSSG	SVSG	VARSG	MDSG	9	3	0	9	0.01	3	1	1
UG2HW	2	SG	AVGSG					9	2	0	-	0.01	3	1	1
UG2HW	2	SG	FFUNCSG					9	101	0	9	0.01	3	1	1
UG2HW	2	SG	LGMSG					9	102	0	9	0.01	3	1	1
UG2HW	2	SG	NNSG					9	1	0	-	0.01	3	1	1
UG2	1	PT	PT	NSPT	SVPT	VARPT	MDPT	1	3	0	1	0.01	3	1	1
UG2	1	PT	AVGPT					1	2	0	-	0.01	3	1	1
UG2	1	PT	FFUNCPT					1	101	0	1	0.01	3	1	1
UG2	1	PT	LGMPT					1	102	0	1	0.01	3	1	1
UG2	1	PT	NNPT					1	1	0	-	0.01	3	1	1
UG2	1	PD	PD	NSPD	SVPD	VARPD	MDPD	2	3	0	2	0.01	3	1	1
UG2	1	PD	AVGPD					2	2	0	-	0.01	3	1	1
UG2	1	PD	FFUNCPD					2	101	0	2	0.01	3	1	1

REEF	ZONE	VALUE_IN	VALUE_OU	NUMSAM_F	SVOL_F	VAR_F	MINDIS_F	SREFNUM	IMETHOD	POWER	VREFNUM	TOL	MAXITER	KRIGNEGW	KRIGVARS
UG2	1	PD	LGMPD					2	102	0	2	0.01	3	1	1
UG2	1	PD	NNPD					2	1	0	-	0.01	3	1	1
UG2	1	RH	RH	NSRH	SVRH	VARRH	MDRH	3	3	0	3	0.01	3	1	1
UG2	1	RH	AVGRH					3	2	0	-	0.01	3	1	1
UG2	1	RH	FFUNCRH					3	101	0	3	0.01	3	1	1
UG2	1	RH	LGMRH					3	102	0	3	0.01	3	1	1
UG2	1	RH	NNRH					3	1	0	-	0.01	3	1	1
UG2	1	AU	AU	NSAU	SVAU	VARAU	MDAU	4	3	0	4	0.01	3	1	1
UG2	1	AU	AVGAU					4	2	0	-	0.01	3	1	1
UG2	1	AU	FFUNCAU					4	101	0	4	0.01	3	1	1
UG2	1	AU	LGMAU					4	102	0	4	0.01	3	1	1
UG2	1	AU	NNAU					4	1	0	-	0.01	3	1	1
UG2	1	CU	CU	NSCU	SVCU	VARCU	MDCU	5	3	0	5	0.01	3	1	1
UG2	1	CU	AVGCU					5	2	0	-	0.01	3	1	1
UG2	1	CU	FFUNCCU					5	101	0	5	0.01	3	1	1
UG2	1	CU	LGMCU					5	102	0	5	0.01	3	1	1
UG2	1	CU	NNCU					5	1	0	-	0.01	3	1	1
UG2	1	NI	NI	NSNI	SVNI	VARNI	MDNI	6	3	0	6	0.01	3	1	1
UG2	1	NI	AVGNI					6	2	0	-	0.01	3	1	1
UG2	1	NI	FFUNCNI					6	101	0	6	0.01	3	1	1
UG2	1	NI	LGMNI					6	102	0	6	0.01	3	1	1
UG2	1	NI	NNNI					6	1	0	-	0.01	3	1	1
UG2	1	4E	4E	NS4E	SV4E	VAR4E	MD4E	7	3	0	7	0.01	3	1	1
UG2	1	4E	AVG4E					7	2	0	-	0.01	3	1	1
UG2	1	4E	FFUNC4E					7	101	0	7	0.01	3	1	1
UG2	1	4E	LGM4E					7	102	0	7	0.01	3	1	1
