

# **NI 43-101 TECHNICAL REPORT FOR HAPPY VALLEY MINE**

**Bulawayo, ZIMBABWE**

**UPDATED WITH PHASE 1 DRILLING  
REPORT**

Prepared for

## **PAMBILI NATURAL RESOURCES CORPORATION**

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**10 MARCH 2023**

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## **CERTIFICATE**

I, **MARY GAYLE HANSEN** do hereby certify that:

1. I am the Principal Consulting Geologist of Digital Mining Services, located at 3 Coleshill Close, Greendale, Harare, Zimbabwe.
2. This certificate applies to the report entitled “NI 43-101 Technical Report for Happy Valley Mine, Bulawayo, Zimbabwe (the “Technical Report”) with an effective date of 10th March 2023 and a signature date of 10th March 2023. The Technical Report was prepared for Pambili Natural Resources Corporation (the “Issuer”).
3. I am a member in good standing of the South African Council for Natural Scientific Professions (SACNSP), Registration Number 400069/03. I obtained a Bachelor of Science (Geology) degree and an Honours degree from the University of Natal, Pietermaritzburg, South Africa in 1984 and 1985 respectively.
4. I have practiced my profession continuously as a geologist for a total of thirty-five (35) years since 1986. I acquired my expertise in mineral exploration starting with Anglo American Corporation in the 1980s, with exploration experience and an Archaean gold discovery in the 1990s with Reunion Mining plc. Since 1998, I have been consulting for numerous clients in the Central and Southern African region, including 10 years as First Quantum Minerals Resource consultant from 2003 to 2011.
5. I have read the definition of a qualified person (“QP”) set out in Regulation 43-101/ National Instrument 43-101 (“NI 43-101”) and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a QP for the purposes of this NI 43-101 report.
6. I visited the property on 7<sup>th</sup> March 2022 and also have been involved in neighbouring projects in the past.
7. I am the author of this Technical Report and responsible for items held within.
8. I am independent of the Issuer applying all of the tests in section 1.5 of NI 43-101.
9. I have not had prior involvement with the Project that is the subject of the Technical Report.
10. I have read NI 43-101, and the items of the Technical Report have been prepared in compliance with that instrument.
11. As of the effective date of the Technical Report, to the best of my knowledge, information, and belief, the Technical Report contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Signed this 10th day of March 2023 in Harare, Zimbabwe.

A handwritten signature in black ink, appearing to read 'M. M. M.', is written over a light blue rectangular background.

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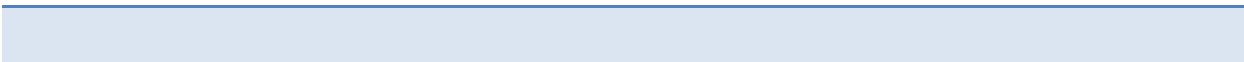
Signature of Qualified Person

SACNASP  
Professional Membership

10th March 2023

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# 1 SUMMARY

Happy Valley Mine is an operating gold mine some 15 kilometres from Bulawayo city centre. The location has the potential to be an excellent mining project in the Hope Fountain structural domain.

The Happy Valley mining claim covers a series of East-West striking shear zones containing known gold mineralisation. This is an Archaean gold mining camp, with the largest deposit in the vicinity being How Mine, with a recorded production since discovery of 1.1million ounces, with a further 1 million ounces reported in their resource.

The historically mined gold reef is known as the Main zone and has two historical and currently accessible shafts located on it and is trenched and worked the strike length of the claim (500m). Recent work in 2022 includes the sinking of a new shaft on this zone to a depth of 15m. The Main zone is Banded Iron Stone (BIF) hosted mineralisation, and stockpiles of coarse sulphide mineralisation are evident on surface. A reverse circulation drilling (RC) programme of 8 holes totalling 1,180m was begun on the 2<sup>nd</sup> of August 2022 and completed on 22<sup>nd</sup> of August 2022. All holes were assayed by Fire Assays and completed at an accredited laboratory in Zimbabwe. This programme delineated two parallel gold reefs and gave an inferred resource of 20,000 ounces.

Significant intercepts are listed below:

- HPRC-001: 1m @ 1.42 g/t Au; 7.4m @ 0.50 g/t Au including 2m @ 1.14 g/t Au; **5.04 m @ 1.89 g/t Au including 3m @ 2.98 g/t Au**
- HPRC-002: 3m @ 0.62 g/t Au; 1m @ 2.28 g/t Au; 12.81m @0.48g/t Au including 2m @ 1.11g/t Au and 4m @ 0.70 g/t Au; **9.7m @ 2.9 g/t Au including 3m @ 5.89 g/t Au and 4m @ 2.54 g/t Au**
- HPRC-003: 1m @ 1.46 g/t Au; 1.7m @ 0.80 g/t Au including 1m @ 1.03 g/t Au.
- HPRC-004: 1m @ 1.20 g/t Au.
- HPRC-005: 3.01m @0.64g/t including 1m @ 1.5 g/t Au; 1m @ 1.45 g/t Au.
- HPRC-006: 1m @ 1.95 g/t Au.
- HPRC-009: **1m @ 6.04 g/t Au; 1m @ 4.66 g/t Au.**
- HPRC-010: 1m @ 1.14 g/t Au; 5m @ 1.18 g/t Au including **1m @ 5.23 g/t Au**; 1m @ 1.10 g/t Au.

	VOL	TONNES	AV GRADE	AV WIDTH	OUNCES
<b>MAIN</b>	62,224	168,005	2.77	2.43	14,962
<b>ZULU</b>	27,478	74,191	1.57	1.6	3,745
<b>SOUTH</b>	21,707	58,609	0.69	1.43	1,300
<b>TOTAL</b>	111,409	300,804	2.07	2.03	20,007

Table 1 : Inferred Resource defined by 2022 RC Drilling

The objective of the Phase 1 RC drilling programme was to define a 200m strike and 150m down dip resource on a drill grid of 40 x 40m, with one gap of 80m. This objective was met, and the project now requires the entire strike length of the Main Reef to be drilled at 40 x 40m, with the three proposed deep diamond drill (DD) holes drilling to a 300m depth under the more encouraging intercepts to prove depth extension. Three holes are proposed to drill northern parallels defined by the early geophysics programme. This programme is envisaged to be 2,700m of RC drilling and 1,300m of DD drilling. This programme will be reviewed as the drilling progresses to get the optimum gold intercepts with the planned holes.

The opinion of the author is that this project is certainly ready for a resource definition and there is a good opportunity for a small-scale mining operation to start to finance a regional gold play. The area has several active gold operations within 500m of the Happy Valley mine, with much bigger historical deposits on the same greenstone belt.

Ground geophysics, both magnetic and induced polarisation surveys were undertaken on the property 4 years ago, and they defined drill targets. These targets were trenched, and surface geological mapping correlated the zones with the old underground mining operations.

There is also a tailings dump from a historical mining operation with grab assays of 0.6 g/t, plus a small rock dump of sulphide samples, that are believed to not have been of interest to the small scale workers which are generally only intersected in oxide hosted gold. No sampling of these dumps has been undertaken to date but could quite readily be surveyed and quantified with grab and auger sampling.

An Environmental Assessment of the property is currently in progress and after the resolution of the relocation of homesteads within the mining areas, this will be completed and allow the commencement of mining operations.

This technical report complies with National Instrument 43-101 (“NI 43-101”) and was prepared by MARY GAYLE HANSEN (SACNSP No 400069/03) for Pambili Natural Resources Corporation (“Pambili”) (TSX-V: PNN) following the signature of an Earn-in Agreement between Pambili and Techshed, the owner and operator of the Happy Valley Mine.

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## 2 INTRODUCTION

This technical report complies with National Instrument 43-101 (“NI 43-101”) and was prepared by MARY GAYLE HANSSSEN, South African Council for Natural Scientific Professions (SACNSP), Membership Number 400069/03 for Pambili Natural Resources Corporation (“Pambili”) (TSX-V: PNN) following the signature of an Earn-in Agreement between Pambili and Techshed Investments (Private) Limited (Techshed), the owner and operator of the Happy Valley Mine.

This report includes all information from the July 2022 43-101 Technical Report on the Happy Valley Mine and includes the section on drilling and the relevant results from this programme.

The author has visited the site on the 7<sup>th</sup> March 2022, and has worked alongside Moses Banda, BSc., a consulting geologist, the author of two exploration reports prepared for Techshed in July 2020 (the “2020 Report”) and January 2023 (the “2023 drilling report”). Mr Banda’s resume is appended to this report (APPENDIX A). The author has known Mr Banda professionally for a period of more than 10 years, and he is currently a member of the Geological Society of Zimbabwe. The 2020 report places Hope Fountain within a structural domain so as to understand the controls of gold mineralization and therefore aid in the exploitation of Hope Fountain ores in general and Happy Valley Mine specifically.

It summarizes mining history from early days of mining in the camp to the present noting that, in particular for Happy Valley Mine, any data available on mining methods, production and possible errors that might have happened and especially in the absence of geological information and advice. The study summarises the exploration work done during the period (2010 to 2020) to shed light on geological knowledge of the gold deposits at Happy Valley Mine.

The 2023 report summaries the Phase I drilling programme, with Moses Banda being the geologist on site during the drilling, and portions of this report are included in Section 11 on the drilling.

There is no compliant historical resource at Happy Valley. The recent drilling programme confirmed that there was ore grade mineralisation at depth and a first pass inferred resource of 20,000 ounces is reported. Therefore, recommendations for a second phase of RC and third phase diamond drilling are included in this report.

## **2.1 PREVIOUS REPORTS ON HAPPY VALLEY MINE**

Besides the Geological bulletins that have focused on the Zimbabwe and Bulawayo greenstone belts, reports on previous work are extensively used and quoted in the 2020 Report. These reports, as well as internal reports generated during the mining exploration work currently underway are referenced at the end of the report and include:

- A 2010 report by P. Hastings BSc. following his visit to the mine;
- A magnetic survey by Pexmin over the claim (report);
- An RSIP survey on two lines 150 metres apart (report);
- Follow-up trenching and sampling by M Banda BSc. (report); and
- An infill RSIP survey by Pexmin reducing the spacing to 75 metres across the length of the claim (report).
- 2020 Report by Moses Banda that summarises all previous exploration and assists in the interpretation of the geophysics that allows for the creation of a drill programme.
- 2022 NI 43-101 report submitted to the Toronto Exchange in July 2022.
- 2023 Report by Moses Banda that summarises the 2022 Phase 1 drilling programme.

## **3 RELIANCE ON OTHER EXPERTS**

The author has reviewed the claims certificates and siting of works plans filed with the Ministry of Mines and believes them to be correct. However, the author has relied on the title information as provided by Techshed and provides no legal opinion thereon.

## **4 PROPERTY DESCRIPTION AND LOCATION**

### **4.1 AREA OF CLAIM**

The Happy Valley A Mining Claim, registration number 37375, is a parallelogram measuring 500 metres by 200 metres with its long length striking east west. It has a perimeter of 1.41km and an area of 9.90 hectares.

### **4.2 LOCATION OF THE PROJECT**

The map below shows the location of Happy Valley Mine, within the Bulawayo Greenstone Belt in Zimbabwe.

The project is located on a single Claim, numbered 37375 south of the city of Bulawayo, the second biggest urban centre in Zimbabwe. This is illustrated on a Google earth image in Figure 2 below.

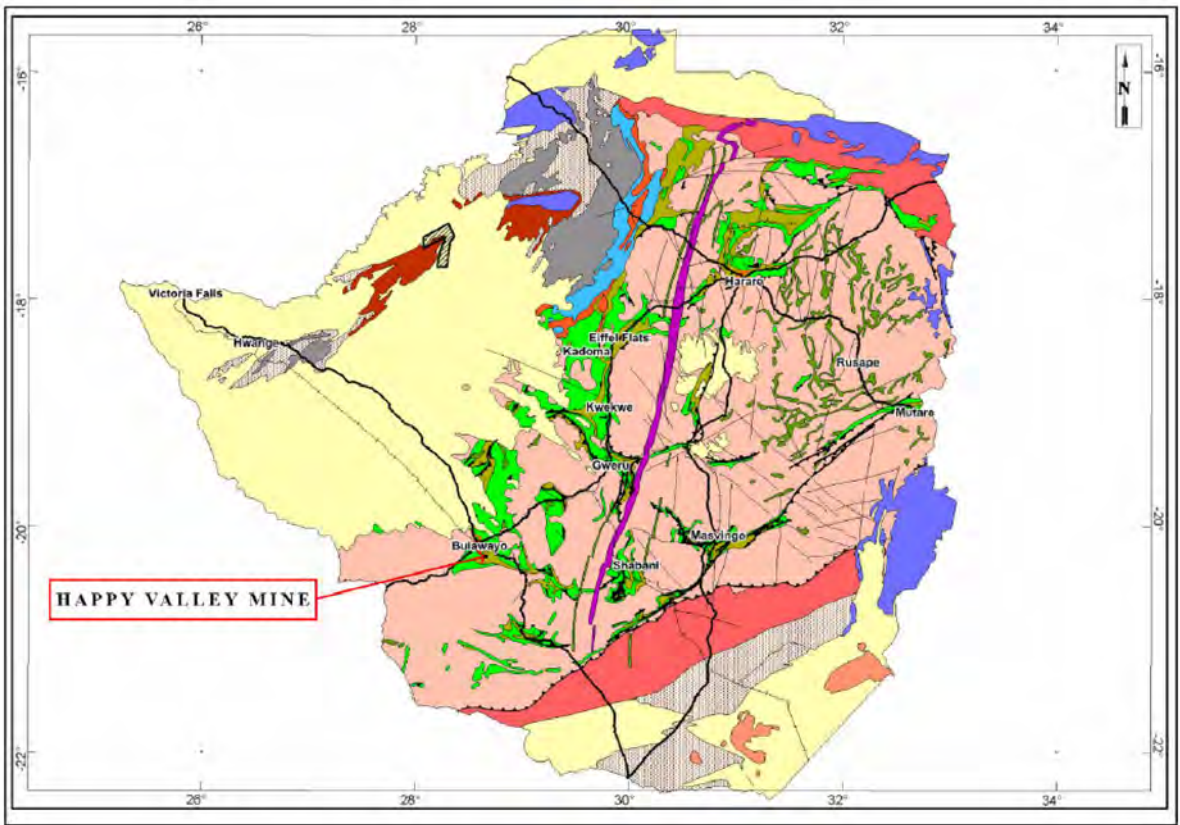


Figure 1: A map of the location of Happy Valley Mine on the Geological Map of Zimbabwe

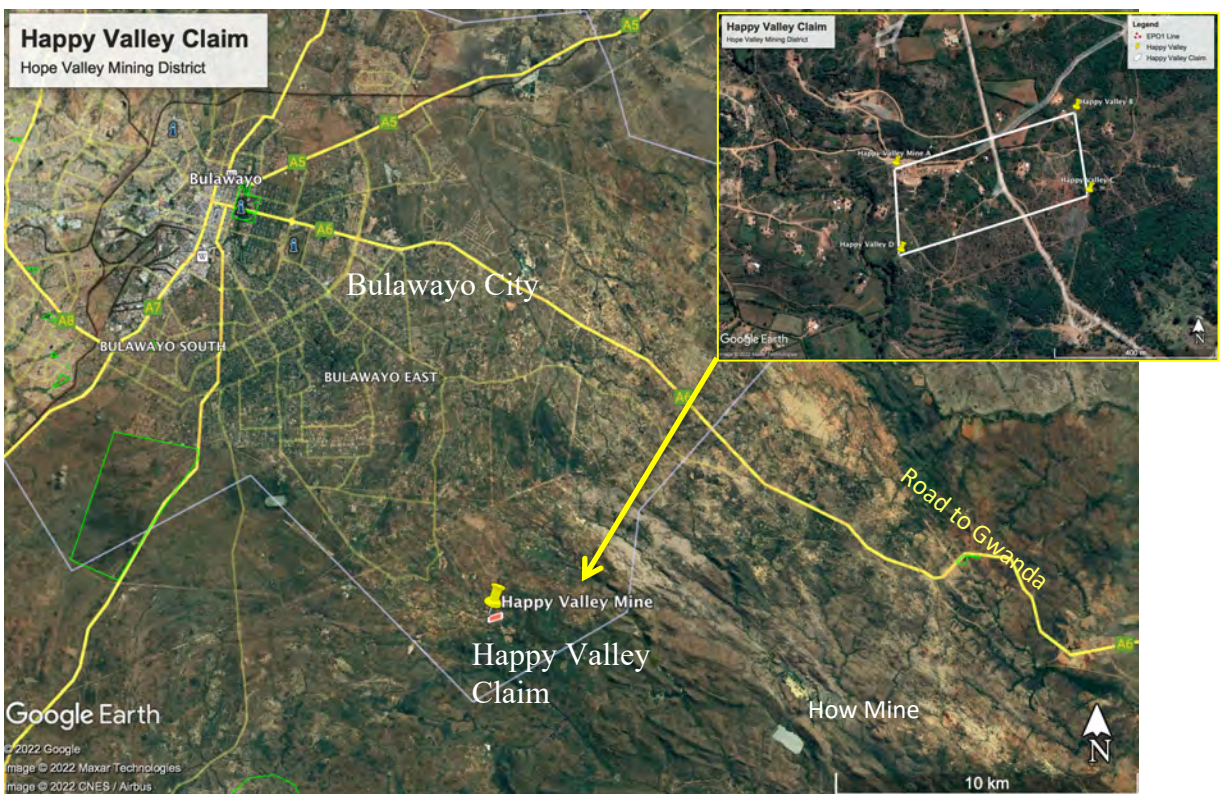


Figure 2 : Claim map of Happy Valley in relation to Bulawayo city

Using Google Earth, the following points define the location of the Happy Valley Claim (in WGS84 UTM Grid). However, it should be noted that all claims in Zimbabwe are defined in ARC1950 UTM Grid and are reported as such. For use in WGS84, 300m should be subtracted from the Northing to define the Coordinates in ARC1950 UTM Grid.

<b>BEACON</b>	<b>COORDINATES (UTM WGS 84)</b>
A	35 K 674470 7756910
B	35 K 675110 7757040
C	35 K 675140 7756840
D	35 K 674680 7756700

**Table 2 : UTM WGS 84 Coordinates of rationalised Happy Valley claim 37375**

### **4.3 MINERAL TENURE OF THE CLAIM**

The Happy Valley A Mining Claim, registration number 37375, is registered for gold. Inspections are statutory and require certification of works completed and gold production. The claim was verified in December 2021 by a letter from the Ministry of Mines, Zimbabwe. This letter is included as Appendix B. The claim is current and the latest inspection certificate was issued for a year, expiring on 9<sup>th</sup> February 2024. This certificate is included in Appendix A.

### **4.4 ISSUER’S TITLE TO THE CLAIM**

Pambili Natural Resources Corporation signed an Earn-In Investment agreement with Techshed on the 28<sup>th</sup> November 2021. The agreement allows for a 51% interest in gold production from HVM on expenditure of US\$1,000,000 over two years, increasing to a maximum interest of 75% on expenditure of US\$7,500,000 over five years.

### **4.5 ROYALTIES**

There is a 5% royalty payment to the Government of Zimbabwe, payable to the sale of gold to Fidelity. This is the same for all gold operations in Zimbabwe. There are no other known royalty agreements or back-in rights.

### **4.6 ENVIRONMENT LIABILITIES**

By law, all mining operations in Zimbabwe are subject to an Environmental Impact Assessment (EIA) study prior to mining. This study encompasses the process and mining operations on the environment as well as the impact on the local communities’ way of life. TechShed have signed a contract with Ecoview Environmental, a government accredited EIA company in mid 2021. Although the consultations are ongoing, the District council is currently processing relocation of homesteads in the mining areas and the report will be finalised when this process is completed. The EIA study includes the approved Siting of Works plan for mining and this is illustrated below.

## 4.7 OTHER PERMITS

An Exclusive Prospecting Licence (EPO) was issued in 2021 to Duration Gold (Duration). These exploration licences cover a large area of ground for exploration purposes. The EPO is initially granted for a period of three years and is renewable twice. (Maximum period of issue is nine years). During this time, there is a freeze on the pegging of claims, without the permission of the EPO holder. However, individual title of previously pegged claims can still be bought and sold.

The author is in communication with Duration, and initially there will be no further pegging of claims, but further into the EPO, when broad scale regional work has been done and follow up targets are identified, there may be some leeway to approach Duration to allow the pegging of additional areas contiguous to the Claim.

## 5 ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE and PHYSIOGRAPHY

### 5.1 ACCESS

The Project Area is accessed from Bulawayo using the How Mine Road. From town along 12<sup>th</sup> Avenue, at the old Rio Hotel you turn right and drive for 5km on a tarred road to a rural shop on the left-hand side of the road. From here you take a left turn on to a gravel road and drive straight to the mining claim, 3.7km away.

The map below shows the access route to the mine from Bulawayo's central business district.

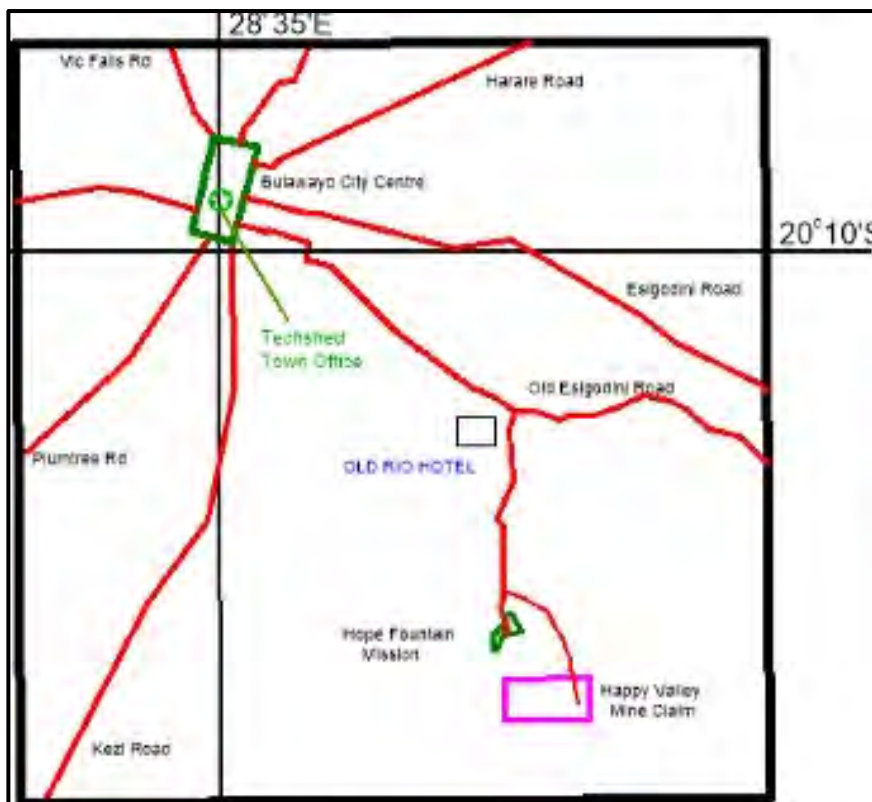


Figure 3 : A sketch map of an access route to Happy Valley Mine from Bulawayo CBD.

## 5.2 CLIMATE

The area of Hope Fountain forms part of the highveld of Zimbabwe and has a mild to chilly winter from May to August, and a warm to hot summer, with a rainfall generally lower than most of the northern part of Zimbabwe, but slightly higher than the average of Matabeleland.

Months	Maximum Temperature	Minimum Temperature
June-July	21°C	7°C
October	29°C	15°C

Table 3 : Average temperatures of Bulawayo.

The rainy season is from mid-November to mid-March with some showers and misty periods in June and July. The rain varies from an exceptional season at 1,260mm to poor seasons as low as 280mm.

## 5.3 LOCAL RESOURCES AND INFRASTRUCTURE

The city of Bulawayo is the second largest city in Zimbabwe and the country's main industrial centre. As the headquarters of Zimbabwe railways, Bulawayo is the country's main transshipment point for goods to and from South Africa.

Bulawayo has the highest Human Development Index in the country and Bulawayo is home to over a dozen colleges and universities, most notably the National University of Science and Technology, Bulawayo Polytechnic College and the Zimbabwe School of Mines.

With mining being a major part of Zimbabwe's economy, a local work force with the requisite mining industry skills is readily available. Housing is readily available both in Bulawayo and closer to the mine. There is a good all-weather road network providing access to the project using local bus services.

## 5.4 PHYSIOGRAPHY

The relief within the Hope Fountain structural domain ranges from as high 1,484m above sea level to as low as 1,360m above sea level. The terrain is rugged with resistant banded ironstones forming ridges incised by south and east flowing streams which eventually drain to the Mzingwane River. (Garson, 1995)

The vegetation type is closely related to the underlying rock-types. The mafic and calc-alkaline greenstones support a heavy growth of varieties of *brachystegia* bush (known locally as *igonde* and *itshabela*), while the more felsic greenstones carry more open acacia and mopane scrub.



## 5.5 ON SITE INFRASTRUCTURE

There is National Power (ZESA) on site, with its own transformer. The site has a borehole water supply that is pumped into tanks illustrated on the figure below, which allow gravity feed. The underground workings are also flooded on the lower levels and will be a supply of water for the plant prior to the dewatering.



**Photo 1: Water storage tanks and power supply on Happy Valley Claim**

## 5.6 SITING OF WORKS – ON SITE PLANNING

The siting of works plan is a Zimbabwe requirement for all mining operations, and the current plan was submitted and approved by the Ministry of Mines in late 2018. On the left of the plan is the site of the claim on the Government 1:50,000 topography maps, with a more detailed siting of works plan on the right. All is referenced on a UTM grid, and the claims boundary is shown.

The plan illustrates the power line and the water tanks in the north on the ridge. The plant location is illustrated, along with the tailing dump. The dotted blue line running north south through the centre of the claim is the road access.

The position of the tailings is demarcated, and it is envisaged that this position will continue to be used. However, rock waste dumps are not on the siting of works, and after a drilling programme, which would include a sterilisation programme, it is envisaged that waste dumps will probably be located on the northern section of the claim. The Siting of Works plan would then be amended accordingly with the Ministry of Mines.

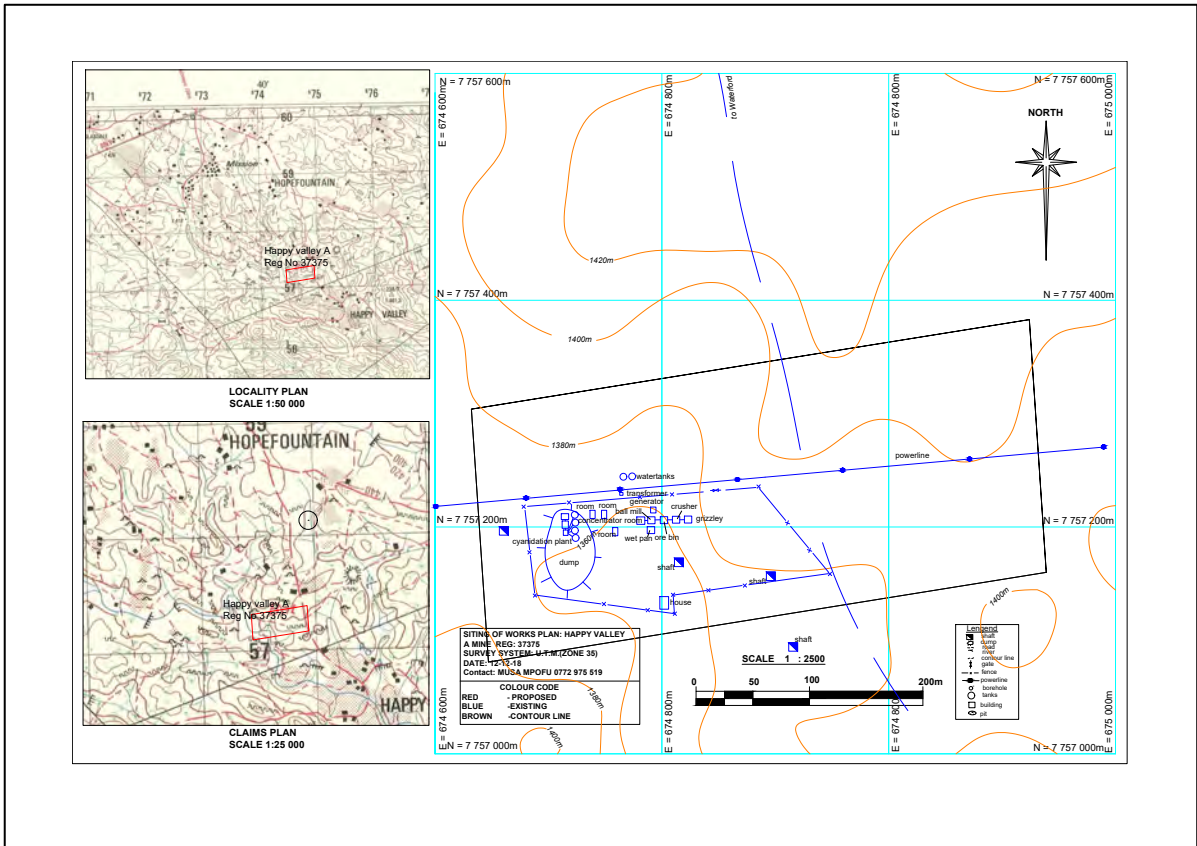


Figure 4 : Siting of Works Plan approved by the Ministry of Mines.

