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INDEPENDENT ASSESSMENT REPORT OF THE GOLD MINERALISATION POTENTIAL AT THE JUMBO MINE CLAIMS MBERENGWA, ZIMBABWE Version 2

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Project No: 01/17 Version 2 **Author:** Cleopas Machingauta

August 2020

The Directors
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25 August 2020

RE: **INDEPENDENT ASSESSMENT REPORT OF THE GOLD MINERALISATION POTENTIAL AT JUMBO MINE CLAIMS, MBERENGWA**

Please find attached Version 2 of the Independent Assessment Report ("IAR") of the gold mineralisation potential at the Jumbo Mine gold claims in Mberengwa following exploration carried out initially in 2016. I have prepared this IAR in accordance with my understanding of your current requirements.

Should you have any queries please do not hesitate to contact the undersigned on the following contact details:

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Cleopas Machingauta

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EXECUTIVE SUMMARY

Introduction

DVK Gold Mining (Pvt) Ltd ("the Client") requested Mr. Cleopas Machingauta ("the author") to update the original report on the potential of the Jumbo Mine claims area regarding gold mineralization following different phases of geophysical and geological exploration work and mining activities carried out on the claims area.

Summary of Findings

The exploration work carried out on the claims area in 2016 and 2017 involved ground magnetic survey and Real Section Induced Polarisation (RSIP) surveys, initial ground truthing of geological characteristics of the area, surface geological mapping, trenching, mapping and sampling.

The aim of the different exploration activities was to identify structural and lithological field relations and establish their bearing on gold mineralization.

Ground magnetic survey was carried out in order to map sub-surface geology, including lithological contacts and lineaments, that could help in understanding the lithological and structural setting in and around the Jumbo Mine Claims, and the implication such setting has on gold mineralisation and occurrence within the area.

RSIP was done to identify potential areas that could be hosting sulphides, as these are commonly known to occur with gold. Any defined anomalies were followed down to depths of 225 m, hence determining the depth behaviour of the anomaly, and to come up with drilling targets on a reconnaissance basis.

Geological mapping was done in order to understand the rock formations of the claims area particularly on and around the old workings, hence establishing the geological and structural setting of the area so that the gathered information could be used in designing the subsequent exploration phases.

Trenching and sampling was carried out to test the mineralisation on the shear zones and the quartz veins they normally host. The trenches were sited to intersect the apparent strike directions of the current workings and structural features deduced from geophysical surveys. The trenching was also done to test the continuity of mineralisation along strike

In summary, ground magnetics, surface geological mapping and trench mapping have identified a number of targets for further investigation through diamond drilling based on the existence of interesting lithological and structural features that are conducive for gold mineralization in the form of:

- N-S-trending shear zones which are the major regional structures, fault zones and secondary splays within the basalts and the quartz veins hosted in them,
- felsic intrusions
- intersecting structures and faults and contacts between lithologies of different competencies e.g. metabasalts and felsic intrusions and metabasalts and granites on the east end of the claims area.

Real Section Induced Polarisation (RSIP) was important in delineating potential sulphide mineralised areas and establishing the behavior of these anomalies at depth.
It is the author's view, based on the exploration work carried out so far, that the Jumbo Mine Claims and the nearby claims are situated in a highly prospective area for gold mineralisation in the Hokonui Formation of the Lower Greenstones on the western margin of the Mberengwa Greenstone Belt. The proximity of the claims area to known old or current mining operations with similar geological and structural features and characteristics further supports this view.

Further investigation of the claims area is recommended and a phased approach would include:

1. Further characterization of the behavior of the mineralised veins and zones could be achieved by mapping and sampling any of the current underground workings if they could be made accessible and safe.

2. Diamond drilling can then follow to probe the down dip extensions of the shear zone-hosted quartz veins and mineralised zones. It will also provide lithological, mineralogical, structural and sampling data besides the geological control inherent in diamond drilling. Diamond core samples will also provide samples for metallurgical test work.
3. It is recommended that some initial reconnaissance drill holes should be planned in such a way as to probe the anomalies at all depth levels i.e. shallow, intermediate and deeper levels, i.e. penetrating down to vertical depths of at least 200 m. These initial holes will be used to calibrate the actual levels of mineralisation occurrence, and any notable diagnostic characteristics of such mineralisation. Once this has been achieved, the rest of the drill holes will then be planned based on the outcome of such initial holes.

Other consultants also carried out geology and mining related work on the Jumbo claims and Bibi claims in which the author was not involved. This work has been included in this updated report for the sake of completeness of all the work carried out on the claims area.

1 INTRODUCTION AND TERMS OF REFERENCE

1.1 Introduction

DVK Gold Mining (Pvt) Ltd (“the Client”) requested Mr. Cleopas Machingauta (“the author”) to update the original report on the potential of the Jumbo Mine claims area regarding gold mineralization following different phases of geophysical and geological exploration work and mining activities carried out on the claims area. Geophysical exploration work mainly involved ground magnetic and Induced Polarisation surveys carried out by Mr. T. Gumede under Knowledge factory.

Other consultants also carried out geology and mining related work on the Jumbo claims and Bibi claims in 2018 in which the author was not involved. This work has been included in this updated report for the sake of completeness of all the work carried out on the claims area.

1.2 Qualifications of Cleopas Machingauta

Mr. C. Machingauta is a geologist with twenty-eight years experience in the mining industry including exploration projects, mining geology, geological modelling, resources evaluation, setting up and managing QAQC systems and new projects. He holds a BSc Geology degree and a MSc Earth Sciences degree from the Paul Sabatier University, Toulouse, France.

He worked as an exploration and mine geologist for over three years for Forbes and Thompson in the Gwanda Greenstone Belt (gold), as a mine and resource evaluation geologist for over 10 years under Anglo American Corporation at Bindura Nickel Corporation. He also worked as a senior evaluation geologist for over three years under AngloGold Ashanti in Guinea in West Africa and as a senior geologist consultant for five years with SRK Consulting. He is now working as an Independent Consultant.

Mr. Machingauta is a member of the Geological Society of Zimbabwe.

He has no beneficial interest in the Jumbo Mine claims or in any assets belonging to the Client. He is to be paid a fee for this work in accordance with normal professional consulting practice.

- ·Cleopas Machingauta, BSc (Hons) Geology, MSc (Earth Sciences)

1.3 Purpose of Report

The purpose of this Report is to give an updated version of the original report that gave a summary of the exploration work carried out on the claims area during 2016 and 2017 and an appraisal of the potential for gold mineralization with recommendations for further exploration work of the deposit**.**

As with the original report, this version of the report does not provide a valuation of the gold claims or any comment on the fairness and reasonableness of any transactions related to the acquisition or lease of the claims.

1.4 Site Visit

Since the initial ground truthing surface and underground visits of the claims area in 2016 after geophysical surveys and geological mapping, the author was on the ground for several months during 2017 carrying out a trenching, mapping and sampling exercise that will help in designing a diamond drilling programme for the claim blocks once the sampling results are established.

1.5 Sources of Information

Table 1 shows a list of information sources used by the author for compiling the original appraisal report.

Table 1: List of Information Sources

Reference	Description	Date	Author
1	The Geology of the Belingwe-Shabani Schist Belt	1978	A. Martin, Rhodesia Geological Survey Bulletin No. 83
2	Structural Controls of Gold Mineralisation in the Zimbabwe Craton – Exploration Guidelines	1994	S.D.G. Campbell and P.E.J Pitfield – Geological Survey Bulletin No. 101
3	Mberengwa Topographic Map	1982	The Surveyor-General, Zimbabwe, Mberengwa 2029 B4
4	Various Public Reports and Documents	-	Zimbabwe Geological Survey Library
5	Jumbo Mine Mberengwa Gold Claims Geophysical Survey Report	Jan 2016	T. Gumede – Knowledge Factory Private Limited
6	Site visits and geological report on Jumbo Mine Claims, Mberengwa	2016	Messrs. M. Ncube and F. Mupudzi

2 DISCLAIMER

2.1 Limitations and Reliance on Information

The opinions expressed by the author in this assessment report are based on the exploration activities carried out in 2016 and 2017 on the claims area and include: the geological mapping done by F. Mupudzi and N. Ncube, the geophysical surveys carried out by T. Gumede. They are also influenced by the observations the author made on the lithological and structural characteristics of the claims during the initial ground truthing of the area and the trench mapping and sampling he also carried out and by the geological reviews of publicly available bulletins of the Geological Survey of Zimbabwe.

The opinions apply to the information, as it existed at the time of the author's investigations. These opinions do not necessarily apply to conditions and features that may arise after the date of compilation of the initial version of this Report, about which the author had no prior knowledge nor had the opportunity to evaluate. The bulk of geophysical survey section of this report was extracted from the report compiled by T. Gumede of Knowledge Factory Private Limited.

The author will not be held responsible for the opinions expressed on the work carried out by other independent consultants that is presented in Chapter 10 and Appendices of this report.

2.2 Legal Reliance

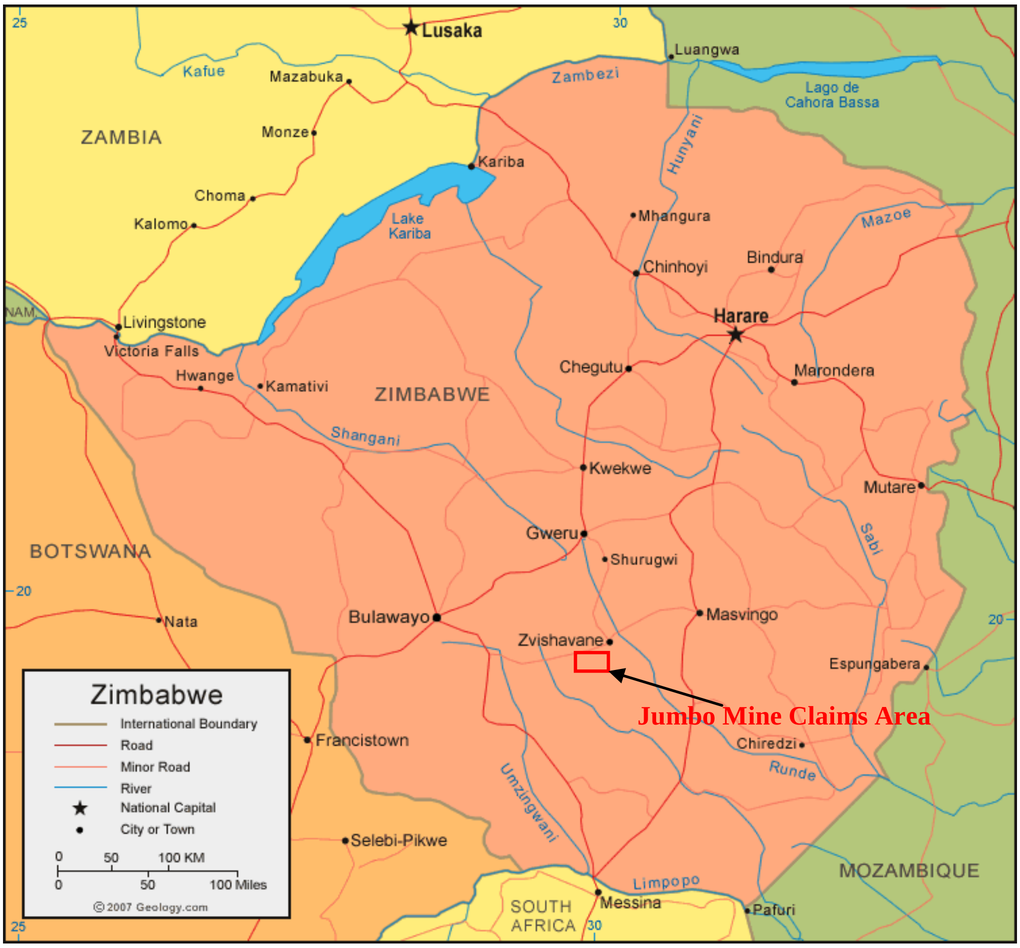
The author did not carry out any legal due diligence of the claims. He has assumed that any information of a legal nature pertaining to land ownership and usage, right of access to and exploitation of minerals, necessary licences and consents including planning permission, any servitudes and conditions contained in any sole-ownership or joint venture agreements for the property are in order and have no adverse technical and financial implications.

3 PROJECT DESCRIPTION AND LOCATION

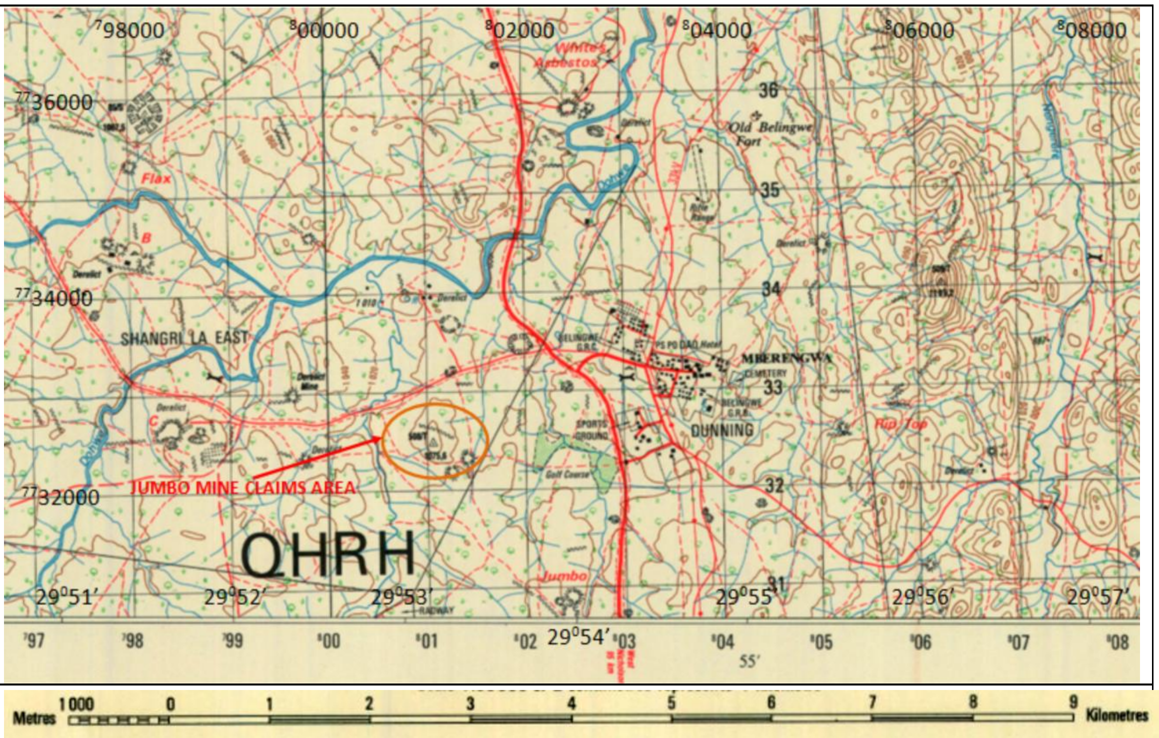
3.1 Access and Infrastructure

3.1.1 Roads

The Jumbo Mine claims are situated on an area straddling across Shangri La East and Dunning Farms, 2.4 km south of Belingwe and about 30 km SSW of Zvishavane. (Figure 1) The claims are accessible through the Zvishavane-Mbalabala-Bulawayo highway for 25 km and branching off eastwards towards Mberengwa. About 5 km on this tarred road, a dirt road branches off leading to the claims a further 2 km south-westwards.



C. MACHINGAUTA	**Figure 1:** Jumbo Mine claims area	Project No. 01/17



C. MACHINGAUTA	**Figure 2:** Jumbo Mine claims location	Project No. 01/13

3.1.2 Electricity

Electricity for current small-scale mining and plant operations is drawn from a Zimbabwe Electricity Supply Authority (ZESA) sub-station that is located on the claims and this is fed from a nearby 11kva line.

3.1.3 Water

The waterlogged old Dunbeth Main shaft services current plant operations and domestic needs for the surrounding community. The nearby Dohwe River could be used for any future bulk water for mining and plant operations.

3.2 Physiography and Climate

3.2.1 Drainage

Two major rivers pass through the area. The Mtshingwe River, which commonly stops flowing during the dry months, enters the area from the west along the line of the Mtshingwe Fault and passes through the Great Dyke over granite terrain erratically following the fault trace onto the Belingwe Greenstone belt before joining the Ngezi River north-east of the claims area. The Ngezi River, also commonly dry for part of the year, enters the area from the north-west. From their confluence, the Ngezi follows the fault line until the effect disappears eastwards and meandering starts. Locally, a smaller river, the Dohwe, passes west of the claims area before feeding into the Mtshingwe River in the north.

3.2.2 Topography

This western flank of the Mberengwa Greenstone Belt generally lies above 1160 m above sea level and is generally flat lying to the south and west of the claims area although occasional ridges rise above the general plain.

3.2.3 Vegetation

The natural vegetation of the area is rarely preserved, and then only on the more accessible peaks where it consists essentially of low shrub trees. The thorn tree is very prominent in this western part of the greenstone belt.

3.2.4 Climate

The greater part of the area like most parts of the surrounding country enjoys a semi arid climate due to its low altitude.

Daily sunshine averages ten hours and humidity is relatively low. The winter months run from June to early August when mean high temperatures of 20ºC are experienced during the day before falling to about 6ºC at night. The summer temperatures are always high with maximum temperatures of 35ºC during the day. The rainy season starts in November and normally ends in early April. The rainfall is relatively low and averages at 550mm per year.

3.3 Project Status

The latest information on mining activities on the Jumbo claims is detailed in the reports compiled by Bara International in July and September 2018 and found in Chapter 10 and Appendix 5 and Appendix 6 of this report.

3.4 Tenure and Ownership

The Jumbo Mine claims are registered under DVK Gold Mining (Pvt) Ltd. They are legally secure through payment and workings. The claims are fully beaconed and maintained and copies of the relevant registration certificate details are listed in Table 2.

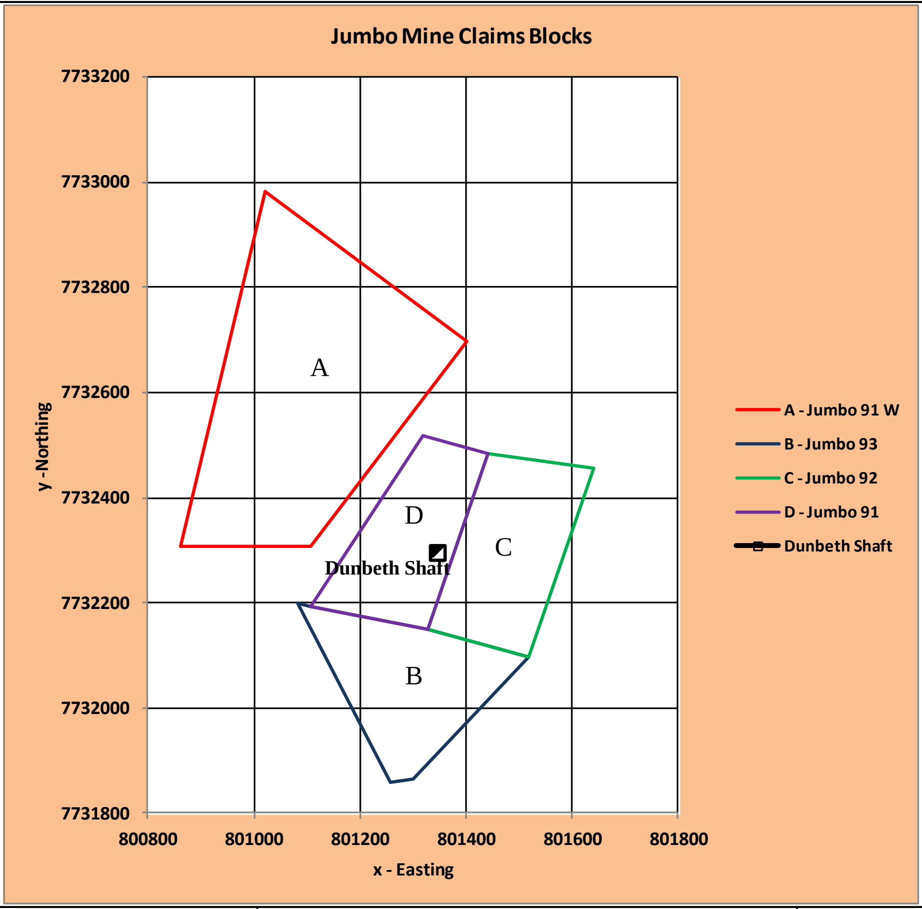
The property boundaries were located and verified with a hand held GPS using Arc 1950 and UTM Zone 36S coordinate system in conjunction with the map showing an outline of the blocks from the Ministry of Mines.

Table 2: Summary of Jumbo Mine Claims registration details

	Certificates of Registration after Transfer						
Receipt No.	**Claim Name**	**Transfer No.**	**Reg. No. after Transfer**	**Orig. Reg. Date**	**Reg. Date**	**Area (hectares)**	**No. of Blocks**
H033194	Jumbo 91	23470	13368	13 Nov 2014	26 Aug 2019	6.6	8 Gold
H033195	Jumbo 92	23471	13369	13 Nov 2014	26 Aug 2019	7.2	8 Gold
H033196	Jumbo 93	23472	13370	13 Nov 2014	26 Aug 2019	7.3	3 Gold
H033189	Jumbo 91 West	23465	16182BM	06 Aug 2015	26 Aug 2019	21.3	19 Chrome
TOTAL						**42.4**	

In terms of the Mines and Minerals Act Chapter 21:05 the dominion and the right to search for, mine and dispose of all minerals, mineral oils and natural gasses is vested in the President of the Republic. Anyone wishing to search for or exploit any mineral may do so only by virtue of right acquired in terms of the above Act.

An individual acquires this right when they purchase a prospecting license or a company acquires an exclusive prospecting order (EPO) over a defined area of ground and from this stems the right to peg claims or mining locations and the right to dispose of minerals. The rights to these mineral claims are preserved by either working the claims or through paying annual renewal fees to the mining commissioner of the district in which the mine claims are located.



C. MACHINGAUTA	**Figure 3:** Jumbo Mine claims blocks	Project No. 01/17

4 MINING HISTORY

4.1 Mining History of the Claims area

The documented history of the mines within and around the claims area is as summarised in Table 3:

Table 3: Declared Historical Production

Mine	Year	Gold Ore (tonnes)	Gold recovered	Reef description
A Mine	1922	191	1.49 kg @ 7.8 g/t	Quartz vein in greenstone
Blue Bell Mine	1933 - 1960	145	1.47 kg @ 10.14 g/t	Veinlets of stibnite in quartz
C Mine	1907 – 2000s	309,515	2,104 kg @ 6.8 g/t	Shear-hosted quartz vein in greenstone
D Mine	1933 - 1941	376	4.2 kg @ 11.17 g/t	Shear-hosted quartz vein in mafic greenstone
Dunbeth Mine	1945 -1949	1,720	12.50 kg @ 7.27g/t	Shear-hosted reef in amygdaloidal greenstone
Jumbo Mine	1915 -1946	34,270	280.09 kg @ 8.17 g/t	Shear-hosted quartz vein in mafic greenstone

4.1.1 A Mine

The A Claims are situated on Shangri La Farm, 200 m east-south-east of the C Mine. The Anglo-French Company Limited acquired these claims and other properties whose names were designated by letters of the alphabet in the early 1900s.

An east-west striking quartz reef in greenstone, parallel to the C Mine reef, in 1922 produced 1.49 kg of gold from 191 tonnes of milled ore, giving an average recovered gold grade of 7.8 g/t.

4.1.2 Blue Bell Mine

The mine was located 2 km west Mberengwa.

The orebody consisted of two parallel east-striking white quartz reefs containing chalcopyrite, pyrite and galena in hornblende schist close to the intrusive tonalite contact.

The mine produced 1.47 kg of gold from 145 tonnes of gold ore intermittently between 1933 and 1960 giving an average recovery grade of 10.14 g/t.

4.1.3 C Mine

The mine, which was operated by Boulder Mining (Pvt) Ltd, is located about 4.5 km almost due west of Mberengwa.

The reef is a basic greenstone and shear-hosted massive quartz vein (up to 12 m wide) that is replaced by a shear-hosted stringer zone below 15th Level. Gold and sulphides contained in fine sinuous chloritic laminations wandering from footwall to hanging wall.

The mine produced 2.104t of gold from 309,515 tonnes of gold ore giving an average grade of 6.8 g/t.

4.1.4 D Mine

The mine is 3.8 km west of Mberengwa.

The reef consisted of a fine-grained mafic greenstone and shear-hosted 0.5m-wide white quartz vein striking east and dipping 80^0 to 85^0 south.

The mine produced 4.2 kg of gold from 376 tonnes of gold ore, intermittently between 1933 and 1941, giving an average gold grade of 11.17 g/t.

4.1.5 Dunbeth Mine

The mine is situated on Shangri La Farm, 2.4 km south-west of Mberengwa.

The reef consists of a south-trending shear zone hosted in fine-grained amygdaloidal greenstones.

In the documented past, the mine produced 12.5 kg of gold from 1,720 tonnes of gold ore giving an average recovery grade of 7.27 g/t.

4.1.6 Jumbo Mine

The mine is situated on Dunning Farm, 2.4 km south of Mberengwa.

The reef consists of an east-trending quartz vein dipping south at 500 and hosted in mafic schists and doleritic greenstones.

The mine, together with Jumbo mine North, produced 280.09 kg of gold from 34,270 tonnes of ore, intermittently between 1915 and 1946, giving an average recovered grade of 8.17 g/t. Tailings sands re-treated totalled 45,952 tonnes.

5 RECENT AND CURRENT MINING ACTIVITIES

5.1 Current mining activities

The latest information on mining activities on the Jumbo claims is detailed in the reports compiled by Bara International in July and September 2018 and found in Chapter 10 and Appendix 5 and Appendix 6 of this report.

5.2 Artisanal mining activities

Recent artisanal mining activities were carried out during early 2016 on:

- the ATM workings that are following quartz vein in a shear zone, striking at 16^0 magnetic and dipping 80^0 east, at the contact between a felsic intrusion and the mafic greenstone. The wall rocks around the quartz vein are silicified. Reports indicate that the quartz vein averaged 20 cm in width with fine disseminated gold and grades reaching 30 g/t or even higher where the reef narrowed.
- the "KG" workings that follow quartz veins and stringers in a shear zone at the contact between feldspar porphyry on the hanging wall and quartz-sericite schist on the footwall in amphibolite country rock. The mineralized zone is limonitic and the quartz veins milky white with "box-work" weathered sulphides. These foliated rocks give rise to small, sharply angular outcrops.

  The series of shafts appear to be following a right-stepping Z inflection towards the north-west with an apparent splay on the hanging-wall.

- The workings located south-east of Main Dunbeth shaft are found in strongly sheared chloritic schist. The mineralised quartz vein within the normally 1m-wide shear zones can reach a width of 30 cm. Reports indicate that the old shaft used to be a subsidiary of the C Mine.
- Workings east of the old Dunbeth Main appear to follow a poorly exposed low lying area towards the eastern extremity of the claims area bordering the local villagers' fields.

5.3 Economic Potential

Observations made during the different exploration activities show that most of the old workings fall within shear zones or shear splays that strike oblique to the former in metabasalt and particularly where the splays host quartz veins and are intruded by felsic units. The quartz veins exhibit a 'pinch-and swell" structure, particularly on the "KG workings" in the north-west, and are often milky white with widths of up to 50 cm in places occurring parallel to the foliation planes within the sheared units. Thin veinlets resulting from brecciation and containing unidentified fine sulphide minerals are also common in sheared rocks.

Gold mineralisation seems associated with the shear splays and quartz veins where fine sulphide "box-work structures" are observed.

5.4 Surface and underground mining images

Figure 4: ATM shaft and workings

Figure 5: Dunbeth Main shaft

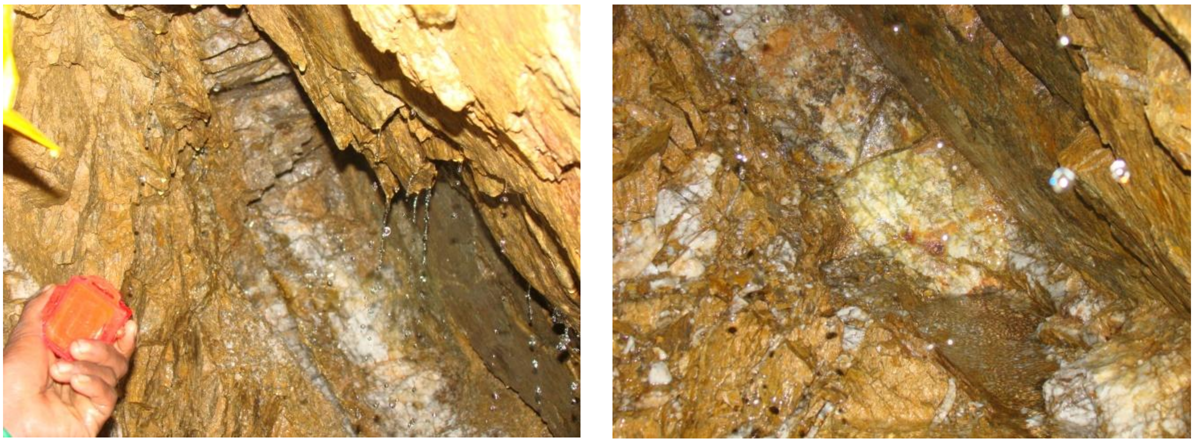


Figure 6: 30cm-wide quartz vein underground at Dunbeth Main Shaft

Figure 7: Quartz vein at a KG workings shaft

Figure 8: Limonitic milky quartz reef at KG shaft

5.5 Milling and cyanidation plant images

Figure 9: Hammer mill at Jumbo Mine claims

Figure 10: Ball mill intended for sands regrind

Figure 11: Separator

Figure 12: Entrance to cyanidation plant

Figure 13: Cyanidation tanks

Figure 14: Carbon columns

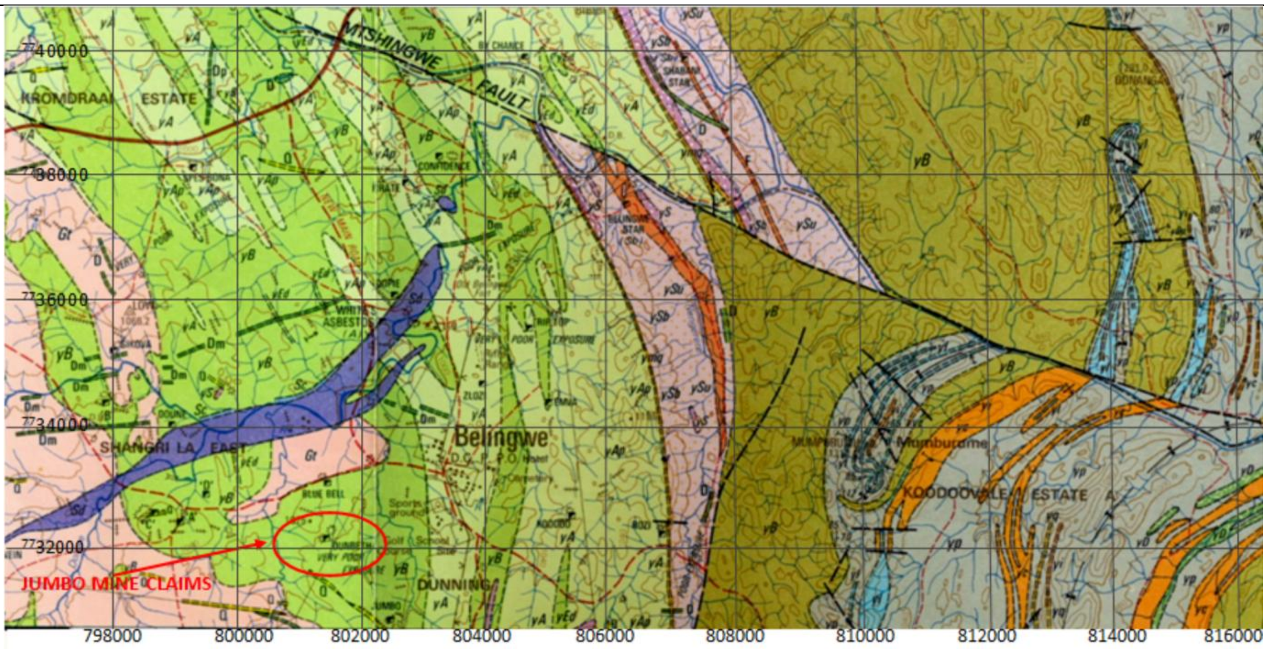
6 GEOLOGICAL SETTING

6.1 Regional Geology

The Mberengwa Greenstone Belt (“MbGB”) comprises a succession of volcanic and sedimentary rocks that have been folded into a tight syncline whose axis trends north-south. The MbGB has been subdivided lithostratigraphically into eight formations, which are grouped into the Lower Greenstones (or Mtshingwe Group, 2.9Ga), and the Upper Greenstones (or Ngezi Group, 2.7Ga).