UG2	1	4E	NN4E					7	1	0	-	0.01	3	1	1
UG2	1	4EMGT	4EMGT	NS4EMGT	SV4EMGT	VAR4EMGT	MD4EMGT	8	3	0	8	0.01	3	1	1
UG2	1	4EMGT	AVG4EMGT					8	2	0	-	0.01	3	1	1

REEF	ZONE	VALUE_IN	VALUE_OU	NUMSAM_F	SVOL_F	VAR_F	MINDIS_F	SREFNUM	IMETHOD	POWER	VREFNUM	TOL	MAXITER	KRIGNEGW	KRIGVARS
UG2	1	4EMGT	FFUNC4EM					8	101	0	8	0.01	3	1	1
UG2	1	4EMGT	LGM4EMGT					8	102	0	8	0.01	3	1	1
UG2	1	4EMGT	NN4EMGT					8	1	0	-	0.01	3	1	1
UG2	1	SG	SG	NSSG	SVSG	VARSG	MDSG	9	3	0	9	0.01	3	1	1
UG2	1	SG	AVGSG					9	2	0	-	0.01	3	1	1
UG2	1	SG	FFUNCSG					9	101	0	9	0.01	3	1	1
UG2	1	SG	LGMSG					9	102	0	9	0.01	3	1	1
UG2	1	SG	NNSG					9	1	0	-	0.01	3	1	1
UG2	1	CW	CW	NSCW	SVCW	VARCW	MDCW	10	3	0	10	0.01	3	1	1
UG2	1	CW	AVGCW					10	2	0	-	0.01	3	1	1
UG2	1	CW	FFUNCCW					10	101	0	10	0.01	3	1	1
UG2	1	CW	LGMCW					10	102	0	10	0.01	3	1	1
UG2	1	CW	NNCW					10	1	0	-	0.01	3	1	1
UG2	2	PT	PT	NSPT	SVPT	VARPT	MDPT	1	3	0	1	0.01	3	1	1
UG2	2	PT	AVGPT					1	2	0	-	0.01	3	1	1
UG2	2	PT	FFUNCPT					1	101	0	1	0.01	3	1	1
UG2	2	PT	LGMPT					1	102	0	1	0.01	3	1	1
UG2	2	PT	NNPT					1	1	0	-	0.01	3	1	1
UG2	2	PD	PD	NSPD	SVPD	VARPD	MDPD	2	3	0	2	0.01	3	1	1
UG2	2	PD	AVGPD					2	2	0	-	0.01	3	1	1
UG2	2	PD	FFUNCPD					2	101	0	2	0.01	3	1	1
UG2	2	PD	LGMPD					2	102	0	2	0.01	3	1	1
UG2	2	PD	NNPD					2	1	0	-	0.01	3	1	1
UG2	2	RH	RH	NSRH	SVRH	VARRH	MDRH	3	3	0	3	0.01	3	1	1
UG2	2	RH	AVGRH					3	2	0	-	0.01	3	1	1
UG2	2	RH	FFUNCRH					3	101	0	3	0.01	3	1	1
UG2	2	RH	LGMRH					3	102	0	3	0.01	3	1	1
UG2	2	RH	NNRH					3	1	0	-	0.01	3	1	1
UG2	2	AU	AU	NSAU	SVAU	VARAU	MDAU	4	3	0	4	0.01	3	1	1

REEF	ZONE	VALUE_IN	VALUE_OU	NUMSAM_F	SVOL_F	VAR_F	MINDIS_F	SREFNUM	IMETHOD	POWER	VREFNUM	TOL	MAXITER	KRIGNEGW	KRIGVARS
UG2	2	AU	AVGAU					4	2	0	-	0.01	3	1	1
UG2	2	AU	FFUNCAU					4	101	0	4	0.01	3	1	1
UG2	2	AU	LGMAU					4	102	0	4	0.01	3	1	1
