

# **UBUNTU AFRIQUE**

## **KADOMA GOLD PLACER MINING PROJECT**



### **GEO-TECHNICAL ASSESSMENT REPORT**

#### **KEY FEATURES**

#### **PREPARED FOR**

**Ubuntu Afrique**

#### **REPORT BY**



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#### **EFFECTIVE DATE**

#### **PURPOSE**

Geo-Technical assessment report for the Kadoma Gold Placer Mining Project highlighting the location, the geology, geomorphological observations, resource estimate, geological interpretation and recommendations

## Table of Contents

Table of Contents.....	ii
FORWARD-LOOKING STATEMENTS .....	iii
1 INTRODUCTION.....	1
1.1 Background .....	1
1.2 Purpose .....	1
1.3 Qualification & Experience of Author .....	1
1.4 Disclaimer .....	1
1.5 Risks .....	2
2 PROPERTY DESCRIPTION, LOCATION AND ACCESS .....	2
2.1 Location and Access.....	2
2.2 Description .....	3
3 BRIEF MINERAL LEGISLATION.....	3
3.1 Mining Claim.....	3
3.2 Environmental Laws.....	4
4 GEOLOGICAL SETTING .....	4
4.1 Regional Geology .....	4
4.2 Local Geology .....	5
4.3 Mineralisation .....	6
5 EXPLORATION .....	7
5.1 Ground Truthing and Geological Mapping.....	7
5.2 Geomorphological Mapping .....	8
5.3 Pitting .....	13
6 RESOURCE ESTIMATE .....	13
7 BACKGROUND .....	14
7.1 Placer Deposits .....	14
7.2 Placer Deposits in Zimbabwe .....	15
8 CONCLUSIONS AND RECOMMENDATIONS.....	16

## **FORWARD-LOOKING STATEMENTS**

This presentation contains certain statements that may constitute “forward-looking statements”. All statements in this presentation, other than the statement of historical fact, that address event or developments that the Company expect to occur, are forward looking statements. Forward looking statements that are not historical facts and are generally, but not always, identified by words “expects”, “plans”, “anticipates”, “believes”, “intends”, “estimates”, “projects”, “potential”, “suggests”, and similar expressions, or that events or conditions “will”, “would”, “may”, “could”, or “should”, occur. Forward-looking statement in this presentation includes statements regarding the timing and nature of future exploration or mining programs and projections, which are, in part, dependent on results from those exploration programs.

Forward looking statements involved known and unknown risks, uncertainties, assumptions, and other factors, that may cause the actual results, performance or achievements express or implied by the forward-looking statements. These statements are based on a number of assumptions based on the general market conditions, timing and receipts of regulatory approvals, the ability of the Company and other relevant parties to satisfy regulatory requirements, the availability of financing for proposed transactions and programs on reasonable terms, and the ability of third-party service providers to deliver services in a timely manner.

Factors that could cause the actual result to differ materially from those in forward-looking statements include market prices, results of exploration, availability of capital and financing on acceptable terms, inability to obtain required regulatory approvals, and market conditions and general business, economic, competitive, political and social conditions. Although the Company has attempted to identify important factors that could cause actual results to differ from those express or implied in forward-looking statements, there maybe other factors which cause actual results to differ. Forward-looking statements contained herein are made as of the date of this presentation. Significant steps have to be undertaken to fully understand before any meaningful resource calculation can be completed.

## **1 INTRODUCTION**

### **1.1 Background**

Sokosi Consortium has acquired mining rights for gold placer deposits within the Kadoma area. This project is aimed to exploit the placer deposits controlled by the environmental laws and regulations. This report, therefore, details findings location, geology, geomorphological observations, resource estimate, geological interpretations.

### **1.2 Purpose**

The purpose of this report is to give a technical assessment of the Kadoma Gold Placer Deposit to allow the company and current or potential partners to reach informed decisions. The project assessment at this stage is based on ground truthing, mapping, some pitting and there is no viability or economic assessment have been made.