The greenstone belt has a maximum width of 30 km in the south but becomes restricted to 500 metres in the central area before expanding to an average 4 km in the north.

Gold mineralisation is mainly associated with the quartz filled N-S trending Sabi Shear Zone on east of the MbGB and the Hokonui Formation of the Lower Greenstones Group on the western margin of the MbGB.



Geology Explanations	
Q	Quartz
F	Felsite
D	Dolerite
Gt	Foliated, banded and massive tonalite
Sd	Sepentinized dunite
yq	Quatzite
yig	Banded ironstone
yv	Carbonated lava
yc	Conglomerate
yl	Limestone
yB	Basaltic greenstone
yS	Serpentinite
ySa, ySb, ySu	Tremolite-chlorite schist, basaltic komatiite, peridotitic komatiite
yA	Pyroclastic andesite to feisic greenstone
yAp	when sheared and porphyritic
yB	Basaltic greenstone

C. MACHINGAUTA	**Figure 15:** Jumbo Mine regional geology	Project No. 01/17

6.2 Local Geology

The Jumbo Mine Claims are located in the Hokonui Formation of the Lower Greenstones about 20 km east of the Great Dyke. The Hokonui Formation, which is restricted to the western limb of the MbGB, consists of intermediate to felsic pyroclastics that in the lower part are intercalated with fine-grained mafic rocks. Some of the mafic rocks are conformably intrusive but others are possibly volcanic in origin. This formation is intruded at its base by the Chingezi Tonalite and is overlain unconformably by the Manjeri Formation which is the basal unit of the Upper Greenstones.

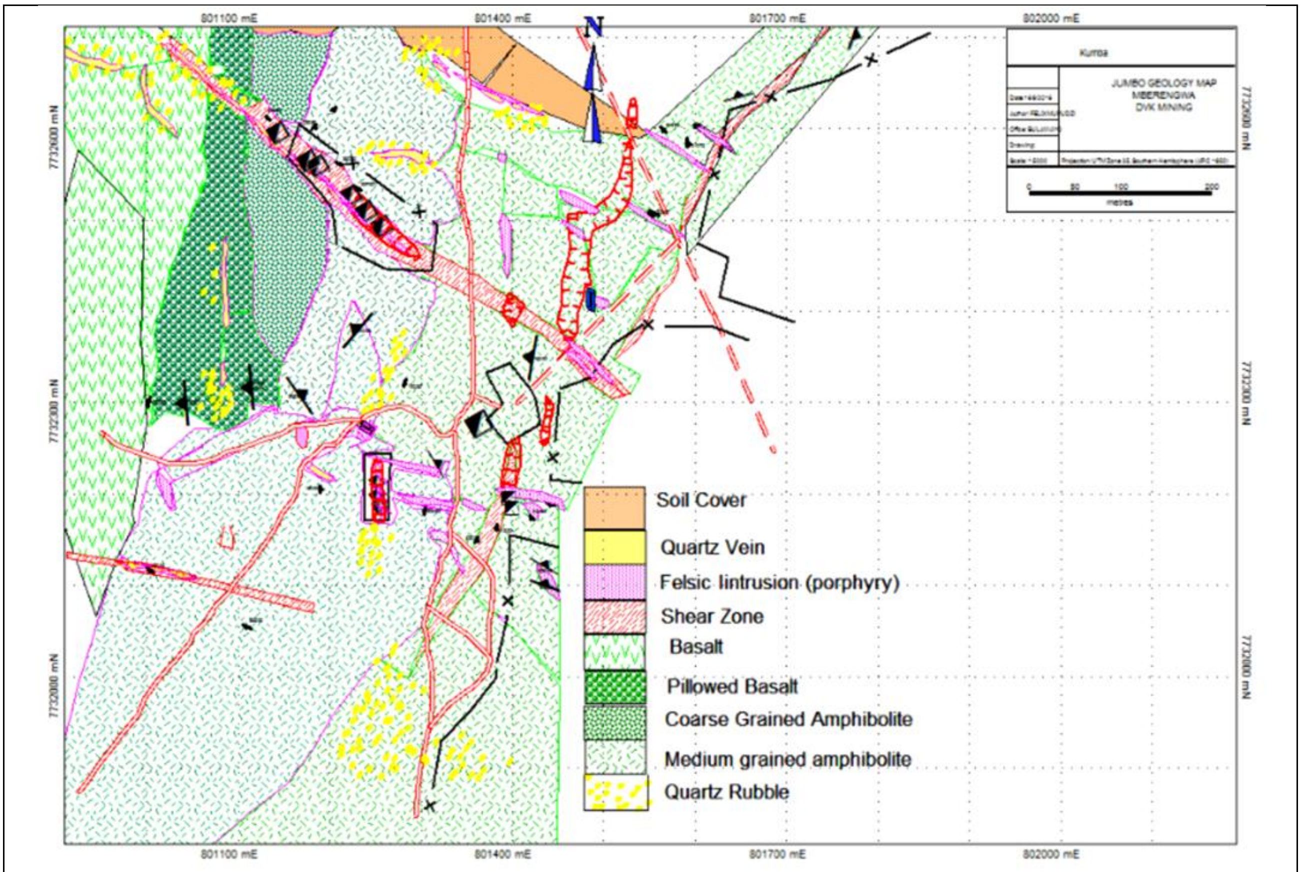
7 EXPLORATION

7.1 Geological Mapping

Geological mapping within the Jumbo Mine Claims and at White Asbestos claims which are situated about 3 km NNW of the Jumbo claims, was carried out in order to gain an understanding of the local geology, i.e. lithological and structural setting of the area.

Mapping was done along 50 m traverses and infill where necessary the geological features were picked using a GPS Garmin62 receiver and plotted on graph paper. Strike and dip were measured using a Silva compass. The separate sheets were scanned and the scans geo-referenced and digitised using MapInfo to compile the geology map. The geological information compiled was compared with the anomalies that were generated from the ground magnetic surveys that were carried out earlier on.

A final 'ground-truthing' exercise was done after processing the geological mapping and ground magnetic survey data, during the siting of trenches, with the aim of relating the different anomaly signatures to the individual rock types and structures.



C. MACHINGAUTA	**Figure 16:** Jumbo Mine deposit geology	Project No. 01/17

7.1.1 Lithological descriptions

7.1.1.1 Basalt and metabasalt

The dominant lithological unit on both the Jumbo and White Asbestos claims are basaltic units that exhibit varying metamorphic grades. In some instances, the basalts are made up of undeformed fine-grained lava flows.

Some pillowed basalts were identified on top of a ridge towards the western extremity of the Jumbo claims. Immediately on the east of the pillow basalts is a coarse-grained amphibolite with some mottled hornblende crystals. Further east, the amphibolites becomes medium-grained.

Elsewhere, the basalt is fine-grained and massive. Where sheared, the metabasalt turns to chlorite-sericite schist.

7.1.1.2 Porphyritic felsic intrusions

Felsic units intrude the metabasalts along E - W and WNW trending secondary shears that splay off the principal regional N-S trending shears. The cream-coloured rocks are coarse to very fine-grained and moderately deformed to undeformed.

Where deformed the felsite shows brittle deformation that poses some rock mechanics challenges during mining operations.

7.1.1.3 Quartz veins

The quartz veins are associated with shear splays where they exhibit a pinch and swell structure. At the ATM shaft area, the quartz has a clear colour with widths of up to 30 cm. At the KG workings the quartz vein is milky white and limonitic with widths in excess of 50 cm in places.

7.1.2 Structural setting and gold mineralisation

The claims exhibit generally the same structural linear trends characterised by principal N- S shears with E-W and WNW trending splays.

The N-S shears are major regional structures. They can be traced for tens of kilometres along strike. The width of the shears varies from 5 m to 20 m. These shears sometimes carry economic free gold mineralisation but not as much as the splay shears that strike oblique to them.

The E-W and WNW-trending shear splays are of significance in terms of gold mineralisation when they are associated with quartz veins. The veins show a pinch swell cm to m scale and commonly disappear altogether along both strike and dip.

Gold mineralisation occurs concentrated in pockets where the width of the vein thins to 30 cm and below. It has been observed that where the quartz is milky and wider than 50 cm, as is the case at the KG workings, gold mineralisation is sub-economic or only confined to the margins of the enclosing splay shears.

Some quartz rubble from the claims area has been sent to the mill and gold recoveries of up to 2g/t were realised on the cyclones.

However, fine sulphide shear-hosted gold that occurs within the shears has proven to return better recoveries on cyanidation of sands after the cyclones.

7.1.3 White Asbestos claims

The dominant lithological unit are basalts that are deformed to green schist facies along predominant regional N-S trending shears as well as the secondary splay shears.

On the eastern part of the claims is a N-S trending shear, averaging 3 m in width, that carries a 30 cm – 50 cm wide grey quartz vein. The vertical ensemble traverses the entire claims without a break.

From a recently excavated shallow shaft (4 m depth), the quartz vein has been shown to carry some malachite.

Although samples collected from the quartz reef returned some sub-economic gold grades on the cyclone there is need to investigate it further and do more sampling along its strike.

7.1.4 Mapping conclusions

Normally, structurally controlled gold deposits hosted in greenstone belts are commonly associated with hinges of folds (anticlines or synclines) and intersections of shear zones and/or faults. Consequently, prospective areas in the Jumbo Mine and white Asbestos claims encompass zones where the metabasalts are truncated by controlling shear zones and splays. The shear zones and splays would have acted as conduits for the auriferous hydrothermal fluids. These fluids rich in various elements, including gold and sulphur, would react with ferro-magnesium minerals in the metabasalts to form gold-iron sulphide complexes such as pyrite, pyrrhotite, arsenopyrite and many more.

There is need to study and understand the correlation of the lithological and structural features picked by mapping and geophysical surveys and plan for the excavation of trenches across structures.

The structures controlling mineralisation i.e. veins, shears and splays, intrusives and inflictions must be thoroughly understood.

The final activity if recommended and supported by the investigations carried out through geophysical surveys, mapping and trenching should be drilling.

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7.2 Ground Magnetic Survey

7.2.1 Introduction on Ground Magnetics

A detailed ground magnetic survey was carried out on the Jumbo Mine claims at a 50 m line spacing and 5m sample stations with the aim mapping out faults, shear zones and dykes which could aid in highlighting potentially favourable areas for gold mineralization within the host rocks.

The generated magnetic anomalies together with the follow-up ‘ground-truthing’ and subsequent geological mapping would be used to determine the continuity positions of the gold reefs on the old workings, as well as re-assessing the host and controlling rock types and structures on the mineralisation.

Many rocks in the earth’s crust exhibit magnetic properties, which may be magnetization induced by the present-day geomagnetic field, or a remanent magnetization acquired at some time in the geological past, or a combination of both. Mapping the patterns of magnetic anomalies attributable to rock magnetism has proven to be very effective in mapping lineaments and curvilinears that reflect fracturing, faulting, folding and shearing, which are potential conduits for gold mineralisation. Structural geometries such as disconformities may also be mapped using litho-magnetic variations.

It has to be pointed out that magnetic surveys are not direct detectors of mineralization, but give guidance if the mineralization is associated with magnetic minerals like pyrhotite, magnetite, and ilmenite.

7.2.2 Magnetic Survey Instrumentation

The survey utilized a GSM 19 magnetometer of sensitivity +/-0.01nT as a roving machine whilst the Geometrics G856 of sensitivity +/-0.1nT was the base machine.

7.2.3 Magnetic Data Processing

7.2.3.1 Map Generation

The following data transforms and routines were effected using frequency and space domain filters in MapInfo Discover Program.

a) Pole Reduction

This transform generates a total field data set whose magnetic anomaly signatures are commensurate with those at the poles rather than -60^0 for the induced magnetization in the prospect area. The effect is to simplify the magnetic map by rendering anomaly waveform independent of strike and to generate symmetrical anomalies over steeply dipping magnetic sources. Anomalies with asymmetric waveform reflect flatly dipping magnetic sources or with a component of remanent magnetization.

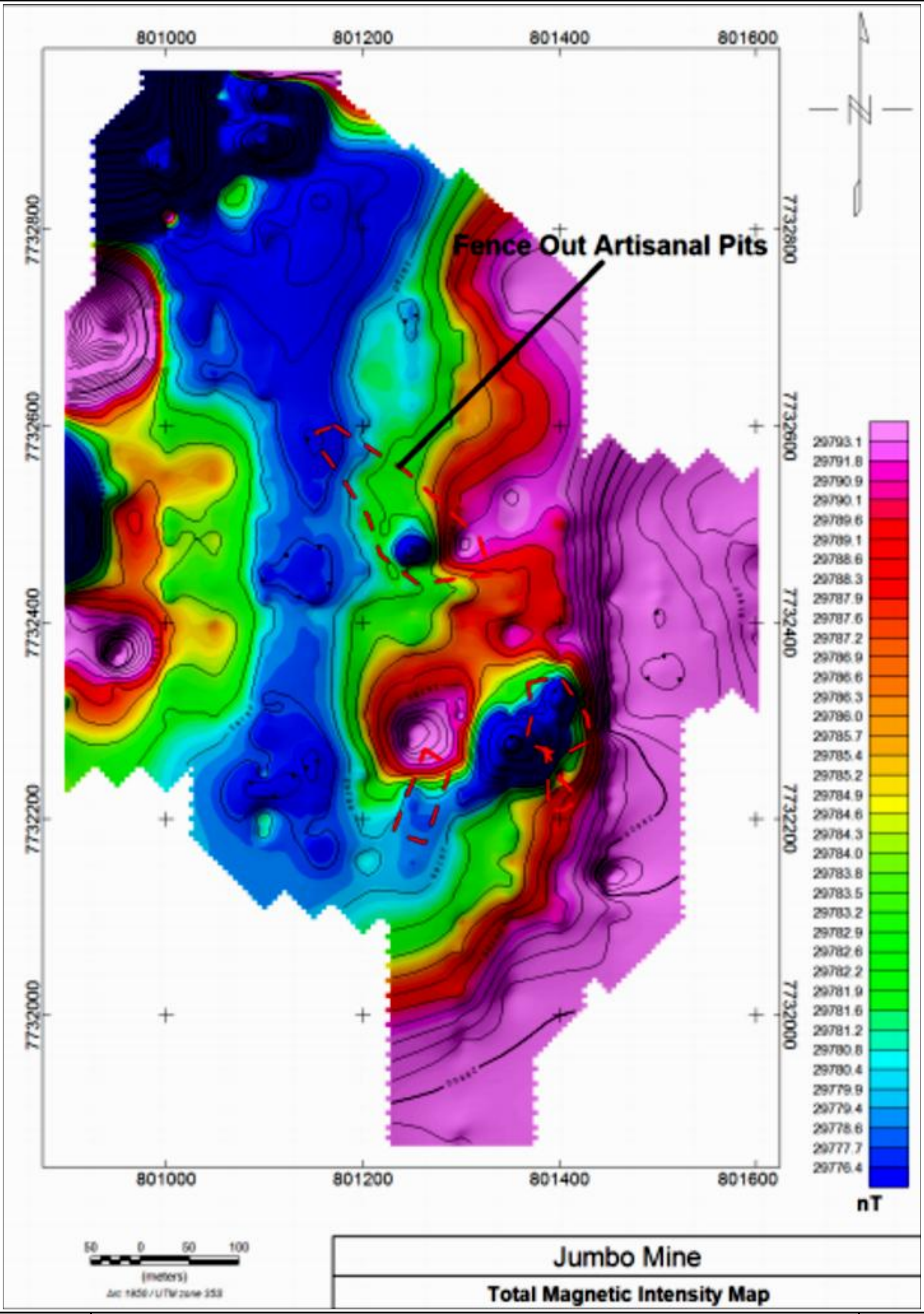
b) Gradient Data

Vertical gradient data emphasize shallow sources at the expense of broad regional responses. These are short wavelength magnetic anomalies and reflect structural lineaments.

It has to be pointed that vertical gradient anomalies over steeply dipping magnetic sources are generally less complex and are preferred in map interpretation.

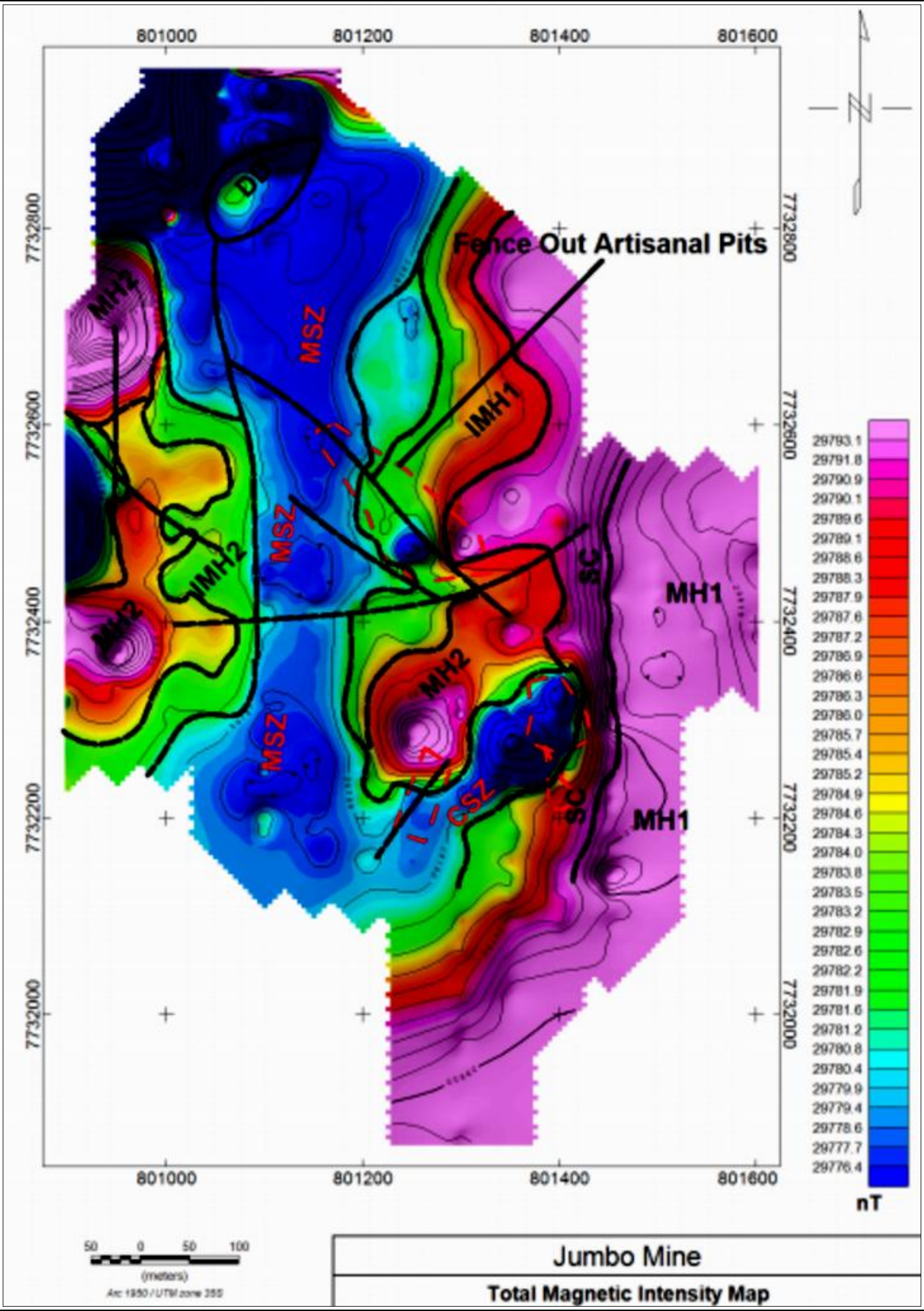
7.2.4 Magnetic Survey Anomaly Discussion

The magnetic survey results, shown in Figure 17, indicates N- S regional trend characterised by a magnetic high feature to the east, a low magnetic feature centrally and a broken but intermediate to high magnetic feature to the west. The fenced out artisanal pits are associated with the shears that have a synonymous low magnetic intensity.



C. MACHINGAUTA	**Figure 17:** Jumbo Mine Total Magnetic Intensity Map showing reef workings	Project No. 01/17

The magnetic survey has mapped 9 distinct magnetic horizons (see Figure 18), indicated as from E to W, MH1, SC, CSZ, MH2, IMH1, MSZ, DD, IMH2 and MH2 with maximum peak to trough intensity of 20nT. The small variation in this intensity indicates that the units may be closely associated in formation hence the small variation in magnetite bearing minerals.



C. MACHINGAUTA	**Figure 18:** Jumbo Mine Total Magnetic Intensity Map with geological structures	Project No. 01/17

7.2.4.1 MH1 Anomaly

This anomaly lies to the east of the artisanal pits, its westerly contact being associated with a depression that has been worked on for free coarse gold. It is the relatively more highly magnetic unit, exposed at depth by excavations, is mafic hence the relative high magnetic intensity. It shows as a N S formation its contact to the west is sheared giving rise to a large magnetic gradient.

7.2.4.2 SC Anomaly

This is a sheared contact of a more mafic unit to the east of MH1 and a granitic formation to the west. This contrast in mineralogy of the formations give rise to a large magnetic gradient that has been as SC. Stringers of quartz were observed on the excavations, making the contact a likely conduit for gold mineralisation

7.2.4.3 CSZ Anomaly

This is a low magnetic feature that has a NE-SW trend. It is interpreted as a radial/conjugate shear as it splays from SC anomaly to the east and MSZ anomaly to the west. It is associated with artisanal pits exploiting narrow rich quartz veins to the NE and SW.

7.2.4.4 MSZ Anomaly

This is a shear, showing as a magnetic low owing to the destruction of magnetite during the tectonic event. It has a N S trend, truncated by WWS EEN and NW SE structures. The conjugate structures are conduits of high grade mineralisation as observed by production from some of the pits. The structures are mapped as microvariation in intensity having a directional orientation acute to the main regional trend. Induced Polarisation surveys targeted the shear and conjugate structures to map any potential sulphide mineralisation that may be host to gold mineralisation at depth.

7.2.4.5 DD Anomaly

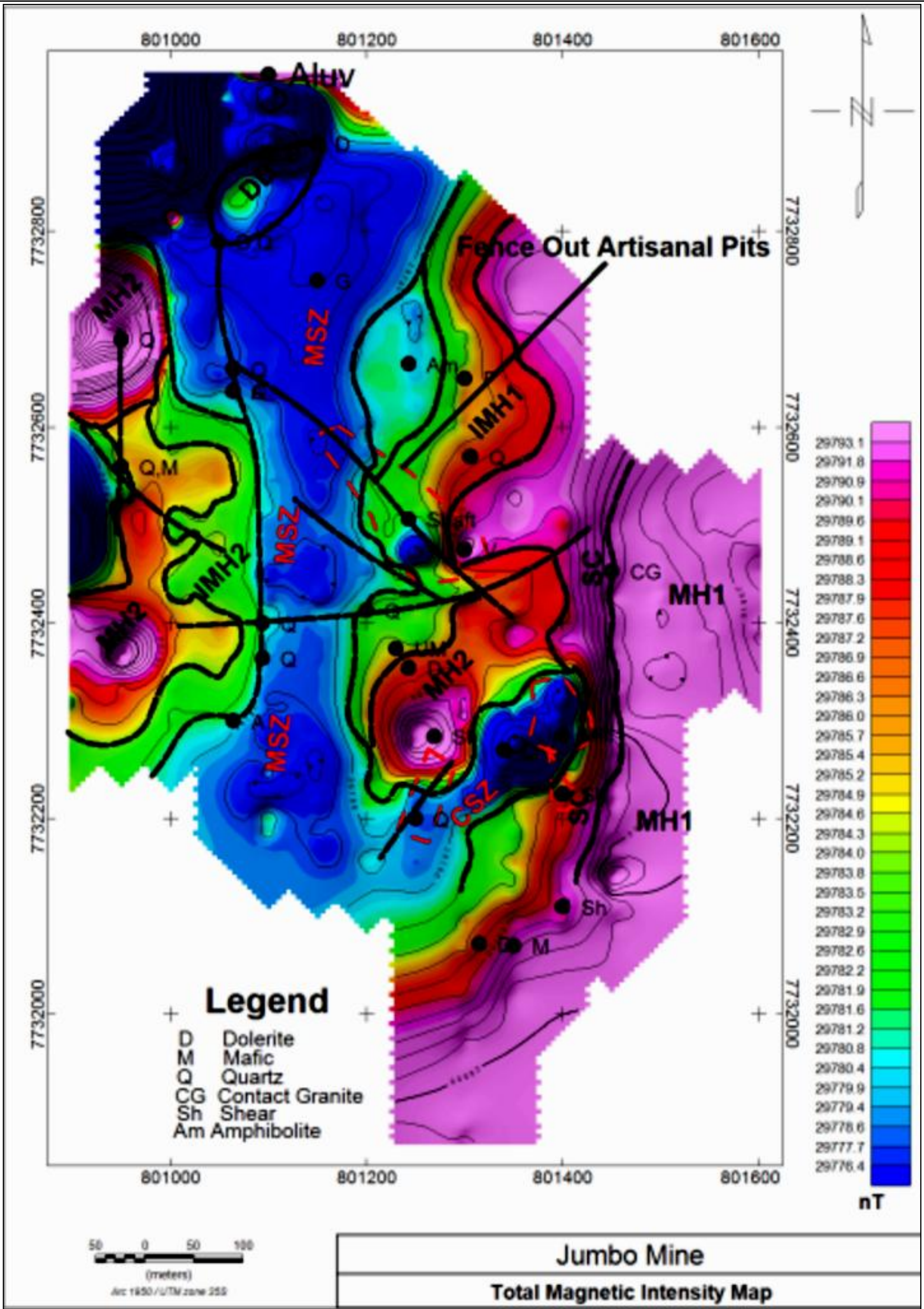
The feature is a short strike length anomaly to the north with a NE SW trend. The float in the environs suggests that a dolerite dyke has cut across MSZ. The area to the north of the anomaly is scarred with shallow alluvial pits targeting gold nuggets.

7.2.4.6 IMH2 Anomaly

The anomaly is bound to the east by MSZ anomaly and of intermediate intensity having a regional N S trend. This may be interpreted as a possible buried granitic formation similar to the one identified on SC anomaly or amphibolite. The anomaly is cut by NW SE and E W structures that have affected the MSZ anomaly. Its north is terminated by more highly magnetic anomaly that appears intrusive.

7.2.4.7 MH2 Anomaly

This is a magnetic anomaly with its strength equivalent to MH1 anomaly and is likely to be mafic in nature. The intensity varies along strike indicating that perhaps it has suffered varying of metamorphism as one progresses north. The field outcrop also shows variation is crystal size within some formation, from relatively fine to the south to a coarser grained unit to the north.



C. MACHINGAUTA	**Figure 18:** Total Magnetic Intensity Map with Geology Interpretation and Outcrop areas	Project No. 01/17

7.3 Induced Polarisation Survey

7.3.1 Introduction to Induced Polarisation Survey

As a follow up to the Ground Magnetic survey, Induced Polarisation (IP) surveys (real section IP configurations) were implemented on more prospective ground to identify potential pitting/trenching and drill targets.

The IP survey was therefore designed to check on the occurrence of sulphides as they are known to be associated with the gold in the area. The continuity of the shear zones and any other lineaments along which gold and related sulphides could be enriched would also be investigated by the IP survey.

An area of 25 hectares was surveyed using multi-gradient configuration to a 250 m depth slice at 100 m line spacing over MSZ, CSZ and other conjugate structure that may be host to gold mineralisation as was interpreted from the magnetic surveys. A 50 m receiver-electrode-dipole length was used with a 25 m along line sampling frequency to improve on resolution.

7.3.2 Instrumentation and Field Procedure

The IP surveying was conducted using an IRIS IP system, in multi-gradient array 2-D mode to survey different pseudo-depth levels. The potential electrode spacing was set to 25 metres to a depth slice of 50 m and 50 m to a 250 m depth slice while along line sampling was set at 25 m for high lateral resolution. Surveys were completed on 5 lines, 7732200N (200N), 7732300N (300N), 7732400N (400N), 7732500N (500N) and 7732600N (600N) transverse to N S, NE SW shear system as shown in Figure 19.