UG2	2	AU	NNAU					4	1	0	-	0.01	3	1	1
UG2	2	CU	CU	NSCU	SVCU	VARCU	MDCU	5	3	0	5	0.01	3	1	1
UG2	2	CU	AVGCU					5	2	0	-	0.01	3	1	1
UG2	2	CU	FFUNCCU					5	101	0	5	0.01	3	1	1
UG2	2	CU	LGMCU					5	102	0	5	0.01	3	1	1
UG2	2	CU	NNCU					5	1	0	-	0.01	3	1	1
UG2	2	NI	NI	NSNI	SVNI	VARNI	MDNI	6	3	0	6	0.01	3	1	1
UG2	2	NI	AVGNI					6	2	0	-	0.01	3	1	1
UG2	2	NI	FFUNCNI					6	101	0	6	0.01	3	1	1
UG2	2	NI	LGMNI					6	102	0	6	0.01	3	1	1
UG2	2	NI	NNNI					6	1	0	-	0.01	3	1	1
UG2	2	4E	4E	NS4E	SV4E	VAR4E	MD4E	7	3	0	7	0.01	3	1	1
UG2	2	4E	AVG4E					7	2	0	-	0.01	3	1	1
UG2	2	4E	FFUNC4E					7	101	0	7	0.01	3	1	1
UG2	2	4E	LGM4E					7	102	0	7	0.01	3	1	1
UG2	2	4E	NN4E					7	1	0	-	0.01	3	1	1
UG2	2	4EMGT	4EMGT	NS4EMGT	SV4EMGT	VAR4EMGT	MD4EMGT	8	3	0	8	0.01	3	1	1
UG2	2	4EMGT	AVG4EMGT					8	2	0	-	0.01	3	1	1
UG2	2	4EMGT	FFUNC4EM					8	101	0	8	0.01	3	1	1
UG2	2	4EMGT	LGM4EMGT					8	102	0	8	0.01	3	1	1
UG2	2	4EMGT	NN4EMGT					8	1	0	-	0.01	3	1	1
UG2	2	SG	SG	NSSG	SVSG	VARSG	MDSG	9	3	0	9	0.01	3	1	1
UG2	2	SG	AVGSG					9	2	0	-	0.01	3	1	1
UG2	2	SG	FFUNCSG					9	101	0	9	0.01	3	1	1
UG2	2	SG	LGMSG					9	102	0	9	0.01	3	1	1
UG2	2	SG	NNSG					9	1	0	-	0.01	3	1	1

REEF	ZONE	VALUE_IN	VALUE_OU	NUMSAM_F	SVOL_F	VAR_F	MINDIS_F	SREFNUM	IMETHOD	POWER	VREFNUM	TOL	MAXITER	KRIGNEGW	KRIGVARS
UG2	2	CW	CW	NSCW	SVCW	VARCW	MDCW	10	3	0	10	0.01	3	1	1
UG2	2	CW	AVGCW					10	2	0	-	0.01	3	1	1
UG2	2	CW	FFUNCCW					10	101	0	10	0.01	3	1	1
UG2	2	CW	LGMCW					10	102	0	10	0.01	3	1	1
UG2	2	CW	NNCW					10	1	0	-	0.01	3	1	1
UG2FW	1	PT	PT	NSPT	SVPT	VARPT	MDPT	1	3	0	1	0.01	3	1	1
UG2FW	1	PT	AVGPT					1	2	0	-	0.01	3	1	1
UG2FW	1	PT	FFUNCPT					1	101	0	1	0.01	3	1	1
UG2FW	1	PT	LGMPT					1	102	0	1	0.01	3	1	1
UG2FW	1	PT	NNPT					1	1	0	-	0.01	3	1	1
UG2FW	1	PD	PD	NSPD	SVPD	VARPD	MDPD	2	3	0	2	0.01	3	1	1