### **1.3 Qualification & Experience of Author**

Mr William Moyce holds a BSc Special Honours Degree in Geology and BSc General Degree in Geology and Mathematics, University of Zimbabwe. He is also an Honorary Doctorate of Humane Letters (DHL). He has over 12 years field experience in gold, chrome and diamond exploration and extraction. He has been involved with small-, medium and large-scale mining operations of gold and chrome in Zimbabwe. His experience and skills span across rock and soil sampling; geological mapping and sampling; localized mine geology; geological report writing; trenching and mine labour management. Added to this he holds 5 years teaching and research experience gained at the University of Zimbabwe. William has done consultancy work on mining development, hydrogeology, water quality assessments and environmental impact assessment (EIA) across the southern Africa region, with great bias in Zimbabwe and Namibia. He further holds cartographic experience and has several scientific publications. Mr Moyce is a director of Geoglobal Environmental Solutions and received the Businessman of the Year Award National 2017 - Special Recognition in Geological & Mining Leadership Excellence under Zimbabwe Business Awards (ZIBA).

Furthermore, Geoglobal Environmental Solutions has based this technical report on information reviewed from technical reports prepared by previous consultants, authors and other relevant published and unpublished technical information.

### **1.4 Disclaimer**

This document contains certain statements that involve a number of risks and uncertainties. There can be no assurance that such statements will prove to be accurate actual results and future events could differ materially from those anticipated in such statements. Geoglobal Environmental Solutions reserves the right, but will not be obligated, to revise this report and conclusions if additional information becomes known to Geoglobal Environmental Solutions subsequent to the date of this report.

In preparing this report the author relied upon:

- Geological information and sample results from publications by different authors who did work within the area.
- Assumptions, conditions and qualifications set forth in this report.

Other than as disclosed herein other sources of information were relied upon without extensive enquiry and review. The author make no particular representation to the degree of accuracy of information reviewed and does not bear liability therefore.

Geoglobal Environmental Solution P/L did not conduct a legal due diligence of the mineral title and ownership of the claims and does not constitute nor is it intended to represent a legal opinion on the title.