7.3.3 Brief Theory of IP Method and Data Processing

IP method is widely used for detecting possible sulphide mineralization (usually an indicator for gold occurrence) that is expected to give high chargeability response. In IP methods, electrical current is alternately induced into the ground and switched off, usually in cycles of 2 seconds. The induced current ionizes the ground temporarily for 2 seconds, thereby creating a temporary cell in the ground that results in an "over voltage" which decays to zero during the off phase of the cycle. The size of the stored charge, and hence the time it takes for the over voltage to decay, depends on the presence of electrically chargeable minerals in the ground such as sulphides. The chargeability (M) in Millivolts/volts, of the ground is the rate of decay of voltage across this cell. True chargeability is the ratio of the over or secondary voltage Vs, to the observed voltage Vo, applied through AB so that M = Vs/Vo, expressed as a percentage or as milli volts per volt. In reality, what is measured is the apparent chargeability (Ma) which is the area (A) beneath the voltage-time decay curve over a defined time interval T_1 to T_2 and normalized by the assumed steady-state primary voltage, Vp such that:

$$Ma = A/Vp = (1/Vp) \times \int_{t2}^{t1} v(t)dt$$

The unit for the resultant quantity is mVs/V.

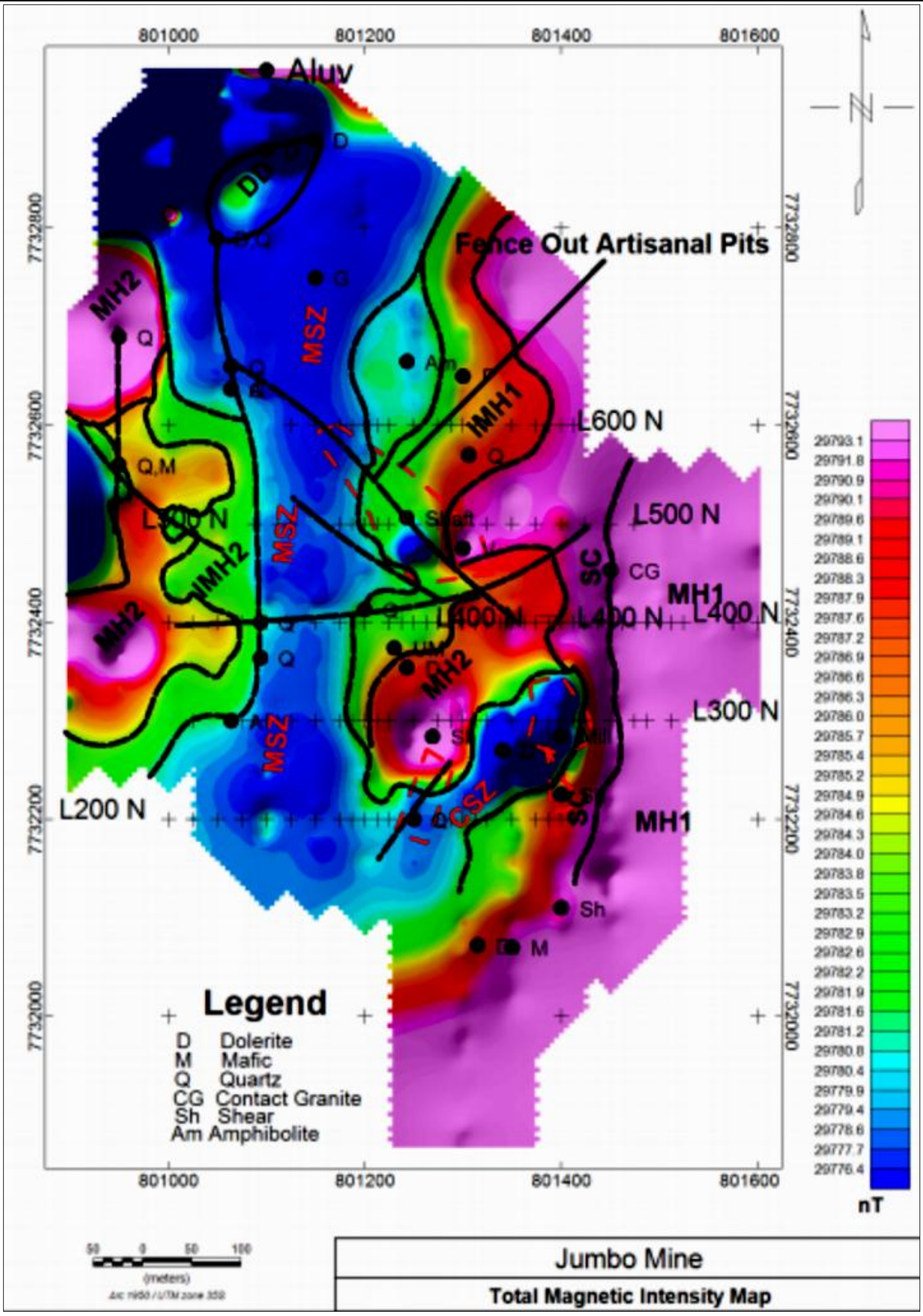
Knowing the location of the electrodes and measuring the amount of current input into the ground and the voltage difference between two potential electrodes, one can compute the resistivity of the medium. The computed resistivity is referred to as the *apparent resistivity.* It is called *apparent resistivity* because the earth does not have a constant resistivity or a homogenous medium i.e. it varies both horizontally and with depth.

Besides disseminated sulphides, other minerals such as graphite, oxides and clays are also possible sources of IP anomalies and they define notable chargeability anomalies. Because all these minerals are conductors, they tend to give low resistivity anomalies. However, high resistivity is possible within sulphide zones if they are hosted within resistive quartz veins or within silicified zones.

Ambiguity on interpretation in such geological environments is introduced so, that from a geological point of view, IP responses are almost never uniquely interpretable. Also, from the IP measurements the apparent (bulk) resistivity of the ground is calculated from the input current and the measured primary voltage. IP/Resistivity measurements are generally considered repeatable within about five percent. However, they will exceed that if field conditions change due to variable water content or variable electrode contact. IP/Resistivity measurements are influenced, to a large degree, by the rock materials nearest the measuring electrodes, and the interpretation of the traditional pseudo section presentation of IP data in the past have often been uncertain. This is because stronger responses that are located near surface could mask a weaker one that is located at depth.

Gradient Array - The gradient array is an efficient setup that can be used for reconnaissance or detail surface work. This array is a generalization of the Schlumberger array, and is used for surveying large grids. The size of the receiver dipoles would be based on the lateral resolution desired. This array provides data with good penetration, data are easy to interpret, there is less masking by conductive overburden, lateral resolution is very good, and can use two or more receivers on line to speed up the survey. Its main drawback is that depth to anomalous bodies cannot be determined.

Real Section IP is a form of multi-gradient array in which the current electrodes are moved to increase depth of observation. The configuration has the advantage that the polarisable body attitude can be estimated from the pseudo section, making interpretation straight forward compared to pole-dipole, dipole-dipole data.



C. MACHINGAUTA	**Figure 19:** Jumbo Mine Total Magnetic Intensity Map with IP survey lines	Project No. 01/17

7.3.4 Data Presentation

The geophysical data from this survey are displayed in several formats, as indicated below. All plan maps are registered to the Arc 1950, zone 35K, and UTM grid coordinate system to enable integration with magnetic data. Pseudo-sections are 3D interpreted depth sections also registered to the UTM grid for data integration. This was achieved by treating IP data as drill holes.

7.3.5 Interpretive Map Generation

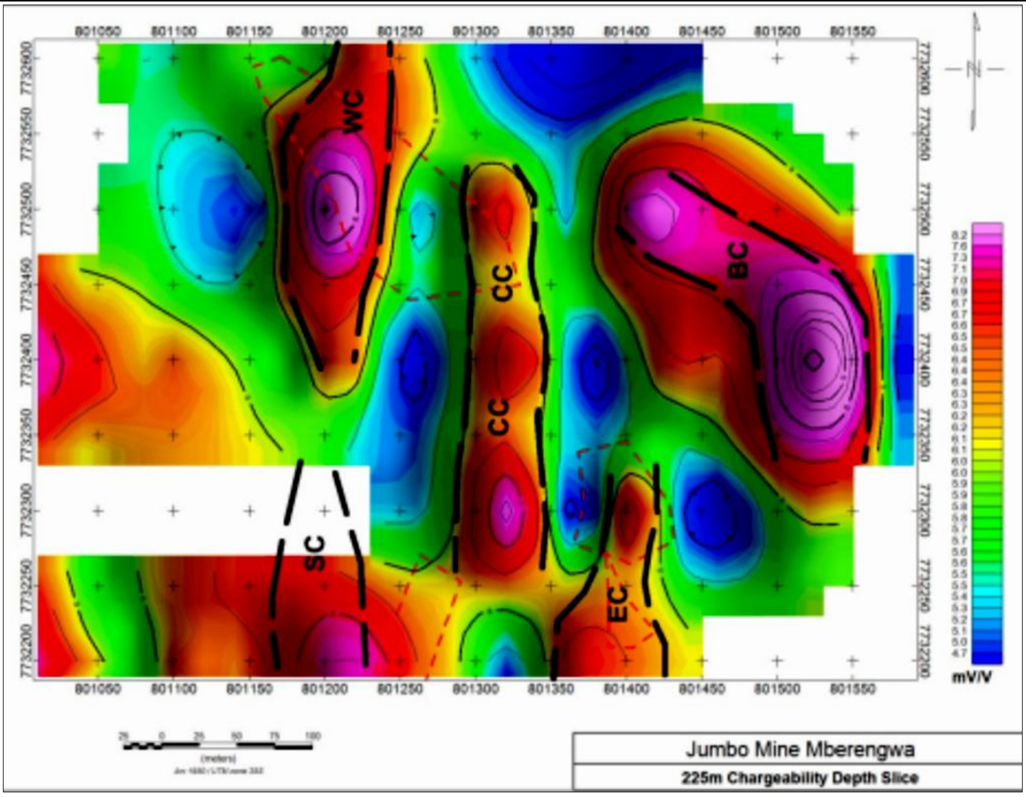
Line by line depth sections of real section IP data were produced to enable determination of location of body, estimation of body attitude and thereby recommend drill positions. Pseudo-depth plan-view maps are essential to determine possibility of structures and correlation with geology mapping, magnetic survey results/interpretation, trenching to improve geological understanding of the area.

7.3.6 Induced Polarisation Survey Anomaly Discussion

Five anomalies at depth have been mapped with a NS strike with EC, CC and WC forming an echelon in which EC is the east anomaly, CC is the central anomaly immediately west of EC by to the northerly side while WC is the westerly anomaly and lying northerly to CC. The forth anomaly BC is the more easterly and broader of the anomalies while SC lies south in association with current artisanal pits.

7.3.6.1 EC Anomaly

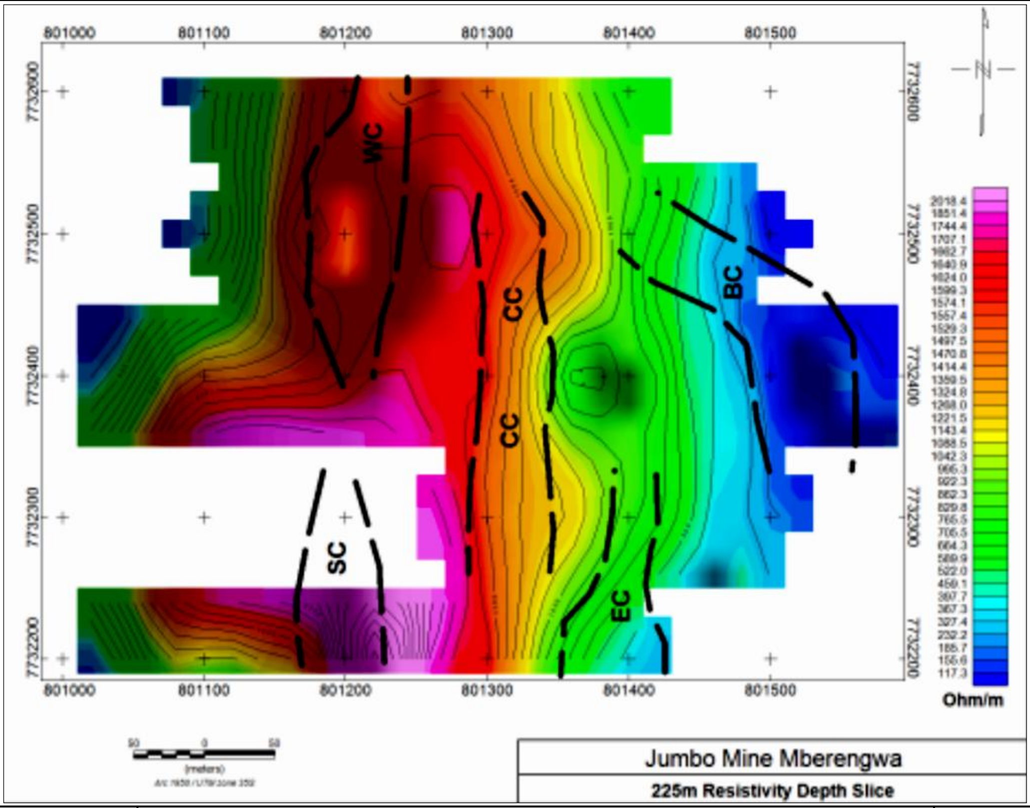
This anomaly is mapped at depth as a N S striking feature associated with the initial Jumbo Mine Shaft area (See Figure 5a and 5b). The chargeability anomaly diminishes in its strength towards the surface, an indication of possible oxidation of sulphides that give rise to a high chargeability. It is associated with an intermediate resistivity feature some 700-Ohm m.



C. MACHINGAUTA	**Figure 20 a:** Jumbo Mine 225 m Depth Slice Chargeability Map with Interpretation	Project No. 01/17

7.3.6.2 CC Anomaly

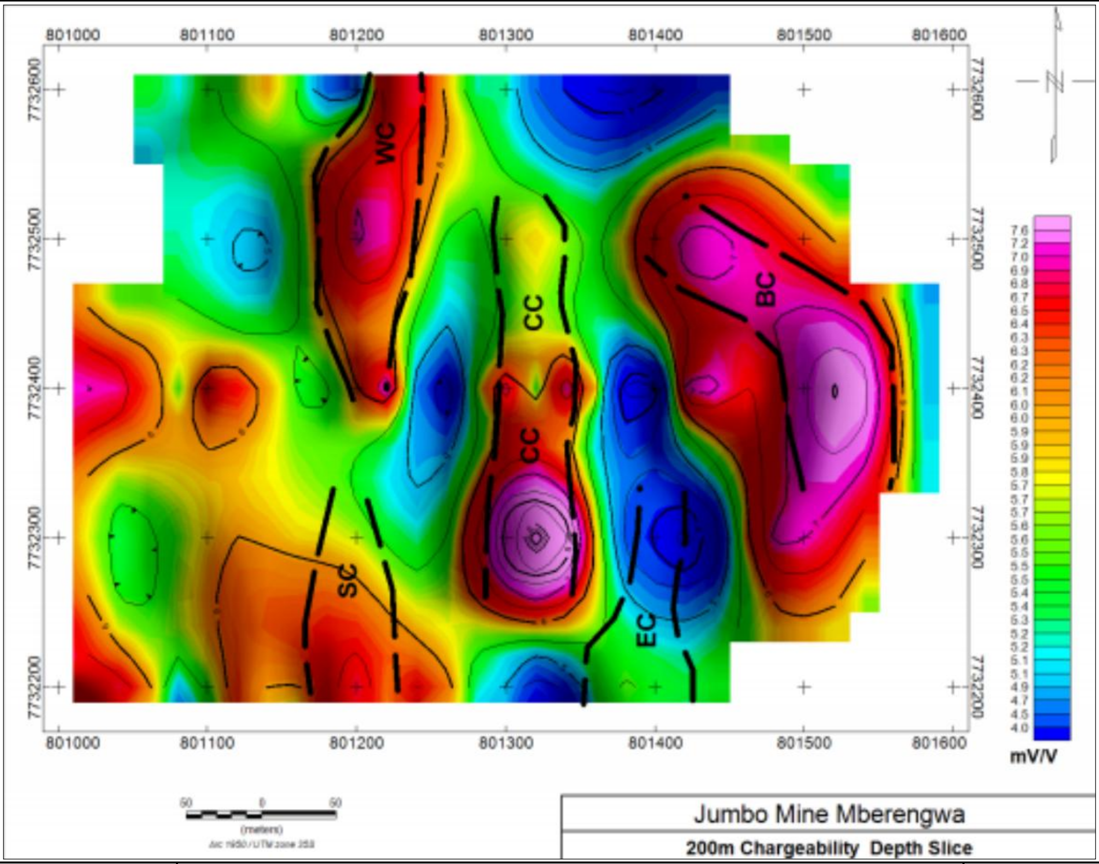
The anomaly lies west of EC anomaly in an echelon form striking N S associated with a resistivity gradient anomaly (See Figures 22 and 23). Its intensity of chargeability diminishes towards surface an indication of possible sulphidic zones at depth. It may be associated with artisanal pits to the south that are associated with a feldspar porphyry



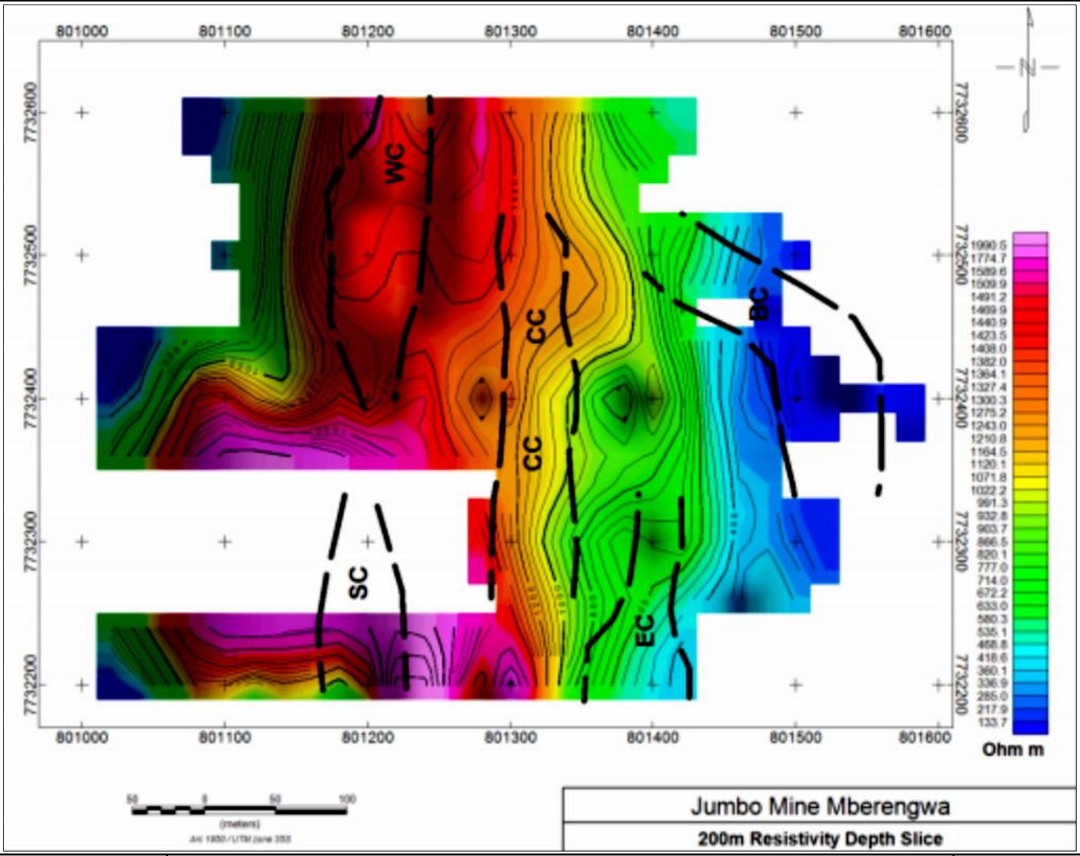
C. MACHINGAUTA	**Figure 20 b:** 225 m Depth Slice Resistivity Map Overlain by Chargeability Anomalies	Project No. 01/17

7.3.6.3 WC and SC Anomalies

This anomaly is the more consistent from a 225m depth slice to a 50m depth slice. It is a NS striking anomaly echelon to CC anomaly (see Figure 6a and 6b). It is associated with an equally resistive feature that terminates against a more resistive anomaly (200 Ohm m) further to its south. It is probably the northerly extension of the SC anomaly that lies to the south.

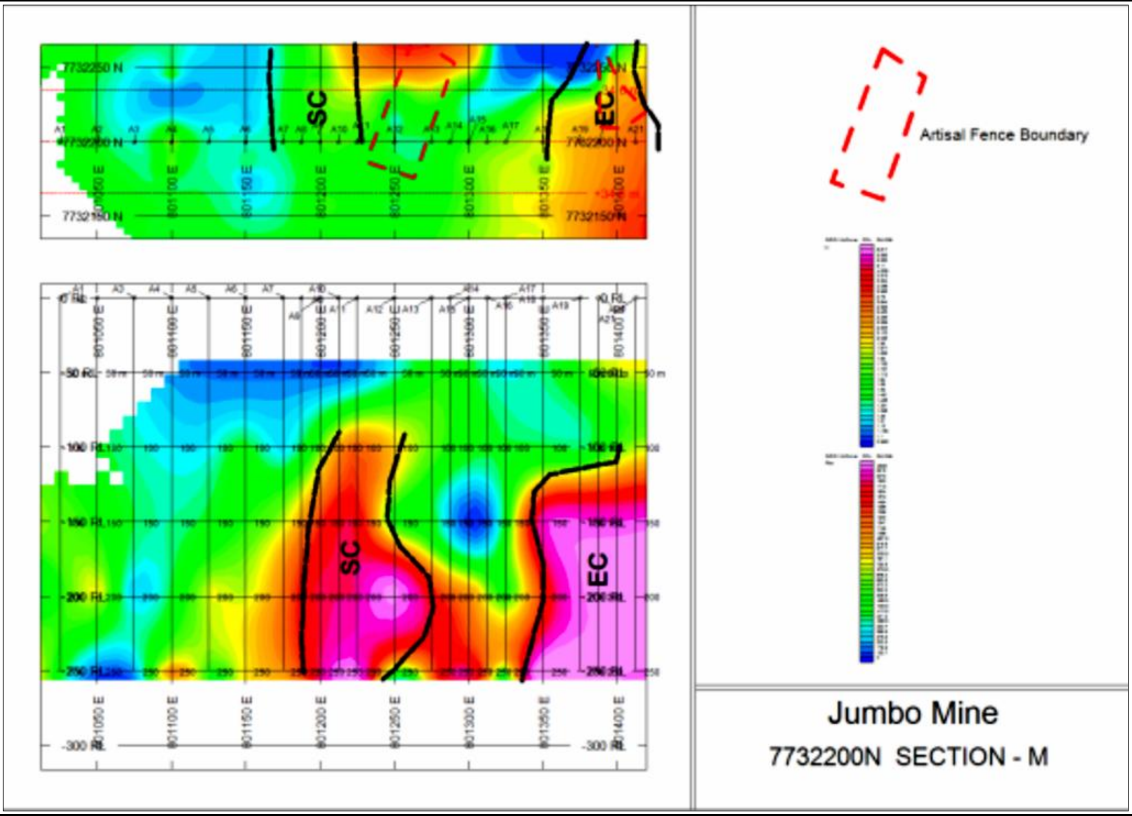


C. MACHINGAUTA	**Figure 21 a:** 200 m Depth Slice Chargeability Anomalies	Project No. 01/17



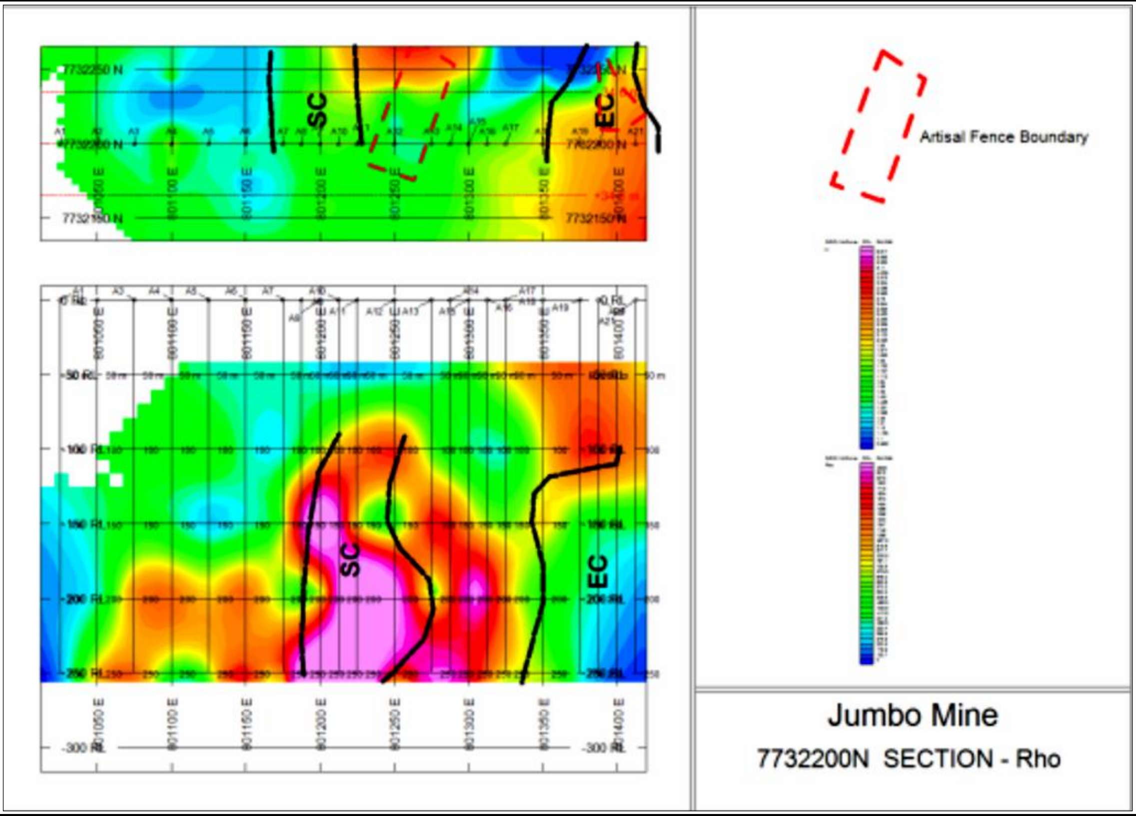
C. MACHINGAUTA	**Figure 21 b:** 200 m Depth Slice Resistivity Map Overlain by Chargeability Anomalies	Project No. 01/17

The anomalies have been presented below as depth section with a surface plan view on top for illustration. Section Line 7732200N maps two fairly deep chargeability anomalies manifesting well from the 100m depth slice (see Figure 22 and 23). These are associated with the SC and EC anomalies from the depth slice plans. The anomalies show as steeply dipping features that are restive, for anomaly SC and conductive for anomaly EC, as shown on Figure 24.



C. MACHINGAUTA	**Figure 22:** Correlation of Section Line 7732200 Chargeability Anomalies with slice plan Interpretation	Project No. 01/17

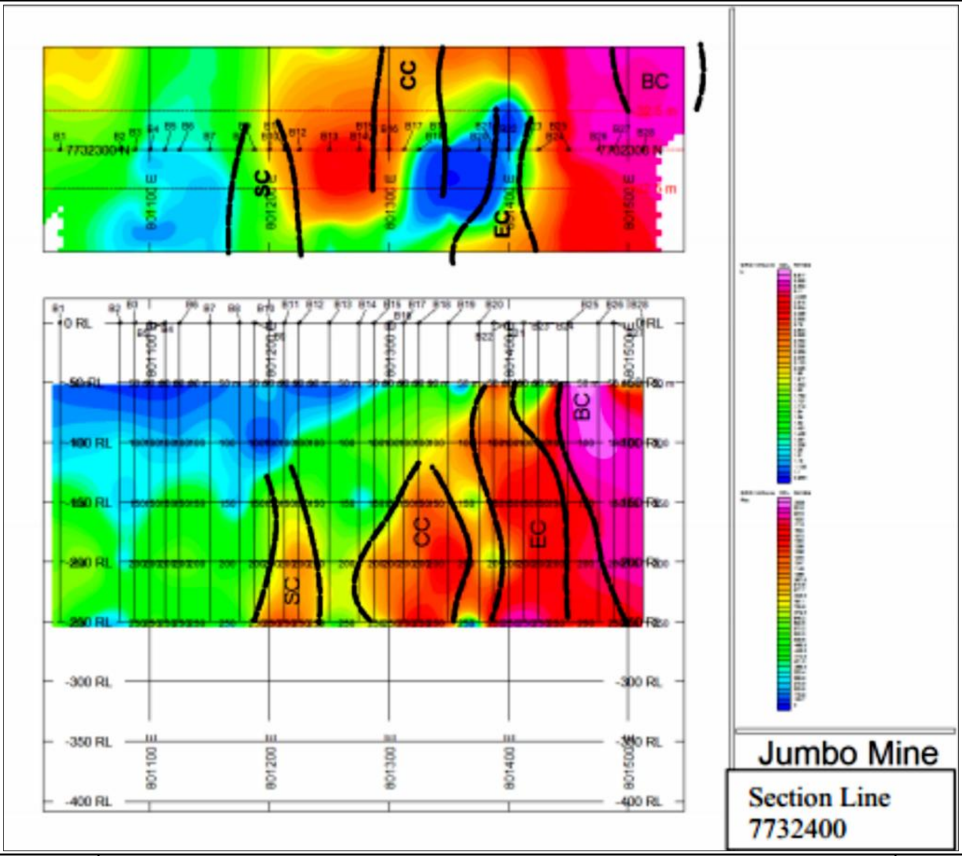
Section line 7732400, which lies north of section line 7732200 maps 4 four of the chargeable units, SC at depth, CC at depth, EC shallower than the 100m slice and BC shallower than the 50m slice. These anomalies have a corresponding very high resistivity for SC, high resistivity for CC, intermediate to high resistivity for EC and a relatively conductive BC (see Figures 24 and 25).