UG2FW	1	PD	AVGPD					2	2	0	-	0.01	3	1	1
UG2FW	1	PD	FFUNCPD					2	101	0	2	0.01	3	1	1
UG2FW	1	PD	LGMPD					2	102	0	2	0.01	3	1	1
UG2FW	1	PD	NNPD					2	1	0	-	0.01	3	1	1
UG2FW	1	RH	RH	NSRH	SVRH	VARRH	MDRH	3	3	0	3	0.01	3	1	1
UG2FW	1	RH	AVGRH					3	2	0	-	0.01	3	1	1
UG2FW	1	RH	FFUNCRH					3	101	0	3	0.01	3	1	1
UG2FW	1	RH	LGMRH					3	102	0	3	0.01	3	1	1
UG2FW	1	RH	NNRH					3	1	0	-	0.01	3	1	1
UG2FW	1	AU	AU	NSAU	SVAU	VARAU	MDAU	4	3	0	4	0.01	3	1	1
UG2FW	1	AU	AVGAU					4	2	0	-	0.01	3	1	1
UG2FW	1	AU	FFUNCAU					4	101	0	4	0.01	3	1	1
UG2FW	1	AU	LGMAU					4	102	0	4	0.01	3	1	1
UG2FW	1	AU	NNAU					4	1	0	-	0.01	3	1	1
UG2FW	1	CU	CU	NSCU	SVCU	VARCU	MDCU	5	3	0	5	0.01	3	1	1
UG2FW	1	CU	AVGCU					5	2	0	-	0.01	3	1	1
UG2FW	1	CU	FFUNCCU					5	101	0	5	0.01	3	1	1
UG2FW	1	CU	LGMCU					5	102	0	5	0.01	3	1	1

REEF	ZONE	VALUE_IN	VALUE_OU	NUMSAM_F	SVOL_F	VAR_F	MINDIS_F	SREFNUM	IMETHOD	POWER	VREFNUM	TOL	MAXITER	KRIGNEGW	KRIGVARS
UG2FW	1	CU	NNCU					5	1	0	-	0.01	3	1	1
UG2FW	1	NI	NI	NSNI	SVNI	VARNI	MDNI	6	3	0	6	0.01	3	1	1
UG2FW	1	NI	AVGNI					6	2	0	-	0.01	3	1	1
UG2FW	1	NI	FFUNCNI					6	101	0	6	0.01	3	1	1
UG2FW	1	NI	LGMNI					6	102	0	6	0.01	3	1	1
UG2FW	1	NI	NNNI					6	1	0	-	0.01	3	1	1
UG2FW	1	4E	4E	NS4E	SV4E	VAR4E	MD4E	7	3	0	7	0.01	3	1	1
UG2FW	1	4E	AVG4E					7	2	0	-	0.01	3	1	1
UG2FW	1	4E	FFUNC4E					7	101	0	7	0.01	3	1	1
UG2FW	1	4E	LGM4E					7	102	0	7	0.01	3	1	1
UG2FW	1	4E	NN4E					7	1	0	-	0.01	3	1	1
UG2FW	1	SG	SG	NSSG	SVSG	VARSG	MDSG	9	3	0	9	0.01	3	1	1
UG2FW	1	SG	AVGSG					9	2	0	-	0.01	3	1	1
UG2FW	1	SG	FFUNCSG					9	101	0	9	0.01	3	1	1
UG2FW	1	SG	LGMSG					9	102	0	9	0.01	3	1	1
UG2FW	1	SG	NNSG					9	1	0	-	0.01	3	1	1
UG2FW	2	PT	PT	NSPT	SVPT	VARPT	MDPT	1	3	0	1	0.01	3	1	1
UG2FW	2	PT	AVGPT					1	2	0	-	0.01	3	1	1
UG2FW	2	PT	FFUNCPT					1	101	0	1	0.01	3	1	1
UG2FW	2	PT	LGMPT					1	102	0	1	0.01	3	1	1