## 6 HISTORY

### 6.1 HISTORICAL OWNERSHIP AND PRODUCTION 1956 - 1985

Records at the Ministry of Mines show that the area was first pegged as the Noddy Mine in 1956 by Scenery Syndicate, which was later sold to W. G. Birkin, who took in I. A. Behr as a partner. In 1957 a small amount work was carried out, and in the following year was sold to Mr G.D. Lamont, who continued the work of the previous owners. Mr Lamont fell ill and died in 1959. However, production records state that from 1956 to 1959 620 tons of ore was milled for 110 ounces, at a grade of 5.35g/t Au.

In March 1963, Mr N. Young re-pegged the ground, cleaned out the three shafts and installed stamp mill, portable compressor and headgear using a generator to run the winch. From the first shaft 30 tons was produced grading at 11.16 g/t before flooding caused the abandonment of operations at a depth of 28m. The second shaft gave 19 tons at a grade of 35.8g/t again stopping due to flooding at 30m. The third shaft gave 20 tons at 4.4g/t Au to a depth of 26m. He managed to mine a further 800 tons by stoping above the water table, with an average grade of 10.1g/t before letting the claims go to forfeiture in 1966.

There was minor operation in 1974-9 but limited production. The claim was then re-pegged by Tawuya Syndicate from 1984-5 again with paltry production.

Period From	Period to	Owner	Tonnes Milled	Gold Produced (kg)	Recovery Grade (g/t)
1956 - 9	1958	Messrs Behr & Berkin/ Lamont	620	3.42	5.35
1962	1963	W Young	240	7.02	29.25
1964	1966	Mrs M.M. Quinn-Farwell	138	1.46	10.57
1974	1979	Hope Fountain Ore Chemical Company (Pvt) Ltd	482	0.36	0.74
1984	1985	Tawuya Syndicate	35	0.01	0.15
TOTAL			1,515	12.26	8.02

Table 4 : Summary of production figures for Noddy Mine.

In 1988, it is purported that Chase minerals explored over the claims as part of their EPO 520 programme, but this is not substantiated in the records. Mr Mpofu pegged the claims in 1998 and held them up to September 2021 when the claims were transferred by a sale agreement to TechShed. While the previous two operators had bad recoveries, this is most likely due to taking over and following an exhausted resource.

## 6.2 UNDERGROUND SAMPLING BY PERCY HASTINGS, October 2010

In October 2010, Percy Hastings visited the mine site and carried out an underground sampling programme. A summary of the work undertaken is given below.



Figure 5 : Surface Map 2010 showing shafts and Interpreted Reefs

Below is a summary of the Shafts on the above map, aligned with the names currently used, and a description given in the 2010 report.

Shaft Numbering	Current Naming	Remarks
Shaft 1		5 metres deep, in hanging wall of vein. Used as second exit
Shaft 2	Main Shaft	30 metres deep and on reef outcrop. Equipped with small hoist, Without pillars at depth. This was sampled by P Hastings
Shaft 3	Phenga Shaft	40 metres deep. Served what was the main working, but not equipped
Shaft 4	Zulu shaft	8 metres deep, very close to the boundary of the claim Quartz vein flattens and widens at depth (reported)
Shaft 5		Shallow
Shaft 6		Shallow
Shaft 7		Shallow
Shaft 8		Shallow, abandoned and collapsed. Close to boundary
Shaft 9	Shaft 9/East Shaft	30 metres – not accessible. Vein said to be 50cm @4g/t

Table 5 : Comparison of Hastings naming of shafts and current names.

Shaft 2 and the corresponding open stope below was sampled and the positions of the samples given in the figure below. The reef widths were given as 20cm to 50m, grading from 0.74g/t Au to 17.72 g/t Au, all associated with quartz veins. Samples 5 and 6 were taken in the hanging wall of the mined reef, suggesting some mineralised halo to the veins. It is not reported where the assays were done.

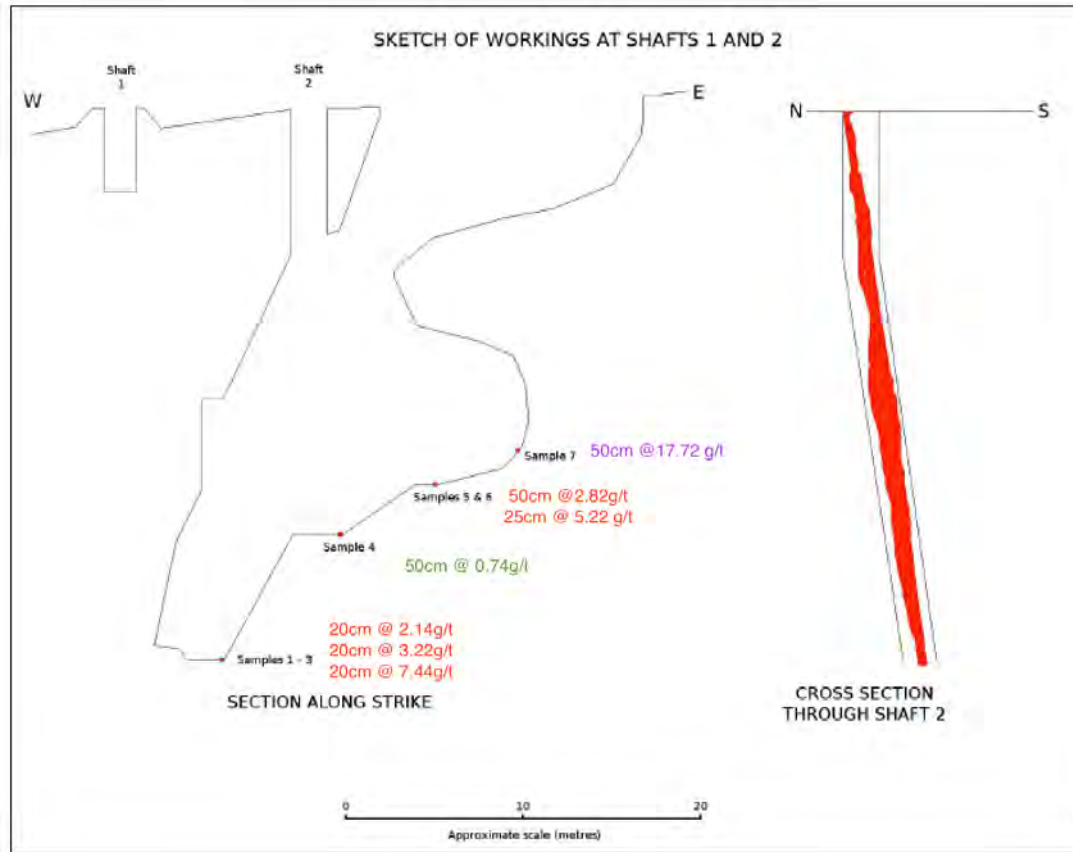


Figure 6 : Sampling of Main Shaft and Stope by P. Hastings

P. Hastings mapped a wide shear zone of over 100m on surface. He noted that the mineralisation that has been mined is associated with quartz veining within this shear zone. Minor pyrite and galena are associated with the gold mineralisation, but no assays for anything other than gold have been undertaken. He certainly noted that the grades are not solely confined to the quartz veins but extend into the sheared wall rocks. He further notes that strike lengths are long, but payable zones may not necessarily be continuous along strike. He considers there should be a greater persistence of pay zones down dip. All veins have almost parallel strikes in an E-W direction and dips are near vertical or very steeply to the south. There may also be some leaching in the near surface of these veins. On occasions these veins are disturbed by faulting.

He suggests that the geology could sustain narrow seam underground mining with production of a few thousand tonnes per month, using suitable equipment and controlled mining of an approximate 1m width. He noted the limited testwork suggested 70% of the gold may be available through fine grinding and gravity concentration, with the remainder won through cyanidation.

### 6.3 RECOMMENDED MINING METHODS, M MABHIKA January 2011

Further to P. Hastings visit, M. Mabhika wrote a report in January 2011 to recommend a mining plan. He noted that the mine has a 2 tonne per hour milling plant, but this was not supported by mining methods.

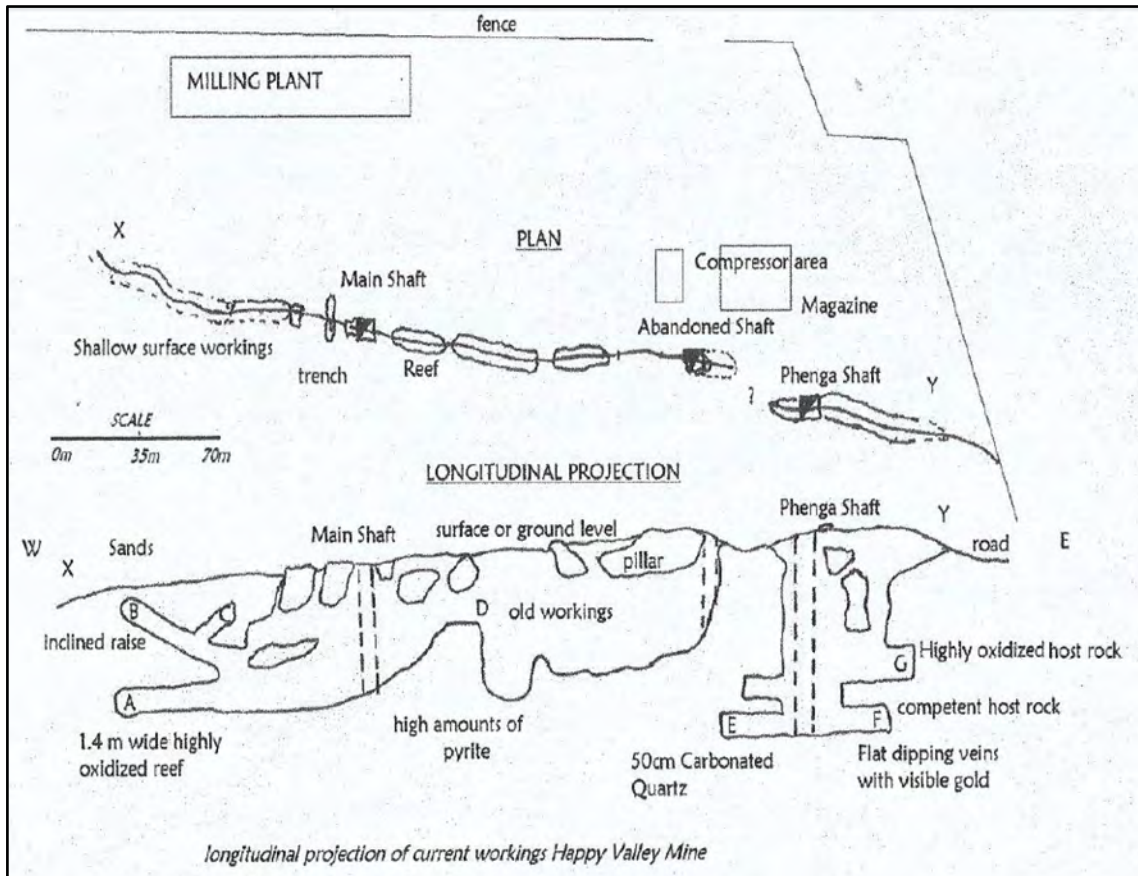


Figure 7 : Mabhika Plan and Long Section of Main Reef 2011

He suggested sinking a 12m long winze on reef from the base of both shafts, and the implementation of a crown pillar to stop collapse. He suggested another drive at 34m and stoping blocks of 30 x 1.2 x 25m to produce 2,400 tonnes of ore per block. He planned on a grade of 4g/t with a 50% recovery, yielding 1.6kg of gold per month. He also suggested to develop a “Main” Shaft from which all the reefs could be mined. He went as far as to propose a location for this shaft. Figures 7 and 8 illustrate these plans.

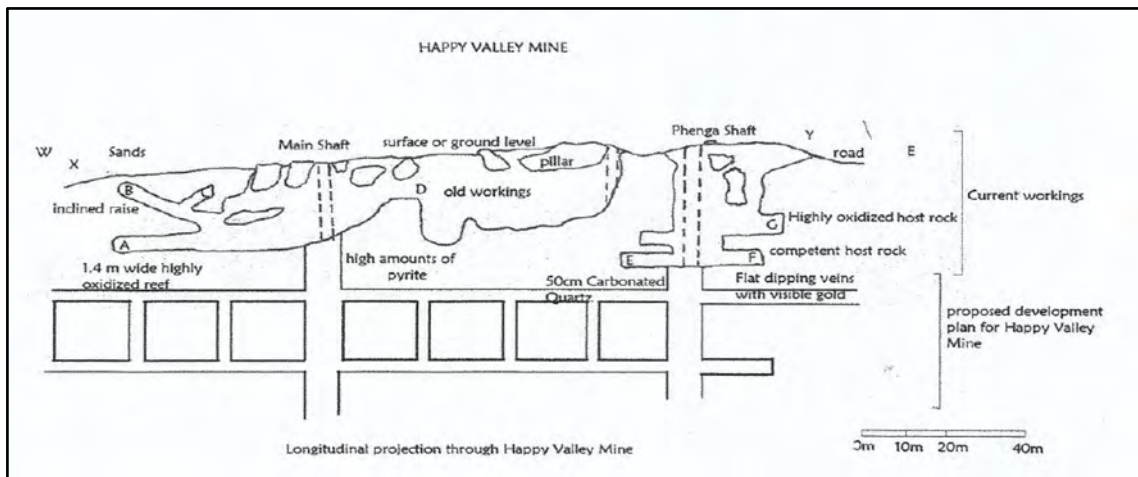


Figure 8 : Mabhika Plan for deeper development between Main and Phenga Shafts

#### 6.4 GEOPHYSICAL SURVEYS AND TRENCHING 2019 - 2020

TechShed – the current owner and the party with which Pambili Natural Resources Corporation has entered into an Earn-in Agreement - commissioned Precambrian Exploration and Mining (PexMin) to undertake geophysical surveys, followed up by trenching. This is detailed in the Exploration Section, due to the current agreement in place, and it is the recent exploration that has defined the drill targets.

## 7 GEOLOGICAL SETTING and MINERALISATION

### 7.1 REGIONAL GEOLOGY

Happy Valley Mine falls in the central part of the Bulawayo Greenstone Belt and its surrounding granitic terrain. The Bulawayo Greenstone Belt is roughly triangular in shape with E to W- trending southern base, 70km long, the eastern edge of which is continuous with the greenstones of the Filabusi area. The greenstones comprise a succession of tightly folded metavolcanics and metasedimentary rocks with generally steep dips away from margins of the granitic rocks. The metamorphic grade is low, varying from lower to middle greenschist facies.

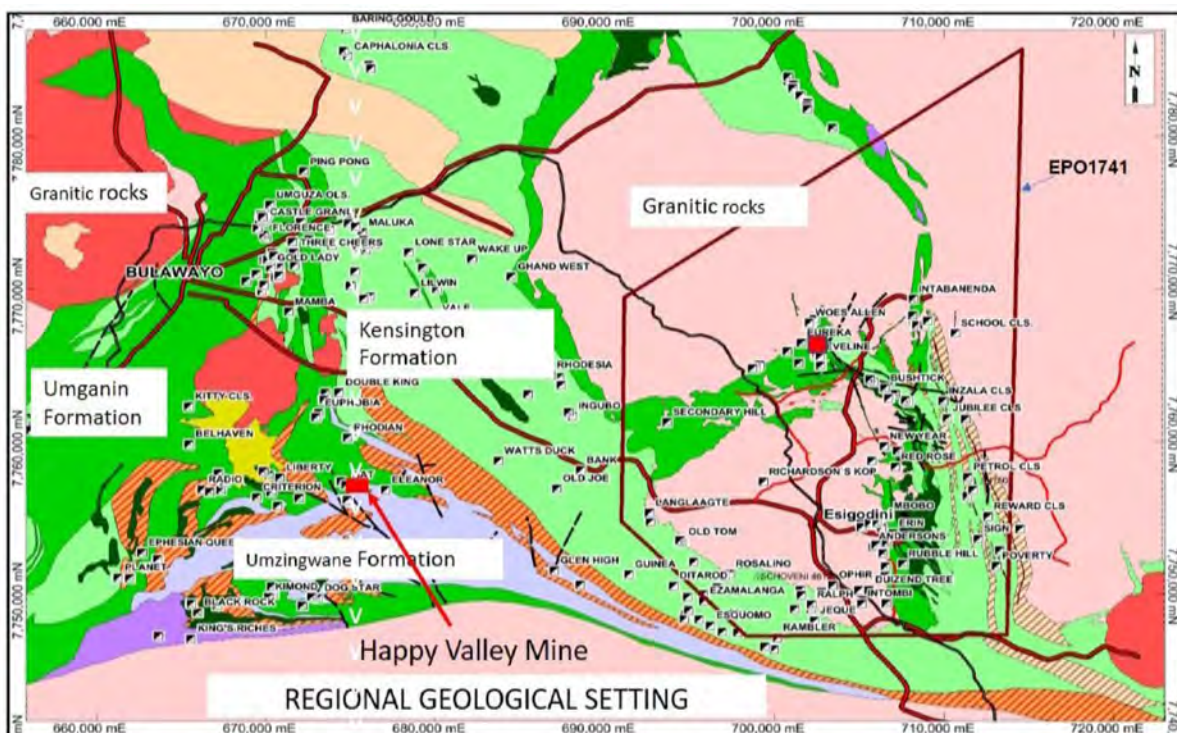


Figure 9 : Regional Geology of the Happy Valley Mine

The Bulawayo greenstone belt is subdivided into nine formations shown below:

#### Bulawayo Group – Upper Greenstones

1. **The Tonbridge Formation** is made up of basaltic pillowed lavas and associated sills and dyke of metagabbro and metadolerite, layered mafic/ultramafic sills and komatiitic basalt flows.
2. **The Umzingwane Formation** comprise conglomerates, arenites, wackes, shales, volcanic breccias, slates, banded iron formations and late rhyodacitic/rhyolites.
3. **The Avalon and 4 Kensington Formations** occur in the west and east respectively of the greenstone belt. They comprise andesite/microdiorite and andesitic/rhyodacitic breccias; andesitic and rhyodacitic flows and autoclastic flow breccias.
4. **The Sauerdale Formation** is made up of komatiites and komatiitic basalts and associated serpentinite and gabbro bodies.



5. **The Umganin Formation** comprise pillowed basalts, tholeiite flows and associated sills, dykes and intrusions of dolerite, gabbro and metagabbro.
6. **The Westacre Formation** forms the base of the Upper Greenstones. It comprises greywackes, conglomeratic mudstones, argillites and calcareous conglomerates.
7. A basal metasedimentary formation lies unconformably on the Lower Greenstones and is succeeded by the Upper Greenstones. Bulawayo Group Lower Greenstones:

#### **Bulawayo Group – Lower Greenstones**

8. **The Vreigevicht Formation** comprise striped amphibolitic gneiss consisting of highly deformed volcanic pyroclastic, mixed pyroclastic - epiclastic rocks and altered mafic rocks.
9. **The Lonsdale Formation** overlies the Vreigevicht Formation. It consists of Metandesitic and metarhyodacitic flows, breccia and intrusions.

## **7.2 REGIONAL STRUCTURE AND MINERALISATION**

The structural geology in this area plays a critical role in the reef geometry and payability. This is modified by the lithology acting as zones of structural weakness, amenable to gold mineralisation. The Hope Fountain is a tight anticlinal fold. The banded iron formation is acting as marker horizon tracing the fold of the Hope Fountain rocks.

The Bulawayo Greenstone Belt forms the south-western lobe of a more extensive greenstone area which originally stretched from the Bubi area in the north to the Shangani-Fort Rixon area in the east and to the Filabusi area in the south-east, and as discovered by recent work by Moses Banda, Tsholotsho (Dokwe) greenstone belt to the west, and which subsequently was broken up into its separate belts by the invasion of granite rocks.

During the F1 phase, the pre-cleavage regional deformation, the Bulawayan belt was folded into a large-scale east-north-east to north-east synclinal fold structure before the F2 deformation. This syncline plunges steeply eastwards. Locally F1 folding was tight to isoclinal but the lack of penetrative fabric may indicate that the deformation occurred at high crustal level.

Deformation associated with granitic diaper emplacement produced a compression of the Bulawayan Belt resulting in refolding of the syncline to form a more intensely folded synclonorium with new axial folds in the south-western part of the belt trending parallel or near parallel to the original fold axis aligned roughly north-east to east-north-east.

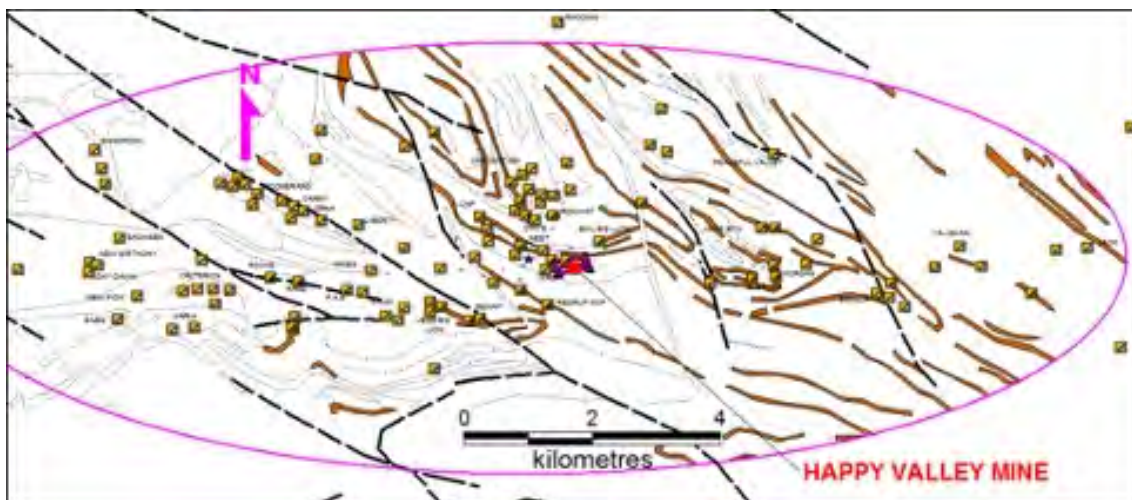
Regional deformation which produced the main fabric caused earlier structures and diapiric granites to be deformed. Probably at this time, the southern thrust sheets and planes were tightly folded along axes trending roughly east-west.

Deformation in the late phases in the Bulawayan belt appears mainly to have taken the form of intense shearing. It is also possible that there was some cleavage-forming deformation during these late phases of shearing. The main direction of shearing is north-westerly with more west-north-west trends in the west of the Bulawayo area and there was later transcurrent faulting along several of these shear zones, notably at the How shear zone.

Many of the major gold mines and numerous lesser ones in the region are situated within or adjacent to the NW-trending shear zones.

The domain is at the core of the anticlinal structure of the Bulawayo greenstone belt. It has the following characteristics:

- It has mines within 2km of each other with adjacent mines outside the ellipse being more than 2km from those within
- Its long axis is 18.7km east west and the north-south axis is 6.7km long
- It has 87 mines that have produced at various times from 1895 to 1984.
- Post 1984 production is patchily recorded.
- Total production of gold to 1984 has been 1,993 kilograms from 246,186 tonnes, a recovery of 8.10 grammes per tonne.



**Figure 10 :** The Hope Fountain structural domain, with yellow indicating mines that have produced during the last 120 years.

The Kensington formation, which hosts the Happy Valley Mine, and several other mining properties in the vicinity comprises meta-andesitic lavas and flow-breccias. The lavas are fine-grained, relatively massive, pale greyish green rocks, which in places are amygdaloidal. They may be porphyritic, with plagioclase phenocryst, 0.5mm to 2 mm long, with smaller dark green to black hornblende phenocrysts of slightly smaller size.

Volcanic breccias are intercalated with flows and bands of more tuffaceous material, and where they are highly attenuated and sheared it is difficult to distinguish the various lithologies.

The Happy Valley Mine is in the “Hope Fountain structural domain” which is defined as an ellipse centred on the mine itself.

### 7.3 PROPERTY GEOLOGY AND MINERALISATION

The Happy Valley Mine Project Area falls within the cleavage triple point of the Umzingwane Geological Formation, Kensington Formation and the Umganin Formation. It falls more within Umzingwane Formation close to the boundary with the Umganin Formation. The Umzingwane formation comprises conglomerates, arenites, wackes, shales, volcanic breccias, slates, banded iron formations and late rhyodacitic/rhyolites. As shown in the map below, a number of gold mines are associated with this cleavage triple point i.e., Wasp, Iron Hat, Bat, Owl's Nest, Emilie's Luck, Coronation, Redrup Kop, Cap etc.

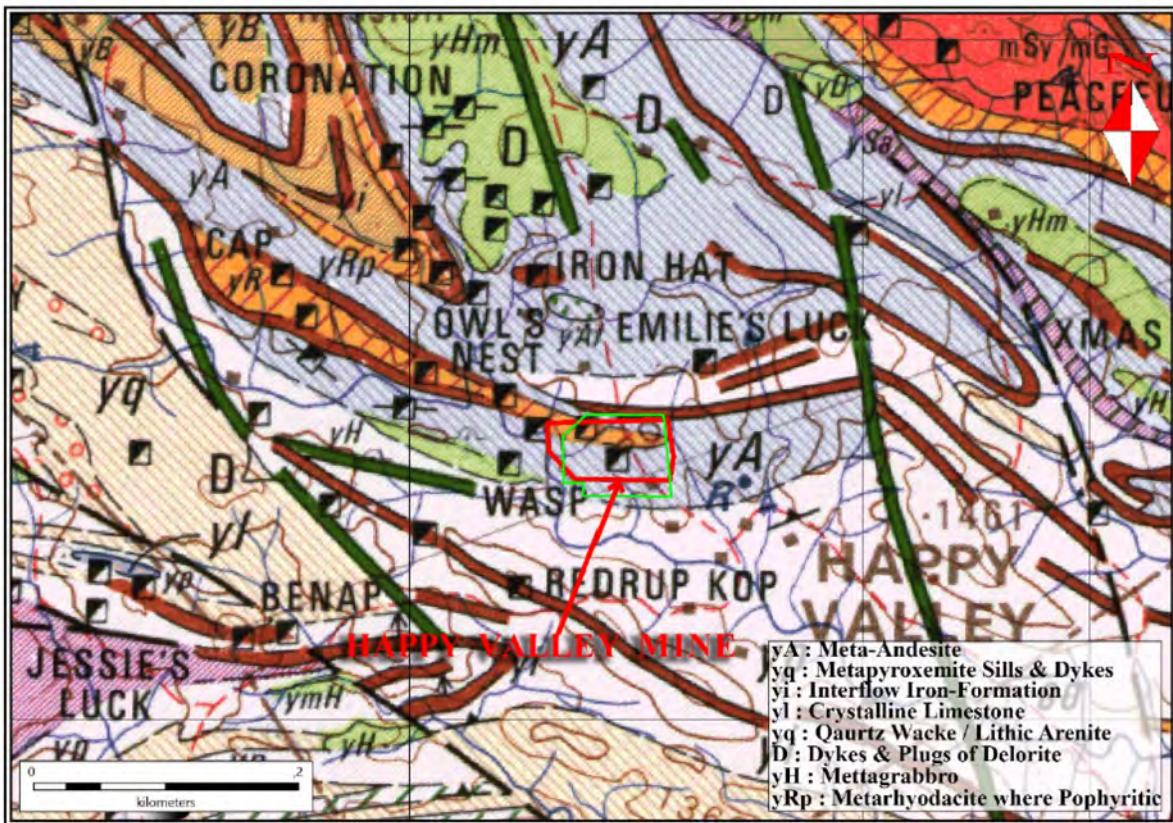


Figure 11 : Location of the Happy Valley Mine on the Regional Geology Map (Bulletin 93)

The Happy Valley Mine claim is dominated by meta-andesite (yA) with a tongue of WNW-ESE of meta-rhyodacite/meta-rhyolite intruding the meta-andesite. These are rocks of the Kensington formation, the upper strata of the Upper Greenstones. There is a main east-west fabric which is shearing and, in some places, a strong cleavage.

The figure below illustrates the mine scale geological map. The main reef mineralisation and the drilling target between the Main Shaft and the Phenga Shaft is believed to be a silicified Banded Iron Formation (BIF).