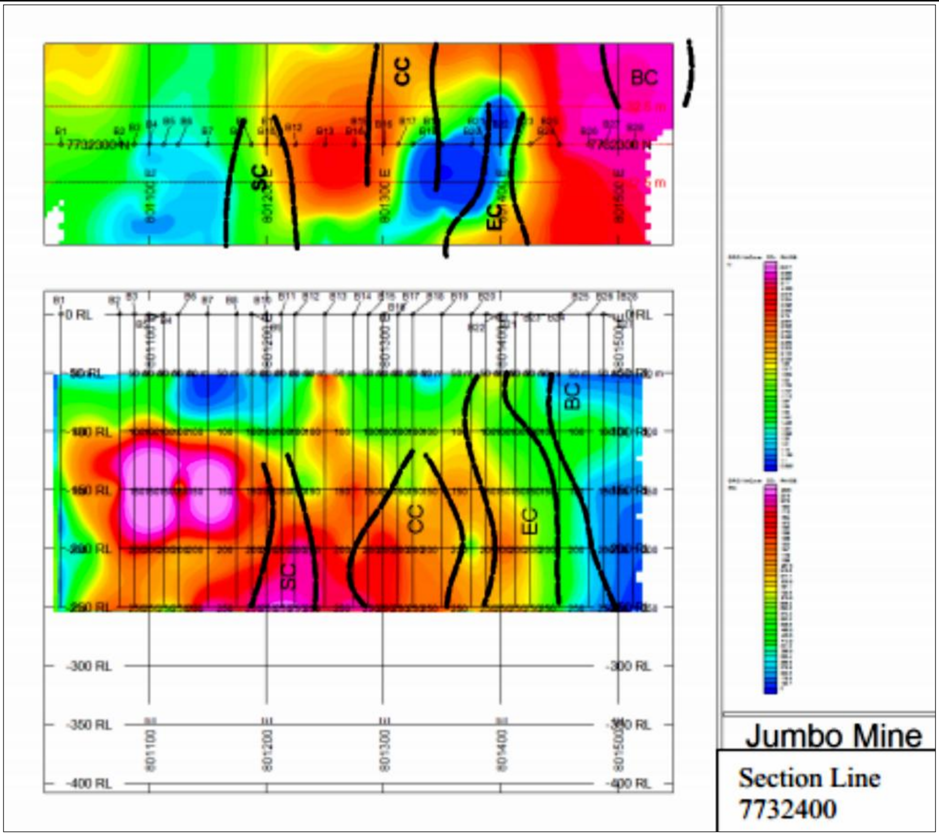
C. MACHINGAUTA	**Figure 23:** Correlation of Section Line 7732200 Resistivity Anomalies with slice plan Interpretation	Project No. 01/17

Section line 7732300, shown as Figures 11 and 12, shows EC as a shallow body that is highly chargeable with a limited depth extent. It is interpreted as part of CC anomaly that has been cut by an east dipping fault. Similarly, BC has been dissected by the same fault at depth, giving rise to an IP anomaly that is directly below EC. The anomalies have subdued resistivity counterparts, with BC still shown its conductivity characteristics.

To the west of CC anomaly lies a very resistive body at depth overlain by a conductive overburden. The resistivity anomaly is related to a low magnetic anomaly interpreted as part of a shear.



C. MACHINGAUTA	**Figure 24:** Section Line 7732400 Chargeability Anomalies with slice plan Interpretation	Project No. 01/17



C. MACHINGAUTA	**Figure 25:** Section Line 7732400 Resistivity response of IP Anomalies overlain on slice plan	Project No. 01/17

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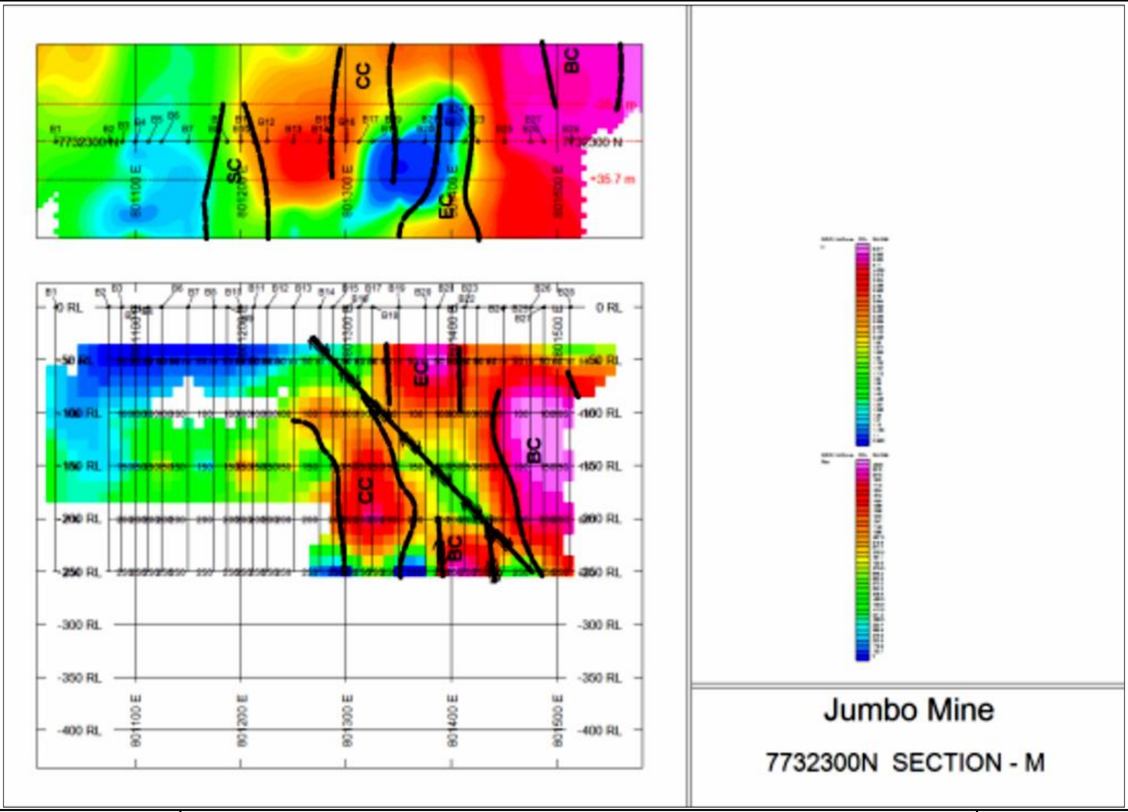
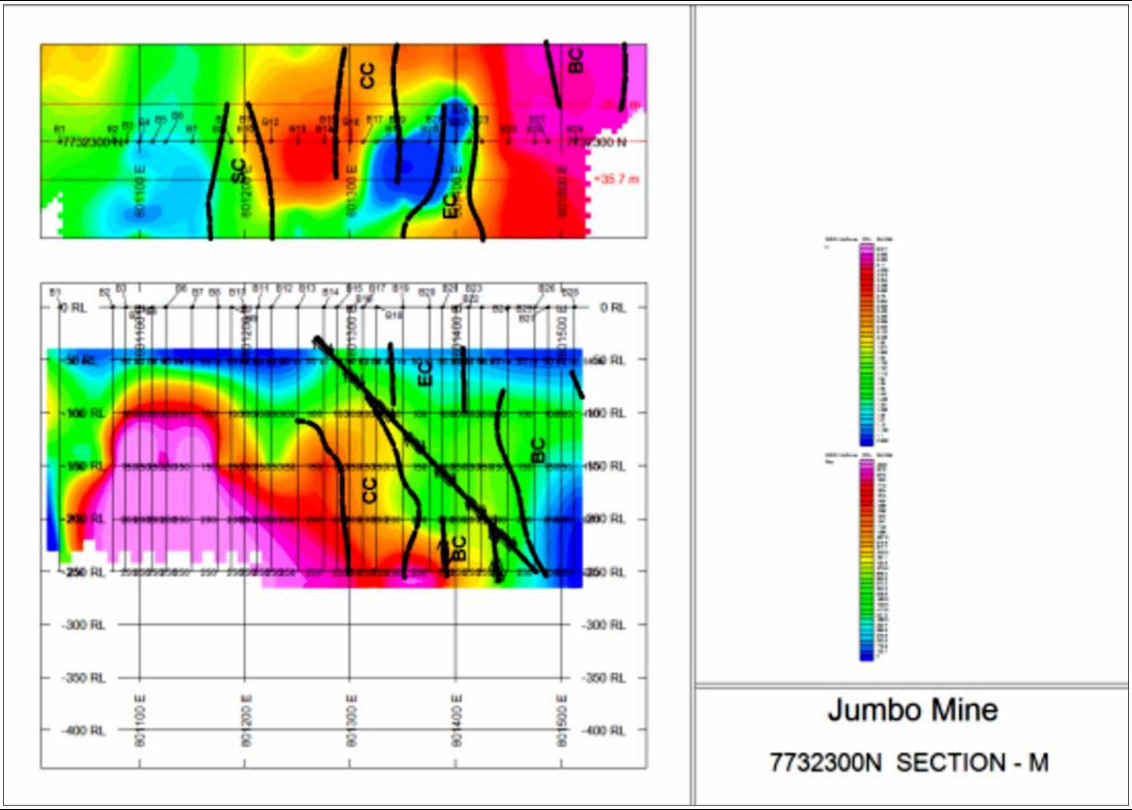
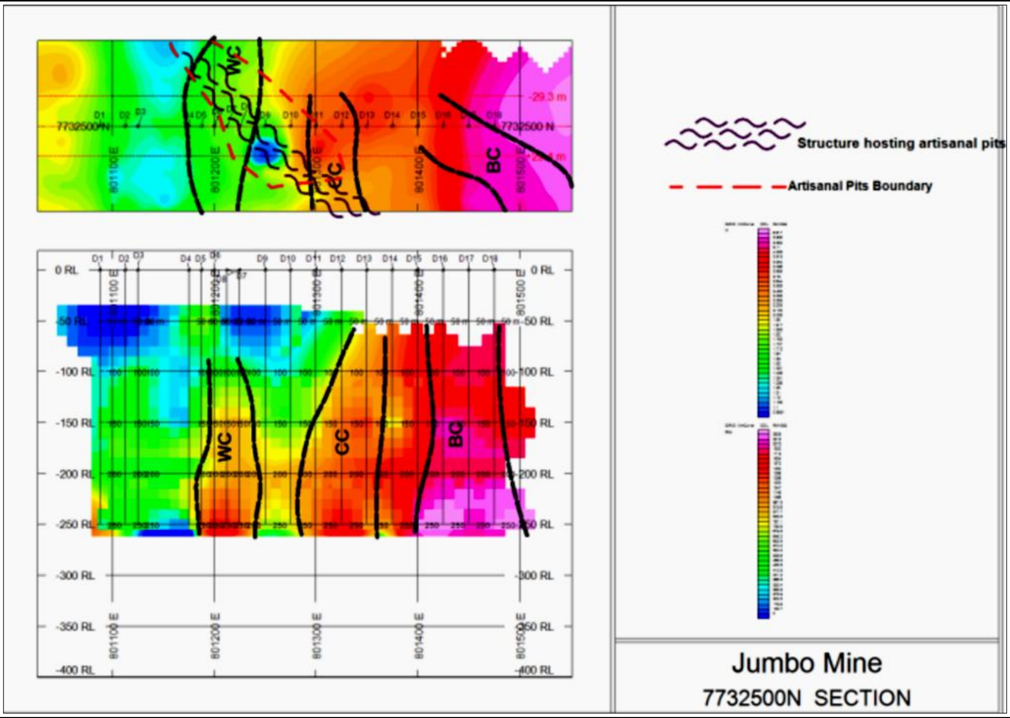


C. MACHINGAUTA	**Figure 26:** Section Line 7732300 Chargeability Anomalies with slice plan Interpretation	Project No. 01/17

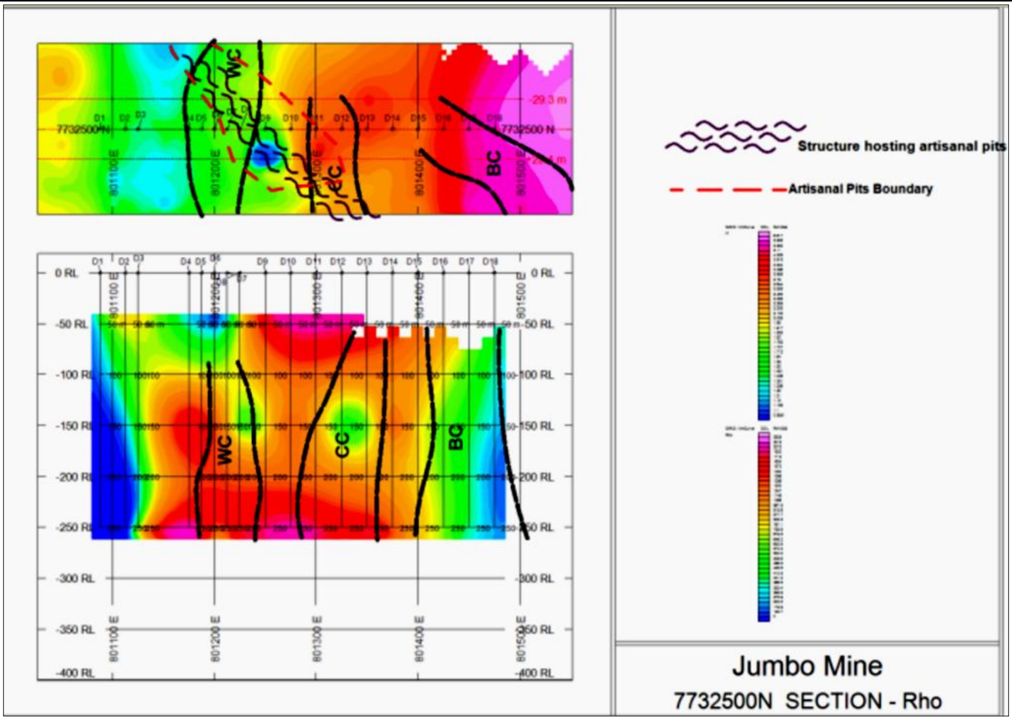


C. MACHINGAUTA	**Figure 27:** Section Line 7732300 Resistivity response of IP Anomalies overlain on slice plan	Project No. 01/17

Section line 7732500N is host to WC, CC and BC anomalies with WC associated with a N S major shear mapped from the magnetic survey results. WC is cut by a NW SE structure, leading to the fattening of the anomaly along the axis scarred by artisanal pits. To the east of WC, CC shows as anomaly that has a near surface expression while BC to the east shows as the most chargeable of the three units (see Figures 28 and 29).

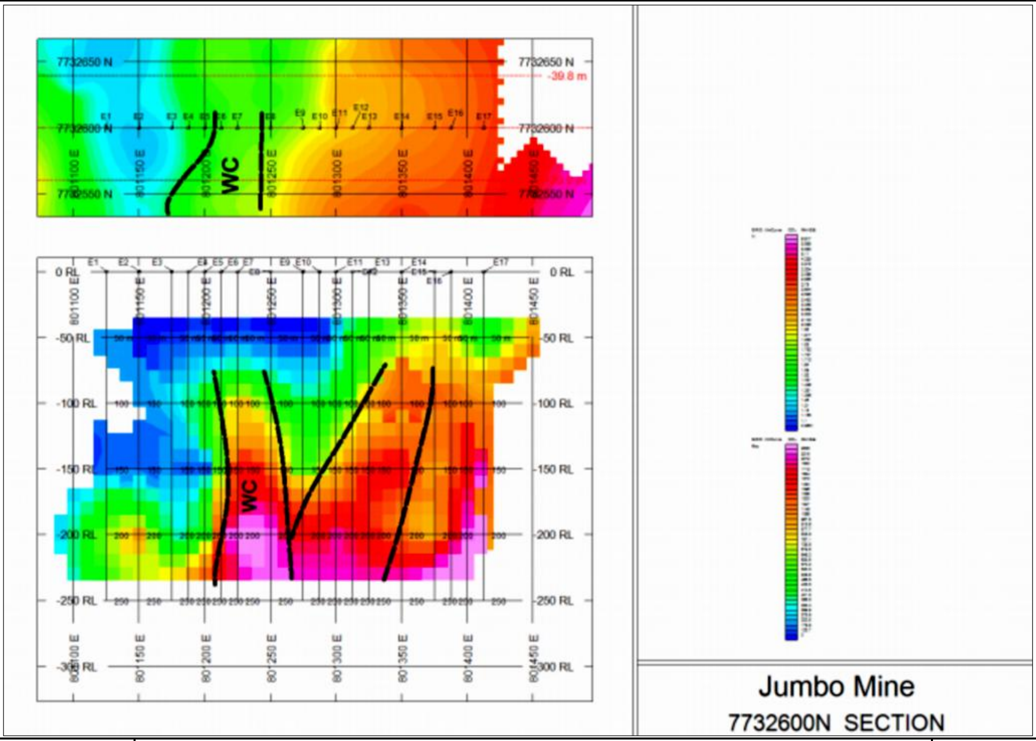


C. MACHINGAUTA	**Figure 28:** Section Line 7732500 Chargeability Anomalies with slice plan Interpretation	Project No. 01/17

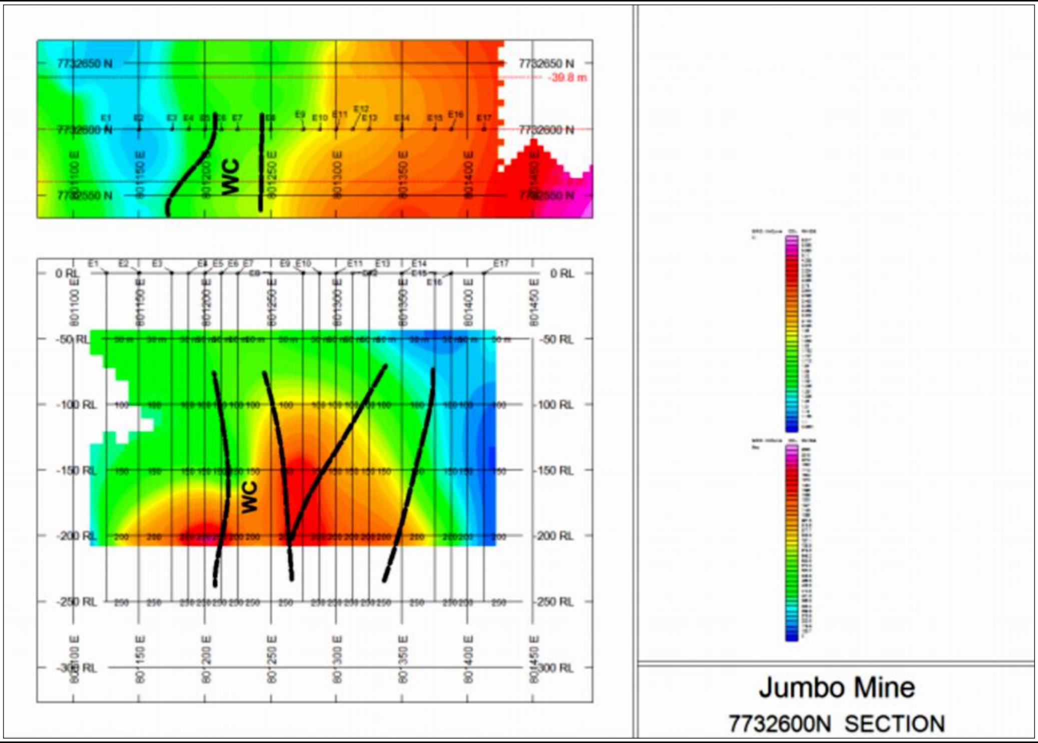


C. MACHINGAUTA	**Figure 29:** Section Line 7732500 Resistivity response of IP Anomalies overlain on slice plan	Project No. 01/17

The northerly section line 7732600, maps WC anomaly from the 100 m depth slice and its radial anomaly to its east. The two anomalies merge at depth, a typical phenomenon of reef type deposits in the Mberengwa area (see Figures 30 and 31). The anomaly WC is associated with a broader resistivity feature from the same depth horizon.



C. MACHINGAUTA	**Figure 30:** Section Line 7732600 Chargeability Anomalies with slice plan Interpretation	Project No. 01/17



C. MACHINGAUTA	**Figure 31:** Section Line 7732600 Resistivity response of IP Anomalies overlain on slice plan	Project No. 01/17

7.4 Geophysical Surveys and Geological Mapping Recommendations and Conclusions

The ground magnetic survey and geological mapping have picked up a number of targets based on the existence of interesting lithological and structural features that are conducive for gold mineralization in the form of shear zones and splays within the basalts and the quartz veins hosted in them; felsic intrusions; intersecting structures and faults and contacts between lithologies of different competencies e.g. metabasalts and granites on the east end of the claims area.

Real Section Induced Polarisation (RSIP) was important in delineating potential sulphide mineralised areas and establishing the behavior of these anomalies at depth.

Five interesting zones were as a result identified for further testing effectively by trenching and drilling

The following steps are therefore recommended for further exploration:

- Trenching on the defined target areas with detailed trench mapping and sampling to determine the strike and lateral extents of mineralisation
- Drilling to sample deep seated anomalies and also determine their strike, lateral and down-dip extents.
- It is recommended that some initial reconnaissance drill holes should be planned in such a way as to probe the anomalies at all depth levels i.e. shallow, intermediate and deeper levels, i.e. penetrating down to vertical depths of at least 200 m. These initial holes will be used to calibrate the actual levels of mineralisation occurrence, and any notable diagnostic characteristics of such mineralisation. Once this has been achieved, the rest of the drill holes will then be based on the outcomes of such initial holes

8 INTERPRETATION AND RECOMMENDATIONS

It is the author's view that the Jumbo Mine Claims are situated in a highly prospective area for gold mineralisation in the Hokonui Formation of the Lower Greenstones on the western margin of the Mberengwa Greenstone Belt. This is supported by:

a) The presence of structural features like veins, shear zones, fault zones and secondary splay structures interpreted from geophysical surveys and also observed on the ground. These structures are potentially important targets for gold mineralisation.
b) The presence of different lithologies with different competencies in contact with each other.
c) The presence of nearby or intrusive granitic or felsic units
d) Proximity to known old or current mining operations with similar geological and structural features and characteristics

Observations made during the different exploration activities show that most of the old workings fall within shear zones or shear splays that strike oblique to the former in metabasalt and particularly where the splays host quartz veins and are intruded by felsic units. The quartz veins exhibit a 'pinch-and swell" structure, particularly on the "KG workings" in the north-west, and are often milky white with widths of up to 50 cm in places occurring parallel to the foliation planes within the sheared units. Thin veinlets resulting from brecciation and containing unidentified fine sulphide minerals are also common in sheared rocks.

Gold mineralisation seems associated with the shear splays and quartz veins where fine sulphide "box-work structures" are observed in the latter at the KG workings.

Further investigation of the claims area is recommended and a phased approach would include:

1. Further characterization of the behavior of the mineralised veins and zones could be achieved by mapping and sampling the current underground workings.
2. The information generated from geological and structural mapping, artisanal mining activity, geophysical surveys and trench mapping and sampling will be useful in generating high priority drill targets.
3. Diamond drilling can then follow to probe the strike, lateral and down-dip extensions of the shear zone-hosted quartz veins and mineralised zones. It will also provide lithological, mineralogical, structural and sampling data besides the geological control inherent in diamond drilling. Diamond core samples will also provide samples for metallurgical test work.

9 FURTHER WORK CARRIED OUT

9.1 Trenching

A number of targets conducive for gold mineralisation were identified on the Jumbo and White Asbestos claims following geological mapping and ground magnetics and Real Section Induced Polarisation (RSIP) surveys. These target lithological and structural features that included shear zones and shear splays within the metabasalts and the quartz veins and felsic intrusions hosted in them were selected for trenching to investigate the nature and quality of the reefs, their continuity across strike and downdip as well their thickness variations.

Forty trenches were excavated by a mechanical excavator over anomalous areas for gold mineralisation, most of the trenches were sited around old workings on the Jumbo (thirty), and White Asbestos (ten) claims.

9.2 Mapping and Sampling

Sampling was restricted around sheared zones within the metabasalts, quartz veins and veinlets and zones with felsic porphyry intrusions. The sheared zones within the trenches were characterised by chloritic, chlorite-sericite and quartz-sericite schists.

The milky white to limonitic quartz vein around the KG workings exhibits a ‘pinch-and swell” structure. Fine sulphides “box-work structures” were also observed on some sections of this KG quartz vein. These are normally associated with gold mineralisation

402 samples were collected and these are awaiting assay analysis at the Antech Laboratory in Kwekwe. QAQC samples will be inserted at the laboratory. The samples will be analysed for gold and arsenic by the Fire Assay method. The laboratory will be requested to repeat all samples with grades of 3 g/t and above by gravimetric finish.

A complete analysis of the trench mapping together with the assay results of the sampling exercise will help identify potential drilling targets.

A full report of the Trenching, Mapping and Sampling on the Jumbo and White Asbestos claims is found in Appendix 2.

10 ADDITIONAL WORK CARRIED OUT

10.1 Analysis of Jumbo Mine Underground Samples

Three underground rock chip samples were taken for Fire Assay with AA finish analysis at the Antech Laboratory in Kwekwe. These are:

10.1.1 Sample No. JUM 77961

10.1.2 Sample No. JUM 78143

10.1.3 Sample No. JUM 79627

The samples were analysed on 21 December 2017; 23 January 2018 and 09 May 2018 and their analytical certificates are found in Appendix 3 of this report.

10.2 Testwork Jumbo Mine Dump Samples

Two sets of dump samples were taken for testwork at Peacocke and Simpson in Harare. These are:

10.2.1 Dump Tailings Samples Report No. PS/232/18T

10.2.2 Bulk Dump Sample No. TT80 Report No. PS/312/18T

The samples were analysed on 09 April 2018 and 14 May 2018 respectively and their testwork reports are found in Appendix 4 of this report.

10.3 Jumbo and Bibi Gold Project Site Visit

The relevant report was compiled by Bara International under Document No: 2018-308-NFR-001 and it is found in Appendix 5 of this report.

10.4 Mining Method and Vertical Shaft Description – Bibibi Mine

The relevant report was compiled by Bara International under Document No: 2018-308-NFR-002 and it is found in Appendix 6 of this report.

10.5 Bibi Claims Proposed Drilling Plan

10.5.1 Local Geology

Geological mapping of the Bibi claims was carried out under the supervision of Mr. Peter Bourhill. The geological map is awaiting digitisation into electronic format.

The reef consists of chlorite schist and a NNW-trending shear hosting quartz veins. Further north, within the claims, two secondary shears splay off the main shear with one trending due north and the other one trending NNE. Shafts and pits from old workings dominate this zone.

10.5.2 Planned drilling

Four diamond drill holes were planned in a proposed initial round of drilling to probe the downdip extent of the reef. The summary of the proposed drilling plan is shown in Table 3.

Table 4: Summary of the Bibi Claims initial drilling plan

Hole ID	X	Y	Inclination	Azimuth	Depth (m)	Expected Depth of Intersection of Mineralisation (m)
B1-1	800676	7741640	-60^0	240	60	44.0 – 46.5
B1-2	800700	7741596	-60^0	240	60	43.0 – 47.0
B1-3	800607	7741712	-60^0	106	70	23.5; 50.0 - 56.0
B1-4	800638	7741732	-60^0	243	60	42.0 - 47.0
Total					**250**	

APPENDIX 1 COPIES OF THE JUMBO MINE CLAIMS REGISTRATION CERTIFICATES

G.P. & S. 38779-A. 68466-0 (Z. 645) Form No. 31

Certificate of Registration after Transfer

(Section 254)

Transfer number 23470

Amount paid $1000

Mining Commissioner's Office

MIN. OF MINES & MINING DEV. PROVINCIAL MINING DIRECTOR MIDLANDS PROVINCE 26 AUG 2019 P.O. BOX ... ZIMBABWE TEL: 054-222241

........................, 19......

THIS IS TO CERTIFY THAT OVIC GOLD MINING (PRIVATE) LIMITED is the Registered Holder of 9 (SEVEN) GOLD Claims, named JUMBO 91

Registered Number 13368 and originally registered in my Register on the 13 day of 11 2014 when the situation was indicated to be ON MBERENGWA COMMUNAL LANDS. 500M EAST SOUTH EAST OF SHANGRILA TRIG BEACON 508/T (MBERENGWA)

H № 033194

for Mining Commissioner

G.P. & S. 38779-A. 68466-0 (Z. 645) Form No. 31

Certificate of Registration after Transfer

(Section 254)

Transfer number 23471

Amount paid $1000

Mining Commissioner's Office

MIN. OF MINES & MINING DEV. PROVINCIAL MINING DIRECTOR MIDLANDS PROVINCE 26 AUG 2019 P.O. BOX ... ZIMBABWE TEL: ...241

........................, 19......

THIS IS TO CERTIFY THAT OVIC GOLD MINING (PRIVATE) LIMITED is the Registered Holder of 8 (EIGHT) GOLD Claims, named JUMBO 92

Registered Number 13369 and originally registered in my Register on the 13 day of NOV 2014 when the situation was indicated to be ON MBERENGWA COMMUNAL LANDS - 440M EAST SOUTH E

H № 033195

for Mining Commissioner

G.P. & S. 38779-A. 68466-0 (Z. 645) Form No. 31

Certificate of Registration after Transfer

(Section 254)

Amount paid $.........

Transfer number 23472

Mining Commissioner's Office MIN. OF MINES & MINING DEV. PROVINCIAL MINING DIRECTOR MIDLANDS PROVINCE 26 AUG 2019 ZIMBABWE

..................., 19......

THIS IS TO CERTIFY THAT DVK GOLD MINING (PRIVATE) LIMITED is the Registered Holder of 3 (THREE) GOLD Claims, named JUMBO 81

Registered Number 13370 and originally registered in my Register on the 13 day of NOV 2014 when the situation was indicated to be ON MBERENGWA COMMUNAL LANDS. 500M EAST SOUTH EAST OF SHANGRILA TRIG BEACON 508/T (MBERENGWA)

H № 033196

for Mining Commissioner

G.P. & S. 38779-A. 68466-0 (Z. 645) Form No. 31

Certificate of Registration after Transfer

(Section 254)

Amount paid $1000

Transfer number 23465

Mining Commissioner's Office MIN. OF MINES & MINING DEV. PROVINCIAL MINING DIRECTOR MIDLANDS 26 AUG 2019 ZIMBABWE

..................., 19......

THIS IS TO CERTIFY THAT DVK GOLD MINING (PVT) LTD is the Registered Holder of 19 (NINETEEN) CHROME Claims, named JUMBO 94 WEST

Registered Number 16182 BM and originally registered in my Register on the 6 day of AUG 2015 when the situation was indicated to be ON SHANGRI-LA EAST FARM APPROX 100M NORTH OF TRIG BEACON 508/T ON AN UNNAMED HILL MBERENGWA

H № 033189

for Mining Commissioner

APPENDIX 2 TRENCHING REPORT ON THE JUMBO AND WHITE ASBESTOS CLAIMS

TRENCHING REPORT ON THE JUMBO MINE AND WHITE ASBESTOS CLAIMS MBERENGWA, ZIMBABWE

Prepared for:	Prepared by:
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Project No: 01/19 **Author:** Cleopas Machingauta

April 2019

The Directors
DVKGOLD Ltd
PO Box 7759
Rushden
NN10 1BQ
United Kingdom

25 August 2020

RE: **TRENCHING REPORT ON THE JUMBO MINE AND WHITE ASBESTOS CLAIMS, MBERENGWA**

Please find attached the Trenching Report on the Jumbo and White Asbestos Claims in Mberengwa.

Should you have any queries please do not hesitate to contact the undersigned on the following contact details:

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(Mobile2) : +263 71 6716 033

(Email1) : czmachinga65@yahoo.com

(Email2) : czmachinga63@gmail.com

Cleopas Machingauta

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EXECUTIVE SUMMARY

Introduction

A number of targets conducive for gold mineralisation were identified on the Jumbo and White Asbestos claims following geological mapping and ground magnetics and Real Section Induced Polarisation (RSIP) surveys. These target lithological and structural features that included shear zones and shear splays within the metabasalts and the quartz veins and felsic intrusions hosted in them were selected for trenching to investigate the nature and quality of the reefs, their continuity across strike and downdip as well their thickness variations.