UG2FW	2	PT	NNPT					1	1	0	-	0.01	3	1	1
UG2FW	2	PD	PD	NSPD	SVPD	VARPD	MDPD	2	3	0	2	0.01	3	1	1
UG2FW	2	PD	AVGPD					2	2	0	-	0.01	3	1	1
UG2FW	2	PD	FFUNCPD					2	101	0	2	0.01	3	1	1
UG2FW	2	PD	LGMPD					2	102	0	2	0.01	3	1	1
UG2FW	2	PD	NNPD					2	1	0	-	0.01	3	1	1
UG2FW	2	RH	RH	NSRH	SVRH	VARRH	MDRH	3	3	0	3	0.01	3	1	1
UG2FW	2	RH	AVGRH					3	2	0	-	0.01	3	1	1
UG2FW	2	RH	FFUNCRH					3	101	0	3	0.01	3	1	1

REEF	ZONE	VALUE_IN	VALUE_OU	NUMSAM_F	SVOL_F	VAR_F	MINDIS_F	SREFNUM	IMETHOD	POWER	VREFNUM	TOL	MAXITER	KRIGNEGW	KRIGVARS
UG2FW	2	RH	LGMRH					3	102	0	3	0.01	3	1	1
UG2FW	2	RH	NNRH					3	1	0	-	0.01	3	1	1
UG2FW	2	AU	AU	NSAU	SVAU	VARAU	MDAU	4	3	0	4	0.01	3	1	1
UG2FW	2	AU	AVGAU					4	2	0	-	0.01	3	1	1
UG2FW	2	AU	FFUNCAU					4	101	0	4	0.01	3	1	1
UG2FW	2	AU	LGMAU					4	102	0	4	0.01	3	1	1
UG2FW	2	AU	NNAU					4	1	0	-	0.01	3	1	1
UG2FW	2	CU	CU	NSCU	SVCU	VARCU	MDCU	5	3	0	5	0.01	3	1	1
UG2FW	2	CU	AVGCU					5	2	0	-	0.01	3	1	1
UG2FW	2	CU	FFUNCCU					5	101	0	5	0.01	3	1	1
UG2FW	2	CU	LGMCU					5	102	0	5	0.01	3	1	1
UG2FW	2	CU	NNCU					5	1	0	-	0.01	3	1	1
UG2FW	2	NI	NI	NSNI	SVNI	VARNI	MDNI	6	3	0	6	0.01	3	1	1
UG2FW	2	NI	AVGNI					6	2	0	-	0.01	3	1	1
UG2FW	2	NI	FFUNCNI					6	101	0	6	0.01	3	1	1
UG2FW	2	NI	LGMNI					6	102	0	6	0.01	3	1	1
UG2FW	2	NI	NNNI					6	1	0	-	0.01	3	1	1
UG2FW	2	4E	4E	NS4E	SV4E	VAR4E	MD4E	7	3	0	7	0.01	3	1	1
UG2FW	2	4E	AVG4E					7	2	0	-	0.01	3	1	1
UG2FW	2	4E	FFUNC4E					7	101	0	7	0.01	3	1	1
UG2FW	2	4E	LGM4E					7	102	0	7	0.01	3	1	1
UG2FW	2	4E	NN4E					7	1	0	-	0.01	3	1	1
UG2FW	2	SG	SG	NSSG	SVSG	VARSG	MDSG	9	3	0	9	0.01	3	1	1
UG2FW	2	SG	AVGSG					9	2	0	-	0.01	3	1	1
UG2FW	2	SG	FFUNCSG					9	101	0	9	0.01	3	1	1
UG2FW	2	SG	LGMSG					9	102	0	9	0.01	3	1	1
UG2FW	2	SG	NNSG					9	1	0	-	0.01	3	1	1

Table D 2: Search Volume Parameters.