Rock Pile from Underground



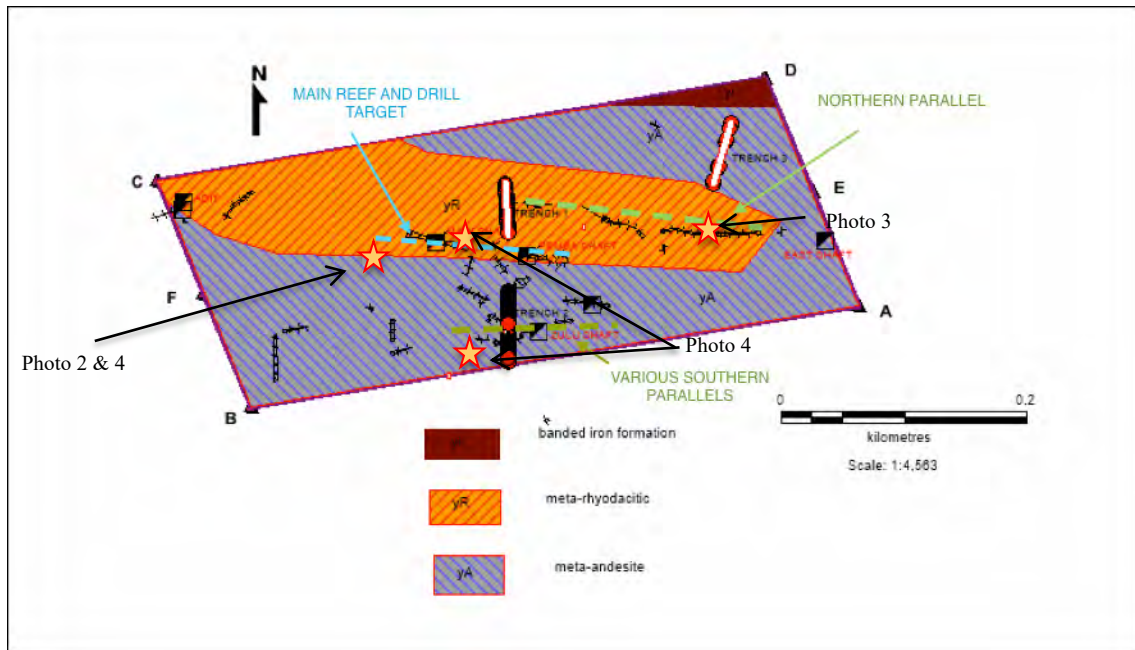
Silicified BIF mineralisation



Silicified Mineralisation

**Photo 2 : Sulphide Mineralisation – Rock Pile from Main Shaft**

This is illustrated as a blue dotted line on the map. Illustrated previously is photographs of the rock containing sulphide mineralisation from this rock pile. This is believed to be the widest reef on the property.



**Figure 12 : Geological map of Happy Valley Mine.**

The northern parallel has been exposed in Trench 1 and is marked as a pale green dotted line. This reef can be followed from the East Shaft (again illustrated in the photographs) and current trenching on surface by the artisanal miners suggest an echelon structure in talcose schists. The meta-rhyodacite mapped is probably a mixture of sheared and silicified banded iron formation and quartz veining in schist.



Near East Shaft – looking east onto BIF ridge



Strong Iron alteration with the East Shaft trenching

**Photo 3 : Reef Trenching by artisanal miners near the East Shaft on strong Iron Alteration**

There are various reefs to the south of the main reef. The Zulu shaft is on one of these and they certainly require clearer definition. The Zulu shaft is illustrated in the photograph below, along with the Main and the Phenga Shafts



Main Shaft



Phenga Shaft



Zulu Shaft

**Photo 4 : Three Main Shafts that are currently accessible, when equipped adequately**

There is evidence of a mapped BIF ridge in the north and is probably the hill that the water tanks are on (see Photo 1). Some geophysics has been conducted over this zone. It does not have evidence of previous artisanal mining operations but has potential as a geophysical target.

The continuity and the widths of the various reefs is not currently quantifiable, as there has been no recent underground access and there has yet to be a drilling programme.

## **8 DEPOSIT TYPES**

The gold mineralisation at Happy Valley mine is typical of the Archaean greenstone narrow quartz reef shear hosted deposit. Foster (1983) reported that 83% of all gold in Zimbabwe have the source of quartz veins and lodes. It is considered that the Happy Valley deposit fits this model. These types of deposits are seen throughout the Bulawayan greenstone belt and are characterised by silicified schistose and shear-zone vein systems of ribbon textured and massive quartz. There is pervasive wall rock alteration, with carbonatization and pyritization being most common adjacent to the veins and lodes.

These loads / veins / shear zones form in a compressional-type environment during regional deformation and metamorphism at the end of the tholeiitic/ komatiitic-calc-alkaline volcanism. These compressional environments are closely associated with the intrusion into the greenstone belts of a suite of early trondhjemite-tonalite-granodiorite granitoids. Often within the greenstone stratigraphic sequence there could be banded iron hosted strata bound type gold deposits.

Gold bearing vein deposits consist of tabular or lenticular bodies of massive quartz, or quartz together with minor carbonate and sulphides from a few centimetres up to several meters wide, with lengths a few meters up to few hundred meters.

Gold bearing shear zones deposits can often comprise numerous sub-parallel veins of quartz and quartz carbonate within a ductile to brittle deformation zones bordered by highly schistose wall-rocks. Alteration zones may extend several 10s of meters, and themselves be mineralised with low grade gold, primarily associated with pyrite, but to a lesser extent, pyrrhotite and arsenopyrite. Later cross cutting thrusts are known to displace these vein type reef deposits.

## **9 EXPLORATION**

In August 2022 Pambili financed a reverse circulation drilling (RC) programme of 8 holes totalling 1,180m. This was based on the Phase I drilling programme set out in the initial NI 43-101 report on the HVM and it delineated two parallel gold reefs, giving an inferred resource of 20,000 ounces.

### **9.1 GEOPHYSICAL SURVEYS**

Geophysical surveys were the first exploration exercise carried out by TechShed which were followed by trenching. The ultimate objective was to define drill targets to identify a resource for mining. Initially, a magnetic survey was undertaken to define structural lineaments. These would be shear zones, faults, mineralised ferruginous quartz, and contact zones etc, which would be considered to be structural traps for gold mineralisation.

The magnetic survey was followed up by a Real Section Induced Polarisation (“RSIP”) Survey to check the defined zones for resistivity and chargeability. The development of quartz veins with depth is expected to be picked up as zones of resistivity on the RSIP profiles. Disseminated sulphides that characterise the gold hosted horizons will be picked as zones of chargeability on the RSIP profiles. Therefore, a consistent magnetic / RSIP anomaly would suggest a shear zone with quartz veining and sulphide mineralisation, and hence provide a prospective target for drilling.

### 9.1.1 Magnetic Survey – Methodology

The magnetic survey was conducted using a GSM 19T magnetometer with a built-in location GPS. A single base station method was employed to correct for magnetic diurnal variations during the survey. The sensitivity was set at plus minus 0.1nT, with a sensor height of 2m. Line spacing of 25 m and station spacing of 5m was used in the magnetic survey. A total of 6.4km were surveyed over the 15.4 hectares survey block.

### 9.1.2 Magnetic Survey – Results and Interpretation

The total field magnetic data is processed to vertical derivative data, which enables the identification of deep-seated objects that may not be immediately discernible from the total field magnetic data. This increases the resolution of possible hidden ore bodies and other geological structures which could be significant to mineralization. Figure 12 below is the first derivative image.

Six major lineaments have been delineated by Total Field Magnetics: Five of the lineaments are trending north-west and are crosscut by a north-east trending lineament.

The five north-west trending lineaments are defining boundaries for four or five distinct units most probably representing different rock types or alteration zonation and are broadly within the strike of the orebody. The geophysicist (Luckson Manda) has interpreted the contacts of these units are zones of weakness and potential sites for gold deposition. There is gradation of magnetism from the north-east corner to the south-west corner of the grid.

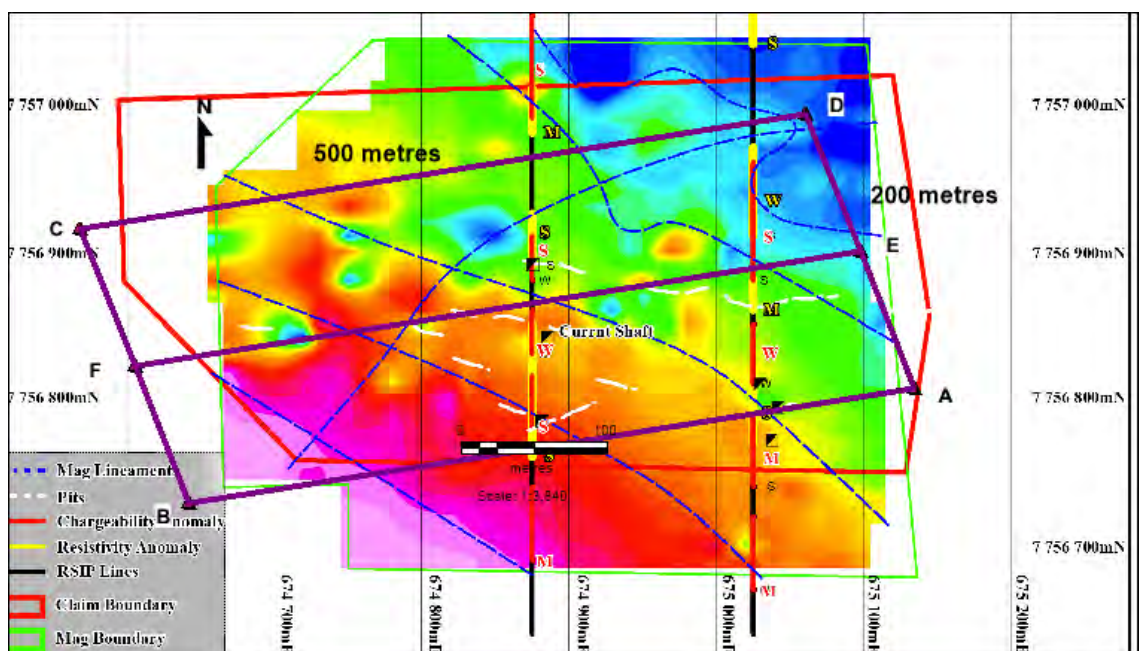
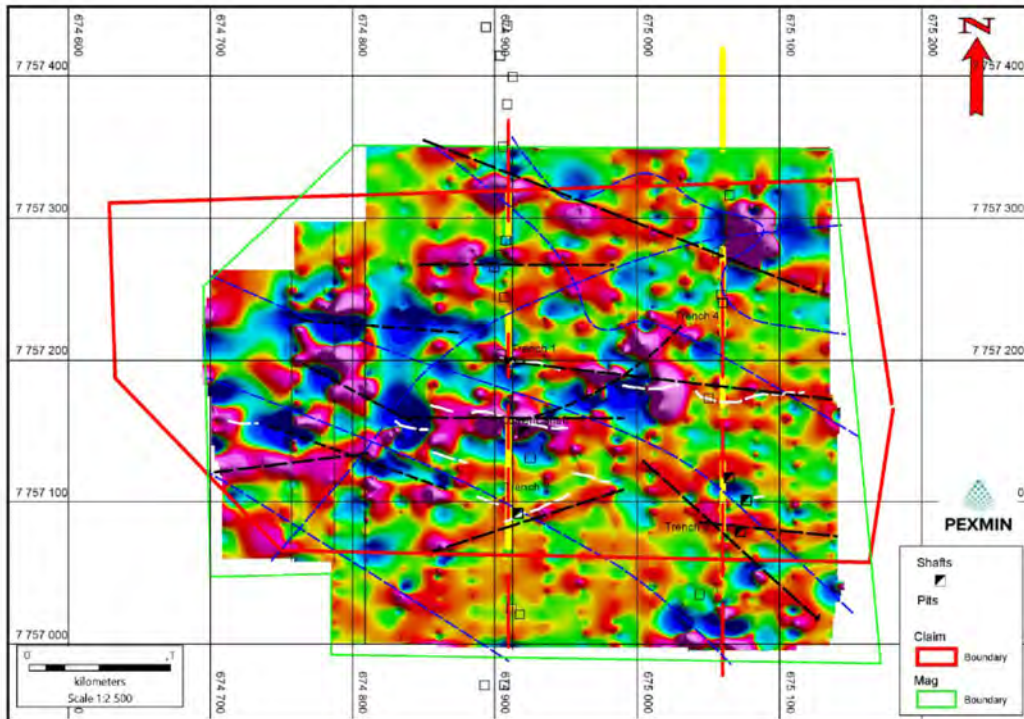


Figure 13 : Total Magnetic Field map of Happy Valley Claim.

The total field magnetic data is processed to vertical derivative data which enables the identification of deep-seated objects that may not be immediately discernible from the total field magnetic data. This increases the resolution of possible hidden ore bodies and other geological structures which could be significant to mineralization. The lineaments are clearly illustrated in the figure below. It can be noted that there is certainly continuity along strike from the Main Reef, particularly to the west, where the NE-SW structure seems to displace the reef.



**Figure 14 : First Vertical Derivative**

### 9.1.3 Induced Polarisation Survey – Equipment and Methodology

A Mig 12 20 KVA Generator, a Hunttec-time domain transmitter and a 6 Channel Iris model receiver were used. The electrical current input was transmitted via 2mm diameter electric cables with a tolerance of 5000 Volts. Steel pegs were used as current electrodes on adequately prepared ground to ensure good signal input. Porous pots with copper sulphate electrolyte were used as potential electrodes to measure the ground chargeability.

The Real Section Induced Polarisation (RSIP) method was employed using different current electrode separations (AB) to investigate varying depth levels (AB/2) of 50, 100, 200 and 300 metres below the ground. Potential electrode separations (MN) of 25 metres were used for shallow levels (50 and 100) and an NM separation of 50m for deeper levels (200 and 300).



### 9.1.4 Induced Polarisation Survey – Results

The following anomalies were defined:

1. Anomalies A and B on line 674875 (line 0a) are close to surface while anomalies C and E are 75 and 125m below surface respectively.
2. Anomaly G on line 675025 (line 0b) has both strong chargeability and resistivity Anomalies E and F are moderate.
3. The presence of old workings on all the above anomalies indicates that they represent mineralised zones.
4. The Project Area is situated in a gold mining area. A review of the historical mining of the mines in the vicinity indicates that gold occurs in Banded Iron Formations (BIF) as ore bodies and is also occurring in lenticular quartz veins in shear zones.
5. The RSIP Survey undertaken indicates that the magnetic lineaments delineated above are associated with chargeability and resistivity hence could potentially be carrying quartz veins mineralised with sulphides. The IP sections indicate that the anomalies continue to depths below 250m.

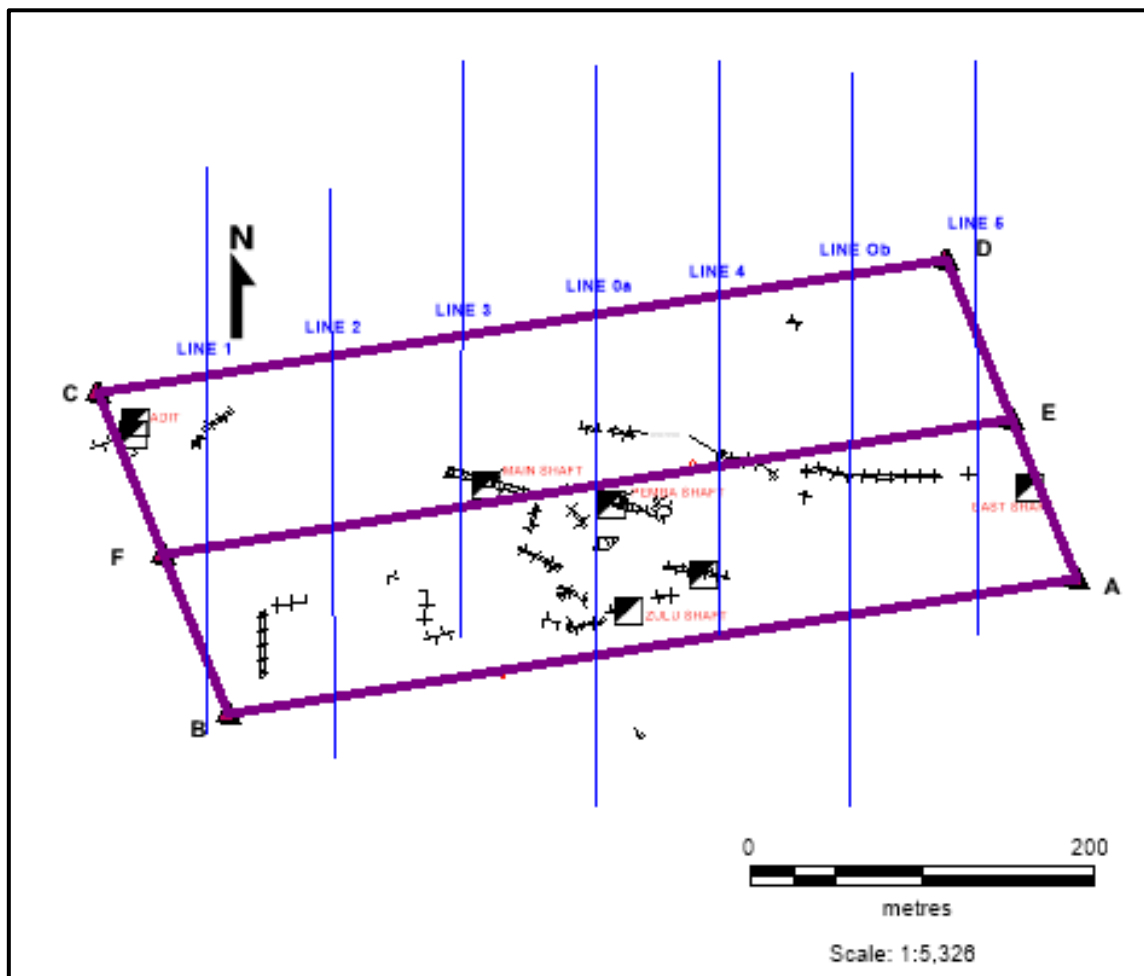


Figure 15 : The Real Section Induced Polarization (RSIP) lines that were surveyed

The magnetics has delineated the subtle boundaries of rocks in the volcanic sequence varying in composition from felsic to mafic from north-east to the south-west; a direction coincidentally along which exploitation excavations trend across the claim.

The Real Section IP has been quite definitive in outlining possible sulphide zones that are hosted within resistive quartz veins or within silicified zones. This where the gold is normally found. This justified the completion of 75-metre spaced RSIP lines covering the entire breadth of the claim to complement the two already done.

## 9.2 TRENCHING

Following the magnetic and RSIP survey conducted in September 2019 by Pexmin (Pvt) Ltd., a recommendation was made to follow up anomalies picked up by the survey with a programme of trenching.

Four trenches were recommended in the Pexmin report. Work was then conducted by excavator in March 2020. Three trenches totalling 156 metres were excavated. The fourth trench was not dug as it lies outside the claim boundary.

Details of sampling programme, preparation and associated QA/QC are given in Section 11.

TRENCH No.	LENGTH (METRES)	No. OF SAMPLES/ASSAYS
1	43	40
2	60	39
3	53	17
<b>TOTAL LENGTH</b>	<b>156</b>	<b>96</b>

Table 6 : Summary of trenching.

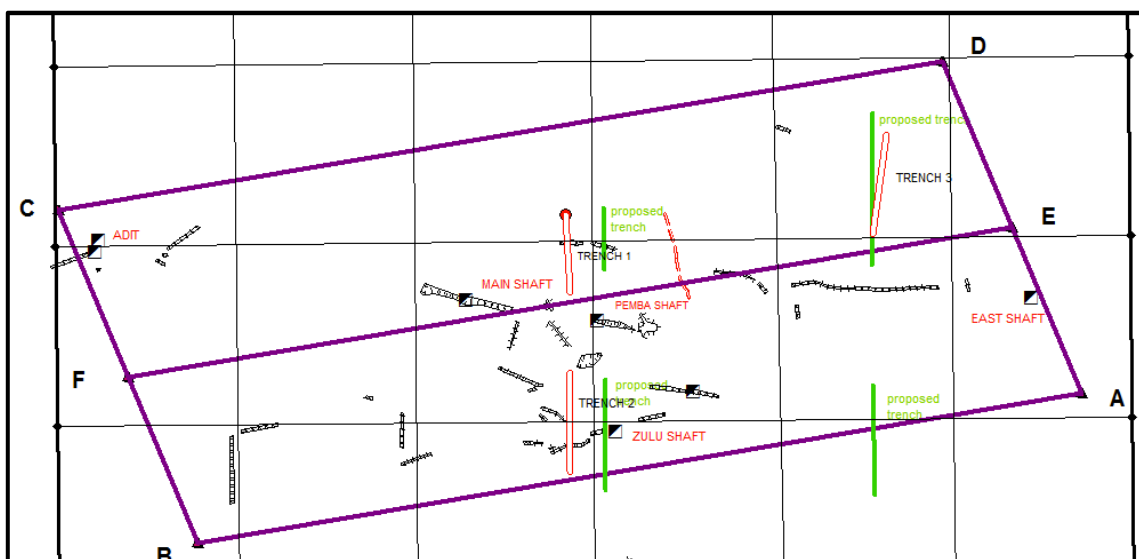


Figure 16: Claim plan showing the proposed trenches (green), the trenches that were dug (red) and outline of all excavations and shafts (black) in the claim.

### 9.2.1 Sampling

Sampling at 1-metre intervals was carried out on exposed bedrock and the samples sent to Duration assay laboratory. The results were then plotted on a map of the claim and co-related to existing excavations and the geophysical results.

### 9.2.2 Results and Old Excavations

Below is a synopsis of the trench results and an analysis of how they relate to old excavations.

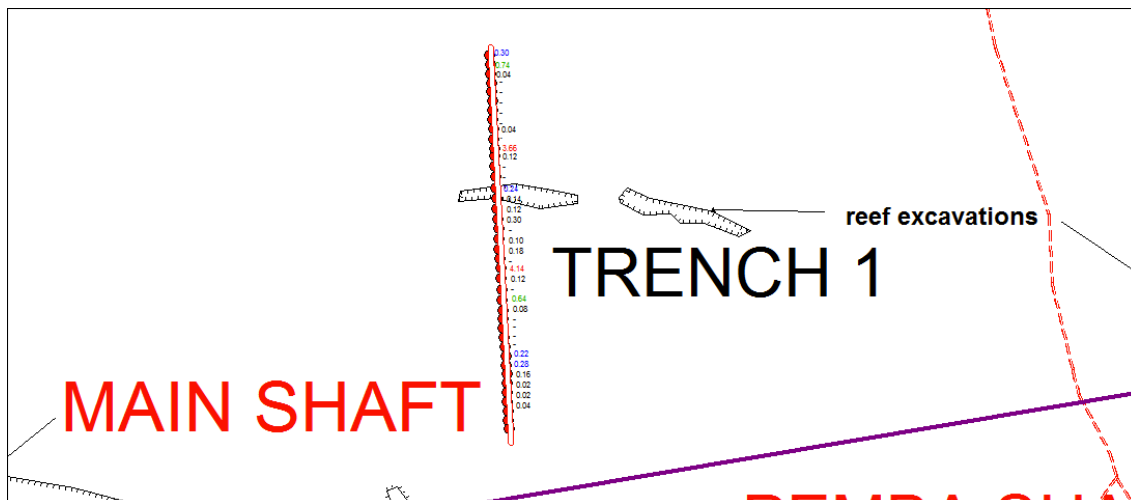


Figure 17 : Trench 1 assays of gold in grammes per tonne (g/t).

- Two values of 3.66 and 4.14 g/t were significant with lower values of 0.74 and 0.64 g/t at discrete points.
- This highlights the mineralization as discrete quartz veins or schist.
- There is no significant halo surrounding the notable values.
- Correlating this with old excavations indicates the lenticular (pinch-and-swell) structure of the reefs.

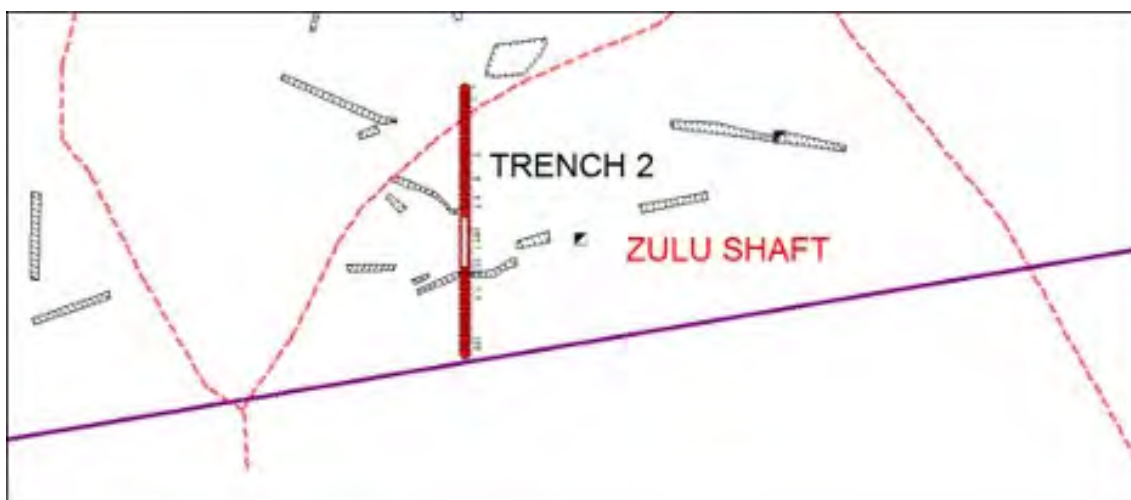
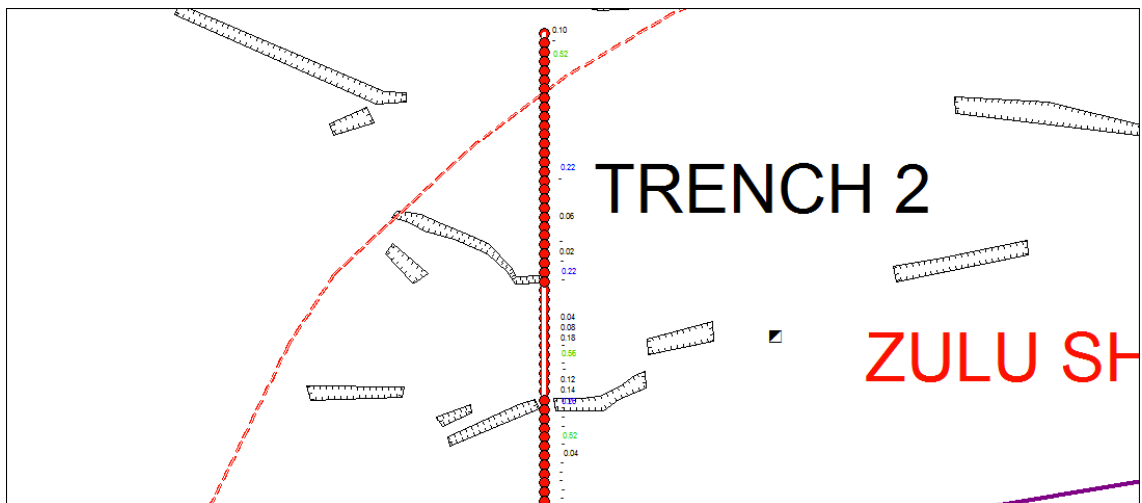
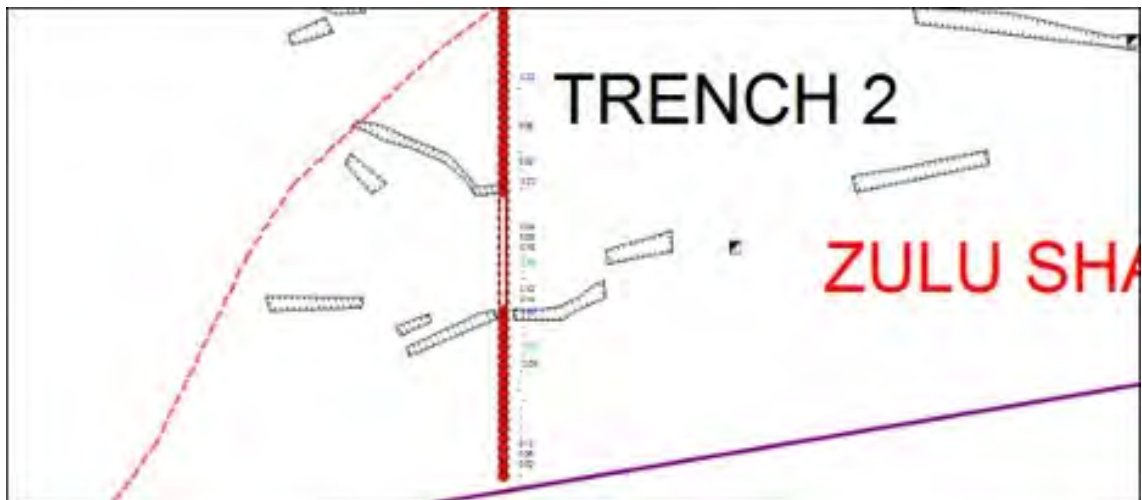


Figure 18 : Sketch map of Trench 2. The maps below show the trench divided in two to show the figures.