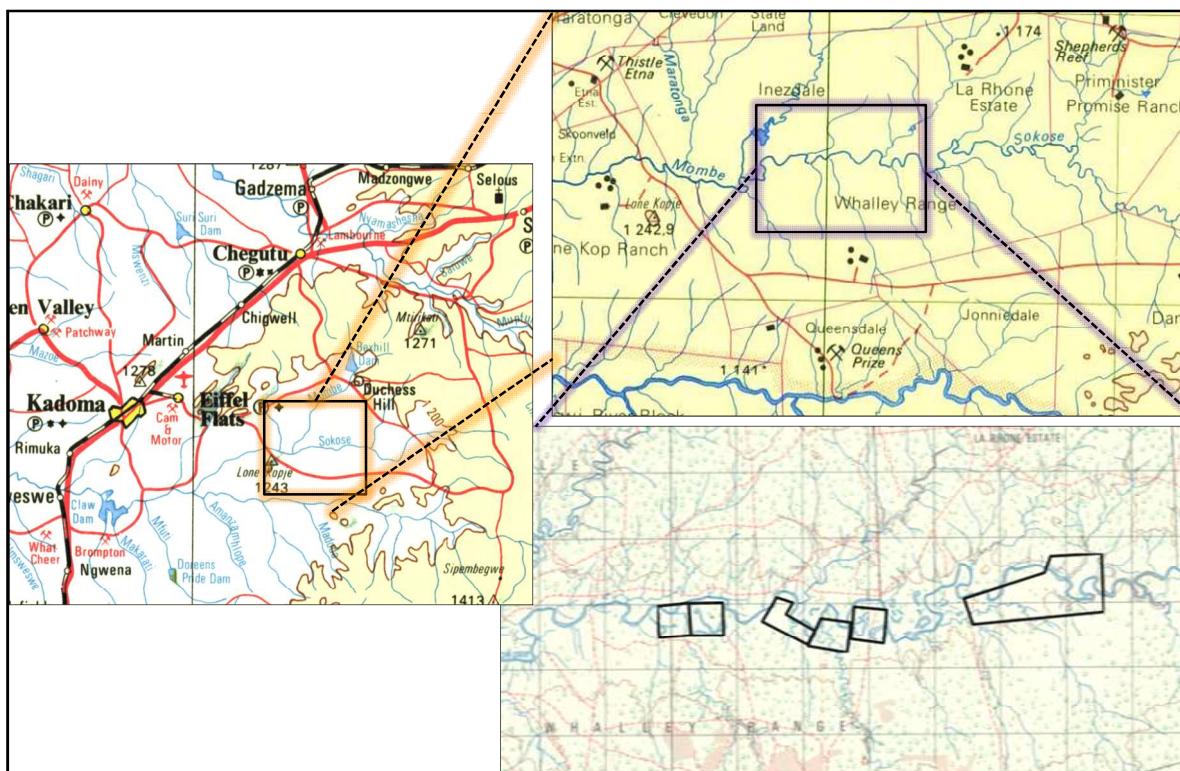
### **1.5 Risks**

Mining is affected by operational, political and economic risk. Mining and mineral exploration, development and production by their nature contain significant operational risks. The business depends upon, amongst other things, successful prospecting programmes and competent management. Profitability and asset values can be affected by unforeseen changes in operating circumstances and technical issues. Others factors such as political and industrial disruption, currency fluctuation and interest rates could have an impact on future operations, and potential revenue streams can also be affected by these factors. The majority of these factors are, and will be, beyond the control of any operating entity.

## **2 PROPERTY DESCRIPTION, LOCATION AND ACCESS**

### **2.1 Location and Access**

The prospect is located about 40 km due east Kadoma in the Gweshe area within Whalley Farm. The area is accessed from the Kadoma onto the road to Eiffel Flats, to Etna, past Etna to Gweshe Shops. One turns due north (left) for about 4 km to access the claims therein on Whalley Farm. Attached is a map of the location.



*Location of the prospect, showing the claims*

## 2.2 Description

The prospect consists of base metals blocks making up about 250 ha, over a stretch of 6 km and the corner beacons have been surveyed using a hand-held GPS (Global Positioning System) instrument.

## 3 BRIEF MINERAL LEGISLATION

All claims within the prospect are under the jurisdiction of the Government Provincial Mining Director in Chinhoyi. All these claims have been pegged in accordance with the provisions of the Minerals and Minerals Act [Chapter 20:05]. In terms of the Act all minerals are vested in the State and the rights to explore, mine and dispose of the minerals is acquired through an application to the respective provincial Mining Director. Surface rights for exploration are acquired through the pegging and registration of the claims. In the event of commencement of mining purposes a siting of works plan is required which must be submitted to the offices of the Government Mining Commissioner.

### 3.1 Mining Claim

A permit that entitles one to mine is called a Mining Claim and since a claim covers a small area, several claims are usually grouped into blocks of 10 hectares for gold, 250 hectares for special blocks of base metals. The claim confers on the holder the exclusive right to mine a particular mineral for which it is registered and prospect for other minerals on the same claim. The claim is maintained through annual inspection and payment of an annual fee. A mining claim is transferable upon notification to the Mining Commissioner's office through prescribed notification forms and payment of transfer fees.

All gold production in Zimbabwe is sold through the Fidelity Refineries, a government of Zimbabwe Gold Refinery Company and payments are based on the prevailing gold international market price.