REEF	ZONE	ELEMENT	SREFNUM	SMETHOD	SDIST1	SDIST2	SDIST3	SANGLE1	SANGLE2	SANGLE3	SAXIS1	SAXIS2	SAXIS3	MINNUM1	MAXNUM1	SVOLFAC2	MINNUM2	MAXNUM2	SVOLFAC3	MINNUM3	MAXNUM3
MRHW	-	PT	1	2	207	331	10	45	0	0	3	2	1	20	40	1.5	20	60	10	3	60
MRHW	-	PD	2	2	242	271	10	45	0	0	3	2	1	20	40	1.5	20	60	10	3	60
MRHW	-	RH	3	2	107	170	10	67.5	0	0	3	2	1	20	40	1.5	10	60	10	3	60
MRHW	-	AU	4	2	158	415	10	67.5	0	0	3	2	1	20	40	1.5	20	60	10	3	60
MRHW	-	CU	5	2	489	1194	10	67.5	0	0	3	2	1	20	40	1.5	20	60	10	3	60
MRHW	-	NI	6	2	1926	1926	10	0	0	0	0	0	0	20	40	1.5	20	60	10	3	60
MRHW	-	4E	7	2	195	309	10	45	0	0	3	2	1	20	40	1.5	20	60	10	3	60
MRHW	-	SG	9	2	1231	1231	10	0	0	0	0	0	0	20	40	1.5	20	60	10	3	60
MR	-	PT	1	2	1225	1992	10	-22.5	0	180	3	2	1	20	40	1.5	12	60	10	12	90
MR	-	PD	2	2	1094	1638	10	-22.5	0	180	3	2	1	19	40	1.5	9	60	10	9	90
MR	-	RH	3	2	1098	1847	10	-22.5	0	180	3	2	1	19	40	1.5	10	60	10	10	90
MR	-	AU	4	2	432	894	10	-22.5	0	180	3	2	1	19	40	1.5	10	60	10	3	90
MR	-	CU	5	2	2957	2957	10	-22.5	0	180	3	2	1	11	40	1.5	10	60	10	10	90
MR	-	NI	6	2	2951	2951	10	-22.5	0	180	3	2	1	11	40	1.5	10	60	10	10	90
MR	-	4E	7	2	1156	1930	10	-22.5	0	180	3	2	1	20	40	1.5	12	60	10	12	90
MR	-	4ECLASS	712	2	1156	1930	10	-22.5	0	180	3	2	1	20	40	1.5	12	60	10	12	90
MR	-	4EMGT	8	2	1924	2474	10	-22.5	0	180	3	2	1	23	40	1.5	9	60	10	9	90
MR	-	SG	9	2	5480	5480	10	0	0	0	0	0	0	11	40	1.5	10	60	10	10	90
MR	-	CW	10	2	4489	5903	10	0	0	0	0	0	0	10	40	1.5	10	60	10	10	90
MR	-	AREAN	11	2	1031	1477	10	-45	0	180	3	2	1	6	15	1.5	6	18	3	6	20
MR	-	NPOINTS	12	2	500	3512	10	-67.5	0	180	3	2	1	8	10	1.5	7	13	3	5	20
MRFW	-	PT	1	2	297	297	10	0	0	0	0	0	0	20	40	1.5	20	60	10	3	60
MRFW	-	PD	2	2	269	269	10	0	0	0	0	0	0	20	40	1.5	20	60	10	3	60
MRFW	-	RH	3	2	183	183	10	0	0	0	0	0	0	20	40	1.5	20	60	10	3	60
MRFW	-	AU	4	2	410	425	10	-45	0	180	3	2	1	20	40	1.5	20	60	10	3	60
MRFW	-	CU	5	2	674	674	10	0	0	0	0	0	0	20	40	1.5	15	40	10	3	40
MRFW	-	NI	6	2	378	378	10	0	0	0	0	0	0	20	40	1.5	15	40	10	3	40