**Figure 19 : Trench 2 Northern part**

- shows three discrete values of 0.52g/t, indicating the pinched part of reefs when compared with existing old excavations. These could have been the no-pay zones of reef traces.



**Figure 20 : Trench southern part had no significant values.**

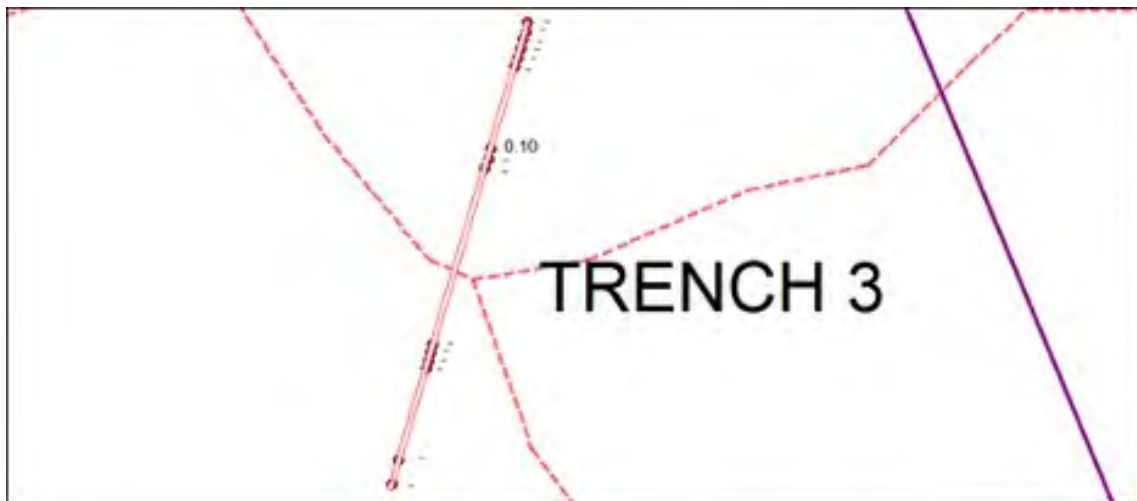


Figure 21 : Trench 3 had no mineralization and was sampled only in weakly altered zones.

- The rock is a highly sheared slaty phyllite which showed no alteration associated with gold mineralization.

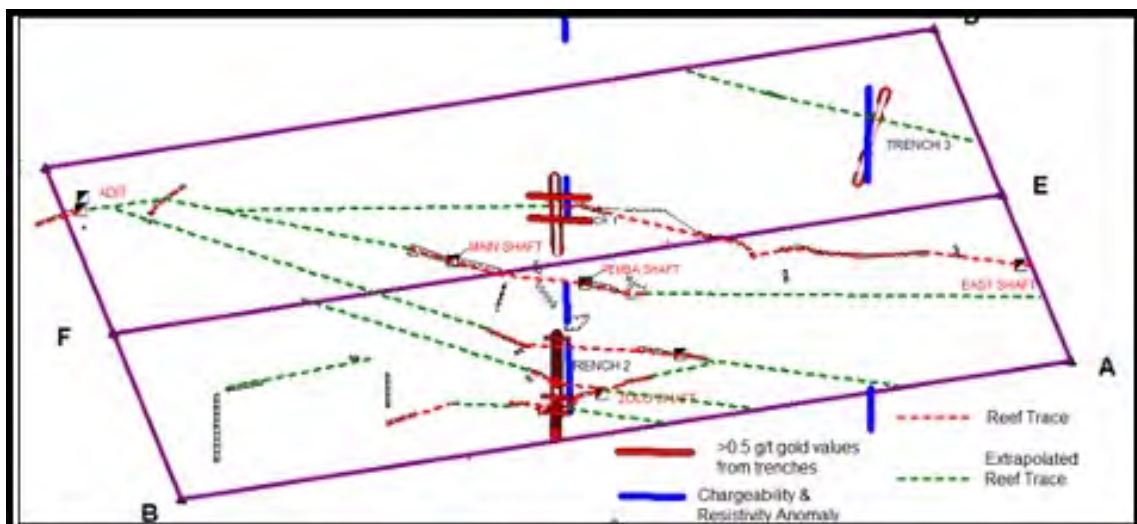
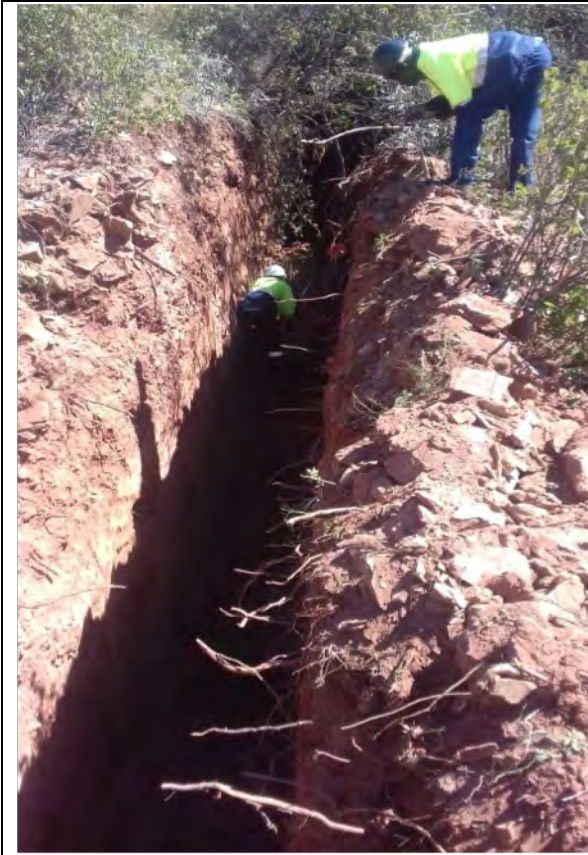


Figure 22 : A map showing significant intersections with respect to reef extrapolations and surface workings.



(A) The sampling of the trenches and



(B) Samples of Reef Material

**Photo 5 : Photograph of Trenching and Samples of Reef Material in Trench Sampling Programme.**

## 10 DRILLING

An eight-hole RC program totalling 1,180 metres was begun on the 2<sup>nd</sup> of August 2022 and completed on 22<sup>nd</sup> of August 2022. The objective of the Phase 1 RC drilling programme was to define a 200m strike and 150m down dip resource on a drill grid of 40 x 40m, with one gap of 80m. It is envisaged that the Main and Zulu reef will get some kind of depth definition. Drilling Resources Zimbabwe (DRZ) of Harare conducted the drilling using one Super Rock RC rig.



Photo 6. 2022 Drilling Programme at Happy Valley Project

Hole Id	Eastings WGS84	Northing WGS84	Elevation (m)	Azimuth degrees	Inclination degrees	Total depth (m)	Date Drilling Started	Date Drilling Finished
	35K	35K						
HPRC001	674786.54	7757128.74	1377.632	360	-60	123	8/2/2022	8/3/2022
HPRC002	674786.81	7757092.96	1377.179	360	-60	172	8/4/2022	8/9/2022
HPRC003	674822.39	7757122.21	1383.497	360	-60	123	8/10/2022	8/11/2022
HPRC004	674825.1	7757088.84	1383.015	360	-60	172	8/12/2022	8/15/2022
HPRC005	674860.98	7757118.68	1389.847	360	-60	123	8/15/2022	8/16/2022
HPRC006	674861.14	7757089.81	1388.505	360	-60	172	8/16/2022	8/18/2022
HPRC009	674943.95	7757103.53	1397.185	360	-60	123	8/18/2022	8/19/2022
HPRC010	674943.67	7757066.02	1391.16	360	-60	172	8/20/2022	8/22/2022
<b>Total (m)</b>						<b>1180</b>		

Table 7 : Phase 1 RC Drilling Programme – COLLAR POSITIONS AND SURVEYS

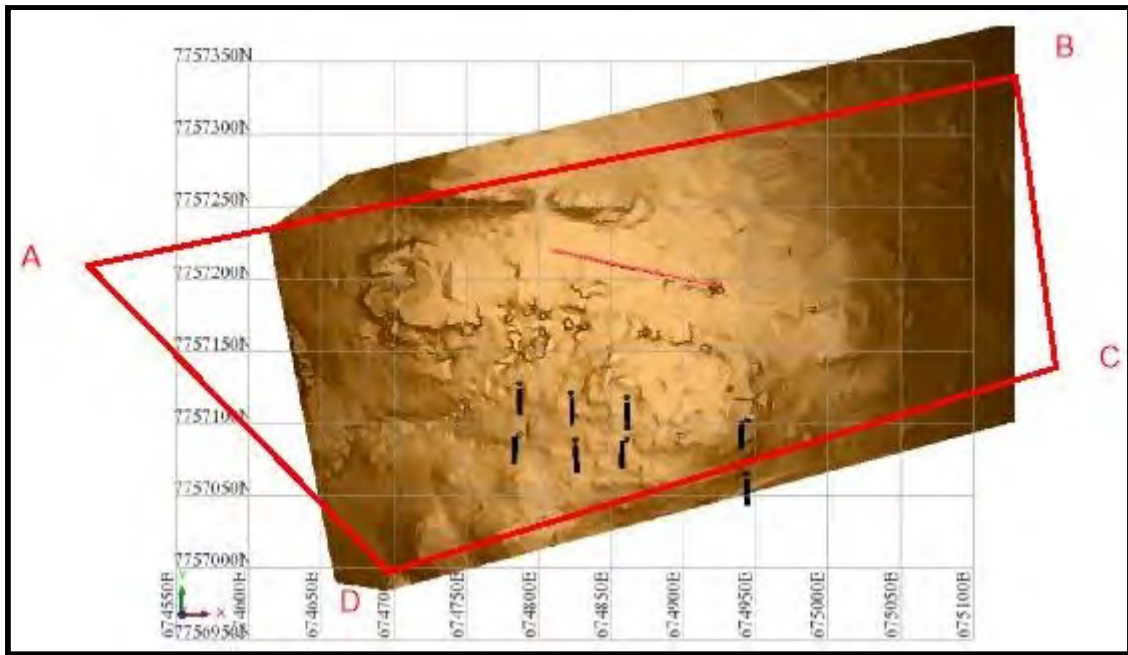


Figure 23 : Phase 1 Drill Hole Locations in relation to topography

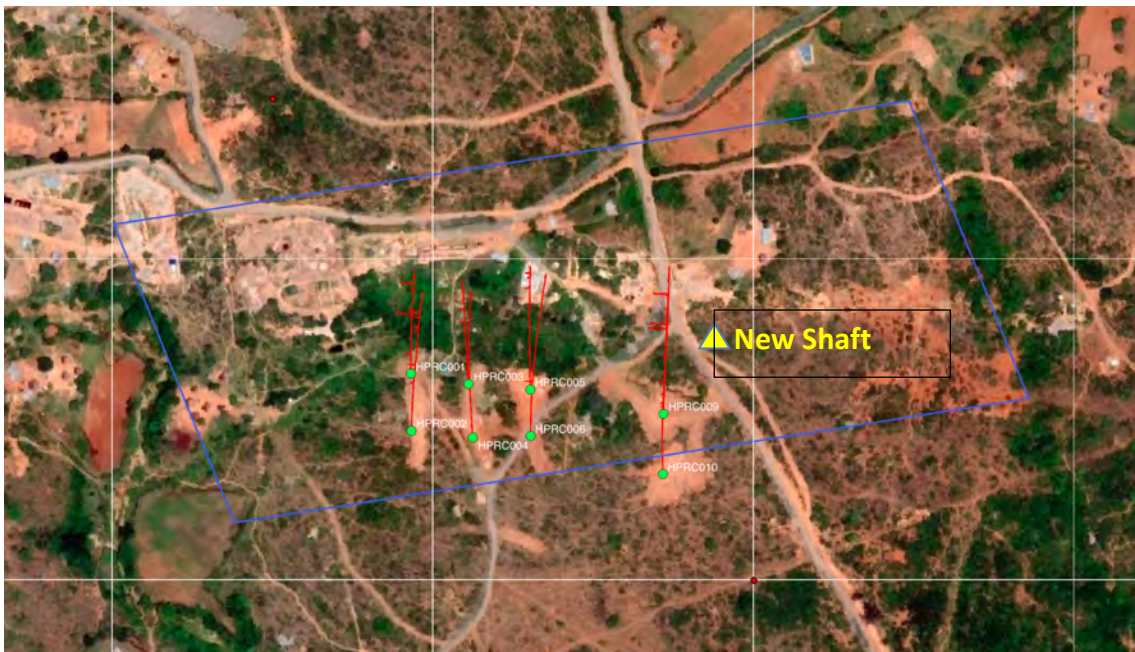


Figure 24: Recent Google image after drilling showing collars of 8 RC holes and New Shaft



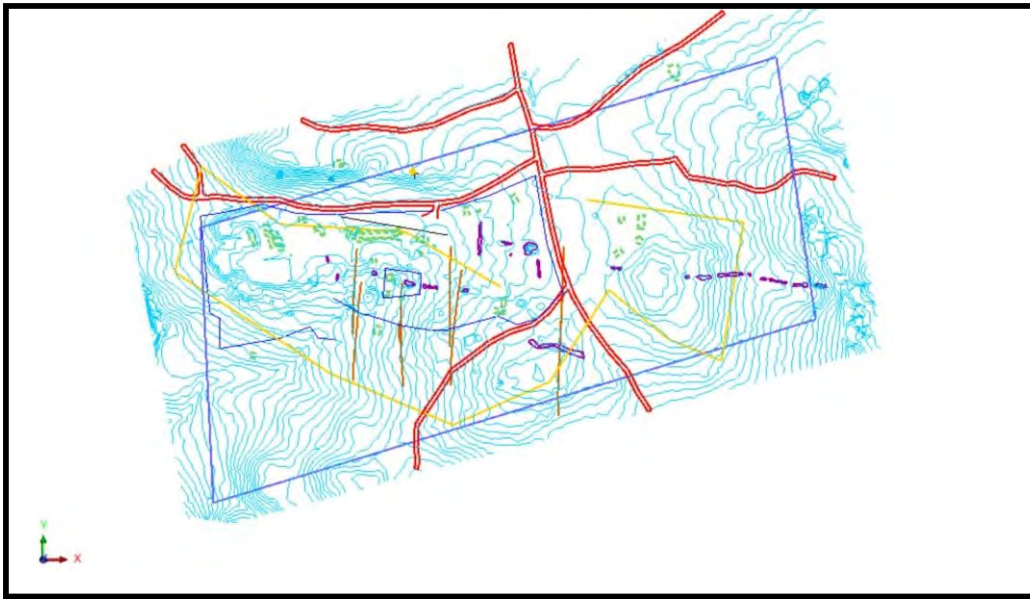


Figure 25: Drone and ground survey of the Drill Programme and associated infrastructure

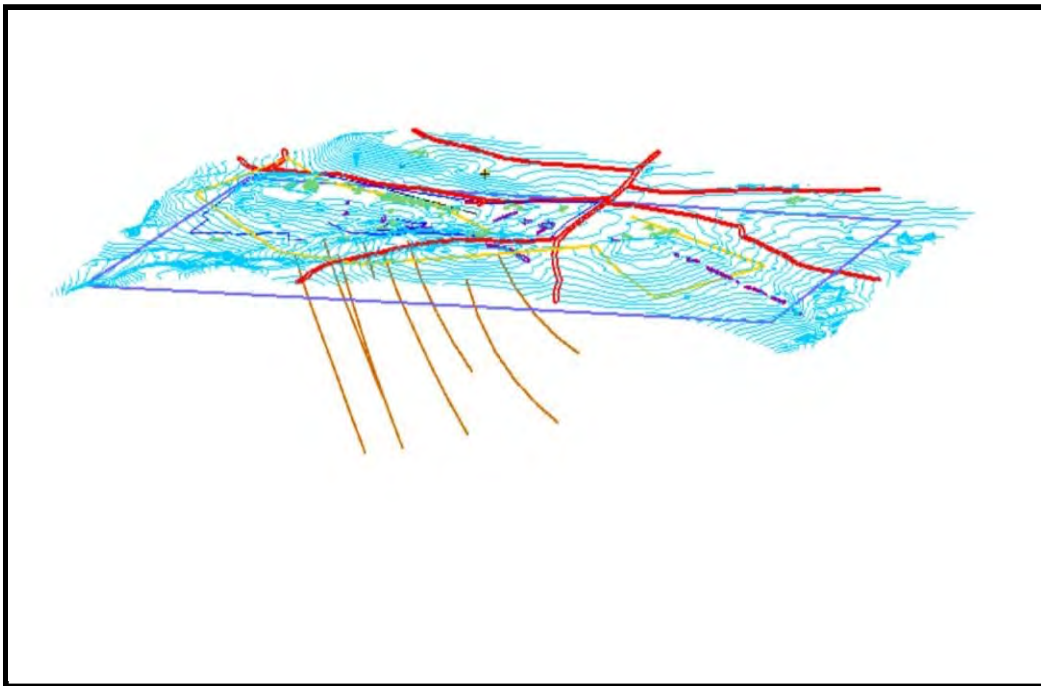


Figure 26 : 3D view of the RC drill Holes

## 10.1 DRILL CONTRACTORS

The Phase 1 reverse circulation (RC) drilling was conducted by Drilling Resources Zimbabwe, a private company incorporated under the laws of Zimbabwe.

Contact details: DRILLING RESOURCES ZIMBABWE (DRZ)  
54 Martin Drive, Msasa, Harare ZIMBABWE  
Tel: +263 242 487244 / 278  
E-mail: [equires@kwblasting.co.zw](mailto:equires@kwblasting.co.zw)

## 10.2 DRILL EQUIPMENT

DRZ used a single Rock RC rig.

All RC drill runs were measured in metres.

## 10.3 DOWNHOLE SURVEYS

Downhole surveys were provided by Diamond Drilling (Pvt) Ltd. All downhole surveys were conducted using a TruShot Digital Survey instrument manufactured by Boart Longyear. Readings were collected at 30m intervals inside the drill string. The short holes (123m depth) were surveyed to 120m while the long holes (172m) were surveyed down to 150m. One hole, HPRC002, experienced a problem as a blockage occurred in the hole and only one shot out of 3, was taken at 30m.

The magnetic declination at Happy Valley Mine is 5°02'W. The readings (the raw data) do not correct at the time of data collection for the 5°02'W magnetic declination.

Outputs were provided digitally and saved as such.

## 10.4 COLLAR SURVEYS

Drill collars were located using a handheld Garmin receiver. A photograph of the GPS reading at the time of drill-hole siting was taken and saved in the appendices. At the end of the program, high precision differential GPS was used to locate the drill collars in a survey that also used drone technology to survey the property. These surveys were used in the database. Fore- and back-sights for drilling azimuth were located using hand-held Silva compass employing a magnetic declination of 5°02'W. An azimuth orientation line was laid out by rope on the ground and marked by a groove prior to the arrival of the drill rig. Inclination was checked by either hand-held clinometer or Silva compass inclinometer and checked by digital inclinometer on a smartphone app.

## 10.5 GEOLOGICAL LOGGING

### 10.5.1 Geological Logging

Geologic logging was carried out on all reverse-circulation chips generated by this drill program covered by this report. Logging was carried out at the drill site. Geologic data was recorded manually and transferred on to an Excel spreadsheet-based core logging template. Principal data fields collected included lithology, alteration, structure, veins and point data.

All core logging was measured in metres.

### 10.5.2 Chip Photos

All chips were photographed in their trays which were labelled with the hole ID number and from-to depth. The digital archive of photographs is maintained in the database with back-up copies.



Photo 7 : Chip Tray Photography

## 10.6 SPECIFIC GRAVITY

No specific gravity measurements were made on the samples generated.

## 10.7 DILLING RESULTS AND ASSAYS

### 10.7.1 Drill Results

The Phase 1 RC drilling programme conducted during August 2022 was successful in:

1. Identifying gold mineralisation to be in discrete quart carbonate –rich veins often of a high- grade.
2. That there is mineralisation encountered at depth as projected by the RSIP geophysical survey.
3. That there is potential for multiple reefs whose orientations can best be tested by diamond drilling.

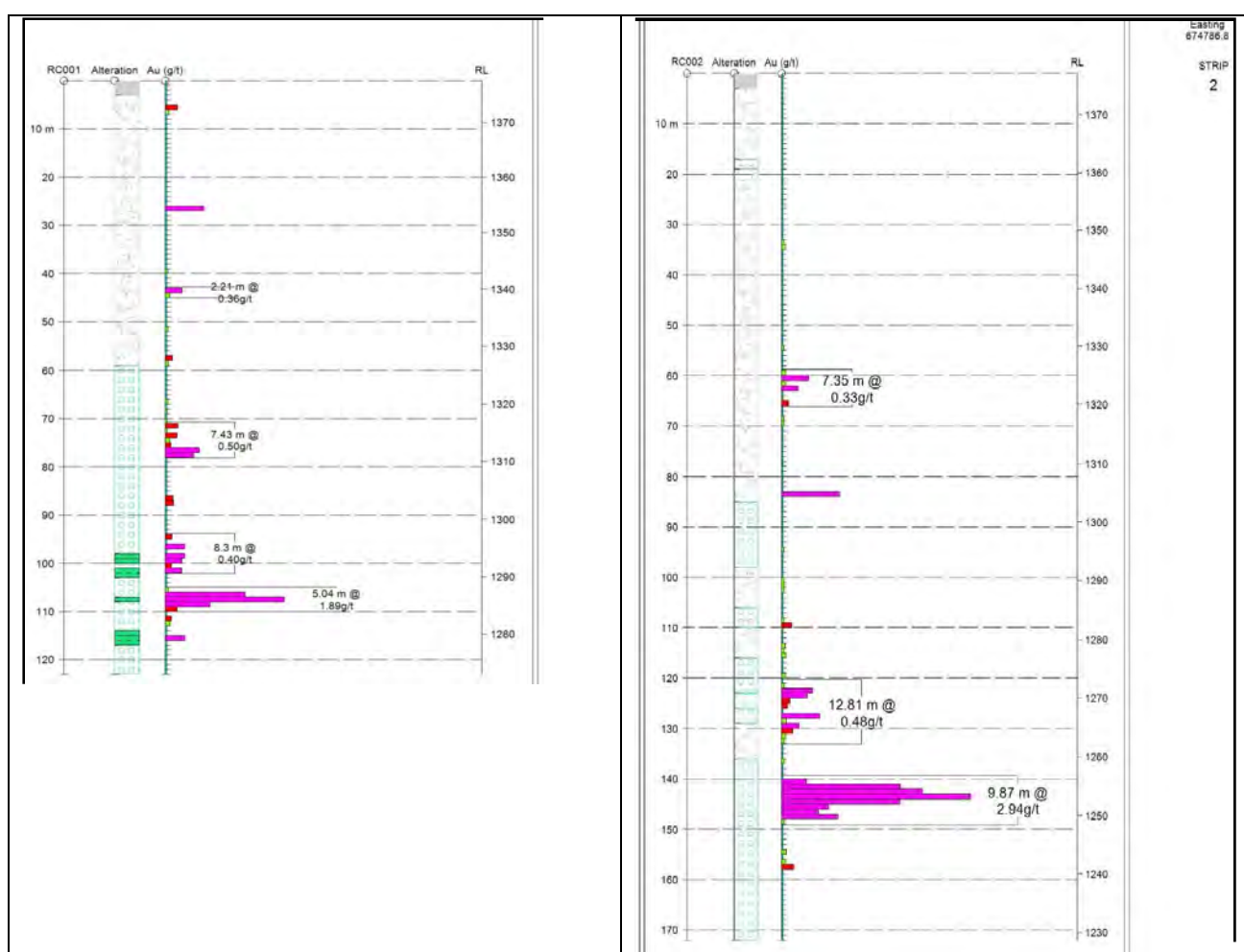
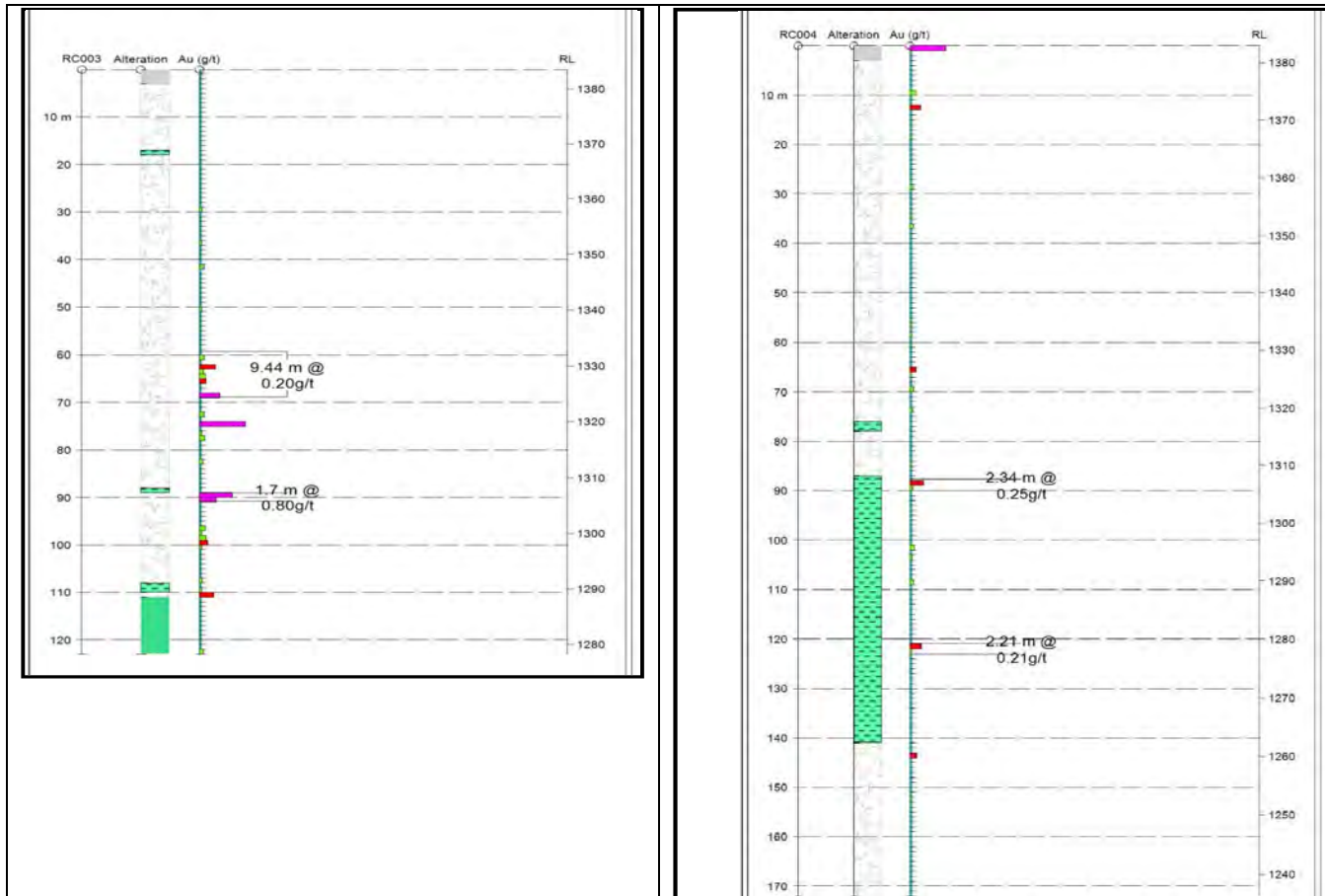


Figure 27: Line 674785, Furthest West : Strip Logs of Holes HPRC001 and HPRC002 showing gold intercepts and alteration

1. Section 1-2 have the best intersection at a vertical depth of 100m while Section 9-10 had a good intersection at a vertical depth of 60m.
2. Modelling of gold grades seems to indicate that the reefs have a steep to moderate southerly dip. No structural data, as would be acquired in diamond drilling, is discerned from the RC program.