Summary of Findings

Forty trenches were excavated by a mechanical excavator over anomalous areas for gold mineralisation, most of the trenches were sited around old workings on the Jumbo (thirty), and White Asbestos (ten) claims.

Sampling was restricted around sheared zones within the metabasalts, quartz veins and veinlets and zones with felsic porphyry intrusions. The sheared zones within the trenches were characterised by chloritic, chlorite-sericite and quartz-sericite schists.

The milky white to limonitic quartz vein around the KG workings exhibits a ‘pinch-and swell” structure. Fine sulphides “box-work structures” were also observed on some sections of this KG quartz vein. These are normally associated with gold mineralisation.

402 samples were collected and these are awaiting assay analysis at the Antech Laboratory in Kwekwe. QAQC samples will be inserted at the laboratory. The samples will be analysed for gold and arsenic by the Fire Assay method. The laboratory will be requested to repeat all samples with grades of 3 g/t and above by gravimetric finish.

A complete analysis of the trench mapping together with the assay results of the sampling exercise will help identify potential drilling targets.

1 INTRODUCTION AND PURPOSE OF REPORT

1.1 Introduction

A trenching programme was carried out on the Jumbo Mine claims between October and December 2017 as a follow up to earlier exploration work that involved surface geological mapping, ground magnetics and RSIP surveys. The results of this earlier work formed the basis of the trenching programme that targeted the old artisanal workings and the structural features identified by the magnetic survey and possible sulphide mineralisation deduced from the RSIP survey.

The trenching programme was supervised by C. Machingauta. Detailed geological mapping was conducted by C. Machingauta and P. Hove. Rock sampling was completed by P. Hove. Analyses will be provided by Antech Laboratory in Kwekwe.

The background to this Report is to be found in an earlier report titled “Independent Assessment Report of Gold Mineralisation Potential at the Jumbo Mine Claims.”

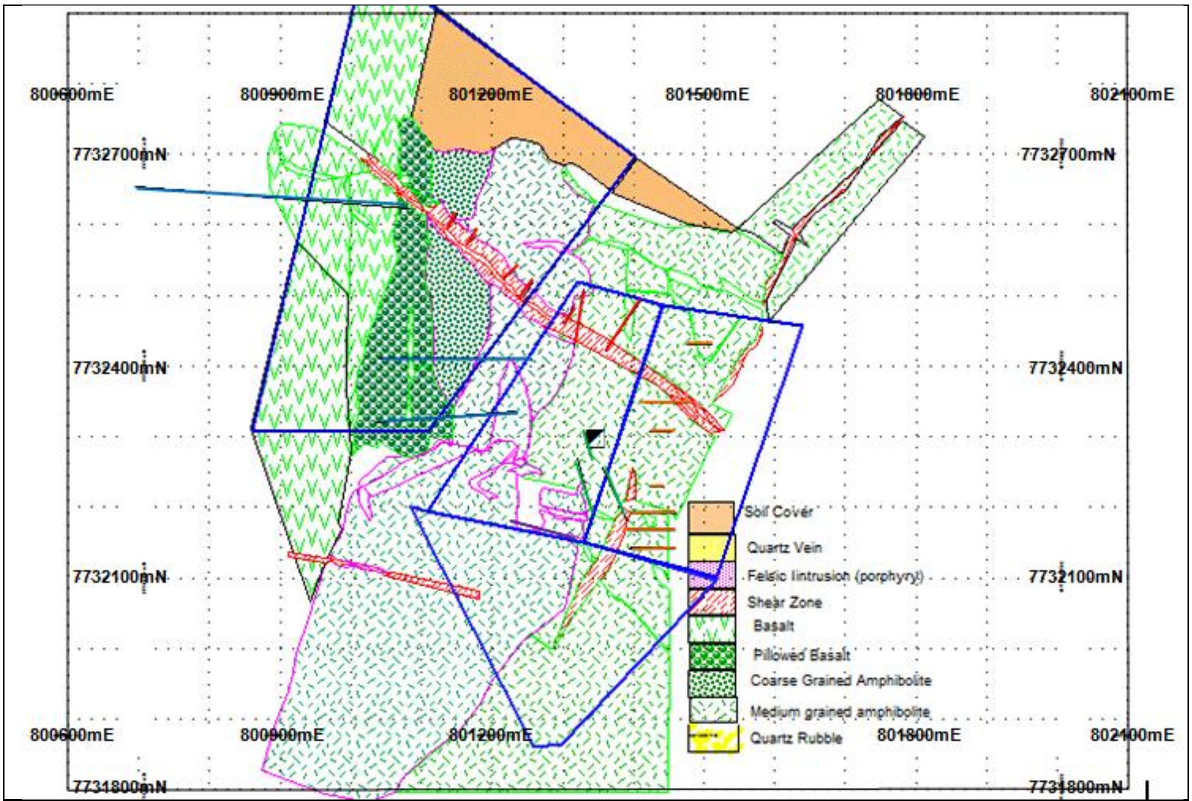
1.2 Purpose of Report

The purpose of this Report is to give a summary of the trenching programme carried out on the claims area between September and December 2017, give the results of the sampling exercise and identify potential drilling targets.

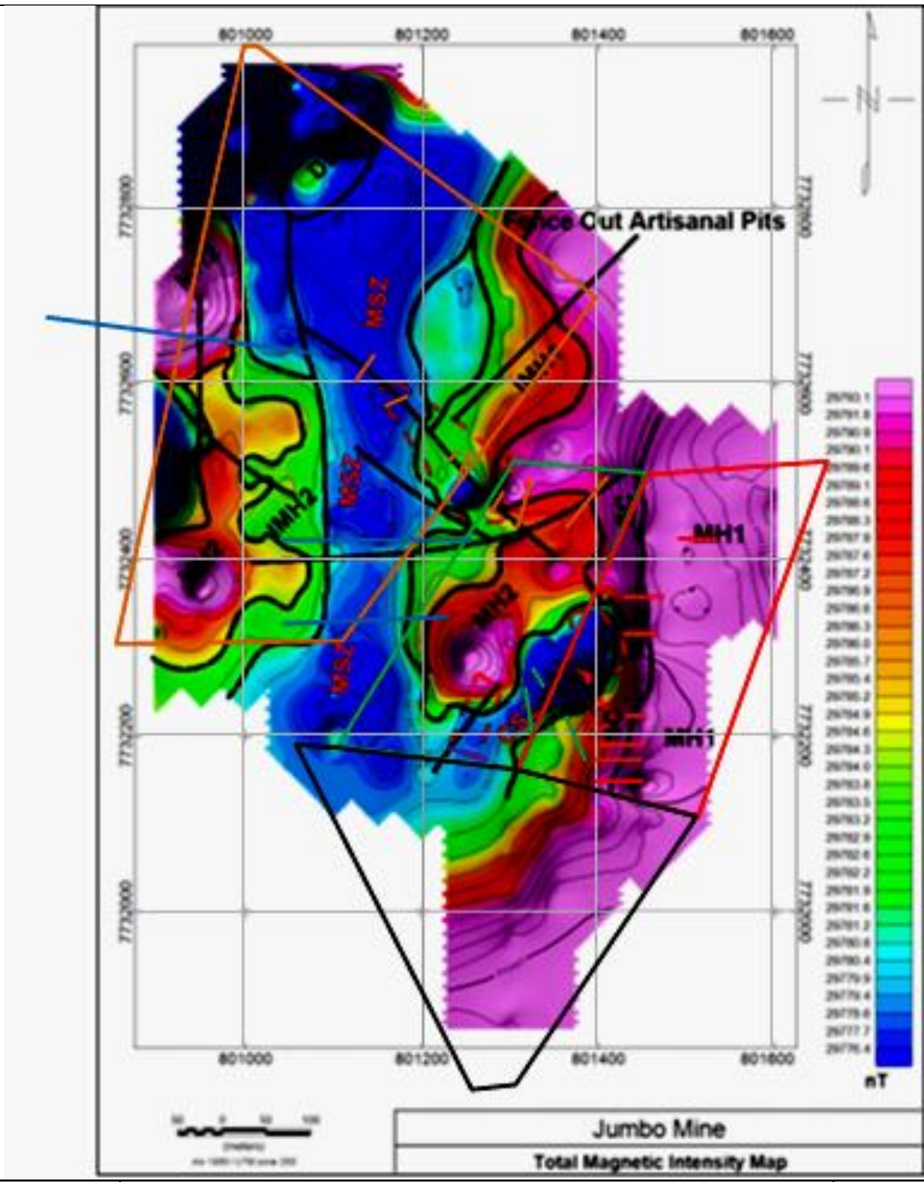
2 TRENCHING

2.1 Initial Trench Plans

21 trenches were initially planned to cover the anomalies deduced from geophysical investigations and geological mapping particularly near and around the artisanal workings at the old Dunbeth Main, the ATM and the KG workings.



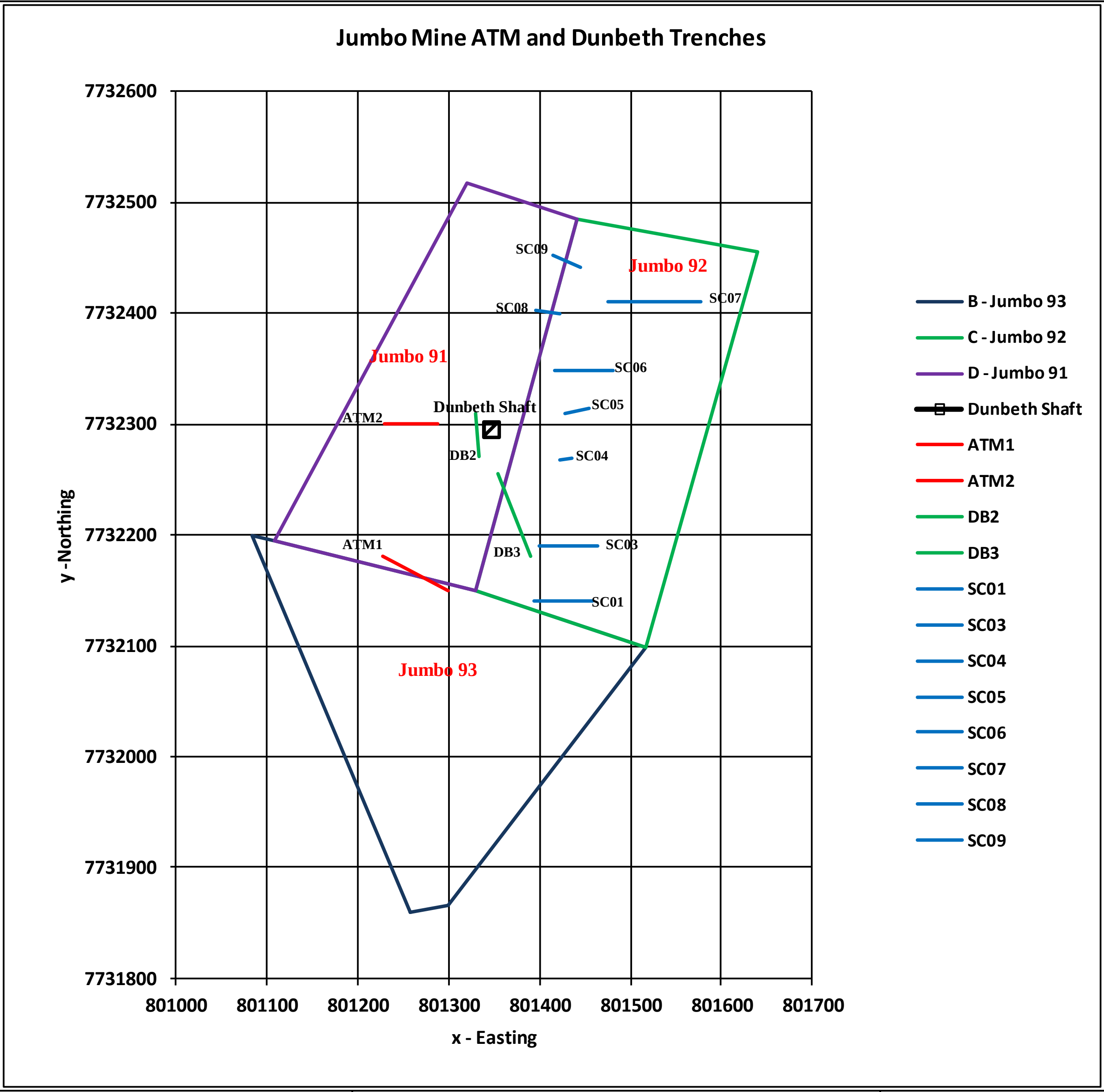
C. MACHINGAUTA	**Figure 1 TR:** Trench plan overlain on Jumbo Mine claims geology	Project No. 01/19



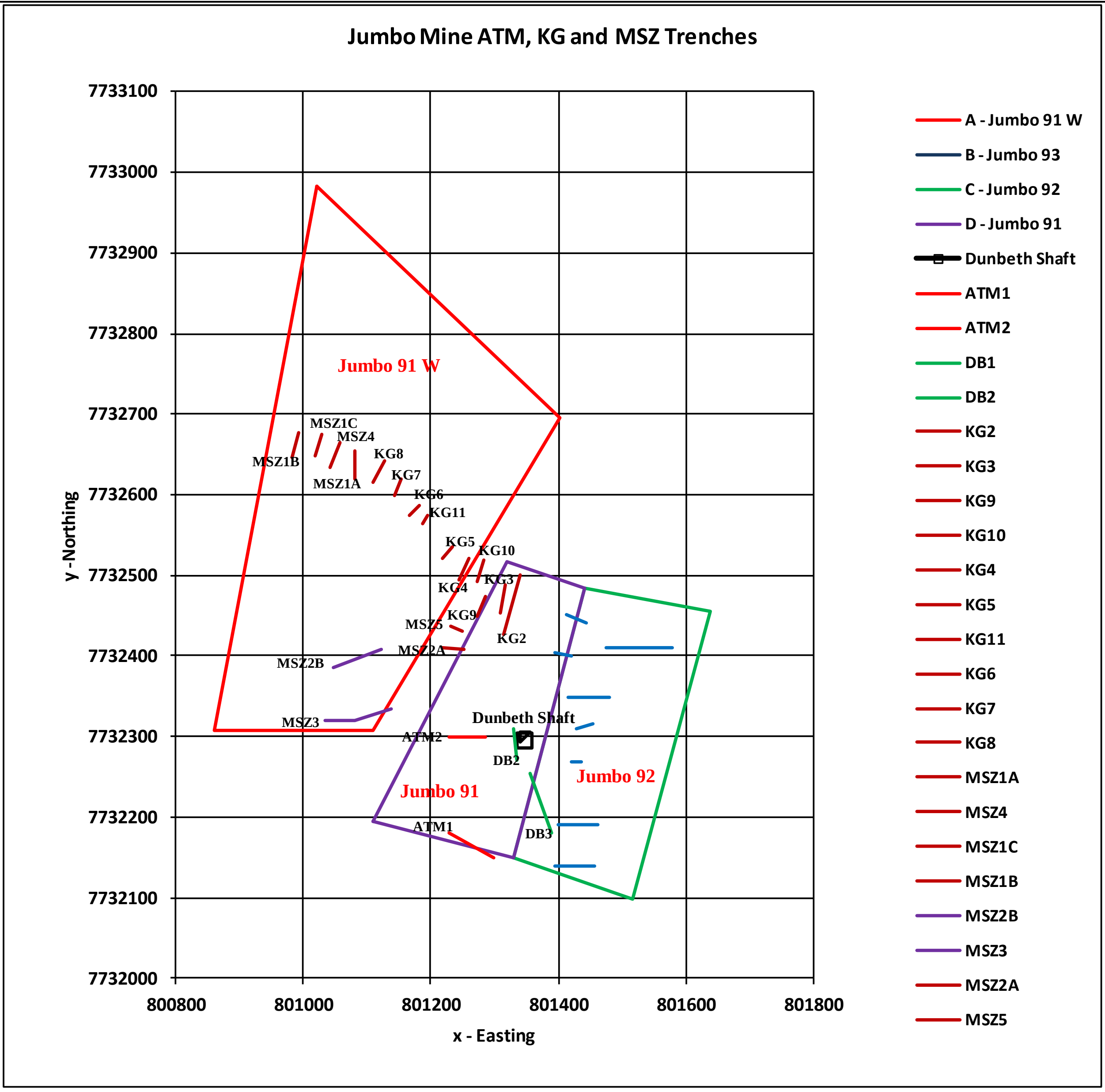
C. MACHINGAUTA	**Figure 2 TR:** Trench plan overlain on ground magnetics survey plan	Project No. 01/19

2.2 Trench Coordinates

2.2.1 Jumbo Trench Plans

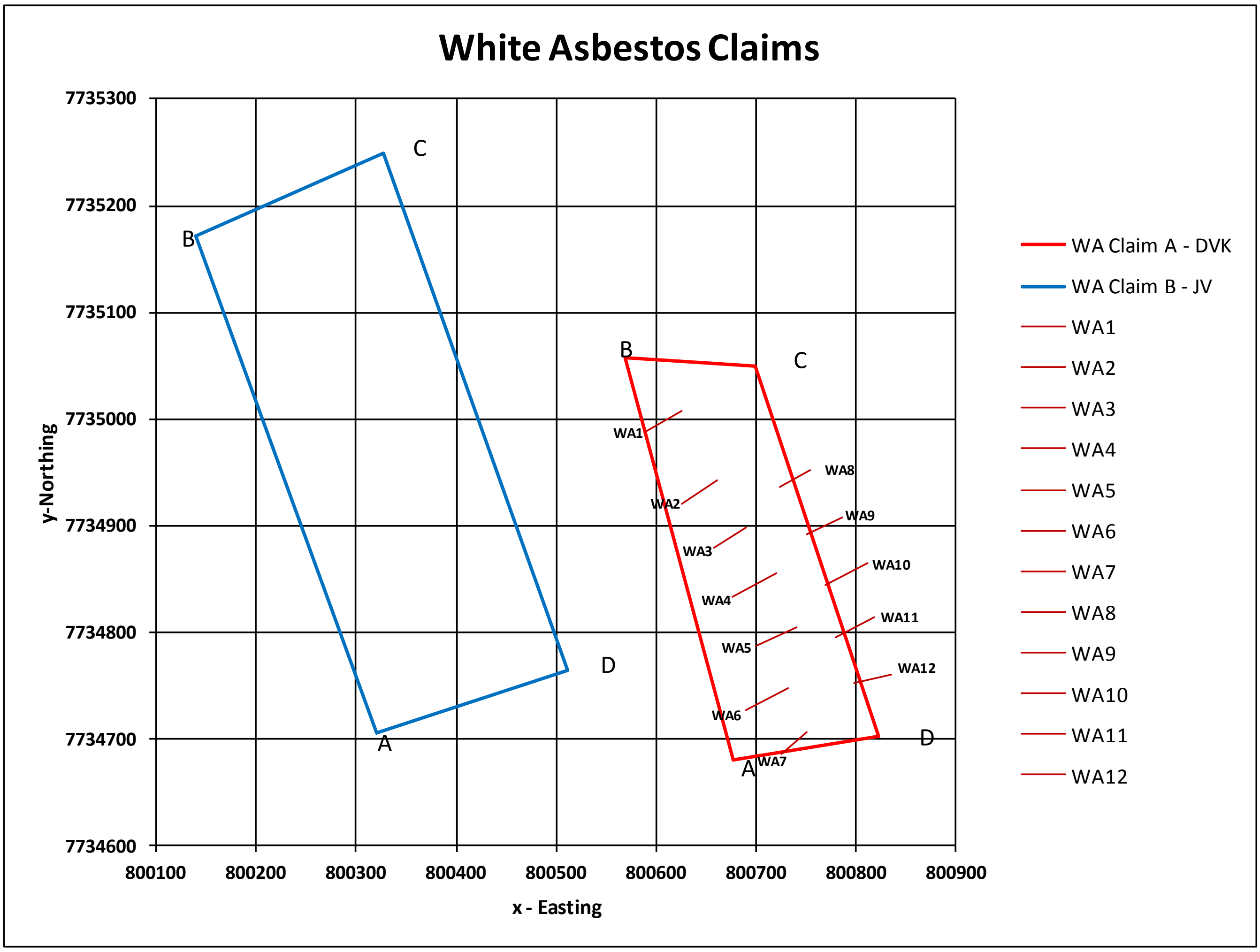


C. MACHINGAUTA	**Figure 3 TR:** Jumbo Mine ATM and Dunbeth trenches	Project No. 01/19



C. MACHINGAUTA	**Figure 4 TR:** Jumbo Mine ATM, KG and MSZ trenches	Project No. 01/19

2.2.2 White Asbestos Trench Plan



C. MACHINGAUTA	**Figure 5 TR:** White Asbestos trenches	Project No. 01/19

2.3 Trenching and mapping

The trenching programme involved excavation, mapping to define structural settings, mineralization and alteration patterns in the quartz vein system and sampling to determine the gold tenor the results of which would generate drilling targets.

The trenches were dug by mechanical excavator to a maximum depth of 2 metres and with an average width of 1 metre. They were mapped and sampled at one metre interval in the shear zones and at lesser intervals to accommodate quartz veins' widths on the following old workings and magnetic and chargeability anomalous areas. The sampling consisted of manual rock chip samples using chisel and hammer n hard rock on the one sidewall of each trench. The trenches were mapped at a scale of 1:100 and the data compiled for presentation on a map at a scale of 1:500.

2.3.1 ATM Workings

Two trenches ATM1 and ATM2 were excavated north and south of the workings that are followed a quartz vein in a shear zone at the contact between a felsic intrusion and the mafic greenstone. The wall rocks around the quartz vein are silicified. 50 samples in total were collected from the two trenches.

2.3.2 West of the Main Dunbeth Shaft

One trench, DB2, was excavated on the west of the main Dunbeth shaft in massive to sheared amphibolite to probe any extensions of the Dunbeth orebody westwards. No quartz veins or veinlets were intersected and only two samples were collected on a narrow shear zone.

2.3.3 West of the old Dunbeth pit

One trench, DB3, was excavated west of the old pit to probe any extensions of the quartz veins westwards in massive to sheared amphibolite. 30 samples were collected in a number of shear zones.

2.3.4 South, east and north-east of the Main Dunbeth shaft and old Dunbeth pit

Eight trenches, SC01, SC02 to SC09 were excavated to probe the SC anomaly indicating a N- S regional trend characterised by a magnetic high feature on the east of the Dunbeth shaft and old workings. Sixty-eight samples were collected from narrow quartz veins and shear zones in medium-grained amphibolite.

2.3.5 KG workings

Ten trenches, KG2 to KG11, were excavated to probe the width and strike extension of the KG workings that follow quartz veins and stringers in a shear zone at the contact between feldspar porphyry on the hanging wall and quartz-sericite schist on the footwall in amphibolite country rock. The mineralized zone is limonitic and the quartz veins milky white with "box-work" weathered sulphides.

The zone apparently represents a prominent secondary shear splay of the characteristic N-S trending regional shears. Sixty-eight samples were collected from the pinching and swelling quartz vein and associated stringers hosted in a shear zone up to 25 m wide.

2.3.6 NW of KG workings

Four trenches were excavated to investigate the extension of the prominent KG workings shear splay on the north-west. The mineralisation is hosted in two parallel quartz veins within the shear splay, with the wider of the two in the hanging wall.

Thirty-six samples were collected.

2.3.7 South of KG workings

Two trenches, MSZ2B and MSZ3, were excavated on the west of the Jumbo blocks of claims to investigate a magnetic survey low representing a possible N-S trending shear along Easting 801100. The trenches intersected narrow shear zones and quartz veins within a fine-grained to slightly sheared metabasalt with some felsic porphyry intrusions.

Two other shorter trenches were excavated around Easting 801253 and Northing 7732420 to investigate any secondary shear splays immediately south of the main KG workings pit. These intersected a felsic porphyry intrusion and a fine to medium-grained metabasalt hosting a narrow quartz vein within a shear zone.

2.4 Trench Images

Figure 6 TR: A trench under excavation around the ATM workings

Figure 7 TR: A KG workings trench sidewall with a shear zone hosting a *boudinaged* quartz vein (Qv), some quartz veinlets (Qvts) and sericitic schist (Ser schist) with limonitic staining (Lim)

3 SAMPLING

3.1 Sampling methodology

Samples were collected in competent rock on one side of each trench. The geological technician carried out the sampling exercise under the geologist’s supervision.

A sample channel was cut manually by hammer and chisel whilst trying as much as possible to maintain a constant groove depth and width. Sample weights generally did not exceed 3 kilograms with slight variations depending on the hardness of the type of lithology sampled.

The sample intervals were determined by the lithological and these intervals did not cross lithological boundaries. Quartz veins, altered zones, or distinct geological units were sampled separately.

The sample intervals and their respective lithological characteristics were recorded in the appropriate sample book. In homogeneous rock, the average sample interval was one metre wide.

Samples were collected in plastic bags with the unique ticket number folded and stapled into a fold at the top of the bag. The individual sample bags were packed in large grain bags with each bag carrying between three and thirteen samples depending on the sample weight and sampling zone. All grain bags were clearly marked on the outside with a black permanent marker and a plastic tag with sample and bag numbers and each grain bag was tightly secured at the top with string.

3.2 Transportation of samples

All the samples were transported to the exploration camp at the end of each sampling day. Once safely secured at the camp the samples were not to be reopened until they until they were dispatched.

At the end of the sampling exercise the samples were transported to Antech Analytical Laboratory in Kwekwe for safe keeping. A chain of custody procedure was followed from site to the laboratory.

3.3 QAQC

No QAQC samples were inserted before dispatch to Antech laboratory. This will be done by the geologist at the laboratory.

The insertion of QAQC samples must include standards, blank and repeat samples. Every 10th sample must be a standard, blank or repeat sample but the order of these can be varied and an accurate record of sample number and QC sample type and code where appropriate must be maintained by the geologist or project leader.

3.4 Sample Analysis

The samples will be analysed for gold and arsenic by the Fire Assay method. The laboratory will be requested to repeat all samples with grades of 3 g/t and above by gravimetric finish.

4 TRENCH MAPPING AND SAMPLING LOG SHEET

Table 5: KG Section Trench number 6-trench mapping and sampling log sheet

Trench KG06

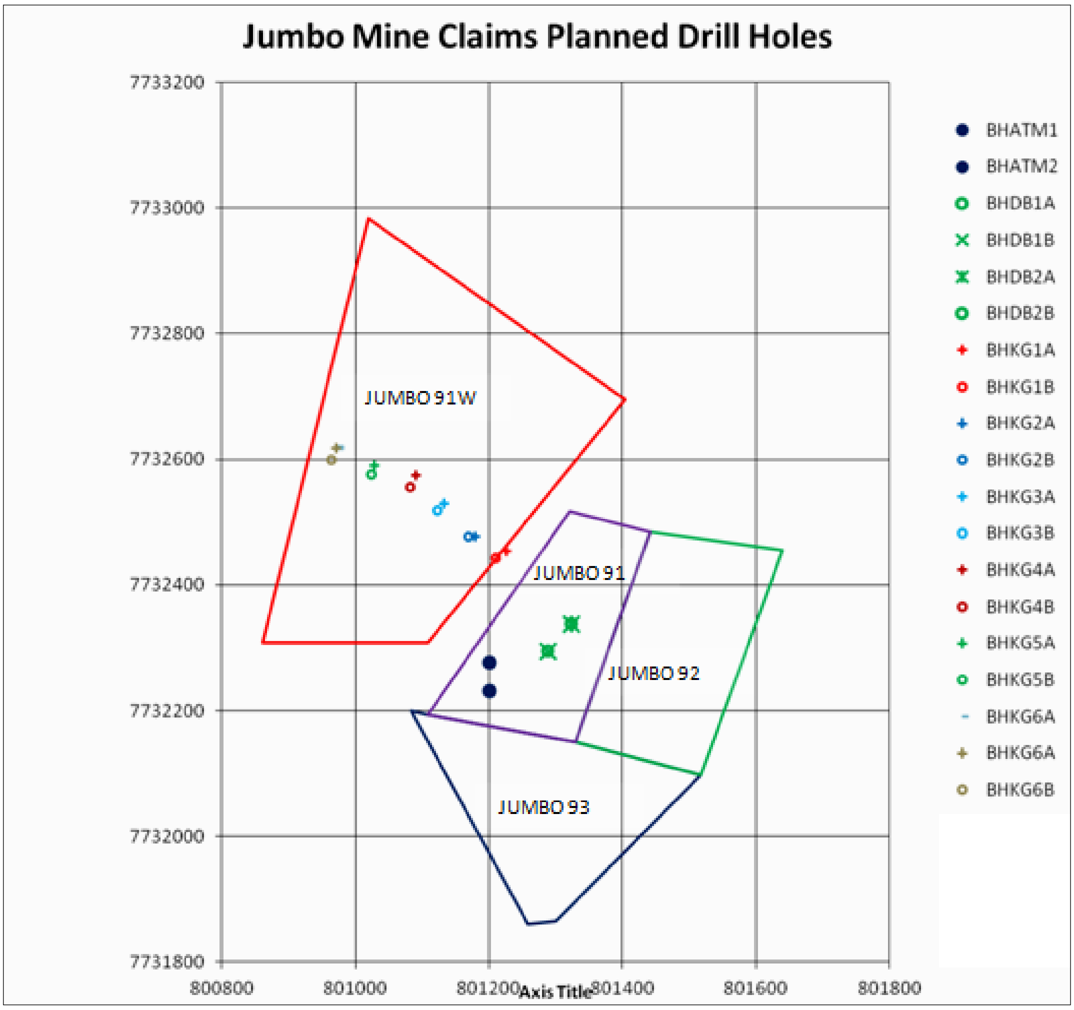
Trench ID	Sample Number	From (m)	To (m)	Width (m)	x - coordinate	y - coordinate	Grade (g/t)	Description
KG06	001	2.00	4.00		801167.929	7732576.749		Felsite
	002	4.00	4.80		801168.604	7732577.181		Felsite
	003	4.80	5.00		801168.774	7732577.290		Sheared meta-basalt
	004	5.00	5.60		801169.110	7732577.505		Qtz-sericite schist
	005	5.60	6.50		801170.037	7732578.098		Qtz-sericite schist
	006	6.50	7.90		801171.217	7732578.854		Milky-white qtz vein
	007	7.90	8.80		801171.975	7732579.339		Milky-white qtz vein
	008	8.80	9.80		801172.817	7732579.878		Felsite
	009	14.00	14.40		801176.695	7732582.360		Felsite
	010	14.40	14.60		801176.864	7732582.469		Qtz stockwork in meta-basalt
	011	14.60	16.00		801178.046	7732583.221		Qtz stockwork in meta-basalt

5 DRILLING PLANS

In the absence of trench sampling assay results, drilling targets were determined based on the results of the RSIP survey results, the intersection of favourable geological structures during trenching and mapping and from the historical artisanal miners' excavations and production. These, in essence, targeted quartz veins and stringers, shear zones and splays and old artisanal miners' pits and excavations.