MRFW	-	4E	7	2	1516	1516	10	0	0	0	0	0	0	20	40	1.5	20	60	10	3	60
MRFW	-	SG	9	2	2086	2086	10	0	0	0	0	0	0	15	40	1.5	15	40	10	3	40
UG2HW	1	PT	1	2	1575	1575	10	0	0	0	0	0	0	13	30	1.5	13	45	10	3	45
UG2HW	1	PD	2	2	2130	2130	10	0	0	0	0	0	0	13	30	1.5	13	45	10	3	45
UG2HW	1	RH	3	2	2136	2136	10	0	0	0	0	0	0	13	30	1.5	13	45	10	3	45
UG2HW	1	AU	4	2	1392	1392	10	0	0	0	0	0	0	13	30	1.5	13	45	10	3	45
UG2HW	1	CU	5	2	1796	1796	10	0	0	0	0	0	0	20	40	1.5	20	60	10	3	60
UG2HW	1	NI	6	2	1959	1959	10	0	0	0	0	0	0	20	40	1.5	20	60	10	3	60
UG2HW	1	4E	7	2	1507	1507	10	0	0	0	0	0	0	20	40	1.5	20	60	10	3	60
UG2HW	1	SG	9	2	1864	1864	10	0	0	0	0	0	0	13	30	1.5	13	45	10	3	45
UG2	1	PT	1	2	3375	3375	10	0	0	0	0	0	0	22	40	1.5	17	60	10	17	90
UG2	1	PD	2	2	3351	3351	10	0	0	0	0	0	0	23	40	1.5	23	60	10	20	90
UG2	1	RH	3	2	3149	3149	10	0	0	0	0	0	0	21	40	1.5	13	60	10	13	90
UG2	1	AU	4	2	4789	4789	10	0	0	0	0	0	0	20	40	1.5	23	60	10	18	90
UG2	1	CU	5	2	856	856	10	0	0	0	0	0	0	21	40	1.5	11	60	11	11	90
UG2	1	NI	6	2	1182	1182	10	0	0	0	0	0	0	21	40	1.5	11	60	11	11	90
UG2	1	4E	7	2	2263	2263	10	0	0	0	0	0	0	23	40	1.5	16	60	10	10	90
UG2	1	4ECLASS	712	2	2154	2154	10	0	0	0	0	0	0	23	40	1.5	15	60	10	10	90
UG2	1	4EMGT	8	2	2215	2215	10	0	0	0	0	0	0	23	40	1.5	20	60	10	13	90
UG2	1	SG	9	2	1913	1913	10	0	0	0	0	0	0	21	40	1.5	13	60	10	13	90
UG2	1	CW	10	2	2807	2807	10	0	0	0	0	0	0	21	40	1.5	13	60	10	13	90
UG2FW	1	PT	1	2	685	685	10	0	0	0	0	0	0	11	40	1.5	11	60	10	3	60
UG2FW	1	PD	2	2	125	604	10	-45	0	180	3	2	1	11	40	1.5	11	60	10	3	60
UG2FW	1	RH	3	2	392	392	10	-45	0	180	3	2	1	11	40	1.5	11	60	10	3	60
UG2FW	1	AU	4	2	666	666	10	-45	0	180	3	2	1	11	40	1.5	11	60	10	3	60
UG2FW	1	CU	5	2	753	753	10	0	0	0	0	0	0	11	40	1.5	11	60	10	3	60
UG2FW	1	NI	6	2	474	474	10	0	0	0	0	0	0	11	40	1.5	11	60	10	3	60
UG2FW	1	4E	7	2	779	779	10	0	0	0	0	0	0	11	40	1.5	11	60	10	3	60

REEF	ZONE	ELEMENT	SREFNUM	SMETHOD	SDIST1	SDIST2	SDIST3	SANGLE1	SANGLE2	SANGLE3	SAXIS1	SAXIS2	SAXIS3	MINNUM1	MAXNUM1	SVOLFAC2	MINNUM2	MAXNUM2	SVOLFAC3	MINNUM3	MAXNUM3