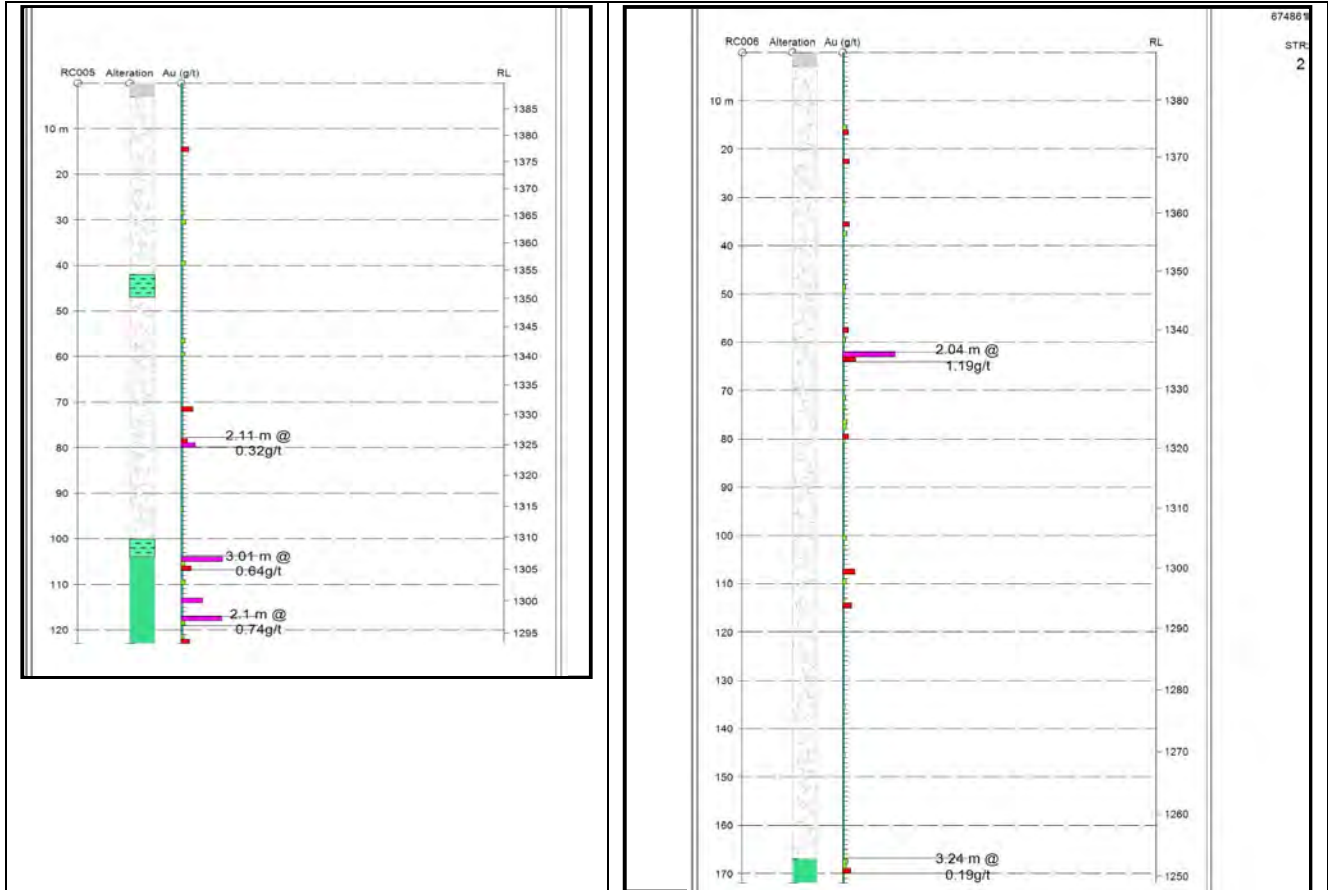


**Figure 28: Line 674825, Second West Line : Strip Logs of Holes HPRC003 and HPRC004 showing gold intercepts and alteration**

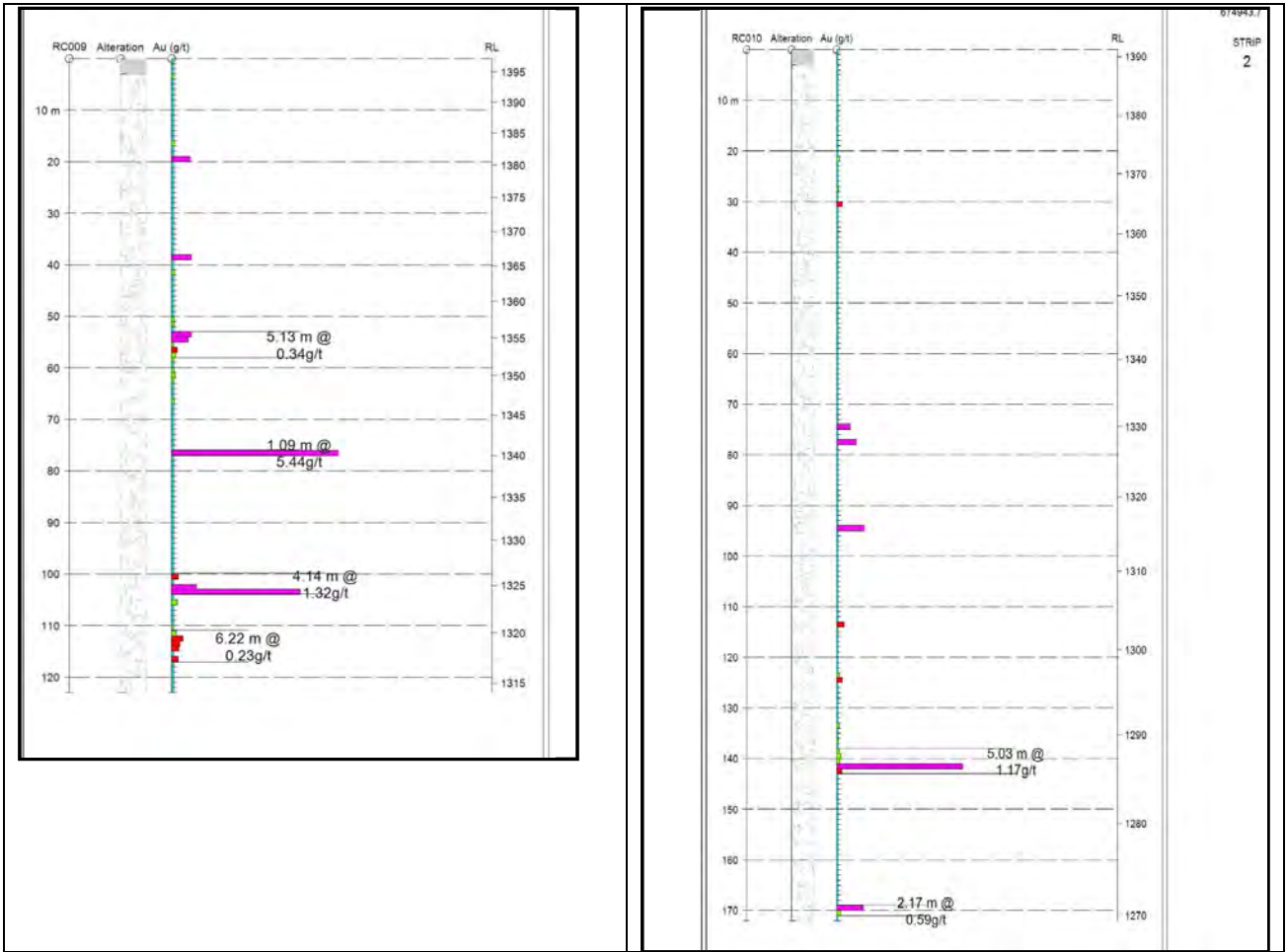
Assay results gave encouraging intercepts including:

- HPRC-001: 1m @ 1.42 g/t Au; 7.4m @ 0.50 g/t Au incl. 2m @ 1.14 g/t Au; **5.04 m @ 1.89 g/t Au** incl. 3m @ 2.98 g/t Au.
- HPRC-002: 3m @ 0.62 g/t Au; 1m @ 2.28 g/t Au; 12.81m @ 0.48g/t Au incl. 2m @ 1.11g/t Au and 4m @ 0.70 g/t Au; **9.7m @ 2.9 g/t Au** incl. **3m @ 5.89 g/t Au** and **4m @ 2.54 g/t Au**.
- HPRC-003: 1m @ 1.46 g/t Au; 1.7m @ 0.80 g/t Au incl. 1m @ 1.03 g/t Au.
- HPRC-004: 1m @ 1.20 g/t Au.
- HPRC-005: 3.01m @ 0.64g/t incl 1m @ 1.5 g/t Au; 1m @ 1.45 g/t Au.
- HPRC-006: 1m @ 1.95 g/t Au.

- HPRC-009: **1m @ 6.04 g/t Au; 1m @ 4.66 g/t Au.**
- HPRC-010: 1m @ 1.14 g/t Au; 5m @ 1.18 g/t Au incl. **1m @ 5.23 g/t Au;** 1m @ 1.10 g/t Au.



**Figure 29: Line 674860, Central Line : Strip Logs of Holes HPRC005 and HPRC006 showing gold intercepts and alteration**



**Figure 30: Line 674945, Eastern Line : Strip Logs of Holes HPRC009 and HPRC010 showing gold intercepts and alteration**

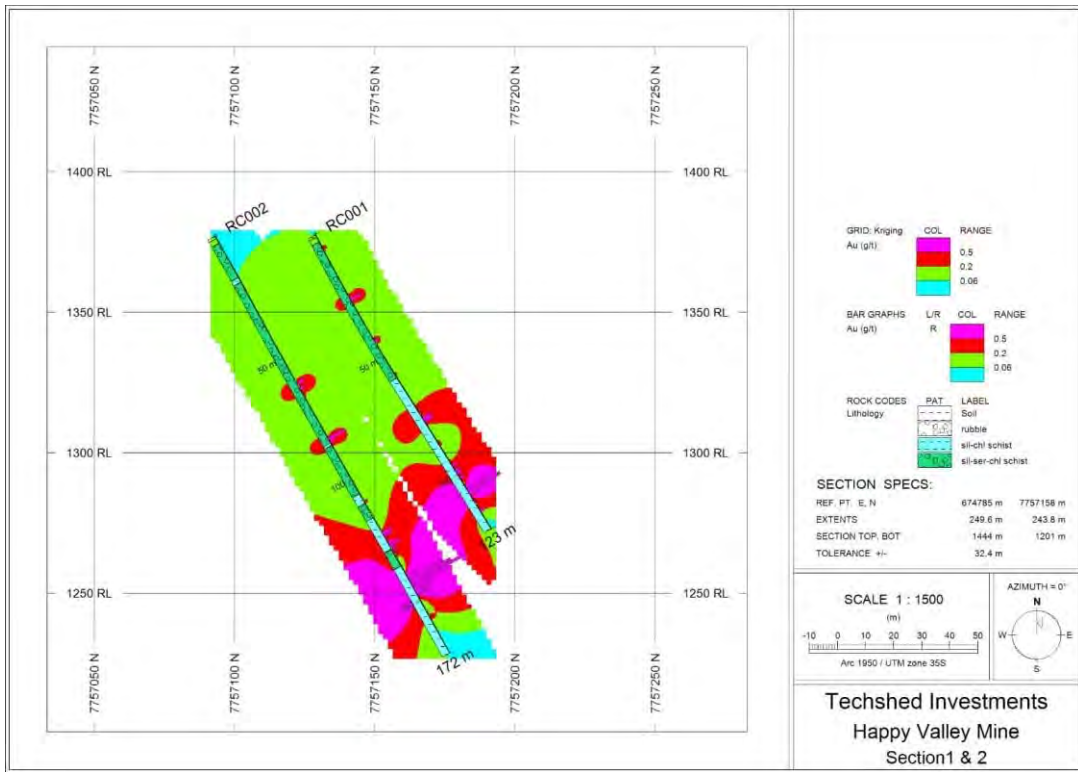


Figure 31 : Section 674785 (Far West) showing Lithology and Grade zones

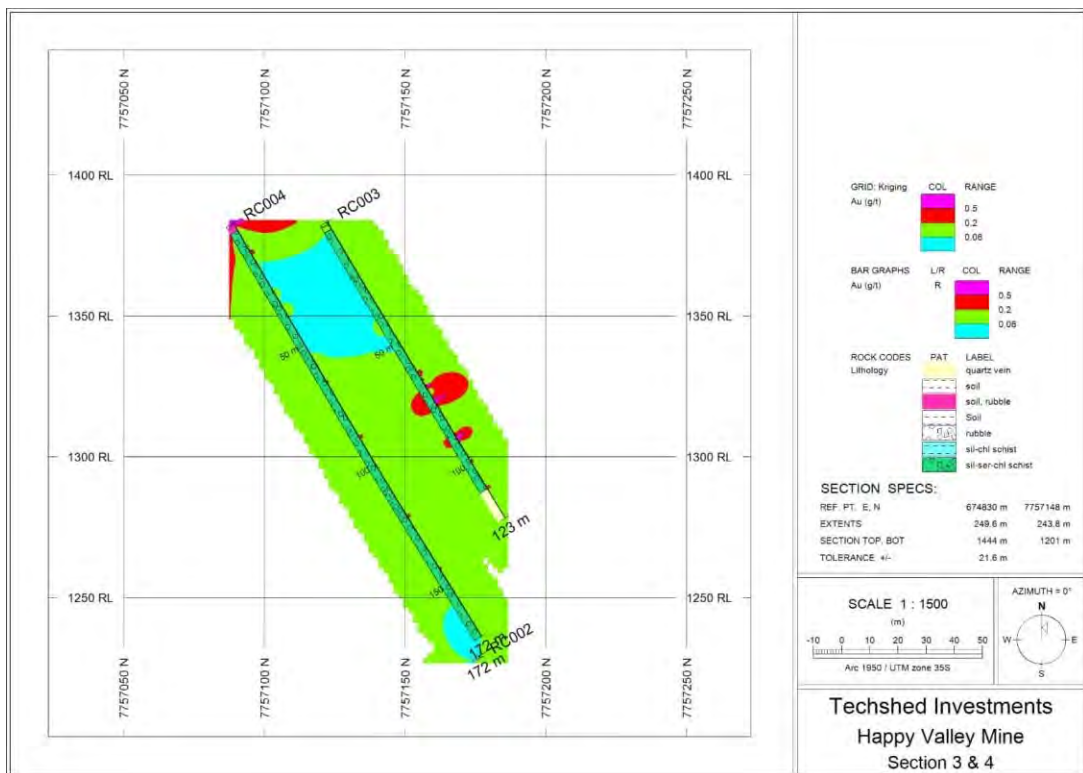


Figure 32: Section 747825 (West) showing lithologies and Grade zones



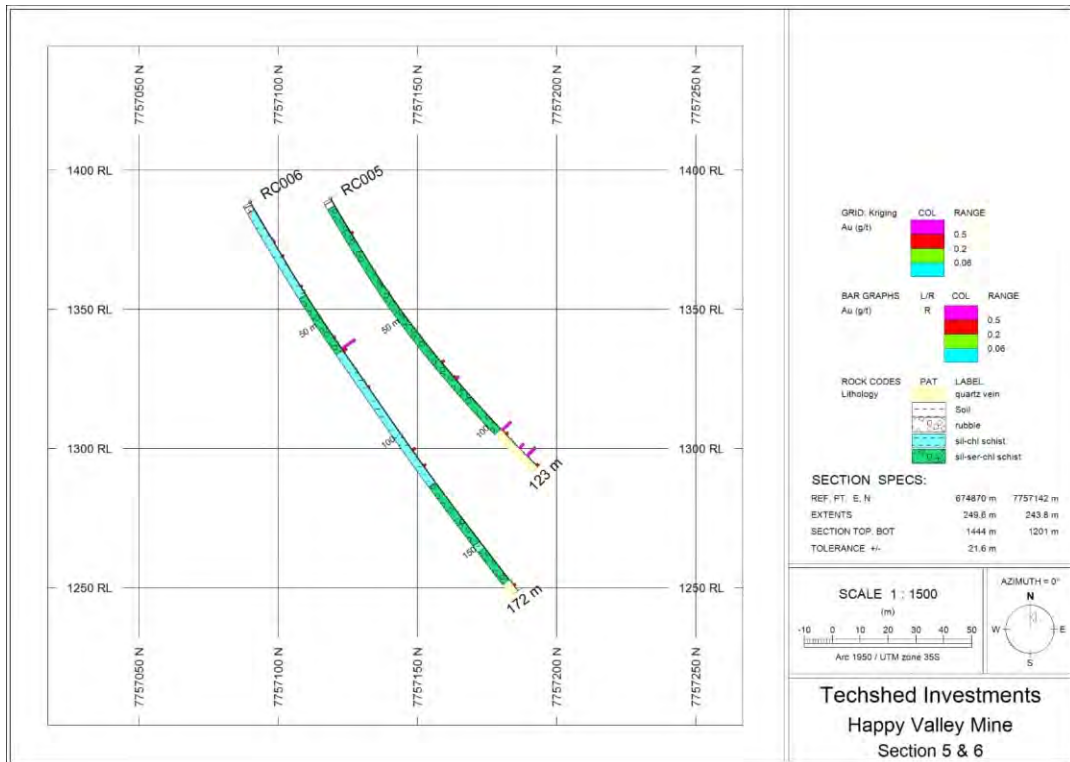


Figure 33 : Section 674860 (Central) showing lithologies and grade zones

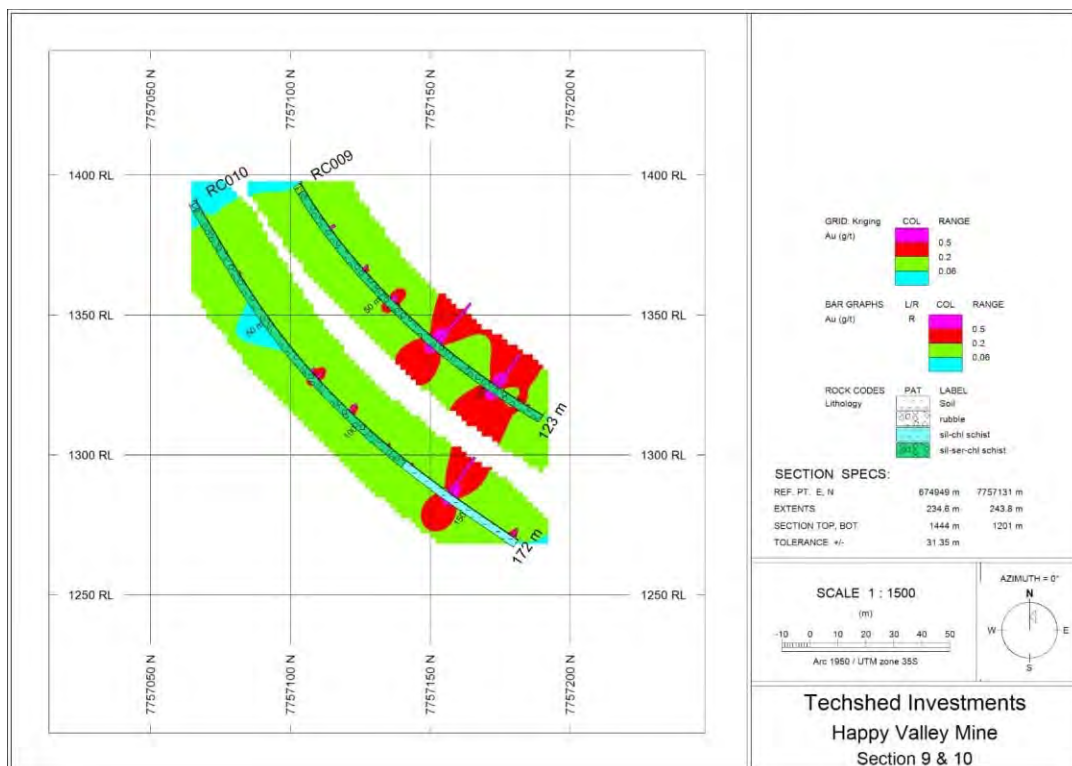


Figure 34 : Section 675945 (East) showing lithologies and grade zones

## TARGET modelling

Modelling was done on the drill holes and a tentative 3\_D interpretation is shown in

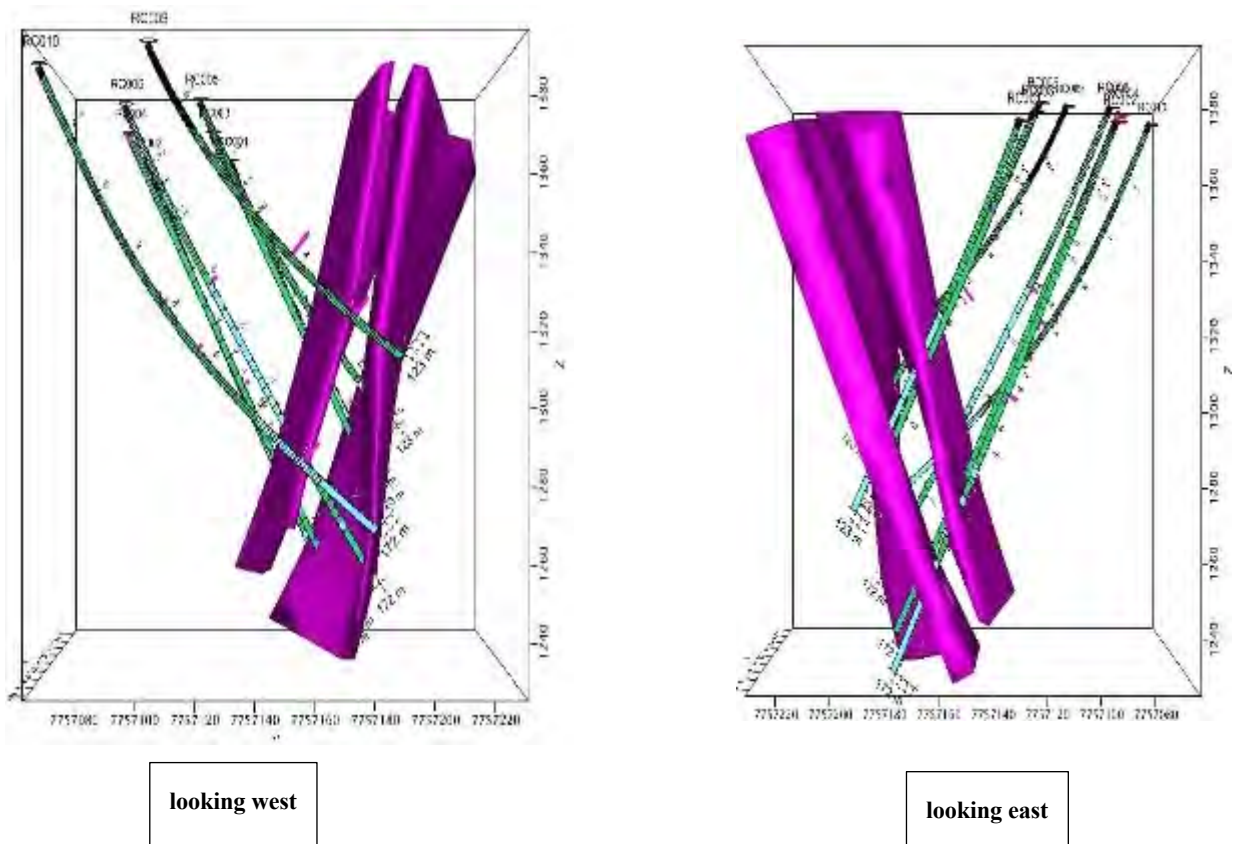


Figure 35 : Interpretive 3D model of potential orebodies

## 11 SAMPLE PREPARATION, ANALYSES AND SECURITY

This section outlines the sample preparation and analysis for both the 2020 Trenching programme and the subsequent 2022 RC drilling programme.

### 11.1 SAMPLE FIELD PROCEDURES – TRENCHING

Trench sampling was carried out by an experience field officer contracted by TechShed, with two assistants. The following describes the procedures.

#### 11.1.1 Sampling set out in the Field

##### Preparation

- The following items were used: Plastic bags, sampling pick, pick and shovel, poly-woven bags, 30m measuring tape, wooden pegs, marker pens, stapler, notebooks, spray paint.
- the plastic sample bags were prepared by pre-numbering with black marker pen and inserting counter tickets.
- A GPS receiver was used for setting out trenches.
- Trenches were dug by excavator to bedrock and at least 10cm of bedrock was exposed to sample and gravity feed the wall material into the sample bags.
- the sample intervals were set out on the side walls. On the start of the sample line hammer a peg close to the floor into the side wall and mark this with the trench number and details.
- Care was taken to always sample and log all trenches in a consistent direction to avoid confusion.
- At surface was also placed a marker.
- A 50m measuring tape was rolled out in such a way that it covered the full extent of every sample interval.
- Spray paint was used to mark 1-metre intervals on the side walls. Specific lithological contacts encountered were not included in a sample interval but functioned as sample boundaries. This was also applied for suspected areas of mineralization.
- The side walls were cleaned with a wire brush or small shovel as the excavator always leaves a layer of smeared muds on the side walls that contaminates the sample.

#### 11.1.2 Sampling Process

- Before start of the sampling the geologist logged the geology.
- After the geologist had logged the geology, samples were taken at 1m intervals consistently except at lithological contacts or mineralized zones.
- At least 2kg of material was inserted in a sample bag.
- Care was taken not to bias the sample by over-representing quartz veining or obvious mineralisation.
- Also, care was taken not to include too much of a friable rock and neglect to sample more massive rock types in the sample interval.

- Equal amounts of sample were collected from each section of the sampling line.
- Sampling was one on one side of the wall and straight into the plastic bag to avoid contamination associated with first collecting in a tarp as it must be cleaned after every sample.
- the bag was stapled and closed, and the sample number written on a sheet together with the interval and line number on the sample sheet.
- The sample was placed in the middle of the interval left for later collection and after final reconciliation when the trench had been finished.
- The geologist made a final check of samples, examined the cutlines/channels, checked sample numbers with intervals on the sheet.
- The samples were then bagged up polywoven bags and transported to the laboratory.

### **11.1.3 QAQC Inserts**

- No standards and blanks were available as they could not be accessed during the strictest COVIC-19 early lockdown period.
- Duplicates were inserted once every 20 samples and such samples were collected from the same cutline as the original sample.

## **11.2 SAMPLE FIELD PROCEDURES – DRILLING**

### **11.2.1 Rig Sampling Process**

- the plastic sample bags were prepared by pre-numbering with black marker pen and inserting counter tickets.
- Samples were collected in sample bags, as per the photograph below from the drill cyclone. The cyclone serves to reduce the speed of the sample stream and to separate the sample from the air, allowing collection. It is important to have an efficient cyclone to both collect as much sample as possible and avoid contamination of the meter long samples. The cyclone was flushed after each sample was collected,
- RC drill cuttings are collected in sample bags by the drill contractor on continuous one-metre intervals from a rotary cyclone splitter.
- RC sample weights from the drill program typically range from 15 to 37 kg and average about 23 kg.



**Photo 8: Sampling at the Rig, Packing and Labelling Samples**

- A reference subsample (sieved) of each interval is placed in a chip tray for logging purposes.
- At the end of a sample run, the sample bag opening is secured and laid out on plastic ground liner to facilitate drying of the sample.



**Photo 9 : Sampling of Drillholes at Happy Valley Project**

### 11.2.2 QAQC Inserts

Valid QAQC sampling procedures were undertaken for the drilling programme. 1306 samples were submitted to the laboratory and of these – 10% were QAQC samples. Every 10 samples, at least one QAQC sample was inserted. Priority was placed on the Duplicates and Certified Reference Material (CRM), or sometimes known as Standards. For every one blank inserted, two duplicate samples were taken one two CRMs were inserted. There were two different CRMs used: One low grade and the other high grade. The results of the QAQC will be discussed later in this section.

QAQC Type	Number	Percentile of Total
Duplicates	48	4%
Blanks	27	2%
CRMs (Standards)	51	4%
<b>TOTAL</b>	<b>126</b>	<b>10%</b>

Table 8 : QAQC Samples used in Phase 1 drill programme

### 11.2.3 Sample Security and Dispatch

- After seven days at the end of the drill program, contract personnel collect the samples from the field and place them at the secured laydown yard.
- Reference chip trays are transported to the site logging facility for geologic logging.
- Drill samples are retained at the secured site logging facility until they are picked up by the commercial lab at site at regularly scheduled intervals and transported to the laboratory facility in Kwekwe, Zimbabwe.
- The sample splits are stored with the Site Geologist and the sample pulps are still at Antech Laboratory. All library samples will be consolidated in Bulawayo in the near future.



Photo 10: Transportation of Samples to the Laboratory

## 11.3 LABORATORY PROCEDURES – TRENCHING

### 11.3.1 MetSolutions Laboratory

The laboratory used is MetSolutions in Bulawayo, Zimbabwe. It is a non-certified laboratory used as an in-house laboratory for Duration Gold Zimbabwe, a mining company based in Bulawayo and operating the Vubachikwe Mine. The laboratory is one of two in Bulawayo, that routinely takes in samples from outside its operations and has served small scale mines which lack in-house facilities. Duration Gold also operates a commercial laboratory - ANTECH in Kwekwe, Zimbabwe, a town 230km northeast of Bulawayo. That laboratory has ISO certification and is frequently used to calibrate the MetSolutions lab in Bulawayo.

### 11.3.2 Sample Analysis

Samples submitted to MetSolutions laboratory were first dried and then coarse crushed to 70% passing -2mm.

A 200g sub-sample is taken from the crushed material and pulverized to 85% passing 200 mesh (75µm)

A 50g aliquot of pulverized material is then assayed for gold by conventional fire assay methods of fusion and cupellation followed by gravimetric finish.

Sample detection limit is 0.01 g/t Au.