However, a complete analysis of the trench mapping together with the assay results of the sampling exercise will help identify the eventual potential drilling targets.

5.1 Jumbo Mine Claims Drill Plan



C. MACHINGAUTA	**Figure 8 TR:** Jumbo Mine Planned Drill hole sites	Project No. 01/19

6 CONCLUSIONS ON TRENCHING AND SAMPLING

A number of targets conducive for gold mineralisation were identified on the Jumbo and White Asbestos claims following geological mapping and ground magnetics and Real Section Induced Polarisation (RSIP) surveys. These target lithological and structural features that included shear zones and shear splays within the metabasalts and the quartz veins and felsic intrusions hosted in them were selected for trenching to investigate the nature and quality of the reefs, their continuity across strike and downdip as well their thickness variations.

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The milky white to limonitic quartz vein around the KG workings exhibits a ‘pinch-and swell” structure. Fine sulphides “box-work structures” were also observed on some sections of this KG quartz vein. These are normally associated with gold mineralisation.

402 samples were collected and these are awaiting assay analysis at the Antech Laboratory in Kwekwe. QAQC samples will be inserted at the laboratory. The samples will be analysed for gold and arsenic by the Fire Assay method. The laboratory will be requested to repeat all samples with grades of 3 g/t and above by gravimetric finish.

A complete analysis of the trench mapping together with the assay results of the sampling exercise will help identify potential drilling targets.

APPENDIX 3 ANALYSIS OF JUMBO MINE UNDERGROUND

Sample No. JUM 77961

Page 1 of 1

FINAL ASSAY CERTIFICATE

ANTECH LABORATORY
P.O. BOX 150, KWEKWE
6KM PEG MVUMA ROAD

ANTECH LABORATORIES

TEL: +263 22682/ 22269/ 24172
CELL: 0772 864 065
EMAIL: contact@antechlaboratories.com

ISO/IEC 17025:2005
A SADCAS Accredited Testing Laboratory: TEST-5 0030

Jumbo Mine
1041 Coventry Road
Light Industry, Gweru

Date Received : 21.12.2017
Your Ref : 21.12.2017
Our Ref : JUM 77691
Sample Description : Rocks
Legend : parts per million (ppm)
ND : Not Detectable
Analysis : [Sample Prep MT1] Fire Assay with AA Finish, [Detection Limit, 0.06 MT2]
Elements : Au
Number of Samples : 2
Date Analysed : 21.12.17

Recommended Limits for Reference Samples:
Ref : 1. STD1 : 2.89 - 3.09
Ref : 2. ANT14/1 : 1.10 - 1.46
Ref : 3. BLANK : <0.06
Ref : 4
Ref : 5
Ref : 6

Sample Label	1.Au ppm
A Section [17-12-17]	15.21
A Section [19-12-17]	69.41
ANT 14-01 [1]	1.27
STD1	2.97
BLANK	<0.06

[1] Only hardcopy final Assay Certificates authorized by the Laboratory Manager are to be considered valid.
[2] Report only to be copied in full.
[3] The Laboratory is not responsible for the customer's sampling errors in the field.
[4] Results only relate to sample tested.
[5] Disclaimer: Results marked [AMNA] are excluded from ISO Accreditation.
[6] Course rejects will be stored for three months while Pulp rejects will be stored for twelve months.

Sample No. JUM 78143

Page 1 of 1

FINAL ASSAY CERTIFICATE

ANTECH LABORATORY
P.O. BOX 150, KWEKWE
6KM PEG MVUMA ROAD

TEL: +263 22682/ 22269/ 24172
CELL: 0772 864 065
EMAIL: contact@antechlaboratories.com

ISO/IEC 17025:2005
A SADCAS Accredited Testing Laboratory: TEST-5 0030

Jumbo Mine
1041 Coventry Road
Light Industry, Gweru

Date Received : 19.01.2018
Your Ref : 19.01.2018
Our Ref : JUM 78143
Sample Description : Rocks
Legend : parts per million (ppm)
ND : Not Detectable
Analysis : [Sample Prep MT1] Fire Assay with AA Finish, [Detection Limit, 0.06 MT2]
Elements : Au
Number of Samples : 3
Date Analysed : 23.01.18

Recommended Limits for Reference Samples:
Ref : 1. STD1 : 2.89 - 3.09
Ref : 2. ANT14/1 : 1.10 - 1.46
Ref : 3. BLANK : <0.06
Ref : 4
Ref : 5
Ref : 6

Sample Label	1.Au ppm
SECTION A SUB-SHAFT	17.09
ANT 14-01	1.43
SECTION B FACE	15.15
SECTION B-HANGWALL	38.39
STD1	2.92
BLANK [2]	0.03

[1] Only hardcopy final Assay Certificates authorized by the Laboratory Manager are to be considered valid.
[2] Report only to be copied in full.
[3] The Laboratory is not responsible for the customer's sampling errors in the field.
[4] Results only relate to sample tested.
[5] Disclaimer: Results marked [AMNA] are excluded from ISO Accreditation.
[6] Course rejects will be stored for three months while Pulp rejects will be stored for twelve months.

Sample No. JUM 79627

FINAL ASSAY CERTIFICATE

ANTECH LABORATORY
P.O. BOX 150, KWEKWE
6KM PEG MVUMA ROAD

ANTECH LABORATORIES

TEL: +263 22682/ 22269/ 24172
CELL: 0772 864 065
EMAIL: contact@antechlaboratories.com

ISO/IEC 17025:2005
A SADCAS Accredited Testing Laboratory: TEST-5 0030

Jumbo Mine
1041 Coventry Road
Light Industry, Gweru

Date Received : 07.02.2018
Your Ref : 07.02.2018
Our Ref : JUM 79627
Sample Description : Rocks
Legend : parts per million (ppm)
ND : Not Detectable
Analysis : [Sample Prep MT1] Fire Assay with AA Finish, [Detection Limit, 0.06 MT2]
Elements : Au
Number of Samples : 23
Date Analysed : 09.05.2018
Date Reported : 09.05.2018

Recommended Limits for Reference Samples:
Ref : 1. STD1 : 2.89 - 3.09
Ref : 2. STD2 : 6.84 - 7.14
Ref : 3. ANT14/1 : 1.10 - 1.46
Ref : 4. ANT14/2 : 0.54 - 0.70
Ref : 5. BLANK : <0.06
Ref : 6

Sample Label	1.Au ppm
BIBIBI 1 STRAWBEERY	25.05
SUB DRIVE FOOTWAL2-4	194.97
ANT 14-01 [3]	1.43
HANGWALL GK 2-4-18	5.21
SUBDRIVE R1 FACE2-4-	160.24
FACE GK 2-4-18	2.44
BIBIBI 1 FANTA SEAM1	1.95
BIBIBI 2 SEAM12-2-18	0.73
SEC A SUBDRIV FOOTWA	36.70
SEC A SUBDRIV LEFT D	27.88
STD1	3.08
SEC A SUBDRIV R-STRI	26.52

[1] Only hardcopy final Assay Certificates authorized by the Laboratory Manager are to be considered valid.
[2] Report only to be copied in full.
[3] The Laboratory is not responsible for the customer's sampling errors in the field.
[4] Results only relate to sample tested.
[5] Disclaimer: Results marked [AMNA] are excluded from ISO Accreditation.
[6] Course rejects will be stored for three months while Pulp rejects will be stored for twelve months.

JUM 79627

Sample Label	1.Au ppm
SHAFT DEV 21-2-18	33.47
FOOTWALL 24-4-18	131.56
A1 SEAM 27-02-18	0.20
FOOTWALL 16-3-14	82.47
MAIN SHAFT S-DRIV LE	34.11
RIGHT SIDE 16-3-18	38.55
RIGHT SIDE24-3-18	57.99
RIGHT SIDE24-3-18 DU	60.20
BLANK [3]	0.01
LEFT SIDE 16-3-18	27.76
WEST SEAM 27-2-18	0.05
EAST SEAM 27-2-18	0.26
ANT 14-02 [4]	0.65
TRACER 27-2-18	0.05
S-DRIV FOOTWAL SEC A	87.51
SUB DRIVE 10-3-18	19.72
STD2	7.11
BLANK [4]	ND

[1] Only hardcopy final Assay Certificates authorised by the Laboratory Manager are to be considered valid.
[2] Report only to be copied in full.
[3] The Laboratory is not responsible for the customer's sampling errors in the field.
[4] Results only relate to sample tested.
[5] Disclaimer: Results marked [AMNA] are excluded from ISO Accreditation.
[6] Course rejects will be stored for three months while Pulp rejects will be stored for twelve months.

APPENDIX 4 TESTWORK ON JUMBO MINE DUMP SAMPLES

Dump Tailings Samples Report No. PS/232/18T

PEACOCKE & SIMPSON

EST • 1985

TESTWORK REPORT

CONFIDENTIAL

CLIENT:	Jumbo Mine (Kilpin)
DESCRIPTION:	Tailings
REPORT NUMBER:	PS/232/18T
DATE:	09/04/18

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NOTES

1. This report refers specifically to the sample material received.
2. Tap water was used in all tests as required, except where indicated otherwise
3. Abbreviations:

g/t	Grams per tonne
AV	Assay value
HAF	Head accounted for: the portion of the head grade accounted for by that fraction, obtained by multiplying the mass fraction by the assay. The total of the HAF column should equal the head assay of the original sample
Units	The actual mass of gold, usually in milligrams, reporting to a test product, obtained by multiplying the product mass by the product assay
Dist	The distribution of gold to the test products, in percent

EXECUTIVE SUMMARY

Two tailings samples were received from Jumbo Mine (Kilpin) for cyanide leaching testwork.

Old Dump

The program involved milling the sample prior to cyanide leaching.

The average assayed head grade of the sample was 10.60g/t Au and the calculated head grade was 10.95 g/t Au.

Agitated cyanide leach testing on the sample after milling realised gold recovery of 86.2 % of the test head in 24hours of leaching. Lime requirement was 2.0kg/t while sodium cyanide consumed was 0.75kg/t

New Dump

The program of the sample involved hand panning of a representative portion and assaying of products. A microscopic photograph of the panning was taken.

The average assayed head grade of the sample was 0.74g/t Au and the calculated head grade was 0.78 g/t Au.

Panning recovered 19.0 % of the gold in the sample giving a pan concentrate grading 42.0 g/t Au.

1. TEST PROCEDURES

1.1. FEED PREPARATION

The sample was mixed and homogenised prior to removal of representative aliquots for testwork as outlined below.

1.2. NORMAL CYANIDE AGITATION LEACH TEST ON MILLED SAMPLE

The sample was milled to 75% passing 75microns. The milled sample was pulped to a 1.5/1 liquid/solid ratio with tap water. Lime was added to achieve pulp pH of 10.5 - 11, followed by sodium cyanide as indicated below. Mechanical agitation was carried out for 24 hours, with regular withdrawal of solution samples to monitor dissolution rate. At conclusion of the leach period the pulp was filtered and water washed, and solid residue dried, split and fire assayed.

2. ASSAYS

The assayed and calculated head grades of the sample are shown below

2.1. SAMPLE: OLD DUMP

Assayed head grades (g/t Au)	10.80 10.40
Average (g/t Au)	10.60
Calculated head grade (g/t Au)	10.95

2.2. SAMPLE: NEW DUMP

Assayed head grades (g/t Au)	0.71 0.77
Average (g/t Au)	0.74
Calculated head grade (g/t Au)	0.78

All assays were conducted by Performance Laboratories (Pvt) Ltd, of Harare, Zimbabwe, which is a SANAS certified laboratory*.

* The South African National Accreditation System is recognised by the South African Government as the single National Accreditation Body that gives formal recognition that Laboratories, Certification Bodies, Inspection Bodies, Proficiency Testing Scheme Providers and Good Laboratory Practice (GLP) test facilities are competent to carry out specific tasks.

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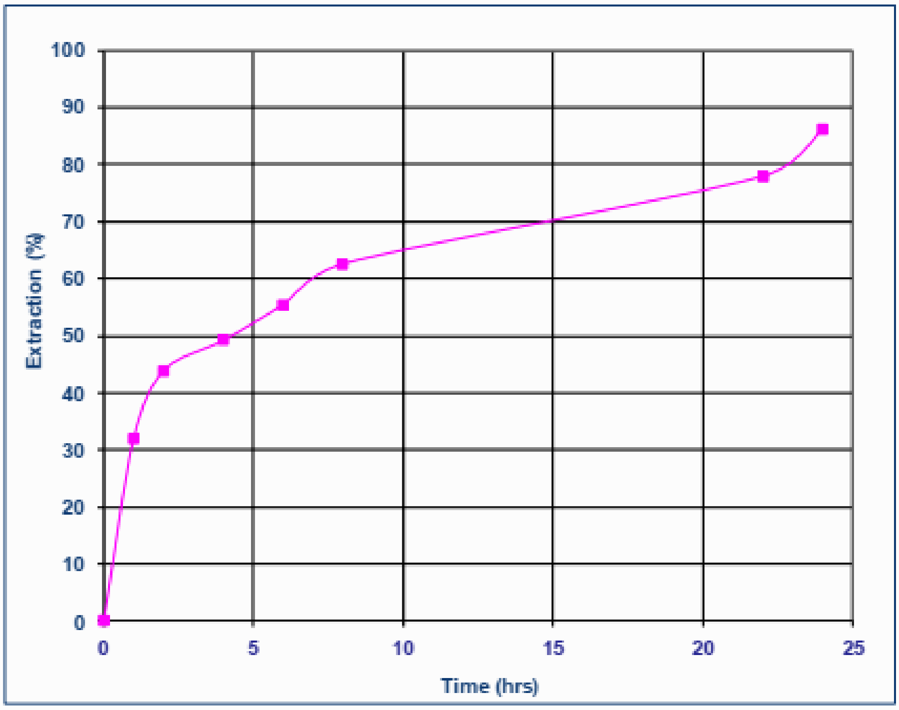
3. RESULTS-OLD DUMP

3.1. CYANIDE AGITATION LEACHING ON MILLED SAMPLE

Table 1: Cyanide Agitation Leaching Results on milled sample

Built-up head grade (g/t Au)		10.95
Leach residue value (g/t Au)		1.51
Extraction	(g/t Au)	9.44
Extraction	(%)	86.2
Lime Required	(kg/t)	2.0
NaCN Consumed	(kg/t)	0.75

Figure 1: Dissolution Rate Curves



- Gold recovery after 24 hours was 86.2% of the test feed.

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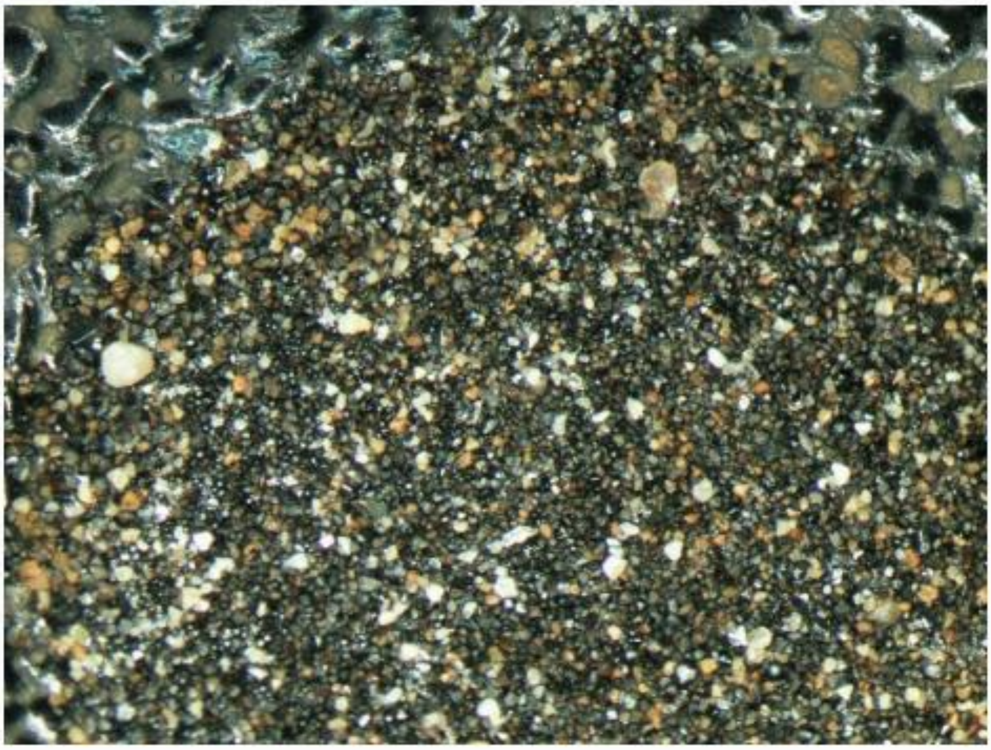
4. RESULTS-NEW DUMP

4.1. PANNING

Table 1: Panning Results

Product	Mass			Gold				
		Percent		Assay (g/tAu)		Units	Recovery (%)	
	(g)	Fract'n	Cum.	Fract'n	Cum.	mg	Fract'n	Cum.
Pan Concentrate	7.0	0.4	0.4	42.00	42.00	0.30	19.0	19.0
Pan tailing	84.4	4.2	4.6	1.60	4.71	0.13	8.7	27.7
Final Tails	1908.6	95.4	100.0	0.59	0.78	1.13	72.3	100.0
Feed	2000.0	100.0		0.78		1.56	100.0	

Panning of the samples showed that the sample had no traces of free gold as shown in the photograph below.



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APPENDIX A – DETAILED TESTWORK RESULTS

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Old Dump

SAMPLE: Jumbo Mine (Klipin) Heads (g/t Au) 10.80 10.40 Average 10.60

TEST 1

CYANIDE LEACHING TEST

Preparation The sample was milled to 75% passing 75microns prior to cyanide leaching as outlined below.

METHOD The sample was pulped to a 1.5/1 liquid/solid ratio with tap water.Lime was added to achieve pulp pH of 10.5-11, followed by sodium cyanide as indicated below. Mechanical agitation was carried out for 24 hours, with regular withdrawal of solution samples to monitor dissolution rate. At the conclusion of the leach period the pulp was filtered and water washed, and solid residue dried, split and fire assayed.

LEACH CONDITIONS:

Solids mass	(g)	1000.0
Solution volume	(ml)	1500.0
Liquid/Solid ratio		1.5
NaCN addition	(%NaCN)	0.1
Lime addition	(kg/t)	2.0

RESULTS

Time	Solution	Extraction		Lime Added	pH	DO	NaCN	
(hrs)	(g/tAu)	(g/tAu)	(%)	g		mg/L	Added g	Sol'n %
0	0.00	0.00	0.0	2.0	10.80	2.9	1.5	0.10
1	2.34	3.51	32.1		10.88	8.0		0.10
2	3.20	4.80	43.9		10.95	5.1		0.10
4	3.59	5.39	49.2		10.85	5.1		0.10
6	4.05	6.08	55.5		10.81	6.5		0.10
8	4.57	6.86	62.6		10.79	5.2		0.10
22	5.69	8.54	78.0		10.14	3.6	0.75	0.05
24	6.29	9.44	86.2		10.45	2.8		0.10

	g/tAu	%
Built-up Head	10.95	
Extraction	9.44	86.2
Residue	1.51	13.8

NaCN consumed (kg/t)	0.75
Lime required (kg/t)	2.0

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New Dump

SAMPLE: **Jumbo Mine (Klipin)** **Heads (g/t Au)** **0.71** **0.77** **Average** **0.74**

TEST 1

PANNING

METHOD The sample was panned and microscope image of the panning was taken.

Product	Mass			Gold				
		Percent		Assay (g/tAu)		Units	Recovery (%)	
	(g)	Fract'n	Cum.	Fract'n	Cum.	mg	Fract'n	Cum.
Pan Concentrate	7.0	0.4	0.4	42.00	42.00	0.30	19.0	19.0
Pan tailing	84.4	4.2	4.6	1.60	4.71	0.13	8.7	27.7
Final Tails	1908.6	95.4	100.0	0.59	0.78	1.13	72.3	100.0
Feed	2000.0	100.0		0.78		1.56	100.0	

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Bulk Dump Sample No. TT80 Report No. PS/312/18T

PEACOCKE & SIMPSON

EST • 1985

TESTWORK REPORT

CONFIDENTIAL

CLIENT:	Jumbo Mine
DESCRIPTION:	TT80 Dump
REPORT NUMBER:	PS/312/18T
DATE:	14/05/18

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APPENDIX A – DETAILED TESTWORK RESULTS 7

NOTES

1. This report refers specifically to the sample material received.
2. Tap water was used in all tests as required, except where indicated otherwise
3. Abbreviations:

g/t	Grams per tonne
AV	Assay value
HAF	Head accounted for: the portion of the head grade accounted for by that fraction, obtained by multiplying the mass fraction by the assay. The total of the HAF column should equal the head assay of the original sample
Units	The actual mass of gold, usually in milligrams, reporting to a test product, obtained by multiplying the product mass by the product assay
Dist	The distribution of gold to the test products, in percent

2

EXECUTIVE SUMMARY

A bulk dump sample labelled as TT80 was received from Jumbo Mine for cyanide leaching testwork.

The program involved mixing and homogenising the entire sample submitted, sampling two representative portions for cyanide leaching tests with and without regrind.

The average assayed head grade of the representative sample was 3.65g/t Au and the calculated head grade was 3.56 g/t Au.

Agitated cyanide leach testing on the representative sample as received (25% passing 75 micron) realised gold recovery of 40.7 % of the test head in 24 hours of leaching.

Lime requirement was 0.50kg/t while sodium cyanide consumed was 0.45kg/t

Milling the sample to 80% passing 75micron prior to agitated cyanide leach testing achieved gold recovery of 81.9 % of the test head in 24 hours of leaching. Dissolution rate was rapid achieving an extraction of 70.0% in 8 hours.

Lime requirement was 0.50kg/t while sodium cyanide consumed was 0.60kg/t

3

1. TEST PROCEDURES

1.1. FEED PREPARATION

The sample was mixed and homogenised prior to removal of representative aliquots for testwork as outlined below.

1.2. CYANIDE AGITATION LEACH TEST

A representative portion was sampled and pulped to a 1.5/1 liquid/solid ratio with tap water. Lime was added to achieve pulp pH of 10.5 - 11, followed by sodium cyanide as indicated below. Mechanical agitation was carried out for 24 hours, with regular withdrawal of solution samples to monitor dissolution rate. At conclusion of the leach period the pulp was filtered and water washed, and solid residue dried, split and fire assayed.

1.3. CYANIDE AGITATION LEACH TEST AFTER MILLING

A representative portion was sampled and milled to 80% passing 75 micron, then pulped to a 1.5/1 liquid/solid ratio with tap water. Lime was added to achieve pulp pH of 10.5 - 11, followed by sodium cyanide as indicated. Mechanical agitation was carried out for 24 hours as indicated above.

2. ASSAYS

The assayed and calculated head grades of the sample are shown below

2.1. SAMPLE: TT80 DUMP

Assayed head grades (g/t Au)	3.62 3.67
Average (g/t Au)	3.65
Calculated head grade (g/t Au)	3.58 3.54
Average calculated head (g/t Au)	3.56

All assays were conducted by Performance Laboratories (Pvt) Ltd, of Harare, Zimbabwe, which is a SANAS certified laboratory*.

* The South African National Accreditation System is recognised by the South African Government as the single National Accreditation Body that gives formal recognition that Laboratories, Certification Bodies, Inspection Bodies, Proficiency Testing Scheme Providers and Good Laboratory Practice (GLP) test facilities are competent to carry out specific tasks.

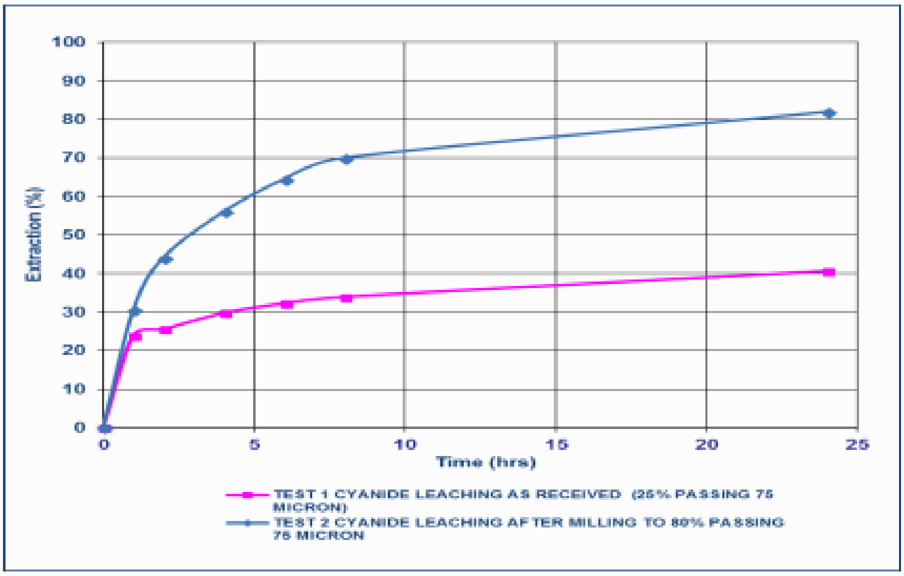
3. RESULTS

3.1. CYANIDE AGITATION LEACHING WITH AND WITHOUT RE-GRIND

Table 1: Cyanide Agitation Leaching Results

	As received (25% - 75micron)	After milling (80% - 75micron)
Built up head grade (g/t Au)	3.58	3.54
Solution extraction (g/t Au)	1.46	2.90
Solution extraction (%)	40.7	81.9
Solid residue (g/t Au)	2.12	0.64
Solid residue (%)	59.3	18.1
Sodium cyanide consumption (kg/t)	0.45	0.60
Lime requirement (kg/t)	0.50	0.50

Figure 1: Dissolution Rate Curve



- Gold recoveries without and with re-grind were 40.7% and 81.9% of test heads respectively after 24 hours.

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APPENDIX A – DETAILED TESTWORK RESULTS

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SAMPLE: TT80 DUMP

Assayed heads (g/tAu)	3.62	3.67	Average :	3.65
Built up heads (g/t Au)	3.58	3.54	Average :	3.56

TEST 1 CYANIDE LEACHING AS RECEIVED (25% PASSING 75 MICRON)

METHOD The sample was pulped to a 1.5/1 liquid/solid ratio with tap water. Lime was added to achieve pulp pH of 10.5-11. Sodium cyanide ws then added and mechanical agitation was carried out for 24 hours, with regular withdrawal of solution samples to monitor dissolution rate and reagent consumption, the latter being replenished to target levels as indicated Solution sample aliquot volumes were taken into account when calculating extractions. At the conclusion of the leach period the pulp was filtered and water washed, and solid residue dried, split and fire assayed.

LEACH CONDITIONS:

Solids mass	(g)	1000.0
Solution volume	(ml)	1500.0
Liquid/Solid ratio		1.5
NaCN addition	(%)	0.1
Lime addition	(kg/t)	0.5

RESULTS

Time	Solution	Extraction		Lime Added	pH	DO	NaCN	
(hrs)	(g/tAu)	(g/tAu)	(%)	g		mg/L	Added g	Sol'n %
0	0.00	0.00	0.0	0.5	11.22	3.3	1.50	0.10
1	0.57	0.86	23.9		11.12	4.0		0.09
2	0.61	0.92	25.6		11.01	2.7		0.08
4	0.71	1.07	29.8		10.90	5.2		0.08
6	0.77	1.16	32.3		10.81	4.2		0.08
8	0.81	1.22	34.0		10.75	4.3		0.08
24	0.97	1.46	40.7		9.70	4.1		0.07

	g/tAu	%
Built-up Head	3.58	
Extraction	1.46	40.7
Residue	2.12	59.3

NaCN consumed (kg/t)	0.45
Lime required (kg/t)	0.5

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TEST 2 **CYANIDE LEACHING AFTER MILLING TO 80% PASSING 75 MICRON**

METHOD The sample was pulped to a 1.5/1 liquid/solid ratio with tap water. Lime was added to achieve pulp pH of 10.5-11. Sodium cyanide ws then added and mechanical agitation was carried out for 24 hours, with regular withdrawal of solution samples to monitor dissolution rate and reagent consumption, the latter being replenished to target levels as indicated Solution sample aliquot volumes were taken into account when calculating extractions. At the conclusion of the leach period the pulp was filtered and water washed, and solid residue dried, split and fire assayed.

LEACH CONDITIONS:

Solids mass	(g)	1000.0
Solution volume	(ml)	1500.0
Liquid/Solid ratio		1.5
NaCN addition	(%)	0.1
Lime addition	(kg/t)	0.5

RESULTS

Time	Solution	Extraction		Lime	pH	DO	NaCN	
				Added			Added	Sol'n
(hrs)	(g/tAu)	(g/tAu)	(%)	g		mg/L	g	%
0	0.00	0.00	0.0	0.5	10.38	1.0	1.50	0.10
1	0.72	1.08	30.6		10.69	1.2		0.08
2	1.04	1.56	44.1		10.70	5.3		0.09
4	1.32	1.98	56.0		10.60	3.1		0.06
6	1.52	2.28	64.5		10.45	3.3		0.08
8	1.65	2.48	70.0		10.39	4.1		0.08
24	1.93	2.90	81.9		10.18	5.4		0.06

	g/tAu	%
Built-up Head	3.54	
Extraction	2.90	81.9
Residue	0.64	18.1

NaCN consumed (kg/t)	0.60
Lime required (kg/t)	0.5

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APPENDIX 5 JUMBO AND BIBI GOLD PROJECT SITE VISIT

Jumbo and Bibi Gold Project - Zimbabwe Note for the Record Document No: 2018-308-NFR-001	BARA INTERNATIONAL

Project	Jumbo and Bibi Goild project - Zimbabwe
Client	David Kilpin
Title	Site Visit Report
Author	C W Brown, WDOF Schoeman
Date	17th July 2018

Report Version	Version Date	Project Manager	Report Review
Revision A	17th July 2018	A D Pooley	Draft

2018-308-NFR-001
17th July 2018 1 of 14

BARA INTERNATIONAL

1 INTRODUCTION

David Kilpin a Zimbabwean national privately owns a number of mining claims in the Midlands area of Zimbabwe. Current activity at these mining rights are centred around the Jumbo and Bibi Mines and is limited to activities which are only slightly more advanced than artisanal mining. Mr Kilpin wishes to further develop these sites by formalising mining to a degree where production is more regular and consistent. Mr Kilpin has approached Bara Consulting (Bara) to advise and assist with this transition.