UG2FW	1	SG	9	2	1478	1478	10	0	0	0	0	0	0	20	40	1.5	11	60	10	3	60
UG2HW	2	PT	1	2	1685	1685	10	0	0	0	0	0	0	6	20	1.5	3	20	10	3	20
UG2HW	2	PD	2	2	695	695	10	0	0	0	0	0	0	6	20	1.5	3	20	10	3	20
UG2HW	2	RH	3	2	710	710	10	0	0	0	0	0	0	6	20	1.5	3	20	10	3	20
UG2HW	2	AU	4	2	798	798	10	0	0	0	0	0	0	6	20	1.5	3	20	10	3	20
UG2HW	2	CU	5	2	716	716	10	0	0	0	0	0	0	20	40	1.5	10	40	10	3	40
UG2HW	2	NI	6	2	477	477	10	0	0	0	0	0	0	20	40	1.5	10	40	10	3	40
UG2HW	2	4E	7	2	774	774	10	0	0	0	0	0	0	6	20	1.5	3	20	10	3	20
UG2HW	2	SG	9	2	526	526	10	0	0	0	0	0	0	6	20	1.5	3	20	10	3	20
UG2	2	PT	1	2	767	767	10	0	0	0	0	0	0	10	40	1.5	10	60	10	10	75
UG2	2	PD	2	2	395	395	10	0	0	0	0	0	0	12	40	1.5	10	60	10	10	75
UG2	2	RH	3	2	1265	1265	10	0	0	0	0	0	0	24	40	1.5	10	60	10	10	75
UG2	2	AU	4	2	273	273	10	0	0	0	0	0	0	10	40	1.5	8	60	10	8	75
UG2	2	CU	5	2	1214	1214	10	0	0	0	0	0	0	20	40	1.5	10	60	10	10	75
UG2	2	NI	6	2	1311	1311	10	0	0	0	0	0	0	15	40	1.5	9	60	10	9	75
UG2	2	4E	7	2	876	876	10	0	0	0	0	0	0	22	40	1.5	20	60	10	20	75
UG2	2	4ECLASS	712	2	2154	2154	10	0	0	0	0	0	0	23	40	1.5	15	60	10	10	75
UG2	2	4EMGT	8	2	290	290	10	0	0	0	0	0	0	10	40	1.5	8	60	10	8	75
UG2	2	SG	9	2	794	794	10	0	0	0	0	0	0	15	40	1.5	9	60	10	9	75
UG2	2	CW	10	2	386	386	10	0	0	0	0	0	0	15	40	1.5	10	60	10	10	75
UG2FW	2	PT	1	2	283	283	10	0	0	0	0	0	0	3	20	1.5	3	20	10	3	20
UG2FW	2	PD	2	2	225	225	10	0	0	0	0	0	0	3	20	1.5	3	20	10	3	20
UG2FW	2	RH	3	2	280	280	10	0	0	0	0	0	0	3	20	1.5	3	20	10	3	20
UG2FW	2	AU	4	2	244	244	10	0	0	0	0	0	0	3	20	1.5	3	20	10	3	20
UG2FW	2	CU	5	2	653	653	10	0	0	0	0	0	0	5	40	1.5	3	40	10	3	40
UG2FW	2	NI	6	2	523	523	10	0	0	0	0	0	0	10	40	1.5	5	40	10	3	40
UG2FW	2	4E	7	2	230	230	10	0	0	0	0	0	0	3	20	1.5	3	20	10	3	20
UG2FW	2	SG	9	2	523	523	10	0	0	0	0	0	0	3	20	1.5	3	20	10	3	20
MRHW	-	PD	2	2	242	271	10	45	0	0	3	2	1	20	40	1.5	20	60	10	3	60
MRHW	-	RH	3	2	107	170	10	67.5	0	0	3	2	1	20	40	1.5	10	60	10	3	60