## 11.4 LABORATORY PROCEDURES – DRILLING

### 11.4.1 Antech Laboratory

Drill samples were assayed at the Antech Laboratories facility in Kwekwe, Zimbabwe. The Laboratory is Accredited

ANTECH LABORATORY, 6km peg, Mvuma Road

P O Box 150, Kwekwe, Zimbabwe

Tel: +263 55 22269 or +263772864065

e-mail : [Edson.luwobo@antechlaboratories.com](mailto:Edson.luwobo@antechlaboratories.com)

[contact@antechlaboratories.com](mailto:contact@antechlaboratories.com)

### 11.4.2 Sample Preparation

- Samples submitted to the Antech Laboratories facility are first dried to less than 0.1% moisture content at 110 – 150°C
- Crushing was then done, with 70% passing 5 mm.
- A sub-sample is taken from the crushed material and pulverized to 85% passing 200 mesh (75 µm) .

### 11.4.3 Sample Analysis

- A 30 g aliquot of pulverized material (pulp) is then assayed for gold by conventional fire assay methods followed by AA analysis. (Antech Laboratories Summary of QA/QC Protocols, 2019/Issue No.2)

## 11.5 QAQC – TRENCHING

Duplicate samples were made every 20 samples (a batch, according as the laboratory processes). The table below lists the three duplicate samples assayed.

Duplicate sample	Au assay (g/t)	Original sample	Au assay (g/t)
HVS038	0.38	HVS001	0.30
HVS039	0.38	HVS018	0.30
HVS040	0.36	HVS033	0.28

**Table 9 : Trench Results – QAQC Validation**

It is the opinion of the author that that lab could reproduce the results within acceptable limits for an exploration exercise.

The geologist on this project used duplicates to gain some measure of the labs ability to reproduce results and the correlation of assays with observed mineralization or lack of it was spot-on. For indicative purposes associated with the purpose of the trenching this was adequate as there were resource estimates to be made.

No Certified Reference Material (CRM), or standards were used. The timing of the trenching was during the early days of the Covid Pandemic, and as Zimbabwe sources their CRM out of South Africa, the closing of borders prevented this process from being incorporated.

The author recommends that all future sampling complies with QAQC requirements, and CRM are sourced prior to any further sampling campaigns.

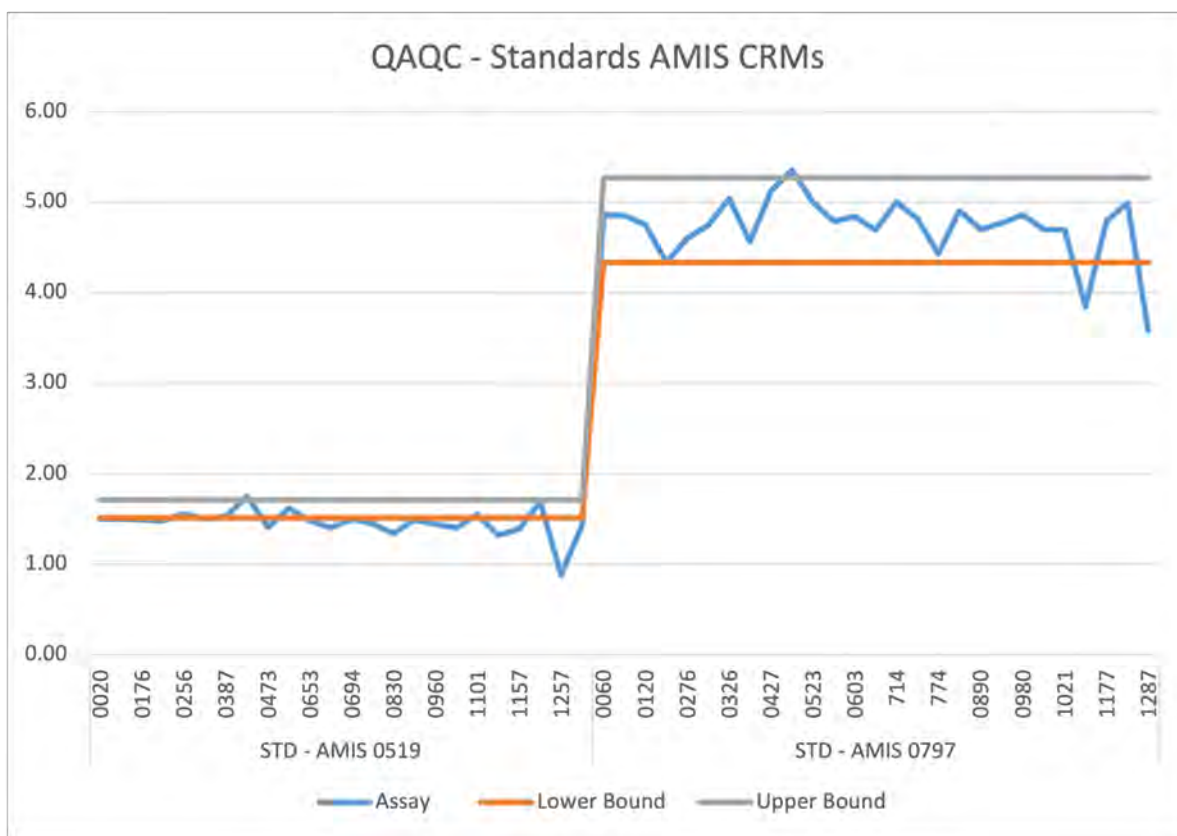
## 11.6 QAQC – DRILLING

The previous section on sampling detailed the insert of the QAQC samples. This section will give the results of the QAQC programme.

### 11.6.1 Certified Reference Material (CRM)

2 CRMs from African Mineral Standards (AMIS) were used. These were purchased from the supplier in South Africa, and 50g was inserted as stated in the ticket run. These are used to test the accuracy of the gold assay. The summary of the accredited elements is given in Appendix 28.5 for both AMIS0519 and AMIS0797. The graph for the performance of these 2 standards is given below.





**Figure 36 : QAQC – CRMs AMIS0519 and AMIS0797 Graph**

The graph above illustrates the blue line as the assay of the CRMS, and the grey and orange line as the 2 standard deviation limit. It can be observed that Antech is reading slightly lower, particularly for the 1.61g/t Au CRM (AMIS0519). The author verifies the reporting of the CRMs is adequate and will not be over-estimating grade.

### 11.6.2 Duplicates

Duplicates are taken to test the repeatability of the gold assay. They are a split of the sample and test the repeatability of the sample. This gives an indication of the severity of the nugget effect, and if the pulverising is poor, often a larger nugget will report. The graph below shows the duplicate samples, although generally of the low grade material, are very repeatable.

It should be stated that the original assay will be used in any resource calculation, and the “duplicate” sample is merely testing the original assay.

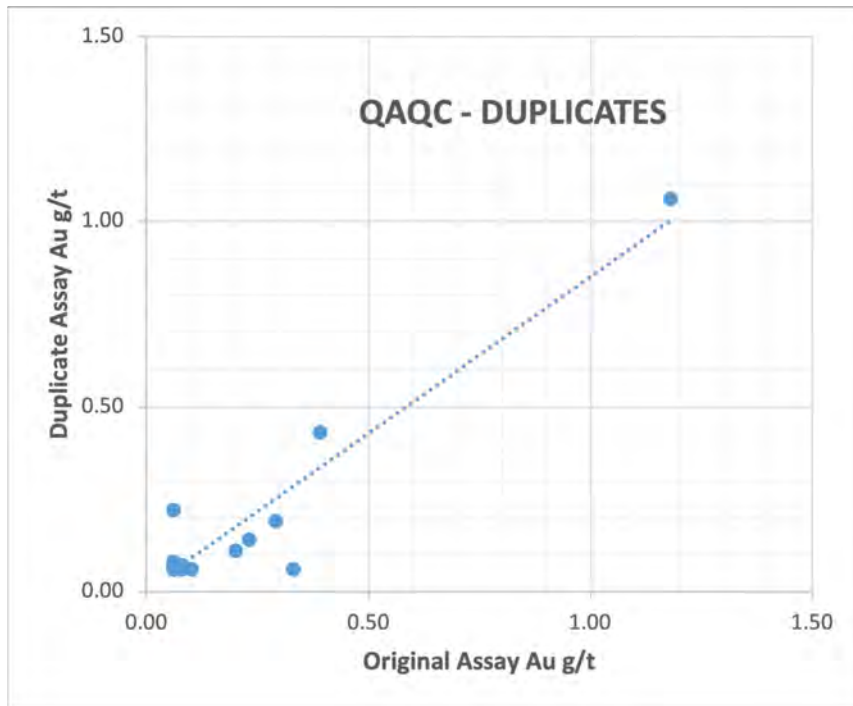


Figure 37 : QAQC Duplicate sued in the drill programme.

### 11.6.3 Blanks

Blanks are inserted to test the sample preparation, and to test if there is any contamination in the laboratory. Normally river sand or building aggregate is used. The graph below shows the blank samples, of which 27 were used over the programme. Only two blanks tested above detection, and that is considered adequate.

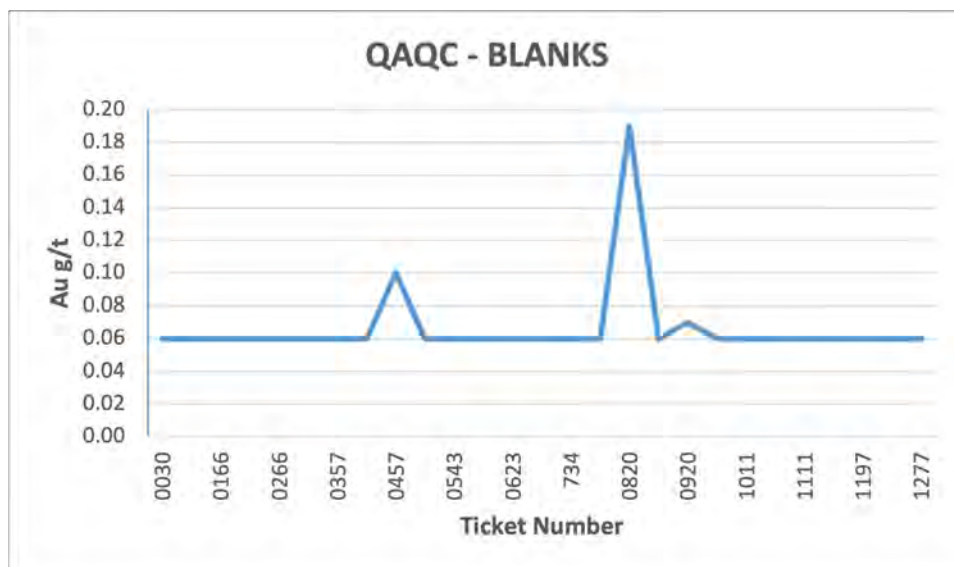


Figure 38 : QAQC Blank Samples.

## 12 DATA VERIFICATION

The author of this report visited the site on 7<sup>th</sup> March 2022 with Moses Banda (the geologist who completed the 2020 exploration) and the CEO of TechShed. The author can vouch that there are several shafts on the property, three of which are probably accessible with some re-equipping. There is a tailings dump the property. The three main reefs have been worked by artisanal miners and show good continuity of the deposit.

The trenching in 2020, reported in the exploration section is still evident, and in fact there has been some artisanal working of the reef that was exposed in Trench 1, as illustrated in the photo below.



**Photo 11 : Trench 1 – where artisanal miners have opened up the reef**

The author validates the positions of the trenches and the fact that mineralised intercepts are in evidence along the strike. The property does have historical evidence of gold mineralisation and mining.

As the author proposed the drilling programme, outlined in the initial 43-101 report, she has been involved during this programme and the compilation of field work. She can vouch for all work done and the accuracy of the data.

### 13 MINERAL PROCESSING and METALLURGICAL TESTING

There has been no recorded Metallurgical testwork on this project. However, there is construction of cyanide leach tanks, illustrated below, suggest at least some material has been subjects to cyanide leach process. Again, no testwork or definition of this resource has been done to date.



**Photo 12 : Leach tanks on the tailings.**

The gold ores have been milled using a 2-3 tonne per hour ball mill with subsequent recovery of liberated gold via gravity concentration methods. The slurry coming is then pumped to dewatering pads, before the dried sands are charged into static tanks for cyanide leach. The pregnant cyanide solution is passed through activated carbon columns, and, at the end of the leach cycle, the carbon is sent to third-party processors for elution and gold recovery.

Records of production to 2020 are not available, however, the last 7 months of 2022 Production is listed below.

<b>Month (in 2023)</b>	<b>Gold Production in Grammes</b>
June	184g
July	9.25g
August	94g
September	124g
October	334g
November	480g
December	628g
<b>TOTAL</b>	<b>1,853.25g</b>

**Table 10 : 2022 Production figures**

## 14 MINERAL RESOURCE ESTIMATES

Although Phase 1 drilling programme has been completed, and some economic intercepts have been reported, particularly in the two western drill lines, the amount of data obtained is not adequate for a resource estimate. However, some “back of the envelope” calculations, plus rudimentary modelling, are illustrated below to indicate the potential - an inferred resource of 20,000 ounces - of the mineralised zone.

There is some concern that the drill holes HVRC03 and HVRC04, or the second most westerly line drilled, might have been drilled “over” the orebody and the fact that there are no reasonable intercepts may be from misplaced holes. The proposed survey of the underground workings will help guide the drillholes in the future and prevent this from happening again.

### 14.1 MODEL

A model of three parallel ore zones was undertaken, using the author’s discretion to create a continuous zone. The Main zone is believed to reflect the underground workings, and approximately 40m on the horizontal to the south of this is the Zulu reef. A continuous although low grade reef 30m south of the Zulu is also modelled. These three reefs are shown below, firstly in plan view and then in Long Section View, where the grades (on the right) and widths (on the left) are given.

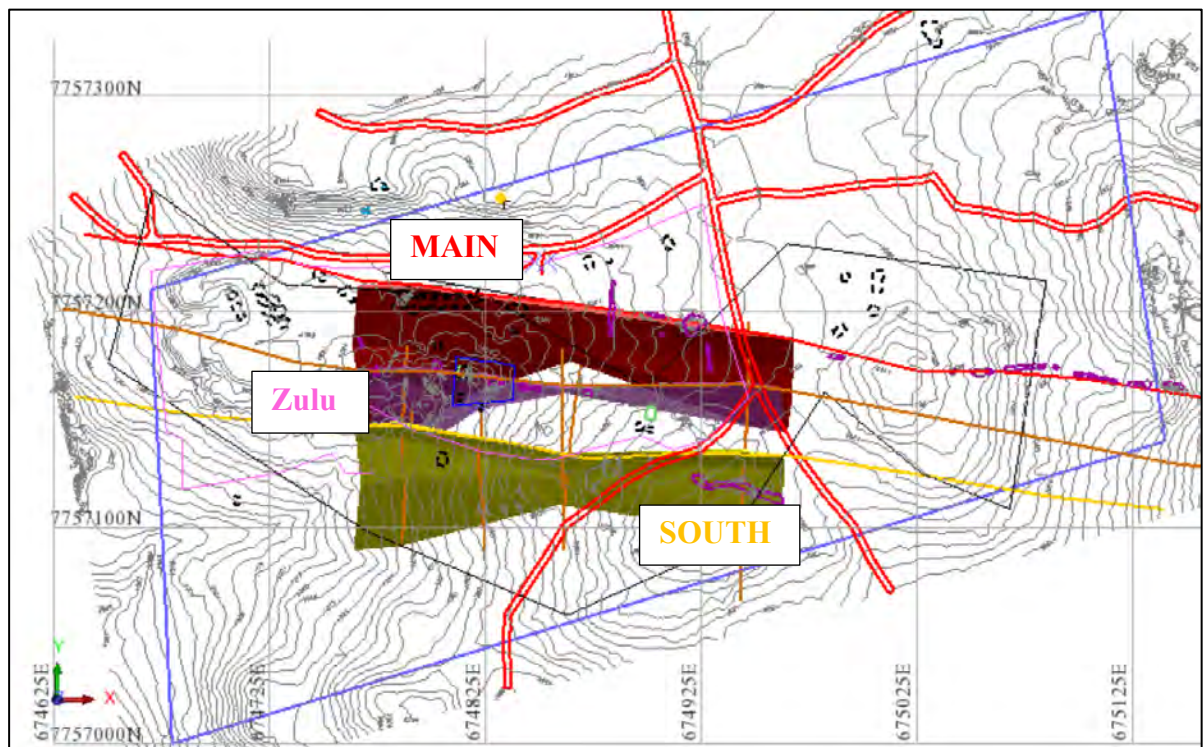


Figure 39 : Plan View of the 3 Modelled Reefs

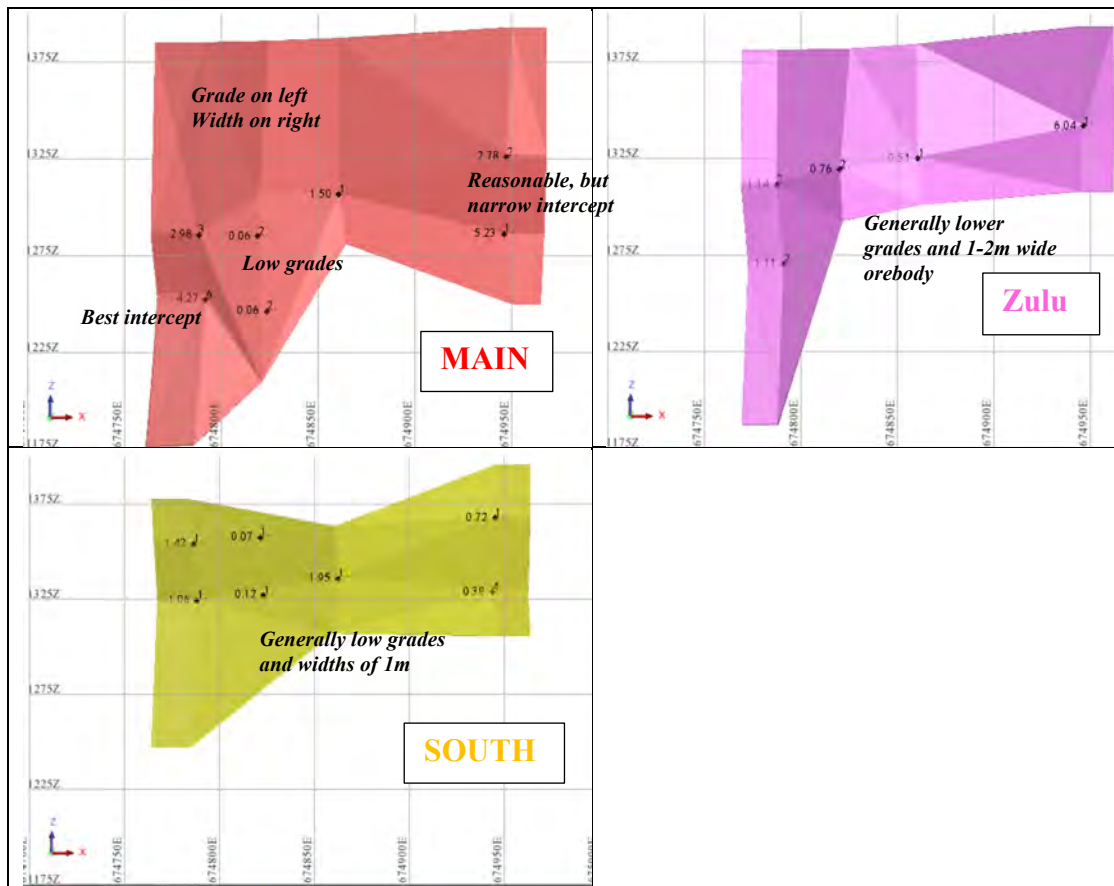


Figure 40 : Long Sections of the 3 Reef zones, showing the Pierce Point intercepts

## 14.2 TONNES AND GRADE OF DRILLED AREA

Some attempt was made to consider the average grade, using the intercepts above. In reality, if a Block Model is created, the “below cut off” grades would be removed. Herewith a first part estimation based on the widths above and extents for the tonnages (SG of 2.7 used, which is based on the average fresh rock SG of Archaean rocks in Zimbabwe and often used in mining operations.). The average grades given are the weighted average (based on the widths).

	VOL	TONNES	AV GRADE	AV WIDTH	OUNCES
<b>MAIN</b>	62,224	168,005	2.77	2.43	14,962
<b>ZULU</b>	27,478	74,191	1.57	1.6	3,745
<b>SOUTH</b>	21,707	58,609	0.69	1.43	1,300
<b>TOTAL</b>	111,409	300,804	2.07	2.03	20,007

Table 11 : First Pass Inferred Resource figures based on average intercepts

## **15 MINERAL RESERVE ESTIMATES**

This section is not applicable to this report.

## **16 MINING METHODS**

### **16.1 Surface Workings**

There is an array of excavations which are assumed to be reef thick. In others, workings can be up to 5 metres wide but mostly are only 2 metres wide. They strike WNW to ESE within a predominantly E-W strike of foliation and cleavage.

There are extensive workings on surface. These are mainly strike trenching and open stopes, with several shafts. The workings have been carried out over a long period, with some related to work done within the last few years and some are current. There are very few cross trenches.

Open stoping/strike trenching exposes several different veins, all with a similar strike direction and dip: at least five veins are indicated, depending on the claim's boundaries. About 600 metres of strike along veins are shown. (Hastings, 2020). This work is detailed in the historical exploration – Section 6.

### **16.2 Shafts**

Up to nine shafts are located within the Happy Valley claim with the main shafts being worked being the Main shaft, the Pemba shaft, and the Zulu shaft. From the longest length of the claim the distance is 600 metres.

The depth of workings is 30 metres at the lower end at the Main shaft and 40 metres on the higher Pemba shaft. This line of shallow shafts lies on the western adit to main shaft (shaft 2) to the east shaft (shaft 9) with a strike of 600 metres and makes up the main workings. These shafts have been defined from the work done by Percy Hastings in 2010 and are all outlined below in their purpose.

### **16.3 Geotechnical and Hydrogeological Work**

As noted in the History section, there has been small scale mining without regard to the need for pillars. Mining in the 1963 was often halted due to water incursions. No work as been done on either Geotechnical or Hydrogeological, but both should be addressed as deviations from requirements for both has lead to the cessation of mining activities during historical times.

## 17 RECOVERY METHODS

Historically, in a report dated 2010, Mr Hastings suggests that 70% of the gold may be available through fine grinding and gravity concentration, the remainder of which should be won through the cyanidation of residues. There has been no testwork to validate this, but it is a fairly common process among small scale workers in Zimbabwe.

## 18 PROJECT INFRASTRUCTURE

The Happy Valley Mine consists of a few permanent buildings being an office, a mine manager's room, plant operator's quarters, two wooden cabins and two large tents with ablution facilities and a few storerooms. A dump is at the western end of the mills.

The figure below is the siting of works from 2018, submitted and approved by the Ministry of Mines.

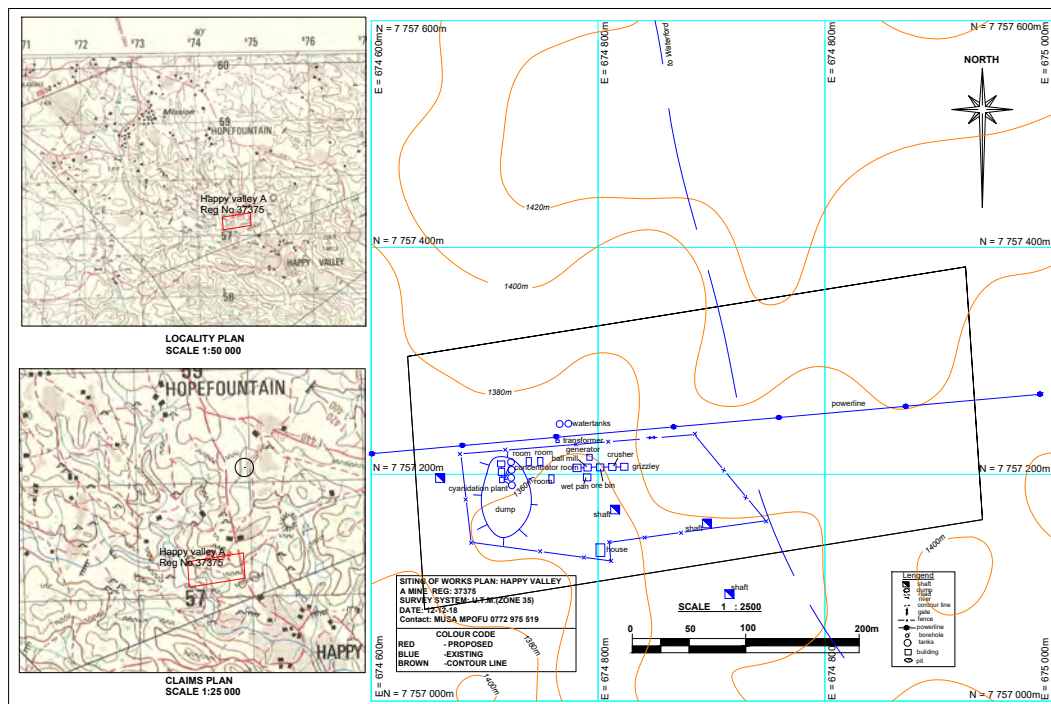


Figure 41 : Siting of works plan as approved by the Ministry of Mines (2018).



## 18.1 Mining and Processing Equipment

NUMBER	DESCRIPTION
2	ABJ 4x6 Ball Mills
2	3-Part Conveyor System inclusive of Crusher, Ore Bin and Feeder
2	ABJ Concentrator Tanks
1	Air Compressor
1	Lovol Smart Generator
2	Winches (2t & 3t)
2	Headgears
3	Submersible Pumps (Terrier Pumps 1.5HP)
1	Jaw Crusher
2	5000l Jojo Tanks
1	Welding Machine
2	Jack Hammers
1	Airleg
3	Carbon Columns
	Sundry Mining & Building Tools

Table 12 : Mining and Processing Equipment

## 18.2 Electricity and Water

100k VA line transformer off an 11kV power line that passes by the mine and provides adequate power for mining and milling operations.

5.5 kVA for care and maintenance and pumping only as power back up.

Water has been supplied from underground pumping. A borehole has been drilled. A pre-existing borehole on site dried up but could be resuscitated after the rains to complement existing water supplies.

## 18.3 Permanent Buildings

Happy Valley mine consists of a few permanent buildings consisting of:

- office
- mine manager's room,
- plant operator's quarters,
- 2 wooden cabins and
- 2 large tents
- ablution facilities.

A north-south road leads from the main Mission Road and cuts across the claim dividing it into two with roughly 1/3 being the eastern portion of the claim. Tracks to shafts are accessible for ore removal to plant. The road is accessible all year round

**18.4 Personnel**

A mine manager and a plant manager are on hand full time as they are resident. A trim labour force has been doing maintenance and plant upgrading and compliance duties. A security company provides 24-hour armed guard duties. An Environmental Impact Study is underway currently and is expected to make recommendations. Infrastructure development is on-going to meet legal and operational requirements as per the mining plan.

	
<p>Installed milling capacity as demonstrated by two parallel ball mills that can process up to 2,600 tonnes of ore per month.</p>	<p>The gold processing room in the foreground and the ball mills in the background at Happy Valley Mine.</p>

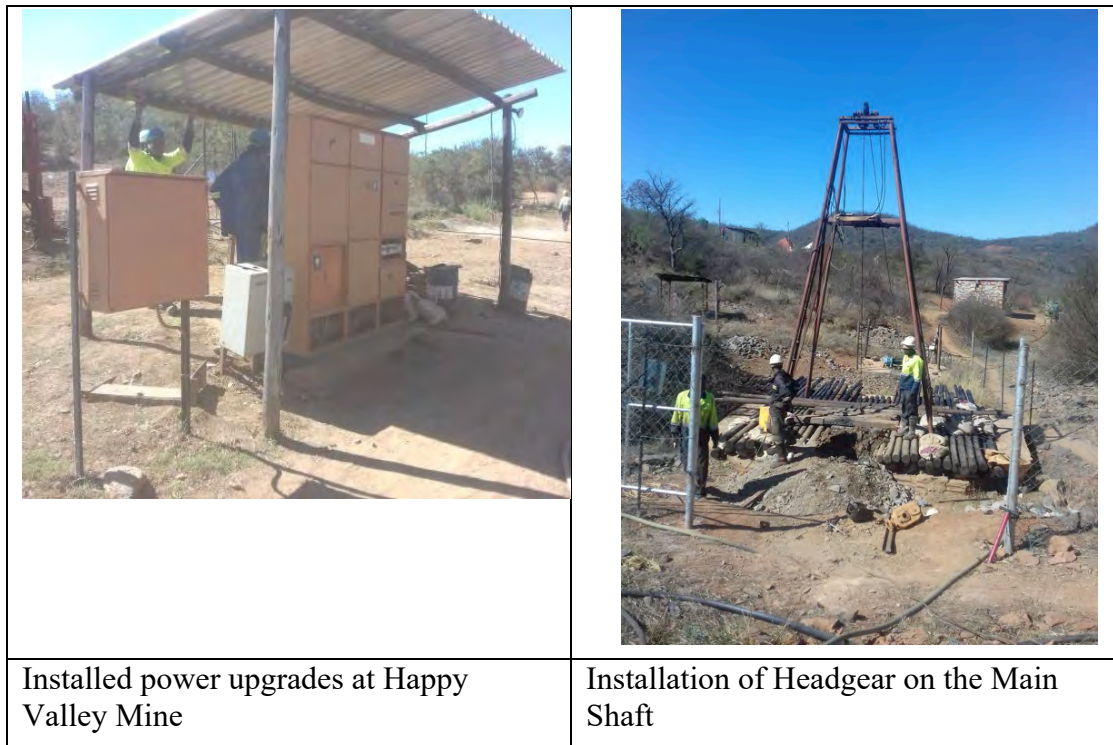


Photo 13 : Infrastructural Photos taken in 2020

## 19 MARKET STUDIES and CONTRACTS

This section is not applicable to this report.