2 SITE VISIT

The Jumbo and Bibi Gold Project is situated in the Midlands of Zimbabwe approximately 30 km SSW of the town of Zvishavane (se Figure 2.1). On Monday 2nd July through Wednesday 4th July 2018, a project team from Bara undertook a visit to the site under the guidance and supervision of Mr Kilpin, the owner of the mines. The primary objective of the visit was site orientation and information gathering. The Bara Project Team consisted of;

- Jim Pooley (Project Manager and Managing Director of Bara)
- Clive Brown (Principal Mining Engineer)
- Willie Schoeman (Principal Infrastructure Engineer)

Figure 2.1 - Project Location

BARA INTERNATIONAL

The Jumbo Mine site is accessed from Zvishavane via the Zvishavane – Mbalabala – Bulawayo highway for 25 km and then a dirt road for a further 5 km, travelling towards Mberengwa and a further 2 km off the Mberengwa road.

Bibi Mine is approximately 2km North of the Zvishavane-Mbalabala highway, and 12 km from Jumbo Mine by road.

2.1 Jumbo Mine

The topography at Jumbo is flat around shaft and plant site but rising to a low hill to the west of the shaft. The vegetation may be described as grassland with shrubs and smaller trees. The soils are reddish brown, a mixture of clay and sand, with a gravel layer making up the upper 0.5 to 1.0m over a large portion of the Jumbo claim.

Mining is currently taking place via a single shaft at Jumbo. The vertical shaft is 40m deep and equipped with a hand-operated windlass for hoisting of men, material and rock in the shaft. The dimensions of the shaft are approximately 2.5m x 2.5m and the shaft in unlined. The figure below shows the Jumbo Mine shaft.

Figure 2.2 - Jumbo Mine Shaft – Surface Arrangement

On the day of the visit there was a power failure and as a result a water build up occurred underground preventing us visiting the underground workings. No plans are available for the

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underground workings but a sketch prepared for us by the mine manger (Giri) is replicated in the figure below.

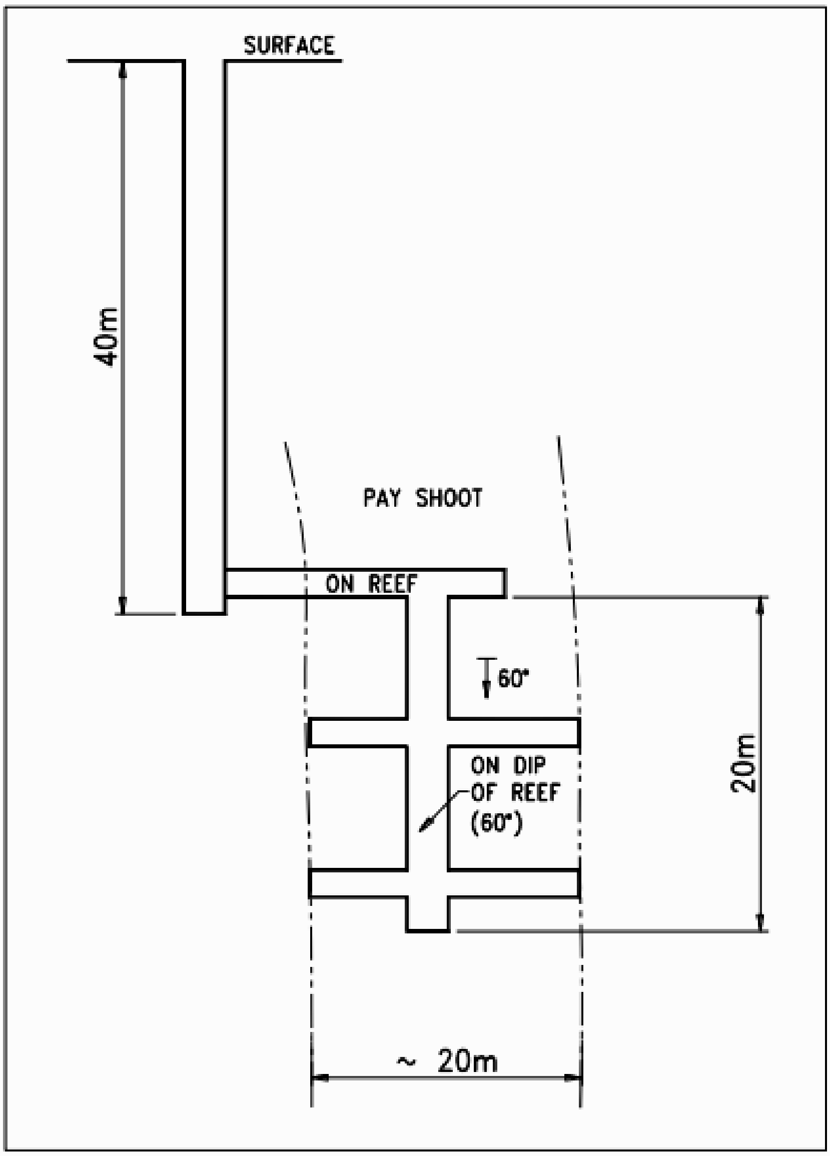

Figure 2.3 - Jumbo Mine Underground Sketch Plan – Vertical Projection

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Mr Kilpin stated that current production is haphazard but approximately two tonnes per day. He would like to see this increased to around 10 tonnes per day initially before expanding facilities to achieve between 70 and 100 tonnes per day.

Production at the mine is currently limited by the ore mined from underground. Ore from the development faces below 1 Level has to be moved from the face to the shaft and up the shaft in elephant foot bags. Production is further limited by a lack of available mining faces. Water handling is also an issue. In the current layout any water ingression reports to the mining faces, so as soon as the pumps stop production has to stop. Fissure water from underground is pumped through a 50NB pipe to surface, from where the local population carts some of it away, or it flows off into the environment. The pump flow rate is estimated at approximately 4l/s for 7hours per day.

Bulk electricity to the site is supplied by ZESA via an 11kV overhead line of ± 3km long, where it is stepped down to 380V in a 100kVA transformer. The owner is currently seeking to replace this with a 200kVA transformer.

The mine is equipped with a compressor of 55 kW, with a nominal capacity of 9.8 m^3/min (343 cfm) at 880 kpa, shown below. This is currently used to power one Y24 rock drill for underground mining and a single compressed air vortex pump.

Figure 2.4 - Compressor

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Processing of the ore currently consists of:

- Crushing – A single small jaw crusher (Approximately 10" x 5")
- Hammer mill (0.5 t/hr capacity)
- Gravity separator
- CIL tanks
- Carbon column

Material is moved between stations by wheel barrow, with a single conveyor used to feed the jaw crusher. The hammer mill is fed by shovel from the crushed material. Slurry from the hammer mill feeds into a gravity separator by gravity in a 100 mm diameter plastic pipe. Concentrate in the gravity separator is recovered in mercury while the tails flows to a series of small settling ponds for dewatering (thickening). The mercury amalgam is roasted over a fire to burn of the mercury. The gravity tailings material is stockpiled and treated through the CIL plant in batches. There are three steel cyanide leach tanks, each with a capacity of 5 tonnes of slurry. The tanks are loaded by hand (shovel) and are not equipped with stirrers or agitators. Residence time in the leach tanks is 20 hours after which the pregnant solution is drained into three plastic storage tanks before being passed through a carbon column to harvest the loaded carbon.

The plant equipment is illustrated in the photographs below.

Figure 2.5 - Jaw Crusher

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Figure 2.6 - Hammer Mill

Figure 2.7 - Gravity Separator

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Figure 2.8 - Thickening Ponds

Figure 2.9 - Leach Tanks

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Figure 2.10 - Carbon Column

The loaded carbon is transported off site and eluted and smelted by a toll treatment plant to recover the gold dore. All gold is sold to Fidelity which is an organisation which purchases all gold in Zimbabwe on behalf of the Zimbabwean government.

After inspection of the shaft and gold plant the exploration trenches around the Jumbo site were visited. There is a large area of weathered material (gravels) approximately 50 cm to 1.0 m thick covering the hillside adjacent to the shaft. There is evidence of a large amount of artisanal mining taking place here. Sampling of this material has yielded grades of between 2 g/t and 7 g/t. This could be investigated as a source of ore to be processed in the Jumbo plant.

Figure 2.11 - Evidence of Artisanal Mining of Weathered material/Gravels

There is limited and very basic accommodation available on the mine site. There are four rooms for accommodation, a few shacks for other purposes, and a strong room is under construction.

In Gweru town, fairly a large industrial warehouse is being converted into living quarters, offices, store, and other general purposes.

2.2 Bibi Mine

Historical workings at Bibi Mine include on open pit as well as a number of old smaller artisanal mine shafts. Two shafts are being sunk for exploration at Bibi, with a third one planned. Each shaft is aimed at exposing the reef systems identified by the geomagnetic survey anomalies. The photographs below show the shafts being sunk on the Main and Number 1 anomalies.

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Figure 2.12 - Bibi Main Shaft

Figure 2.13 - Bibi Number 1 Shaft

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The main shaft is at a depth of 10 to 12 m and is expected to intersect the orebody at around 12 to `14 m depth. The Number 1 shaft has only advanced around 5 m to date. During our visit the Main shaft was drilled, charged up and blasted, all within approximately two hours. The face size was reduced to 1.5m x 1.5 m for the blast in order to increase the advance rate in order to access ore quicker. The shaft size is nominally 2.5 m x 2.5 m.

No water has been intersected in either of the shafts to date.

There is currently no water or power supply available at the Bibi site. The nearest ZESA power line is approximately 3.5 km away. Compressed air for drilling is supplied by a portable 75 cfm diesel driven compressor. No permanent structures have been erected on site.

3 FUTURE PLANNING

In order to increase production, a number of interventions are required. The recommended activities are tabled below:

Table 3.1 – Proposed Activities for Production Increase Jumbo Mine

Item	Description	Estimated time	Estimated cost	Targeted production rate
1	Obtain services of Project Manager plus technical services including mine surveyor, geologist, rock engineer (underground geotechnical engineer)	1 month		10 t/d
2	Get geological interpretation of orebodies, pay shoots, width and grade estimates also weathered surface material	3 months		10 t/d
3	Develop a mine plan based on a geological interpretation of the orebodies and pay shoots.	2 weeks		10 t/d
4	Extend the Jumbo Vertical shaft to below the next production level (Level 2, 70 m below surface).	2 months		10 t/d
5	Equip the shafts with fixed ladder ways.	2 months	US$300/m	10 t/d
6	Establish a second entrance to underground workings for emergency egress and ventilation	3 months		10 t/d

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Table 3.1 – Proposed Activities for Production Increase Jumbo Mine

Item	Description	Estimated time	Estimated cost	Targeted production rate
7	Erect a simple headgear with hinged shaft doors above the collar, and install an electric winch with facilities for kibble or coco-pan hoisting.	3 months	US$100,000	70 t/d
8	Establish underground ventilation system.	1 month		70 t/d
9	Improve ore handling, crushing and conveying facilities: o Mill (Rod mill or ball mill). o Erect (or convert the existing) CIL tanks with agitators, together with pumps and ancillaries. o Carbon column an elution plant?	6 months	US$400,000	70 t/d
10	Build a tailings storage facility (slimes dam) for the tailings from the leach plant.	6 months	US$30,000	10t/d
11	Excavate settling ponds on surface for the water from underground to pump into. Clarified overflow can then be recirculated back underground for drilling, or discharged into the local stream. Settled mud should be treated for gold extraction.	2 months	US$10,000	10t/d
12	Improve accommodation, ablutions and general infrastructure on site.	3 months	US$100,000	10t/d

Table 3.2 – Proposed Activities for Production Increase at Bibi Mine

Item	Description	Estimated time	Estimated cost	Targeted production rate
1	Get geological interpretation of orebodies, pay shoots, width and grade estimates – Bibi Mine	3 months		10 t/d
2	Develop a mine plan based on a geological interpretation of the orebodies and pay shoots – Bibi Mine	1 month		10 t/d

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Table 3.2 – Proposed Activities for Production Increase at Bibi Mine				
Item	**Description**	**Estimated time**	**Estimated cost**	**Targeted production rate**
3	Establish water and power supply to Bibi Mine (could be diesel generator and water tank)	1 month		10 t/d
4	Install fixed ladderways in all shafts used for production	1 Month	US$300/m	10t/d
5	Establish accommodation on site or accommodate people at Jumbo		US$100,000	

APPENDIX 6 MINING METHOD AND VERTICAL SHAFT DESCRIPTION BIBIBI MINE

Jumbo and Bibibi Mines Note for the Record Document No: 2018-308-NFR-002	BARA CONSULTING

Project	Jumbo and Bibibi Mines – Mine and Mine Infrastructure Design
Client	David Kilpin
Title	Mining Method and Vertical Shaft Description- Bibibi Mine
Authors	Clive Brown, Willie Schoeman
Date	10 September 2018

Report Version	Version Date	Project Manager	Report Review
2018-308-NFR-002/00	10 September 2018	Andrew Pooley	Andrew Pooley

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1 INTRODUCTION

The Jumbo and Bibibi Mines in Zimbabwe are currently being operated as artisanal workings using basic mining methods which limit the production capacity. The mine owner, Mr David Kilpin, has requested Bara International (Bara) to assist in developing engineering concepts to support an increase in the production capacity at Bibibi Mine to 150 tonnes per day.

In order to achieve the required production rate, the infrastructure, services and mining methods will need to be modified and improved upon. This note describes the mining and hoisting method which is proposed for Bibibi Shaft. It is noted that at the time of writing the geological exploration is still ongoing. A geophysical study has been completed and a preliminary geological report has been prepared and provided to Bara. A drilling program will be initiated in September 2018. The selection and design of the proposed mining method is based on the following information:

- Observations during the site visit undertaken in July 2018
- Anecdotal data on the orebody geometry and nature from the underground exposures.
- Preliminary Geological report.

2 ORE BODY DESCRIPTION

Based on our observations during the site visit, the anecdotal information we are receiving from the underground mining operators and the Preliminary Geological report our understanding of the orebody is as follows:

The orebody dip in the vicinity of the Main Shaft varies from 60 degrees to the East to 70 degrees to the West. It is reported that the change in dip takes place over a strike distance of about 10 m. The shear zone is approximately 10 m wide with mineralisation occurring over a width ranging from 2 m to 5 m. The mineralisation is associated with quartz veining within the shear zone. The quartz veins are hosted either in Chlorite Schist or Banded Iron Stone (haematite).

The shear zone has been mapped on surface over a strike distance of approximately 200 m. To the North the shear Zone splits into three splays and appears to terminate. It is open to the South and the Client is in the process of gaining access to the claims to the South of the current tenement.

The sampling conducted by the geologist indicated mineralised widths of 0.3 m to 2.2 m, however reports from the mining crews are that the orebody has opened up to 3 to 5 m in places. This is to be expected as the quartz vein typically pinch and swell both along strike and dip.

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3 MINING

3.1 Mining Method selection

The key criteria considered for selecting the mining method were:

- Ability to support the production rate of 150 tpd.
- Low capital cost, with most development in ore.
- Relatively simple with minimal technology.
- Appropriate to the orebody geometry and rock properties.

The following methods were considered:

- Shrinkage stoping
- Handheld underhand stoping
- Sublevel open stoping (SLOS)

The table below summarises the advantages and disadvantages of the various methods considered.

Table 3-1 – Mining Method Selection

Mining Method	Advantages	Disadvantages
Shrinkage stoping	Minimal support required. Good for poor ground conditions.	Slow production rate while developing stope. High level off skill required to manage stope draw.
Underhand stoping	Good for narrow veins.	Slow production rate (mucking by hand into orepass/raise). Requires sidewall support discipline. Hazardous as people are working in a stope below inaccessible sidewalls and exposed to falling rocks.
Sub-Level Open Stoping (SLOS)	High production rate Safe as it is a non-entry stoping method.	Requires sublevel development. In narrow veins (< 2.0 m) high risk of dilution.

Based on our understanding of the orebody it is proposed that SLOS be selected as the preferred mining method. If the veins are too narrow and dilution becomes a problem the

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mining method can be changed to underhand stoping with no change to the development layout. Only if the ground conditions prove to be so poor that underhand stoping is considered too dangerous should shrinkage stoping be used.

3.2 Description of SLOS Mining Method

Sublevel open stoping makes use the drilling of long blast holes to blast a bench of ore. Drilling takes place from the main level of a sublevel. The broken ore reports to a loading level at the bottom of the stope, where it is loaded into the cocopans for transport to the shaft. Figure 3.1 shows a vertical projection of a sublevel open stope.

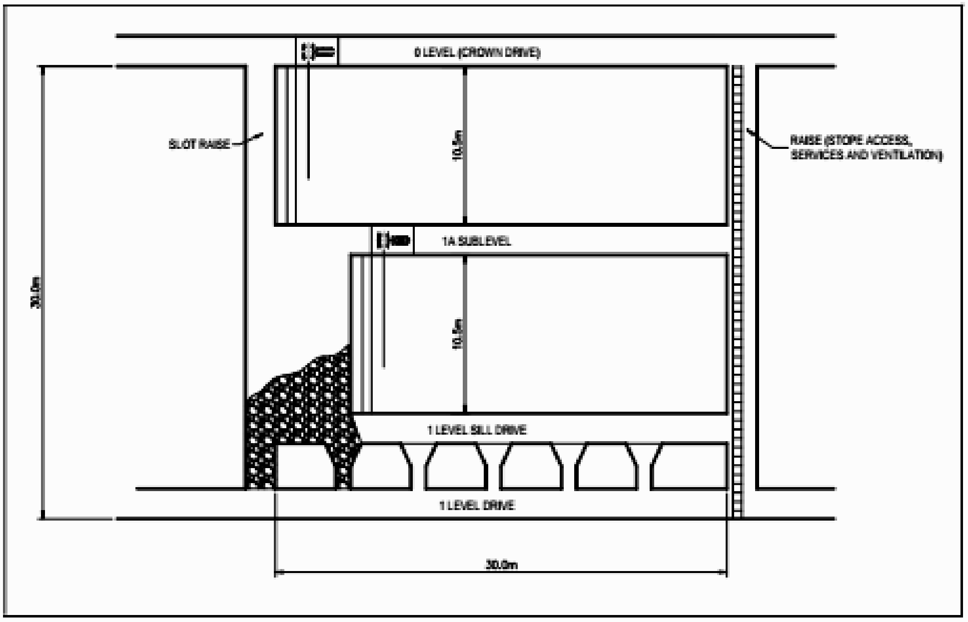

Figure 3.1 – Vertical Projection of LHOS

A cross cut will be developed from the shaft on each level. When the cross cut intersects the orebody ore drives are developed along strike. If the orebody is wider than the standard ore drive width of 1.8 m, the drive should be carried so that the footwall contact of the vein is exposed in the face. The full width of the orebody can then be determined by either drilling horizontal exploration holes (diamond drill holes) or by developing cubbies at regular intervals.

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Once the ore drive has advanced beyond the limits of the first stope block, say 40 m, stope preparation development can start. Stope preparation development involves the development of:

- Sill drive. This is a drive above the main level drive separated from the main level by a safe pillar distance, currently assumed to be 3.0 m. The pillar size should be confirmed by a rock engineer.
- Draw points. These are holings between the main level drive, which becomes the loading drive during stoping, and the sill drive. These should be spaced at a suitable distance apart to avoid the lockup of ore in the stope. The spacing is typically 5.0 m (centre to centre).
- Travelling way. This is a raise connecting the main level drive to the level above. This raise or travelling way is equipped with a ladderway to provide access to the stope and all services enter the stope via this raise (from above or below). It also functions as the intake ventilation route for stope ventilation.
- Slot raise. This is a raise on the opposite end of the stope from the travelling way, which functions as a starting point or free face for blasting of the stope.
- Sublevel drive. The spacing between levels on the shaft is likely to be around 30m vertically. This is too much to be mined in one bench so the height is split in two (or more) benches by the development of sublevel drives from the travelling way. For a 30 m main level spacing a single sublevel drive splitting the stope panel into two benches will suffice. In cases where the main level spacing exceeds 30 m it may be necessary to have two sublevels.

Once a block or stope panel has been developed stoping can commence. Blasting starts on the lower bench with the stope face first blast using the slot raise as a free face. The blast holes are drilled and charged from above, i.e. from the sublevel drive for the lower bench and from the upper main level ore drive for the top bench. The sequence of stoping is bottom up. The bottom bench is blasted first and leads the top bench, as illustrated in Figure 3.1. This allows the ore blasted on the top level to report to sill drive without getting caught up on the sublevel and allows people working on the sublevel to work in a safe environment, where a rock falling from the bench above falls beyond their position, into the open stope and reports to the sill drive.

The draw points are equipped with chutes on the main level. Removal of the ore from the stope involves the opening of the chute and tipping of the ore into the cocopans, directly by gravity. Chutes can be a simple timber construction using stop boards to close the chute or

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steel, arch door type preconstructed chutes. The steel chutes can be reclaimed and re-used after the stope is depleted. Figure 3.2 illustrates the chute arrangement.

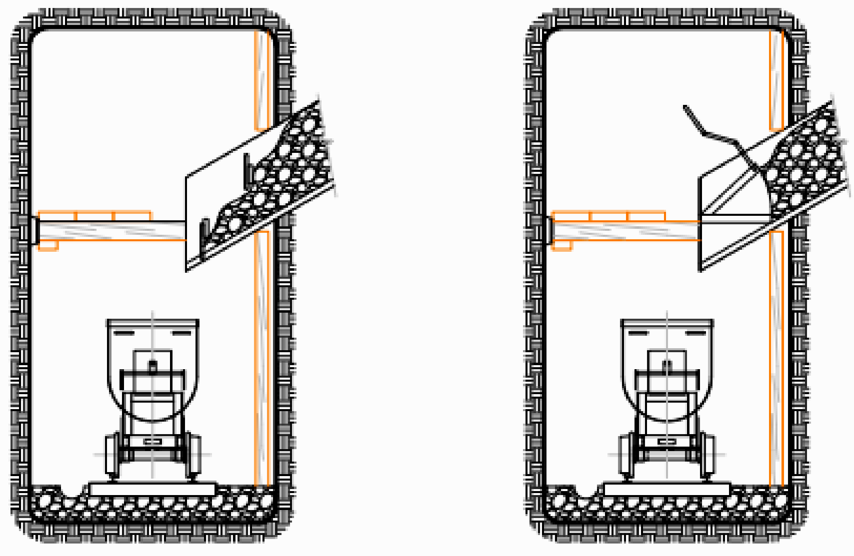

Figure 3.2 – Example of Chute Arrangement

Cocopans will be hand trammed to the shaft where they will be loaded into the cage for hoisting to surface.

Figures 3.3 and 3.4 show a cross section and long section of the proposed conceptual mining layout at Bibibi mine. Figure 3.5 shows a level plan of a typical level, in this case 1 Level.

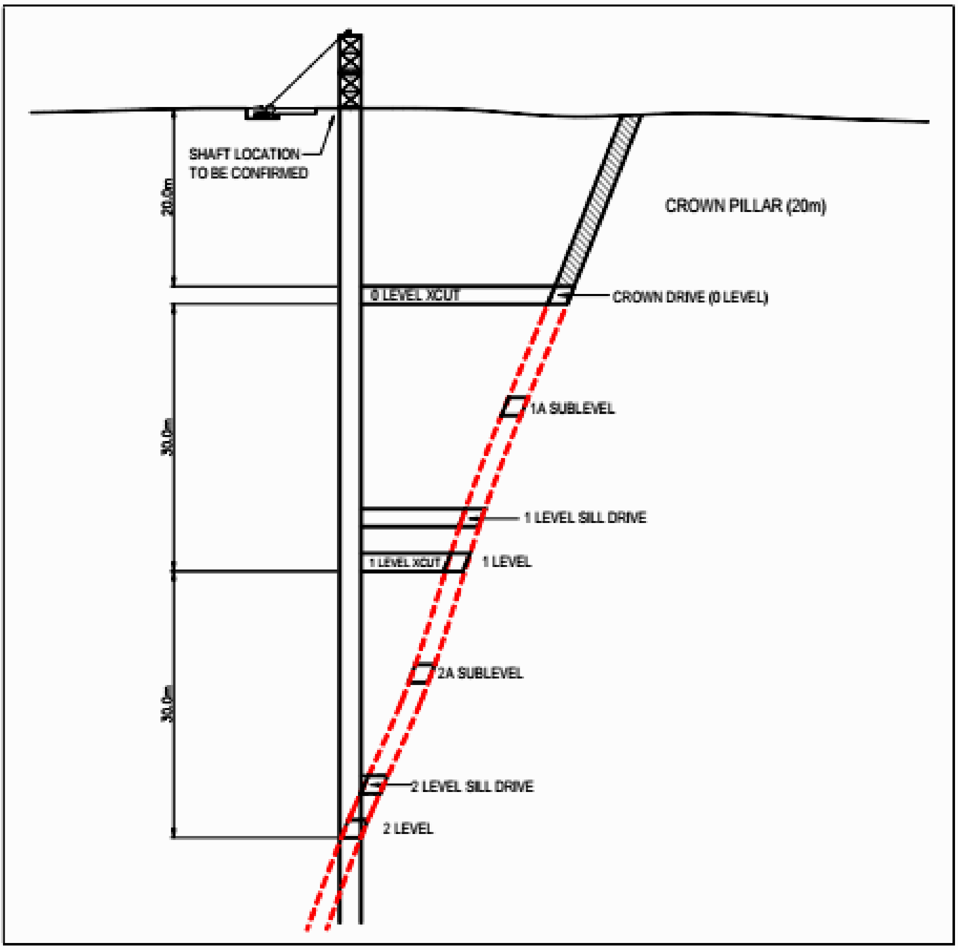

Figure 3.3 – Cross Section through Bibibi Mine

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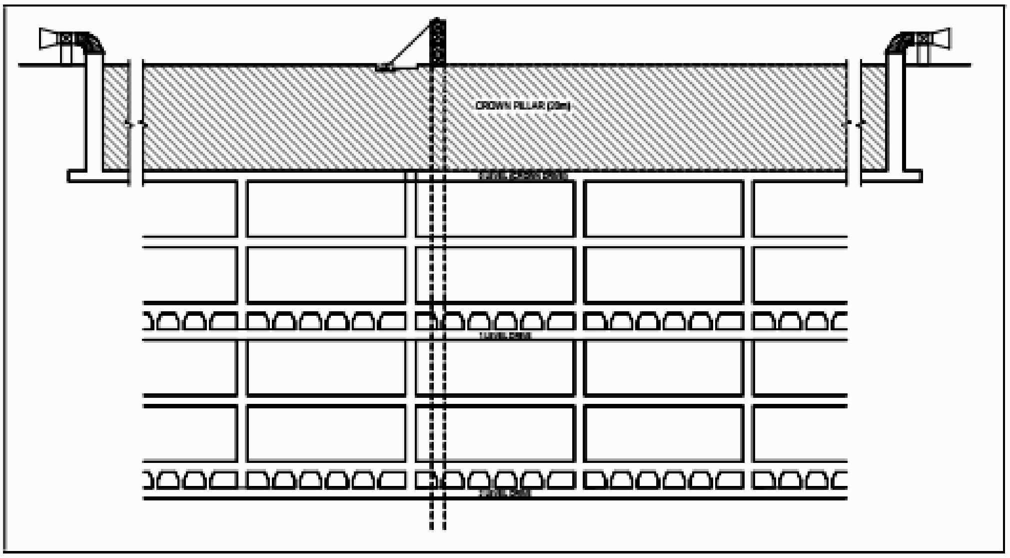

Figure 3.4 – Long Section through Bibibi Mine

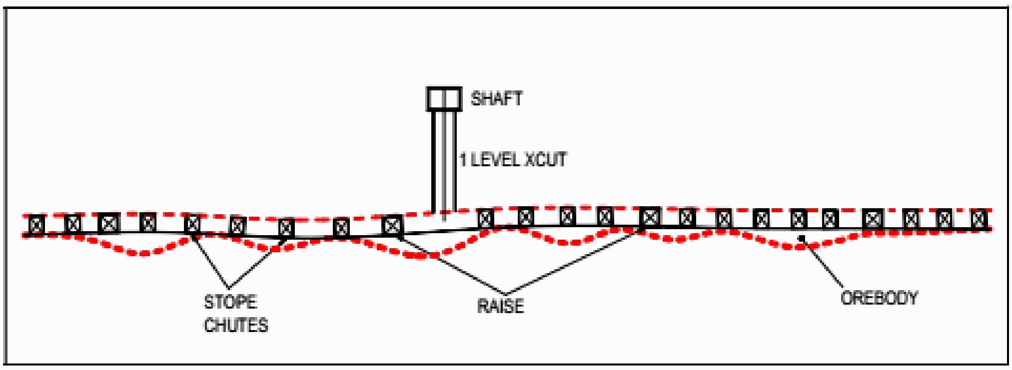

Figure 3.5 – Typical Level Plan

Figure 3.6 below shows the tramming arrangement on a level. A turntable will need to be installed at the intersection of the reef drive and the crosscut. Alternatively, a rail switch can be used but this involves additional development and is more costly. A turntable will suffice for the relatively low tonnages planned.

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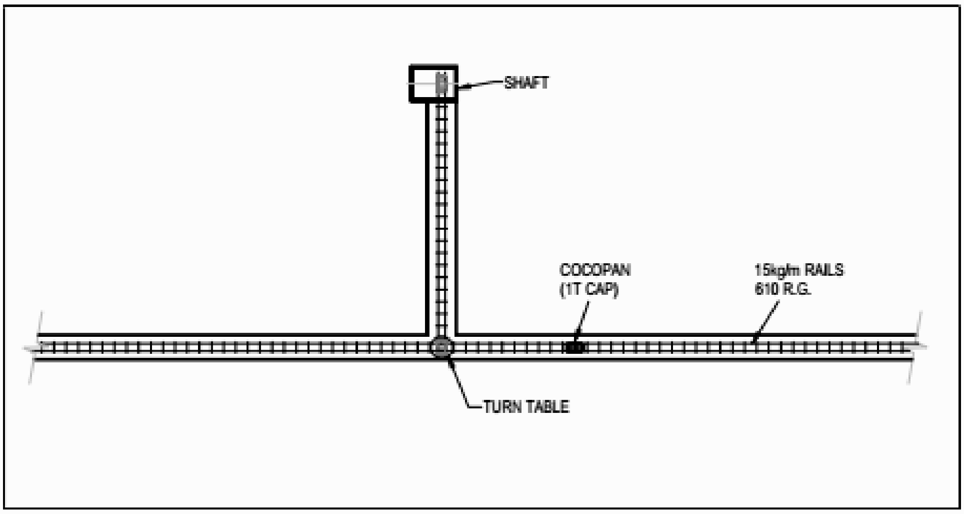

Figure 3.6 – Level Tramming Arrangement

3.3 Ventilation

Air requirements have been determined at a concept level. Fresh air will be downcast via the central access shaft and distributed into the two operating levels. Air will be exhausted through the open stopes and out to surface via an exhaust raise at either side of the access shaft. Figure 3.7 illustrates the steady state ventilation arrangements.

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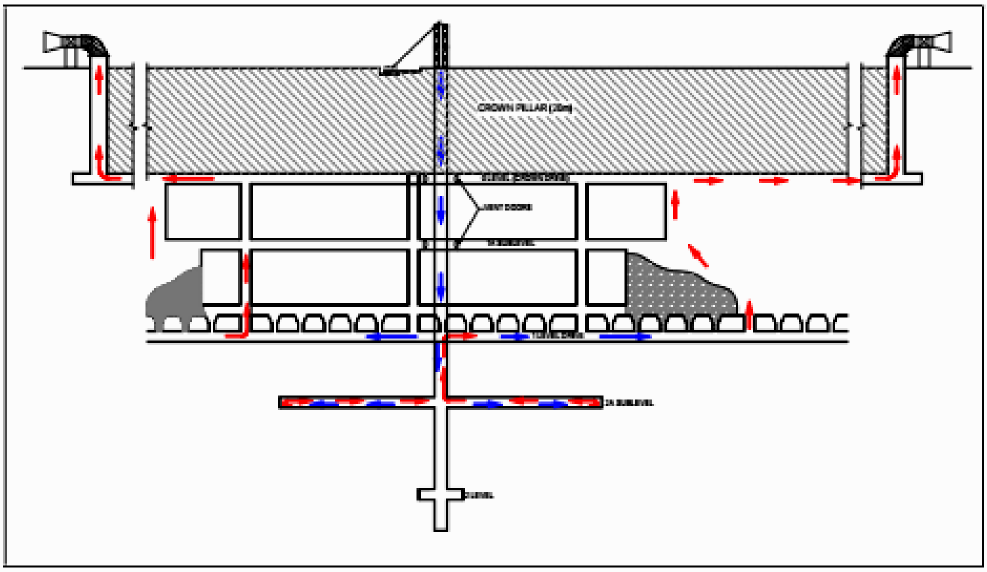

Figure 3.7 – Steady State Ventilation Plan

A total of 4 development ends will be worked simultaneously. Development will be force ventilated. There will be no diesel powered vehicles. The total air required at full production is summarised in Table 3.2 below, this volume of air will allow for a sufficiently robust ventilation system to provide satisfactory ventilation conditions.

Table 3-2 Total Air Requirement at Full Production			
Item	**Number**	**m³/s**	**Total m³/s**
Stopes	2	10	20
Development ends	4	3.5	14
Leakage allowance			6
TOTAL			**40**

The main fans will be situated at two fan stations at the top of the exhaust raises on surface. Each fan station will be equipped with a bifurcation with 2 x 45 kW 760mm diameter standard mine axial fans each equipped with adjustable blades and a self closing door. This will allow a build up of production, optimisation of electrical power and should one fan fail, production can still continue albeit at a reduced rate.

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Horizontal development will use 7.5 kW 570 mm diameter standard mine axial fans and raise development will use 4 kW 406 mm standard mine axial fans. Alternatively, raise development can use a compressed air venture. Fans should be equipped with silencers. Any pump station not in through ventilation should be ventilated with a 4 kW fan.

Fan cost allowance is shown below:

- 45 kW ZAR 40 000 ea. Silencer ZAR 7 500 ea.
- 7.5 kW ZAR 15 000 ea. Silencer ZAR 5 000 ea.
- 4.0 kW ZAR 12 000 ea. Silencer ZAR 3 500 ea.

A summary of fan requirements is shown in Table 3.3 below.

Table 3-3 Total Fan Requirements

Fans	Number	Number	m^3/s	Power
Main Fan Station	2 off	4 fans	10 m^3/s	45 kW
Development Fans		4 fans	3.5 m^3/s	7.5 kW
Raise development		2 fans	2 m^3/s	4.0 kW

Initial development of the mine will use a 570 mm duct equipped with a single 45 kW fan to force air into the workings and air will be exhausted up the access shaft until the exhaust raises are developed. This development should be a priority to establish a flow through of ventilation. Figure 3.8 illustrates the development arrangement during initial development.

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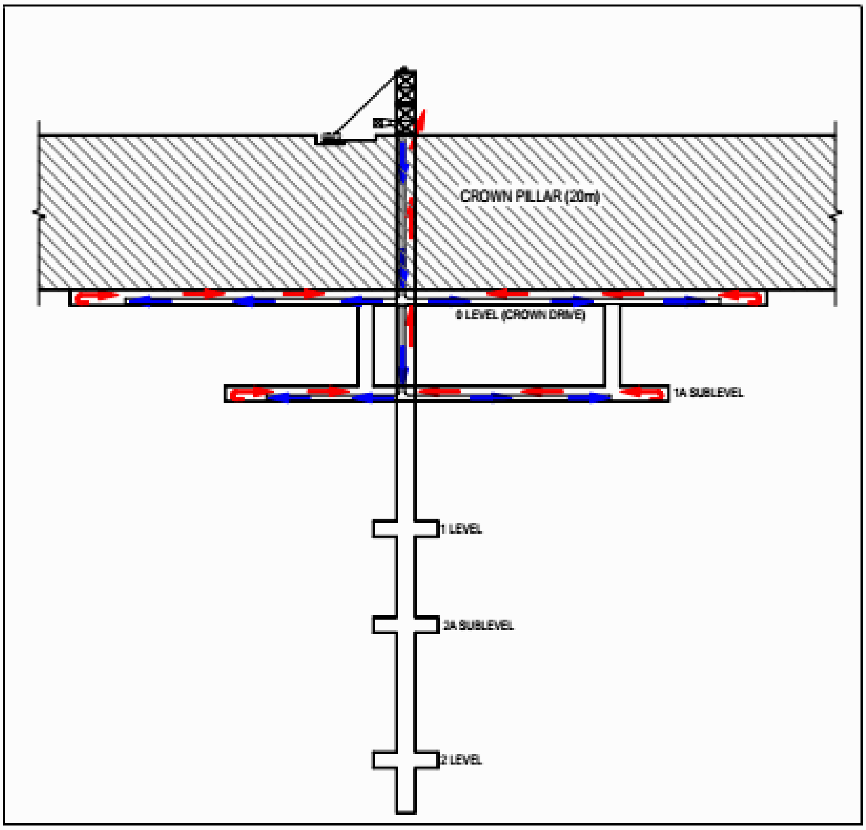

Figure 3.8 – Early Development Ventilation Plan

One of the exhaust raises should be equipped with a ladder as a means of exiting the mine in the event of a failure of the main access shaft.

It should be presumed that there is the possibility of flammable gas (methane) occurring in the mine and there should be in place a procedure to check for this with a methanometer.

3.4 Ground support

To date no geotechnical study has been conducted at Bibibi Mine and during the site visit it was observed that no ground support was being installed in the development ends. Timber lagging was used in the vertical shafts where required so the miners do have the required skills to install timber support. Bara recommend that systematic ground support is installed

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in the development ends at Bibibi Mine. This could take the form of rock bolt support, which could be split sets or end anchored rock studs, or timber support.

Figures 3.9 and 3.10 illustrate possible support installation patterns for rock bolt support or timber support. Wire mesh can be used in combination with either the rockbolts/splitsets or the timer support to provide areal cover where rock conditions are particularly poor.

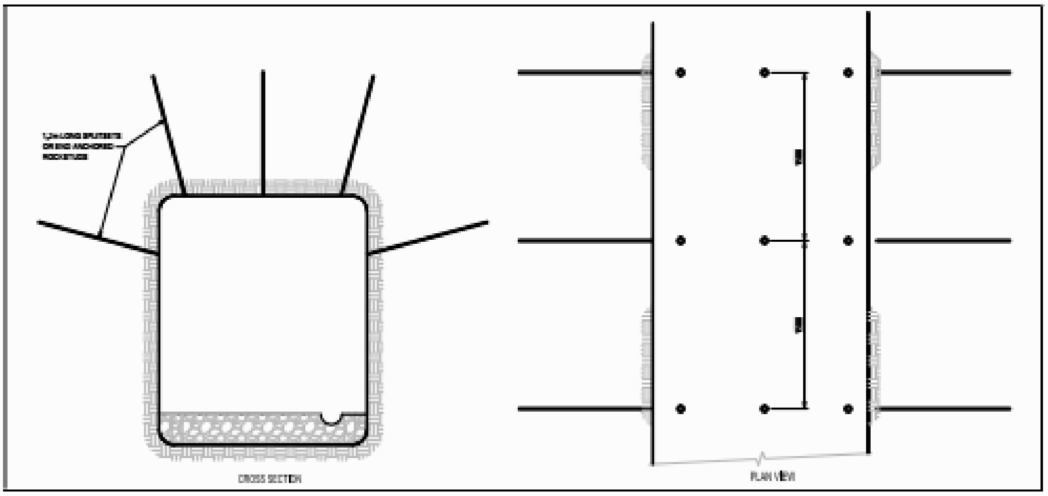

Figure 3.9 – Possible Rock Bolt or Split Set Support Pattern

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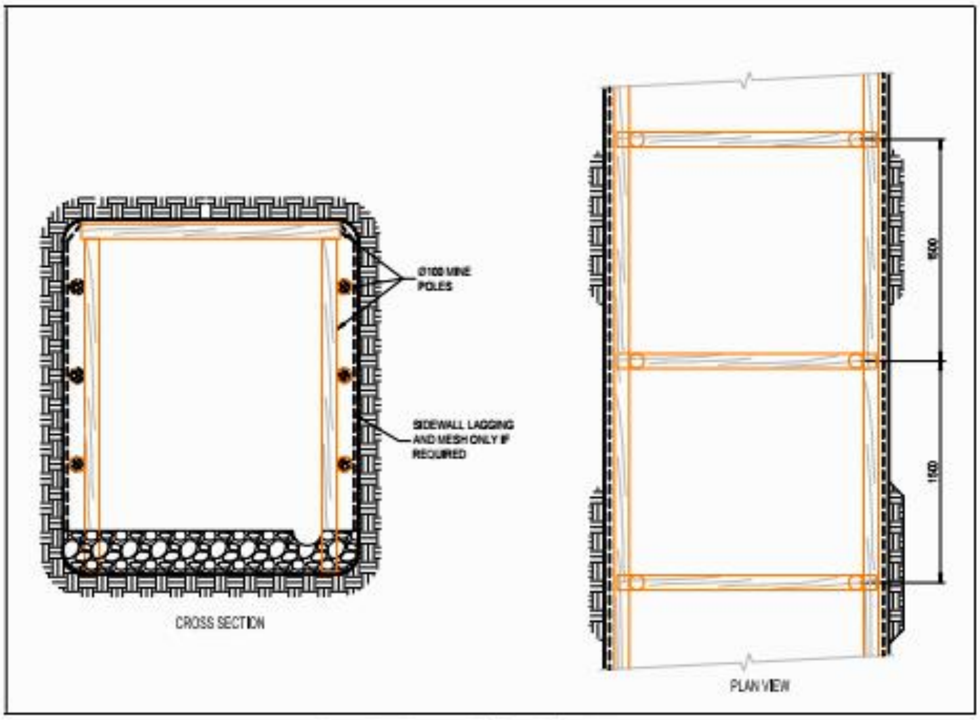

Figure 3.10 – Possible Timber Support

Bara recommend that once development commences a site visit is undertaken by a competent rock engineer who should then develop ground support standards for the Mine.

4 MINE ACCESS

4.1 Hoisting Method Selection

The key criteria considered for selecting the hoisting method were:

- Ability to support the production rate of 150 tpd from a depth of 110m below surface
- Low capital cost.
- Relatively simple with minimal technology.

The recommended option for rock hoisting is to hoist cocopans together with their chassis, inside a skeleton cage with guide ropes, in a rectangular cross section shaft, as shown in drg. No. JBM-M-002 and illustrated below in Figure 4.1.

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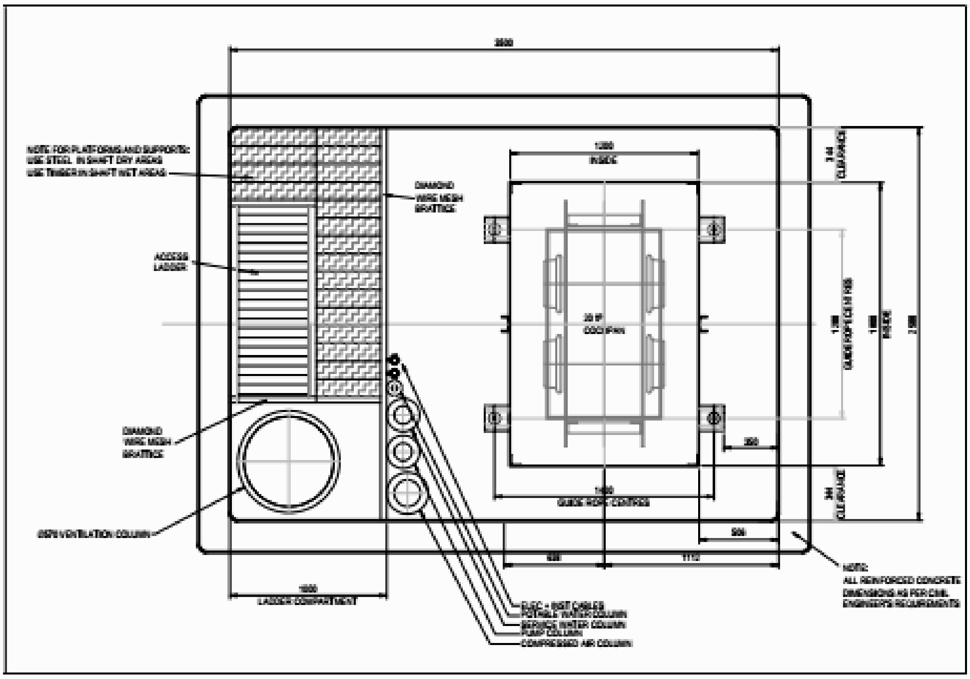

Figure 4.1 – Hoisting Arrangement for Cocopan Hoisting

The cocopans will be manually pushed in and out of the cage. The shaft layout allows sufficient clearance for swaying of the cage, as can be experienced when ropes are used as guides. A ventilation pipe, ladder way, pipe columns, electrical and instrument cables are also catered for. A brattice of diamond wire mesh, tied to vertical steel wire stringers, prevents the intrusion of humans into the hoisting compartment.

The platforms and supports are connected to palm bolts, which are grouted into the side walls. The construction should preferably be of steel in a dry shaft (to prevent fire), and of timber in a wet shaft (to prevent corrosion).

On the bank, the up- cast ventilation column should be orientated to exhaust in line with the prevailing wind.

People will access the underground via the ladders, down to the third level (± 80m). Below that, application can be made to the mining inspectorate to licence the winder for man

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hoisting, which should be approved, provided all the statutory safety features have been installed.

Drilling machines and rods, explosives, support and other materials can be conveyed underground in cocopans, explosive cars, or other dedicated containers, in the cage.

4.2 Hoisting capacity

The estimated handling times, cycle times and hoisting capacities from various depths with ¾ or 1 tonne cocopans are shown below in Tables 4.1 and 4.2

Table 4-1 Hoisting Cycle Time Calculation

Task	Seconds
Push empty cocopan in	4
Engage wheel chocks	3
Hook up safety chain	3
Ring away	3
Deck at bottom	3
Hook up cage	5
Ring down	4
Lower drop rails	3
Unhook safety chain	3
Lift wheel chocks	3
Push empty cocopan out	4
Push full cocopan in	6
Engage wheel chocks	3
Hook up safety chain	3
Raise drop rails	3
Ring cage away	3
Deck at bank	3
Unhook safety chain	3
Lift wheel chocks	3
Push full cocopan out	5
Total handling time	**70**

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Table 4-2 Hoisting Capacities for 55kW Dymot Single Drum Winch model 2467A						
Depth of wind	50	m	110	m	230	m
Hoisting speed	66	m/min	66	m/min	66	m/min
Travel time up	0.8	min	1.7	min	3.5	min
Travel time down	0.8	min	1.7	min	3.5	min
Handling time	1.2	min	1.2	min	1.2	min
Availability	80%		80%		80%	
Cycle time	3.4	min	5.6	min	10.2	min
Trips per hour	18		11		6	
Cocopan capacity ft^3	16	20	16	20	16	20
Cocopan capacity m^3	0.45	0.57	0.45	0.57	0.45	0.57
Ore bulk density	1.8	1.8	1.8	1.8	1.8	1.8
Payload tonnes	0.8	1.0	0.8	1.0	0.8	1.0
Hoist t/h	14.6	18.2	8.7	10.9	4.8	6.0
Tonnes / day required	**150**	**150**	**150**	**150**	**150**	**150**
Hours / day required	10	8	17	14	31	25
Hoisting h/d available	17	17	17	17	17	17
Max hoisting capacity	248	310	148	185	82	102

These calculations are based on using a Dymot 55kW single drum hoist as per their quotation Q10105 dated 22 February 2018. This quote also includes a headgear, the dimensions of which will have to be increased to fit the proposed shaft cross section.
As can be seen, this winder can hoist the required 150 tpd from 110 m depth. Although it is capable of hoisting from levels below this, the target tonnage will not be achieved, so alternative arrangements will have to be made later in the mine life. It would then be advisable to replace the rope guides with fixed guides and to change to double drum hoisting to increase the capacity at depth of greater than 110 m.

4.3 Shaft Hoisting Arrangement

Typical shaft and surface layout drawings are shown in drawings no.JBM-M 003, 004 and 005, illustrated below in Figure 4.2, 4.3 and 4.4.

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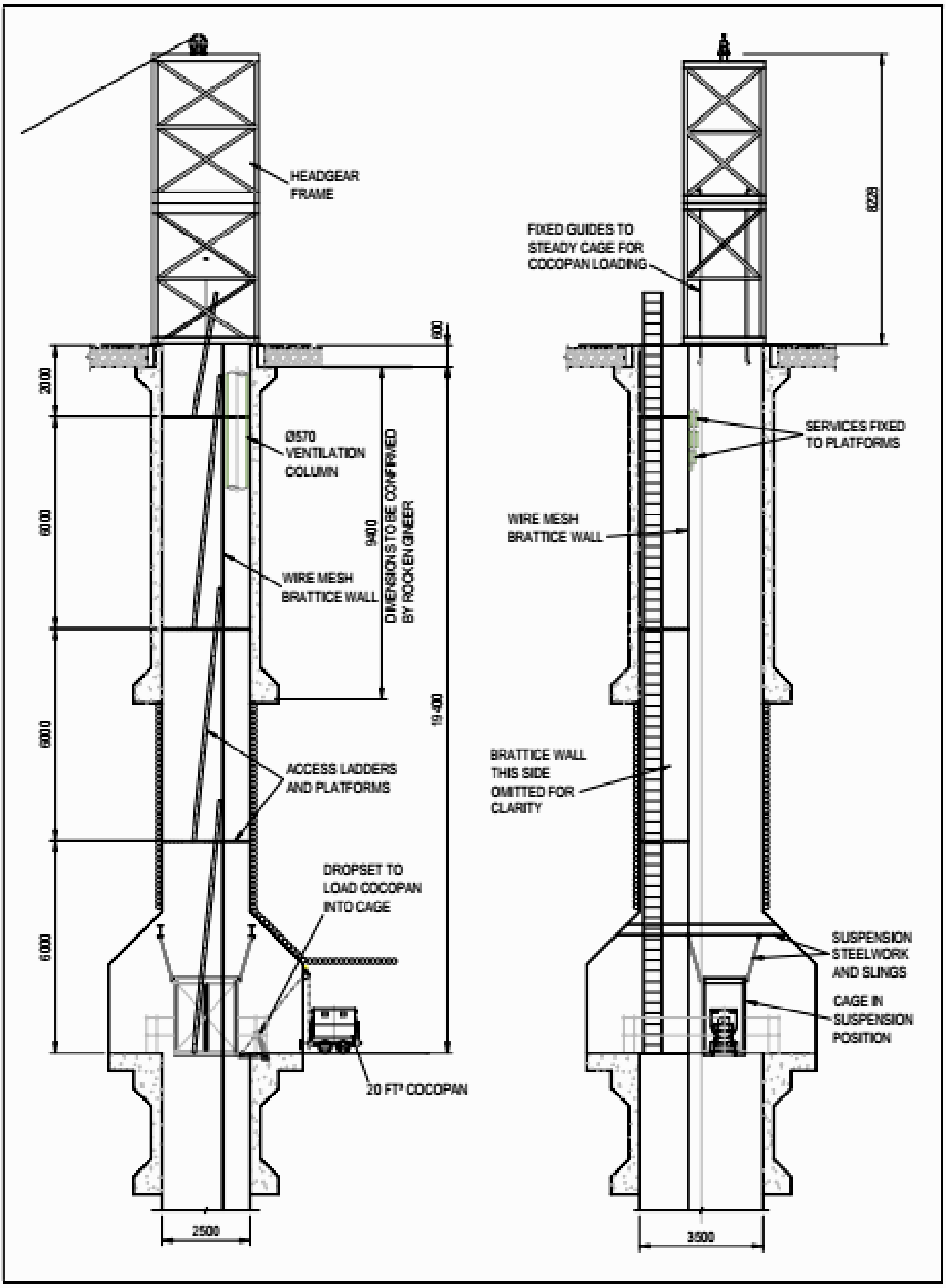

Figure 4.2 – Proposed Collar and Loading Arrangement

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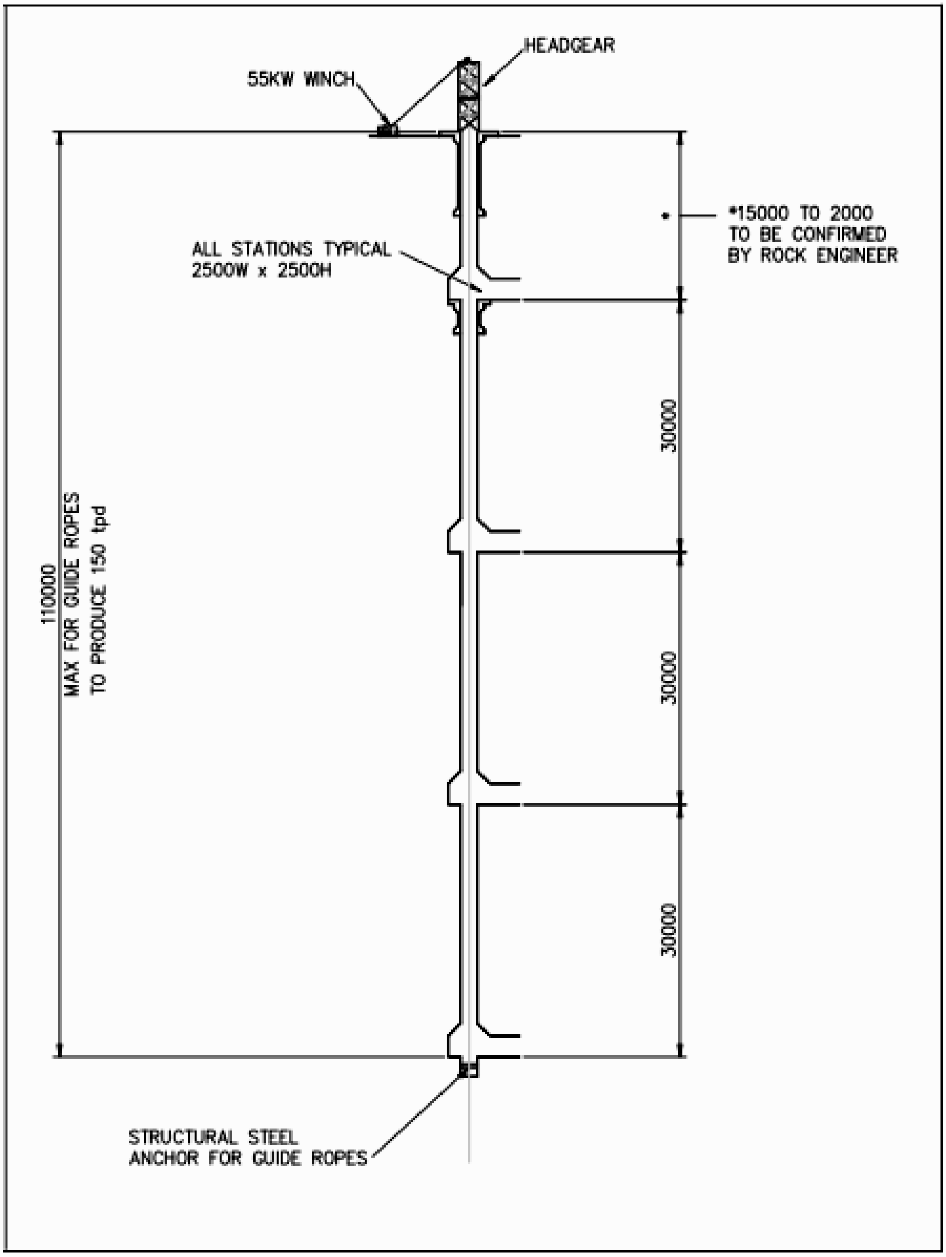

Figure 4.3 – Proposed Shaft Longitudinal Section

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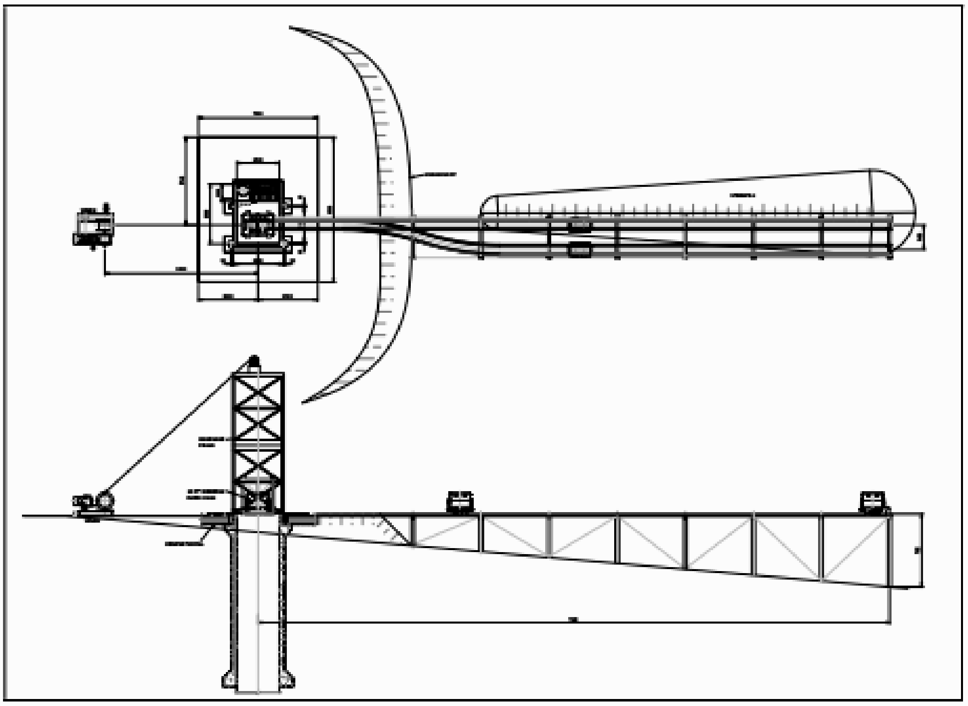

Figure 4.4 – Proposed Shaft Site Layout

The actual dimensions and specifications of support, excavations and reinforced concrete are to be determined by a Civil Engineer, based on the recommendations of a Rock Mechanic.

The shaft collar and bank should be raised at least 500 mm above the surrounding ground level, to prevent the ingress of rain water into the shaft during a storm. The design is based on the use of steel wire ropes (which could be second hand, in good condition) to guide the cage in the shaft. At the shaft bottom the guide ropes are attached to rigid steel beams which are securely connected to rock bolts in the sidewall. Above surface, the ropes are appended to the top of the headgear with adjustable tie bolts, to allow for tensioning of the ropes.

To hold the cage steady during the loading and unloading of the cocopans it will require:

- Fixed guides in the headgear from just below the bank, which the cage will slide into, for the loading and unloading of the cocopans. This should prevent sideways

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movement. With the cage on the bank, the suspended hoist rope length is short and rope stretch should not be a problem.

- Suspension chains and hooks, which are manually applied to hold the cage, when hoisting from deeper levels. These will compensate for swaying and rope stretch.
- A chair for the cage to rest on can be provided at the lowest level that hoisting takes place from. A length of fixed guide can also be installed here if required.
- Care must be taken to provide handles or levers to the equipment, to prevent fingers, hands or feet from getting injured.
- Chocks or sprags must be installed to lock cocopan wheels to the rails inside the cage. And safety gates or chains must prevent the tub or chassis from protruding outside the cage.

On surface the cocopans are pushed out onto an elevated ramp and the rock is then tipped on a stockpile, which can be divided between ore and waste.

4.4 Shaft sinking

It is assumed that the initial sinking of the shaft will be done with a hand windlass, as is the current practice at Bibibi. Once competent rock is reached, a geotechnical and civil engineer should be engaged for the design of the shaft barrel foundation, collar, bank and headgear footings. After this construction is completed, and the headgear and hoist are installed, the hoist can also be used for shaft sinking.

One option is to use a kibble for hoisting of the blasted rock up to surface, where it would then be tipped with the use of a lazy chain, into a chute in the headgear, which is swivelled into the hoisting compartment and delivers the rock onto an adjacent stockpile. This operation requires hinged cover doors on the shaft collar, which must be closed before the kibble is tipped, to protect the workers in the shaft bottom from falling spillage.

A sinking stage platform, which is suspended from hand winches on the collar, would support the miners with their shaft sinking operations, and the appended ropes can also serve as guide ropes for the kibble cross-head.

It must be noted that it would be difficult to try and deepen the shaft and maintain production of ore at the same time. It must be planned for in different campaigns. More options and drawings will be provided in the next phase of this project.

ABBREVIATIONS

Au	Gold
As	Arsenic
IP	Induced Polarisation
RSIP	Real Section Induced Polarisation

GLOSSARY

Greenstone belts	Are zones of variably metamorphosed mafic to ultramafic volcanic sequences with associated sedimentary rocks that occur within Archaean and Proterozoic cratons between granite and gneiss bodies. The name comes from the general green colour imparted by the metamorphic minerals chlorite, actinolite and other green amphiboles within the mafic rocks.
Metabasalt	A low-grade, mafic metavolcanic rock with preserved evidence of its original basaltic character.
Pillow structures	Are relics of pillow lavas that were formed during the extrusion of lava under water. Pillow lavas in volcanic rocks are characterized by thick sequences of discontinuous pillow-shaped masses, commonly up to one metre in diameter.

UNITS

cm	a centimetre
^{0}	degree
g/t	grams per tonne
ha	a hectare
kg	kilogram
km	a kilometre
m	a metre
%	percent
t	metric tonne