## 20 ENVIRONMENTAL STUDIES, PERMITTING and SOCIAL or COMMUNITY IMPACT

This section is not applicable to this report.

## 21 CAPITAL and OPERATING COSTS

This section is not applicable to this report.

## 22 ECONOMIC ANALYSIS

This section is not applicable to this report.

## 23 ADJACENT PROPERTIES

The author has been unable to verify the information on the adjacent properties, and therefore the comments below are not necessarily indicative of the continuity of mineralisation. In order to provide verifiable data, there would be a requirement for a Technical Report and this is not available. Therefore the comments below are merely the author's opinion and not verifiable fact.

The illustration below shows the claim Happy Valley A, registration number 37375. The image is not clear, but this is how the Ministry has the claims currently, as there is no cadastral system in Zimbabwe. The author is therefore unable to give exact coordinates information on the adjacent claims. This is the best impression available. There is a faint indication of claims both East and West of the claim, suggesting that the strike extensions may be claimed. This would have to be verified. However, there is a possibility that north and south are open, and if required for mining infrastructure, particularly the north – the ground is probably available. However, in order to validate these statements, it would be required to go the Ministry of Mines and get valid certificates with the co-ordinates of the surrounding claims.

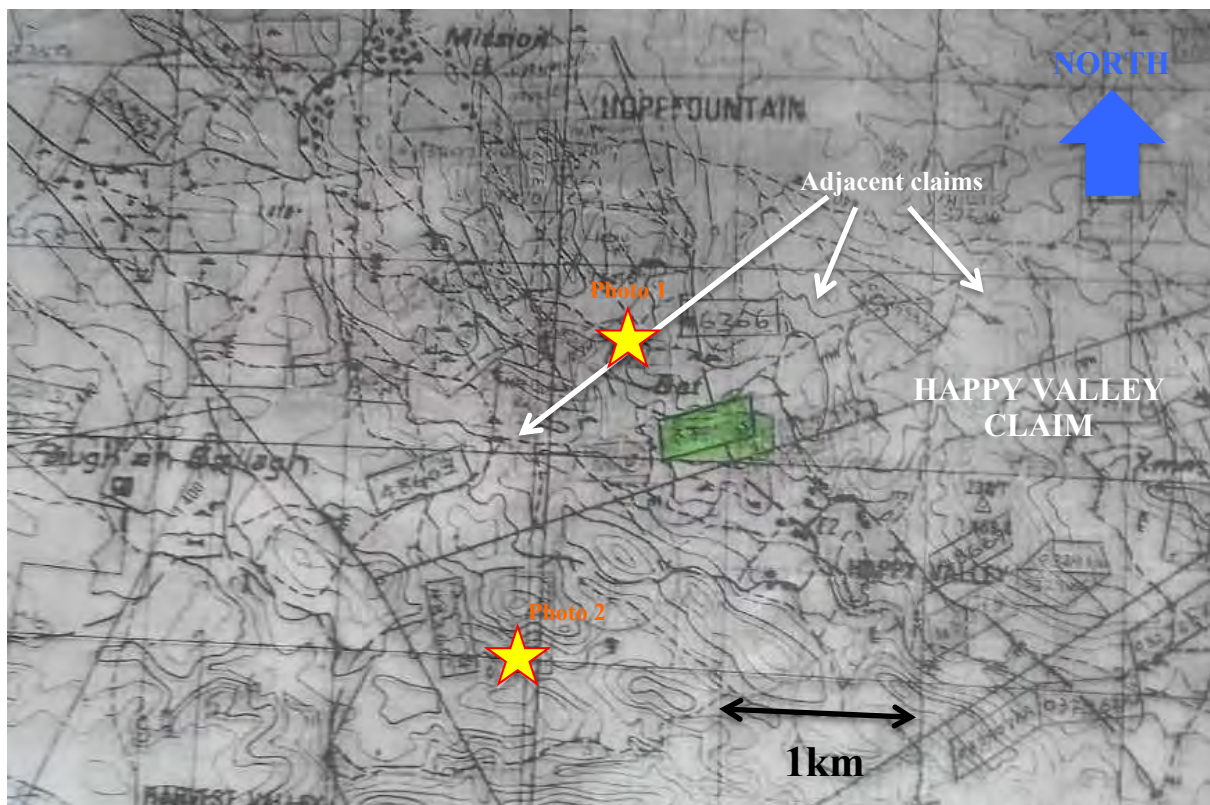
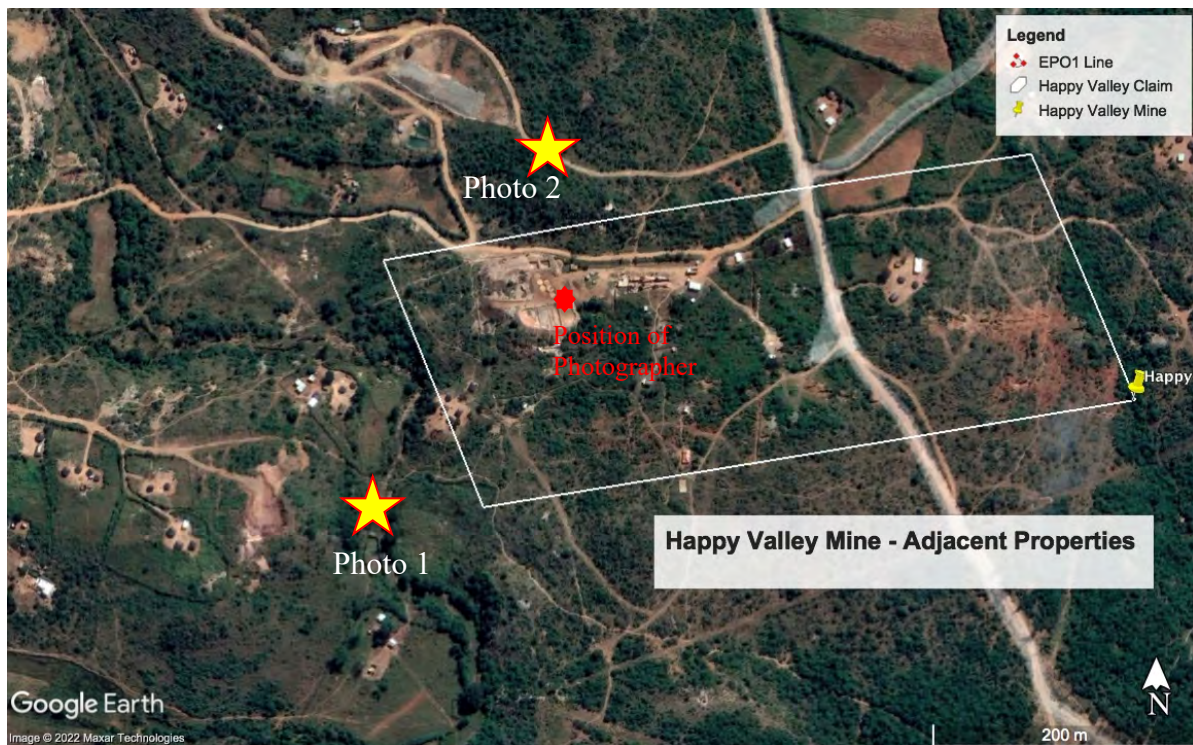
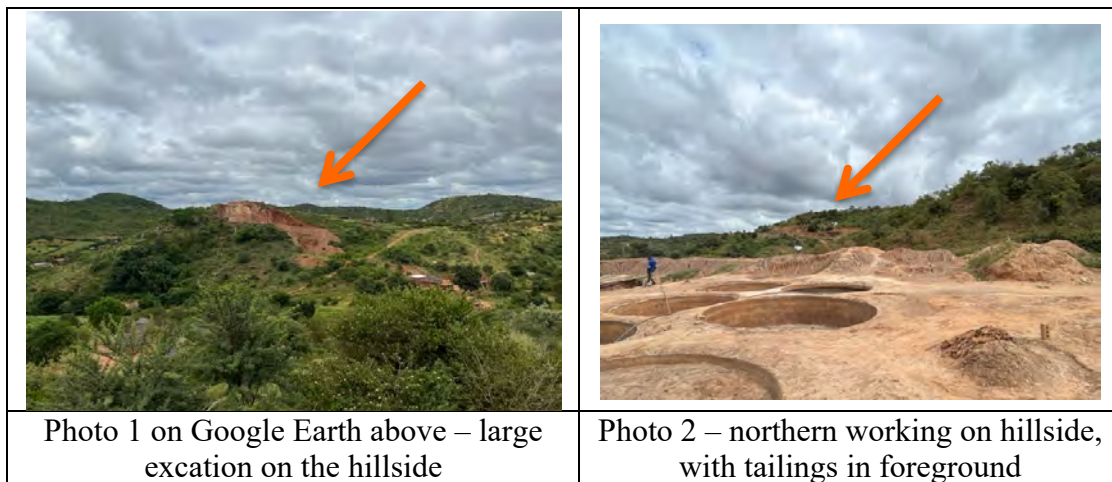


Figure 42 : Ministry of Mines Map of Adjacent claims holders.

Having said all of this, there is strong visual evidence of active small-scale mining on the neighbouring claims. In fact, the Hope Fountain area has undergone a mini “gold rush” recently, with some large nuggets being found near surface in the general district. Following on is photographs in relation to a May 2021 Google Earth image of the neighbouring blocks which are probably less than 1km distant.



**Figure 43 : Google Earth Image May 2021, with adjacent Properties, which are being worked.**



**Photo 14 : Photographs of Adjacent properties from the Tailing Dump**

## 24 OTHER RELEVANT DATA and INFORMATION

This report contains the known historical exploration reports.

## **25 INTERPRETATION and CONCLUSIONS**

### **25.1 SIGNIFICANT RISKS AND UNCERTAINTIES**

Historical exploitation has suggested a relatively small-scale operation. It is generally believed that the operation has never been sufficiently funded or explored to reach any potential, and there is no history of a single exploration hole on this site. However, if this is viewed from another angle, the risk could be that the mineralisation is patchy and not continuous and has therefore never attracted the funding that is required to develop the property. This is the inherent geological risk of Archaean of gold mineralisation. The gold reefs may pinch and swell, and so the grade is “lost” along strike. There is always the risk of again “losing” the reef due to faulting. Careful and systematic geological mapping and input should reduce this risk but providing a geological model and predicted faulting that assists in the mining “following” the reef.

However, it is the author’s opinion that any prospect should not be written off prior to some type of drilling programme. Exploration data, and particularly the geophysics and the on seam trenching and excavations does certainly indicated that there is a reef gold deposit worth following up.

### **25.2 GEOLOGICAL INTERPRETATIONS**

A summation of conclusions reached about Happy Valley Mine:

- The continuation of present orebodies as shown by shafts and excavations is evidenced by the RSIP surveys. The coincidence of the RSIP anomalies with old workings and shaft and underground workings is emphatic.
- Lenticular quartz veins on strike and down dip are the primary gold mineralized rock type. (Evidence from old workings shafts, underground workings, geophysics RSIP survey).
- A west-north-westerly trending gold mineralized orebodies have been shown with conjugate directions of mineralization in NW and SW directions not investigated. (Geological mapping, geophysics MAGNETICS and RSIP).
- The maximum depth of the 11+ kilograms of gold that have been extracted is 40 metres. Recent geophysics has shown structures measured down to 250m and open-ended. At depth. (RSIP)
- The lithology variation as indicated by geo-magnetic data is gradational from felsic metavolcanics in the north to mafic lava flows to the south. The trend of rocks is WNW, coincident with the main mineralization trend. The lithological demarcations therefore serve as weaknesses conduits for gold mineralization or may be zones where of weakness where silica-rich fluids would deposit gold and sulphides.
- The nuggety nature of the gold mineralization is highly suspected though not tested. It could prove the difference between mining profitably and would recommend that QAQC be applied rigorously, including laboratory quality testing, on all sampling as well as immediate acquisition of crushing material to prepare own samples and ultimately assay own samples and beyond.

### 25.3 CONCLUSIONS

The Happy Valley mine is a gold claim that has both historical and current production, proving that there is certainly gold potential on this claim. The surface exploration work that has been completed has verified historical production from the gold reef present on the claim. The Phase 1 drill programme has proved to 150m depth that there is economic gold mineralisation on 2 parallel reefs, with a best downhole intercept on the far western line of **9.7m @ 2.9 g/t Au including 3m @ 5.89** at a depth of 130m below surface.

Happy Valley mine has the potential to mobilise gold in the Hope Fountain area. From the study conducted to date it is recommended to follow a path of development and exploration while continuing operations.

## 26 RECOMMENDATIONS

### 26.1 WORK PROGRAMME – UNDERGROUND SURVEY

Some of the underground workings are accessible, and a survey of these would be very useful in “tying” in the recent drilling with the historical mining. This will give greater certainty to the orebody model and hence enhance the confidence in the resource. A surface survey has been undertaken as part of the 2022 drilling programme. It is considered that the same surveyor that did the surface survey, and quoted for the underground survey would be employed.

### 26.2 WORK PROGRAMME – RESOURCE DRILLING PHASE 2

Phase 2 was dependent on results from Phase 1. It can safely be said that Phase 1 drilling was a success, and Phase 2 should be implemented. This has been somewhat expanded from the initial phase with the following objectives:

- (a) **PHASE 2A – Strike Extension:** Drill out the entire strike of the Happy Valley claim at 40 x 40m grid. Define a 500m strike and 150m down dip resource on a drill grid of 40 x 40m. Phase 1 only considered a 200m strike. It is envisaged that the Main and Zulu reef will get some kind of depth definition. This programme is estimated at 2,320m of RC drilling. The drill lines will be similar to those already drilled, and continue on a uniform grid pattern.
- (b) **PHASE 2B – DOWNDIP EXTENSION :** Drill 3 diamond holes, two on one line and one on a line 200m away. This will give a good geological representation of the depth extension of the reef. The holes on the line of the good intercepts will define the resource at the depth of 250m and 350m below surface and that on the line 200m to the east will define the resource at 250m depth below surface. This importantly defines the style of mineralisation, and the core allows detailed geological interpretation, including the deportment of the gold, and the likelihood of a refractory nature. This drill programme is proposed at 1,300m.
- (c) **PHASE 2C – Other Geophysical Anomalies :** Drill a further 3 RC holes into a potential north parallel to further define another reef system. This is based on the 2020 geophysical surveys. This is a further 380m of RC drilling and would bring the total RC drilling up to 2,700m

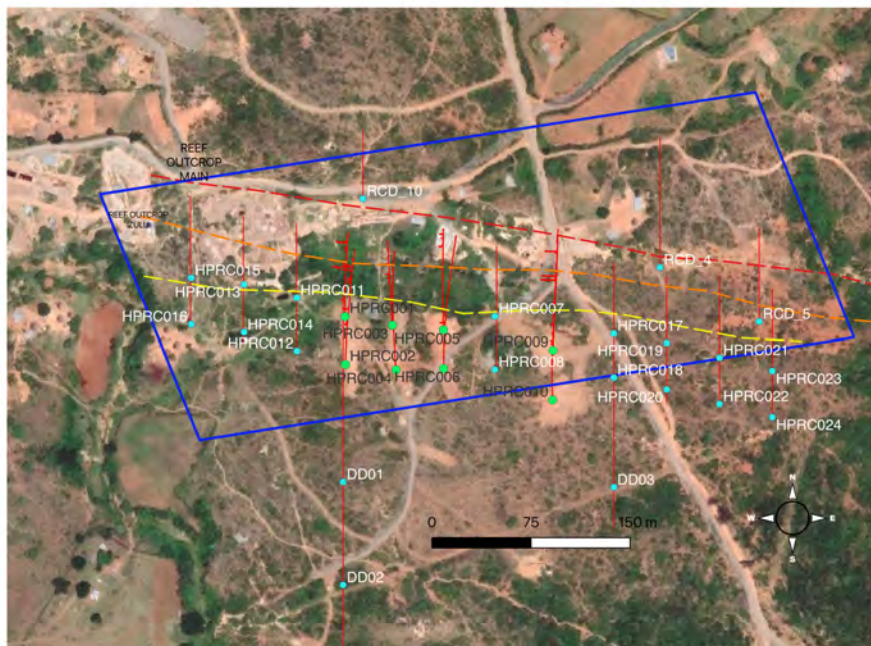
Phase 2 may be amended during the programme dependent on the results, with infill drilling on good results, or abandonment of some holes if they don't warrant drilling.



**PHASE 2 :**

BUDGET RC Drilling	US\$195,000
METERAGE (RC)	2,700 meters
NO of HOLES	19
OBJECTIVE	Define a 500m strike of gold mineralisation down to a depth of 150m and define a resource on this basis.
BUDGET DD Drilling	US\$195,000
METERAGE (DD)	1,300 meters
NO of HOLES	3
OBJECTIVE	Extend the potential depth of the resource to a limit of 350m below surface and have geological information on the mineralisation
TIME LINE	6 months, starting 1 <sup>st</sup> May 2023 and ending 31 <sup>st</sup> December 2023 (due to the rainy season at the beginning of the year)

In the map below, the large green collars illustrate the holes that have already been drilled and the smaller collars are the proposed holes. It should be observed that the proposed diamond drill is collared outside the Claim boundary. The following image illustrates the geophysics in relation to the proposed drilling with the surface outcrop of the reef and the drilled intercepts below the surface. The southerly dip can be clearly observed from this image, where the outcrop of the reefs are shown and the drill hole traces of the 2022 with assay bars.



**Figure 44 : Proposed Drilling Programmes – Phase 1 and 2**

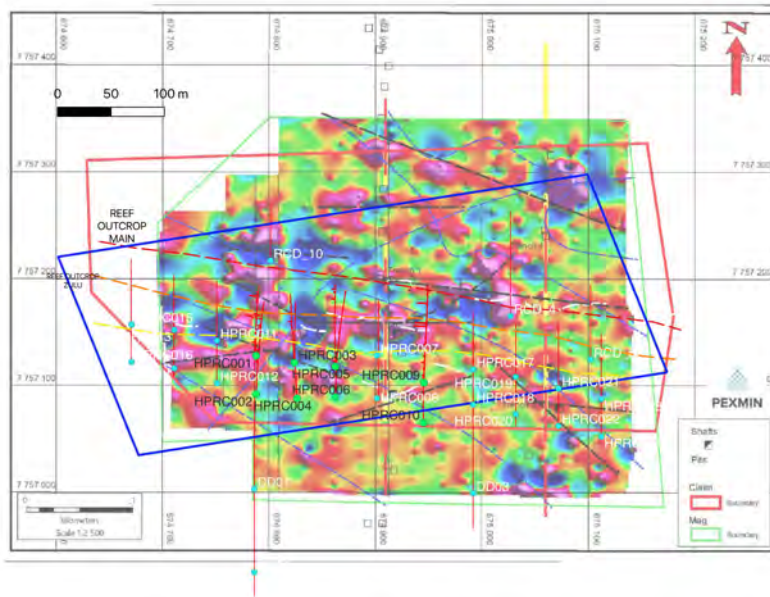


Figure 45 : Proposed Drilling programmes overlain on Ground Magnetics done by PEXMIN in 2021.

Hole Names	Northing	Easting	Elevation	Depth	Azimuth	Dip
<b>PHASE 2A: 40 x 40m grid drilling to 175m RC</b>						
HPRC007	7757129	674900	1393	120	0	-60
HPRC008	7757089	674900	1395	170	0	-60
HPRC011	7757143	674750	1376	120	0	-60
HPRC012	7757103	674750	1372	170	0	-60
HPRC013	7757153	674710	1378	120	0	-60
HPRC014	7757117	674710	1371	170	0	-60
HPRC015	7757158	674670	1374	120	0	-60
HPRC016	7757123	674670	1369	170	0	-60
HPRC017	7757116	674990	1392	120	0	-60
HPRC018	7757083	674990	1390	170	0	-60
HPRC019	7757109	675030	1391	120	0	-60
HPRC020	7757074	675030	1388	170	0	-60
HPRC021	7757098	675070	1388	120	0	-60
HPRC022	7757063	675070	1389	170	0	-60
HPRC023	7757088	675110	1391	120	0	-60
HPRC024	7757053	675110	1389	170	0	-60
				<b>2320</b>	<b>TOTAL</b>	
<b>PHASE 2B: Diamond Holes drilling to 250 and max 350m below surface</b>						
DD01	7757004	674785	1383	350	0	-65
DD02	7756926	674785	1386	450	0	-65
DD03	7757000	674990	1385	350	0	-65
				<b>1150</b>	<b>TOTAL DD</b>	
<b>PHASE 2C: Previous Holes - drilling North Parallel</b>						
RCD_4	7757166	675025	1400	170	0	-55
RCD_5	7757125	675100	1400	120	0	-55
RCD_10	7757218	674800	1400	90	0	-55
				<b>380</b>	<b>TOTAL</b>	
				<b>2700</b>	<b>TOTAL RC</b>	

Table 13 : Phase 2 Drilling Programme – 1,180m

### 26.3 WORK PROGRAMME – BUDGET

Below is given the summary of the costs. Assays are costed at the local accredited laboratory in Zimbabwe, Antech used in Phase 1. RC drilling is costed at US\$40 per metre and diamond at \$100 per metre. Prices are increasing currently in Zimbabwe and therefore, dependent on the timing of the work, the pricing may vary.

ITEM	COST PER UNIT	NO UNITS	TOTAL
Drilling RC	40	2,700	108,000
Drilling DD	100	1,150	115,000
Assays	17	3,200	54,400
Consumables			17,600
Personal			20,000
Consultants			20,000
<b>TOTAL</b>			<b>335,000</b>

Table 14 : Budget for Phase 2 (all 3 parts of the Phase)

## 27 REFERENCES

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3. Campbell, S.D.G. and Pitfield, P.E.J. 1994. Structural Controls of Gold Mineralization in the Zimbabwe Craton – Exploration Guidelines. *Zimbabwe Geological Survey Bulletin No. 101.* 270p
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## 28 APPENDICES

### 28.1 APPENDIX A: BRIEF RESUME OF MOSES BANDA, author of the initial (non-compliant) report on HVM

Moses Banda is a geologist with 30 years' experience in the gold mining industry of Zimbabwe. He graduated with a BSc Honours in Geology from the University of Zimbabwe in 1990. Having worked for major mining houses in Zimbabwe, Moses has spent most of the time on exploration and development projects. Some of the major projects include resource drilling for the underground feasibility of Freda Rebecca mine, the largest gold producer in Zimbabwe. Moses was project geologist for resource drilling for Canister Resources' Dokwe project, a million-ounce gold deposit in western Zimbabwe. He had a two year stint in East Africa, mainly in Uganda and Tanzania. For two He was technical services manager for Duration Gold, then a fast growing gold producer. For the last seven years Moses has worked to develop small scale mines in Zimbabwe as a consulting geologist.

### 28.2 APPENDIX B: Letter from Ministry of Mines verifying ownership

Official communications not to  
be addressed to individuals

Basch Street 10<sup>th</sup> Avenue  
Bulawayo

Telephone: 263-9-66381-3,  
61703



In your reply, please quote the reference:

MINISTRY OF MINES & MINING DEVELOPMENT  
OFFICE OF THE PROVINCIAL MINING DIRECTOR  
MAT NORTH  
P.O. Box 386  
Bulawayo  
Zimbabwe

17 January 2022

Jon Harris  
Pennine Petroleum Corporation 315 39<sup>th</sup> Avenue S.E  
Calgary Alberta  
Canada T2G 1X5

**RE: CONFIRMATION OF OWNERSHIP OF CLAIM HAPPY VALLEY MINE C  
REGISTERED NUMBER 37375**

Techshed Investments (Pvt) Ltd company registration 2201/18 is the registered holder of Happy Valley Mine C registered number 37375 and transfer number 36969 as from the 10 September 2021.



  
F Ngulube  
**PROVINCIAL MINING DIRECTOR-MAT NORTH**  
**For/ SECRETARY FOR MINES AND MINING DEVELOPMENT**

Figure 46 : Letter from the Ministry of Mines confirming Claim Ownership

**28.3 APPENDIX C: CLAIM INSPECTION CERTIFICATE – Valid 2024**

R/N 91537550

68471-7  
Z. 639

Form No. M.M. 16.

Amount  
Paid

\$262683,30

**INSPECTION CERTIFICATE**  
(Section 202)

No. 4416

TECHSHEED INVESTMENTS Mining Commissioner's Office,  
Pvt Ltd  
408 LAPF

0784259736 ..... 20.....

*THIS IS TO CERTIFY* that under the provisions of the Mines and Minerals Act [Chapter 21:05]

27 inspection has been obtained on the block/s of 109/R claims

named HAPPY VALLEY C Reg. No. 37375

and that the next inspection will be due on the 09/02/2024

Extra work Certificates filed, Nos. ....

No 058825 CA

MINES & MINING  
MAL NORTH  
PROV. MINING DIRECTOR

23 FEB 2023

P.O. BOX 386, BULAWAYO  
ZIMBABWE TEL: 09-6638111  
FAX: 09-661953

Mining Commissioner

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**Figure 47 : Claim Certificate showing current Inspection Certificate**

## 28.4 APPENDIX D: RESISTIVITY AND CHARGEABILITY PROFILES

The Resistivity and Chargeability profiles for each line surveyed are given below. The drilling lines are:

674770, 674810, 674850, 674890 and 674930.

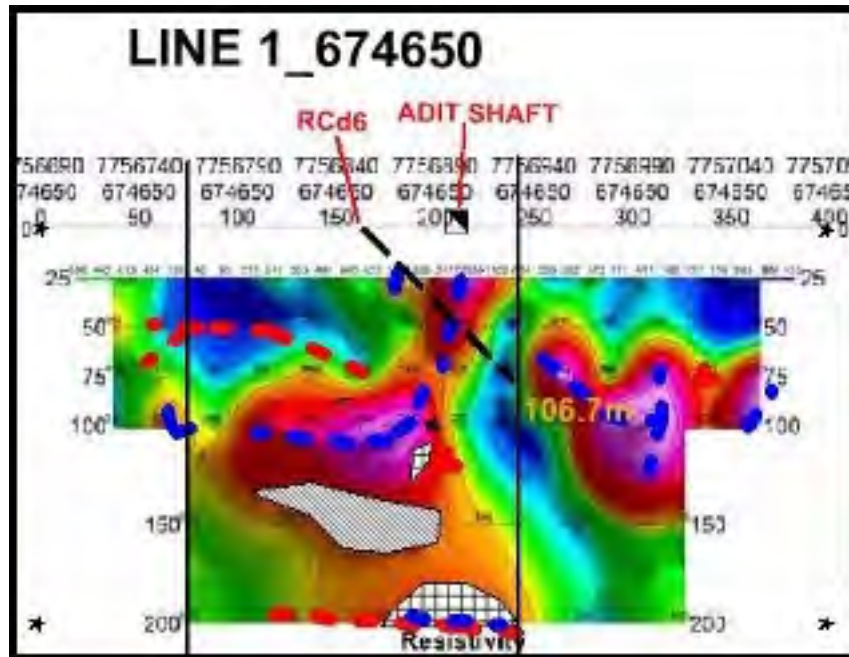


Figure 48 : Line 1 proposed RC drillhole on resistivity section.

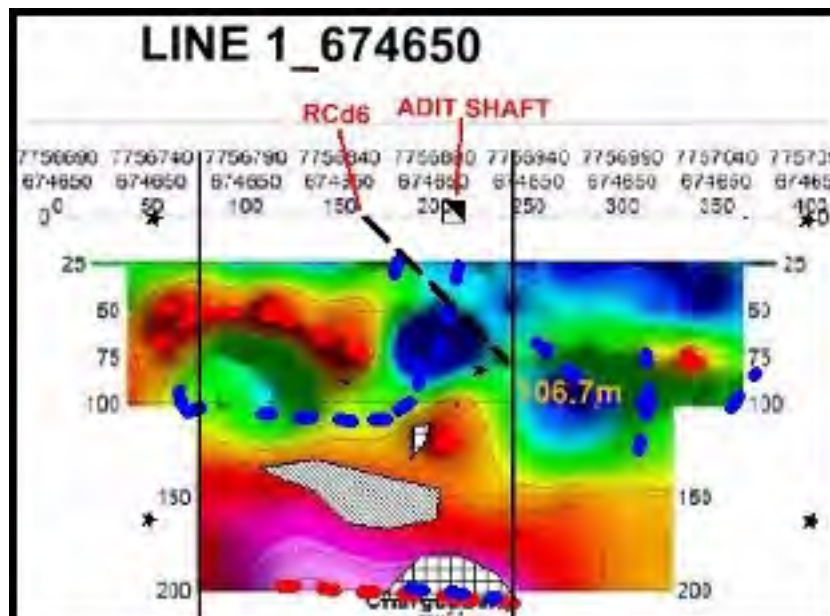


Figure 49 : Line 1 proposed RC drillhole on chargeability section.

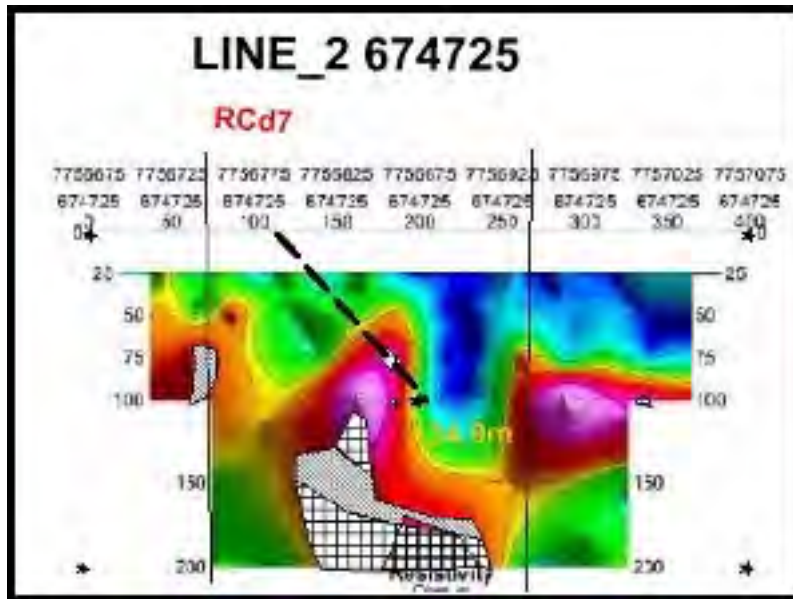


Figure 50 : Line 2 proposed RC drillhole on resistivity section.

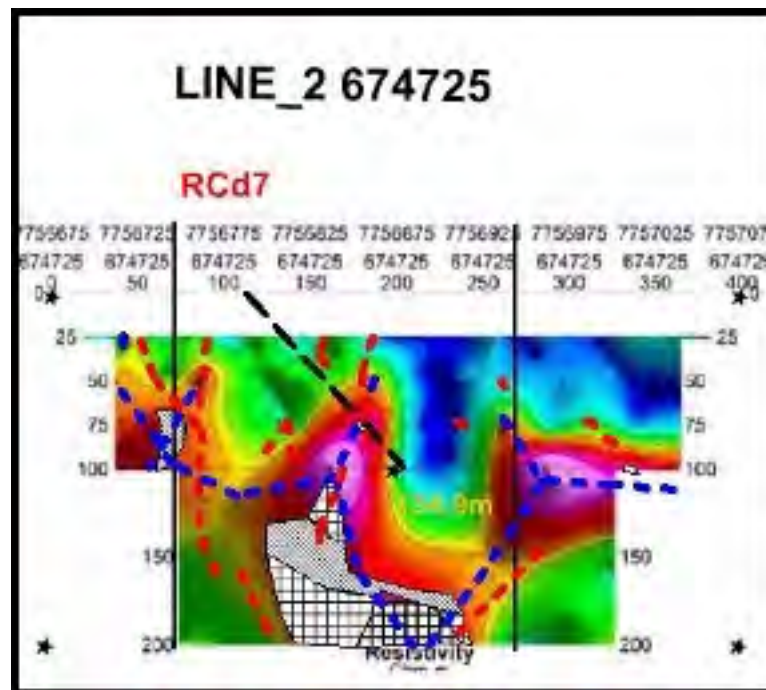


Figure 51 : Line 2 proposed RC drillhole on chargeability section.



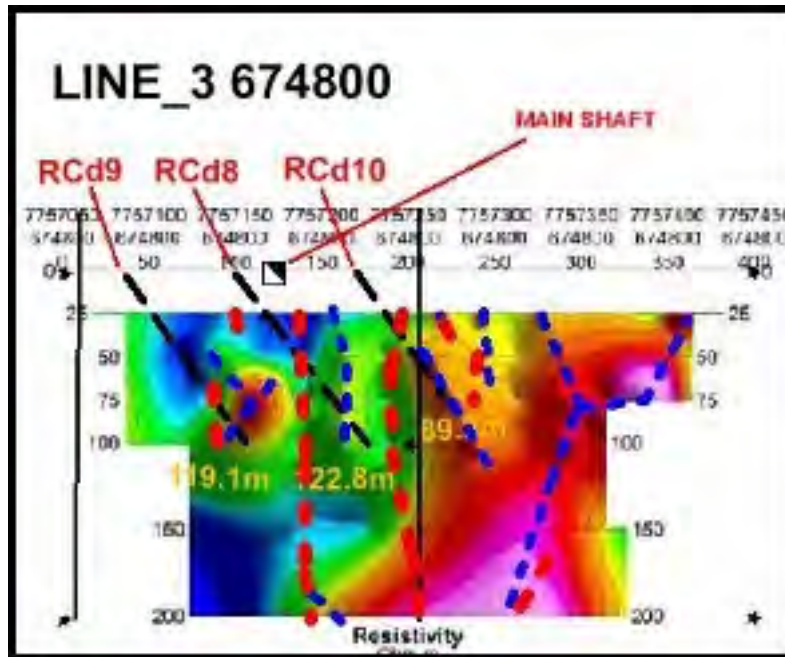


Figure 52 : Line 3 proposed RC drillhole on resistivity section.

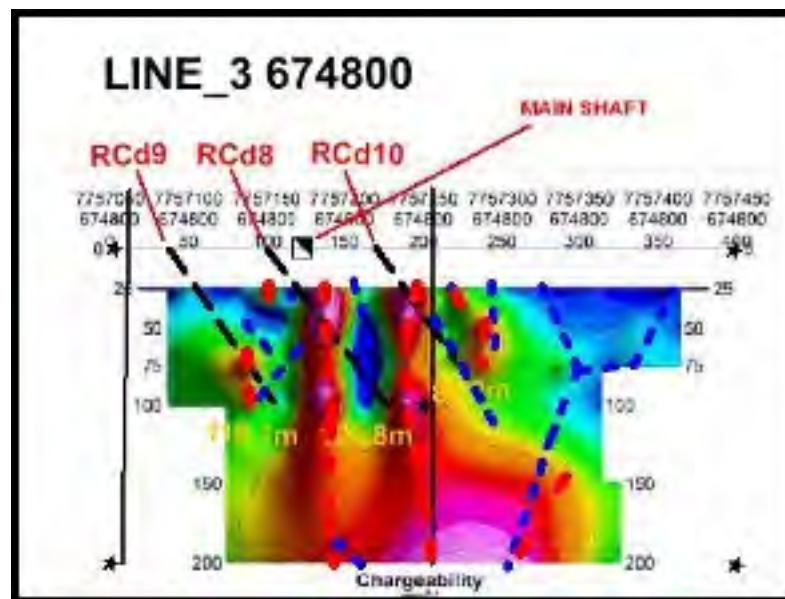


Figure 53 : Line 3 proposed RC drillhole on chargeability section.

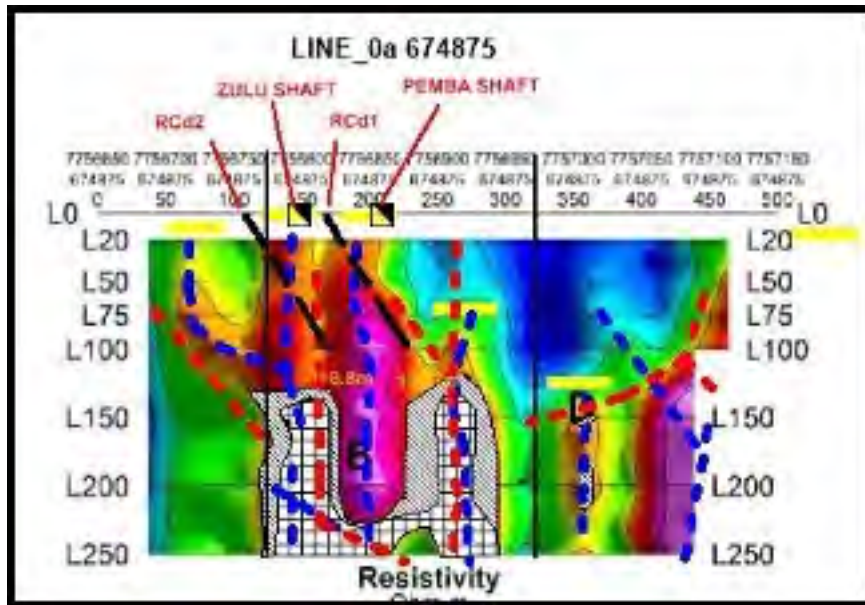


Figure 54 : Line 0a proposed RC drillhole on resistivity section.

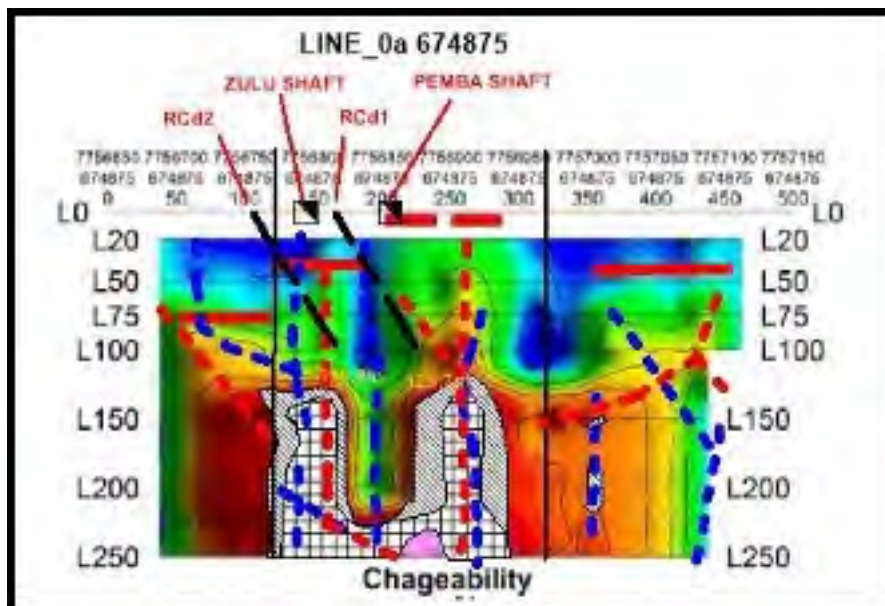


Figure 55 : Line 0a proposed RC drillhole on chargeability section.

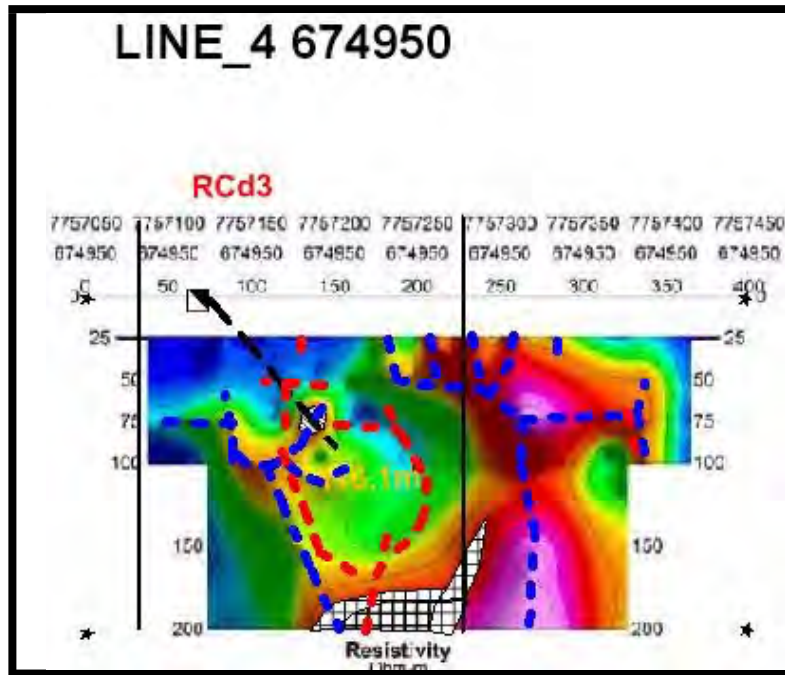


Figure 56 : Line 4 proposed RC drillhole on resistivity section.

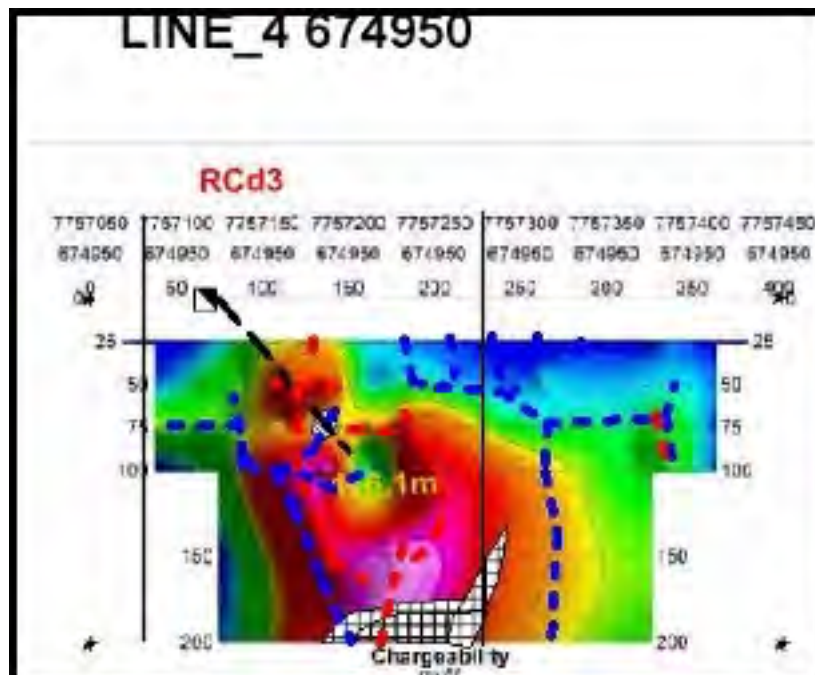


Figure 57 : Line 4 proposed RC drillhole on chargeability section

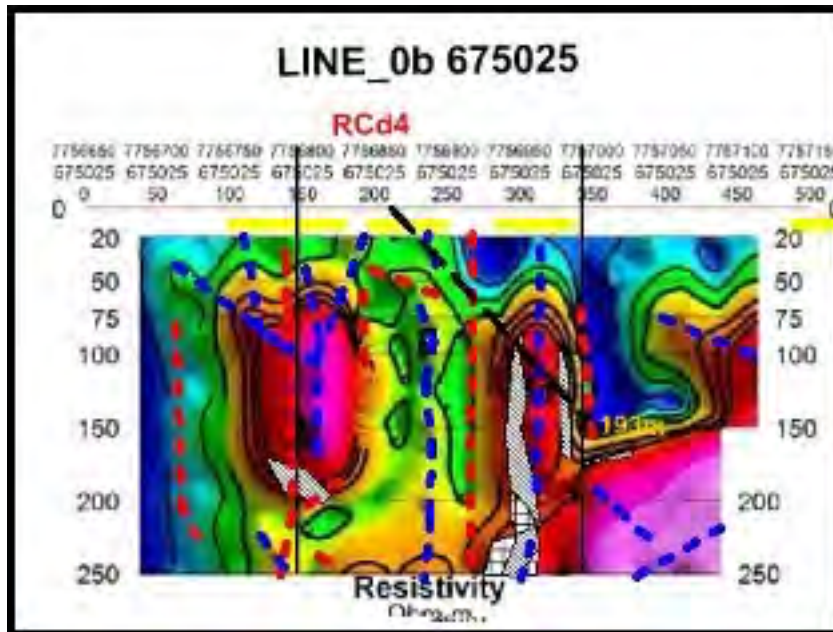


Figure 58 : Line 0b proposed RC drillhole on resistivity section.

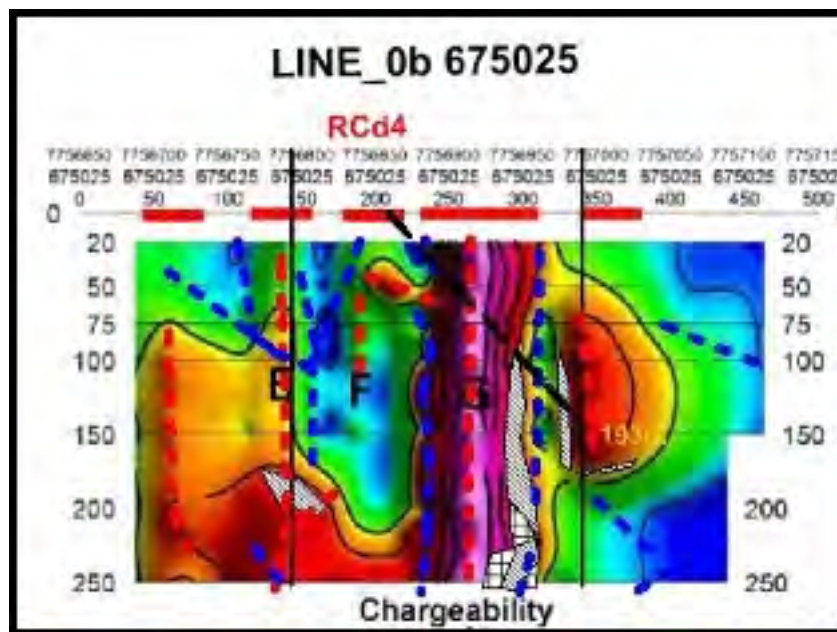


Figure 59 : Line 0b proposed RC drillhole on chargeability section.

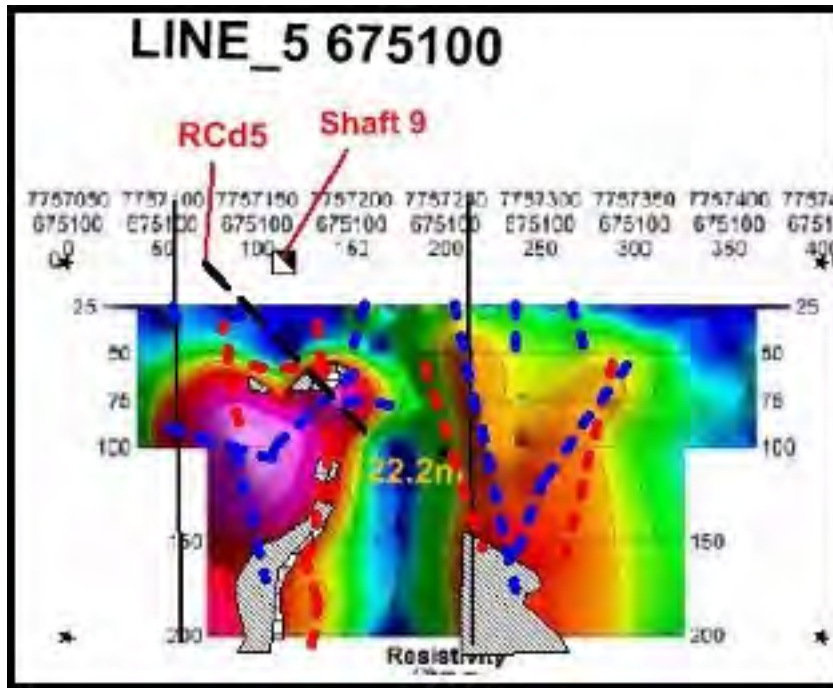


Figure 60 : Line 5 proposed RC drillhole on resistivity section.

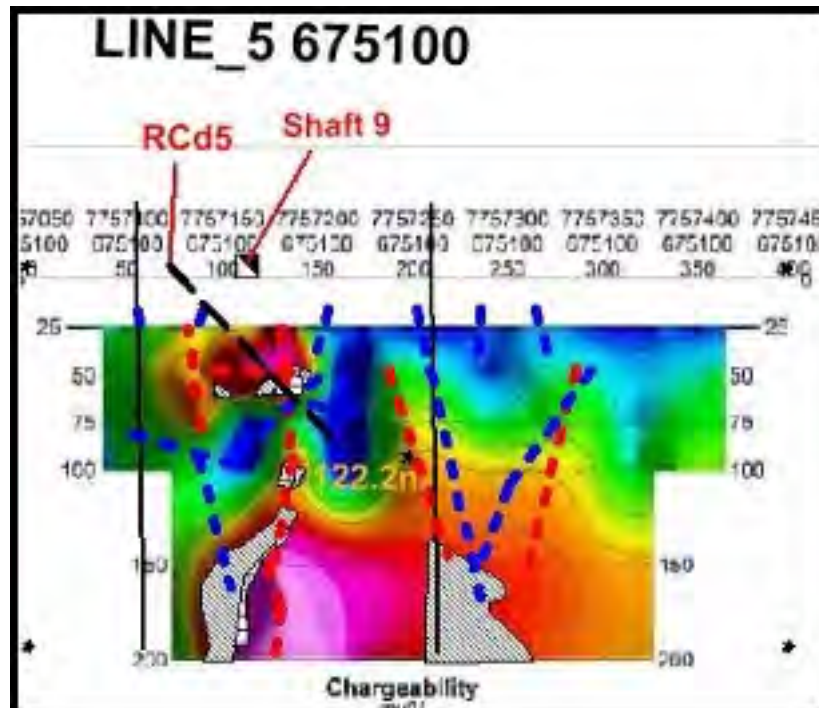


Figure 61 : Line 5 proposed RC drillhole on chargeability section

## 28.5 APPENDIX E: AMIS CERTIFICATES

### 28.5.1 AMIS0519

#### Summary Statistics

#### **Recommended Concentrations and Limits (at two Standard Deviations) Certified Concentrations**

Analyte	Method	<sup>l</sup> ( $\mu$ )	<sup>11</sup> $\pm$ (2s)	Unit
Au	<sup>1</sup> Pb Collection	1.61	0.1	g/l
C	<sup>2</sup> Combustion/LECO	8353	594	ppm
S	Combustion/LECO	2.88	0.22	%
SG	<sup>3</sup> SG	3.07	0.15	Dimensionless
Ag	<sup>4</sup> 4A MICP	0.5	0.1	ppm
Al	4A MICP	3.63	0.22	%
Al	<sup>5</sup> FUS	3.50	0.084	%
As	4A MICP	791	149	ppm
Ba	4A MICP	304	24	ppm
Ba	FUS	291	13	ppm
Be	4A MICP	2	0.2	ppm
Bi	4A MICP	0.2	0.04	ppm
Ca	4A MICP	1.39	0.10	%
Cd	4A MICP	0.7	0.1	ppm
Ce	4A MICP	21	1	ppm
Ce	FUS	21	1	ppm
Co	4A MICP	25	3	ppm
Cr	4A MICP	364	30	ppm
Cr	FUS	385	41	ppm
Cs	4A MICP	1	0.09	ppm
Cs	FUS	0.9	0.2	ppm
Cu	4A MICP	77	2	ppm
Fe	4A MICP	19.95	1.6	%
Fe	FUS	19.59	0.64	%
Ga	4A MICP	10	3	ppm
Hf	4A MICP	1	0.1	ppm
Ho	FUS	0.5	0.08	ppm
In	4A MICP	0.1	0.01	ppm
K	4A MICP	1.36	0.069	%
La	4A MICP	11	1	ppm
La	FUS	10	2	ppm
Li	4A MICP	16	2	ppm
Mg	4A MICP	3.12	0.10	%
Mg	FUS	3.03	0.12	%
Mn	4A MICP	4517	280	ppm
Mo	4A MICP	1	0.2	ppm
Na	4A MICP	5855	278	ppm
Nb	4A MICP	4	0.3	ppm
Ni	4A MICP	195	19	ppm
P	4A MICP	410	26	ppm
Pb	4A MICP	32	3	ppm
Rb	4A MICP	53	4	ppm
Rb	FUS	48	7	ppm
Sb	4A MICP	15	2	ppm
Sc	4A MICP	6	0.6	ppm
Si	FUS	24.15	2.3	%
Sn	4A MICP	1	0.2	ppm
Sr	4A MICP	31	2	ppm
Sr	FUS	31	5	ppm
Ta	4A MICP	0.7	0.1	ppm
Tb	FUS	0.4	0.05	ppm
Te	4A MICP	0.2	0.09	ppm
Th	4A MICP	3	0.2	ppm
Th	FUS	3	0.5	ppm
Ti	4A MICP	1163	109	ppm
Ti	FUS	1213	72	ppm
Tl	4A MICP	0.8	0.1	ppm
U	4A MICP	2	0.2	ppm
V	4A MICP	47	11	ppm
W	4A MICP	8	1	ppm
Y	4A MICP	13	0.7	ppm
Y	FUS	16	2	ppm
Yb	FUS	2	0.2	ppm
Zn	4A MICP	195	19	ppm
Zr	4A MICP	46	3	ppm

## Summary Statistics

### **Recommended Concentrations and Limits (at two Standard Deviations) Certified Concentrations**

Analyte	Method	<sup>9</sup> ( $\mu$ )	<sup>11</sup> (2s) $\pm$	Unit
Au	<sup>1</sup> Pb Collection	4.80	0.47	g/t
Au	<sup>2</sup> FA GRAV	4.87	0.60	g/t
Au	<sup>3</sup> CL	3.84	0.56	g/t
S	<sup>4</sup> Combustion/LECO	1.31	0.046	%
S	<sup>5</sup> 4A MICP	1.31	0.028	%
Ag	4A MICP	0.5	0.2	ppm
As	4A MICP	2823	251	ppm
Cu	4A MICP	79	6	ppm
C	Combustion/LECO	1.47	0.13	%
LOI	<sup>6</sup> LOI	7.91	0.71	%
SG	<sup>7</sup> SG	2.93	0.23	Dimensionless
Al	4A MICP	4.81	0.24	%
Ba	4A MICP	169	9	ppm
Be	4A MICP	1	0.1	ppm
Bi	4A MICP	2	0.1	ppm
Ca	4A MICP	2.71	0.14	%
Cd	4A MICP	0.2	0.02	ppm
Ce	4A MICP	18	0.7	ppm
Co	4A MICP	50	3	ppm
Cs	4A MICP	43	1	ppm
Fe	4A MICP	5.42	0.10	%
Ga	4A MICP	10	0.7	ppm
In	4A MICP	0.04	0.003	ppm
K	4A MICP	1.65	0.084	%
La	4A MICP	10	0.8	ppm
Li	4A MICP	112	11	ppm
Mg	4A MICP	4.52	0.16	%
Mn	4A MICP	1069	81	ppm
Mo	4A MICP	3	0.3	ppm
Na	4A MICP	5258	93	ppm
Nb	4A MICP	3	1	ppm
Ni	4A MICP	397	26	ppm
P	4A MICP	204	11	ppm
Pb	4A MICP	22	0.9	ppm
Rb	4A MICP	95	6	ppm
Sb	4A MICP	54	16	ppm
Sc	4A MICP	20	0.4	ppm
Sn	4A MICP	2	1	ppm
Sr	4A MICP	73	8	ppm
Ta	4A MICP	1	0.2	ppm
Th	4A MICP	3	0.3	ppm
Ti	4A MICP	1771	364	ppm
Tl	4A MICP	0.6	0.05	ppm
V	4A MICP	130	11	ppm
W	4A MICP	9	2	ppm
Y	4A MICP	9	1	ppm
Zn	4A MICP	87	6	ppm
Zr	4A MICP	49	3	ppm

**28.6 APPENDIX F: DRILLHOLE COLLARS**

<b>HOLE #</b>	<b>N</b>	<b>E</b>	<b>ALT</b>	<b>Length of Hole</b>	<b>Azimuth</b>	<b>Dip</b>
HPRC001	7757128.74	674786.54	1377.632	123	0	-60
HPRC002	7757092.96	674786.81	1377.179	172	0	-60
HPRC003	7757122.21	674822.39	1383.497	123	0	-60
HPRC004	7757088.84	674825.1	1383.015	172	0	-60
HPRC005	7757118.68	674860.98	1389.847	123	0	-60
HPRC006	7757089.81	674861.14	1388.505	172	0	-60
HPRC009	7757103.53	674943.95	1397.185	123	0	-60
HPRC010	7757066.02	674943.67	1391.16	172	0	-60

**Table 15: HOLE COLLARS FOR 2022 DRILLING**