### **3.2 Environmental Laws**

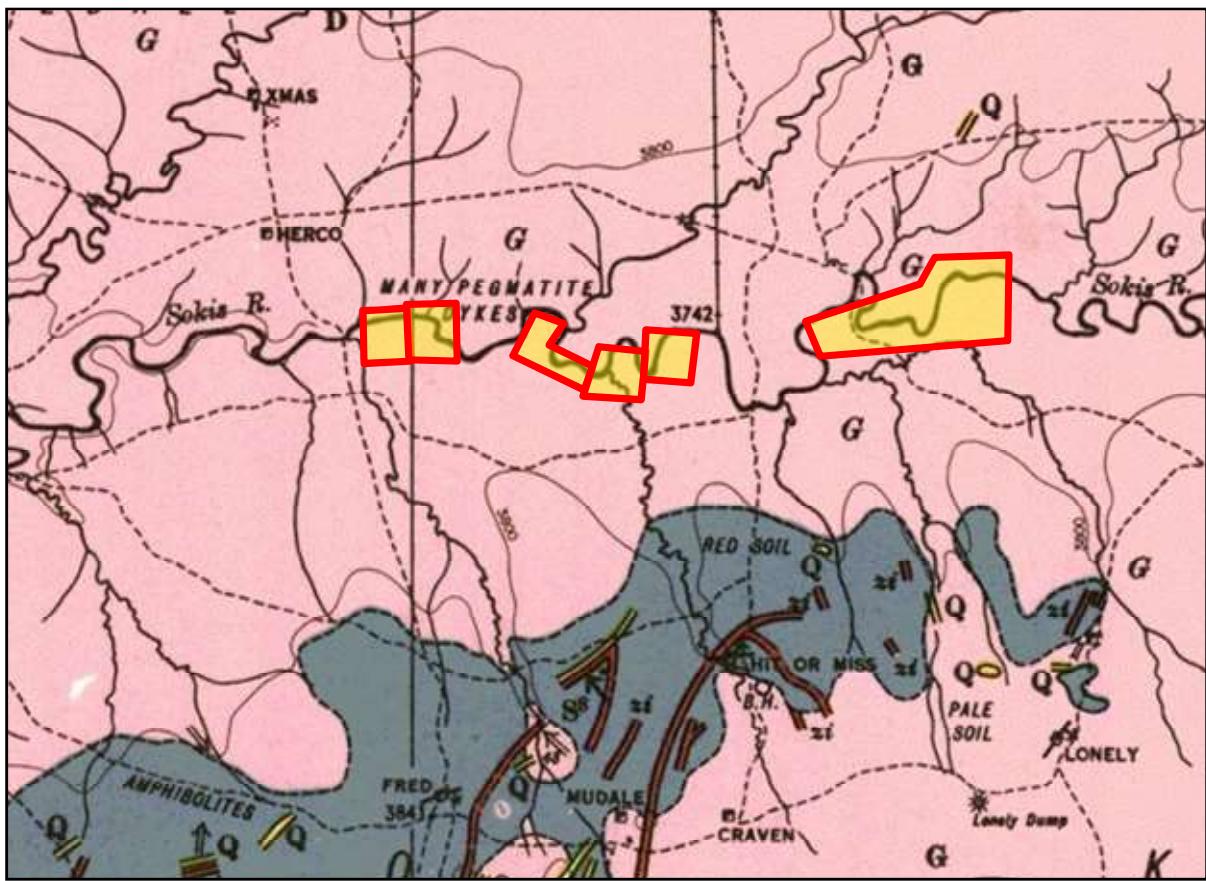
Environmental legislation is covered under the Environmental Management Act [Chapter 20:27]. It has related statutes which cater for EIAs and alluvial mining activities. As such the project could controlled by the Statutory Instrument 92 of 2014 Control of Alluvial Mining Regulation & Statutory Instrument 258 of 2018 (Control Of Alluvial Mining) (amendment) Regulations, which stipulate that no alluvial mining shall take place within 200 m of the naturally define banks of a river of the highest flood level, wetland or river bed/ bank or any stream. Other prohibitions stated include; the use of mechanized equipment for the mining and use of mercury. No sanitary convenience, reservoir, or depots for any substance that is likely to cause pollution of the water resource may be located within 500 m from streams or reservoirs. Ore stockpiles, slimes dams or settling ponds cannot therefore be located within 500 m of the river. Progressive rehabilitation of the area during the project and at mine closure is the sole responsibility of the certificate holder. Progressive rehabilitation includes; restoration of mining areas, pollution abatement, erosion and siltation control, re-vegetation of mined area as well as monitoring of water quality and quantity

Therefore the project will be controlled by these regulations and all washing shall be 500 m away from the highest flood line of the Sokosi River.

## **4 GEOLOGICAL SETTING**

### **4.1 Regional Geology**

The prospect lies within granitic - gneissic terrain bordering the Archaean-age Chegutu - Kadoma Greenstone Belt. The Chegutu - Kadoma greenstone belt is bordered to the east and west by large volumes of granitoids, Rhodesdale batholith to the east, Whitewaters and Sesombi batholiths to the west and Biri batholith further north. The batholiths are highly heterogeneous, being locally variously banded para-gneisses, migmatites, and massive and porphyritic granitoids. The Rhodesdale granitoid host most of the mines that produced the highest gold within the adjacent Midlands Greenstone belt. Mineralization within the intrusive granites and gneisses is associated with brittle and brittle-ductile fractures with relative little quartz and stockworks and the para-genesis are dominated by pyrite with minor chalcopyrite and stibnite.



*Geology around the prospect - adapted and modified from Wiles (1957)*

#### 4.2 Local Geology

The prospect lies within the Rhodesdale Granite (G) (Wiles, 1957). Weathering of the granite and granodiorites gives rise to the typical light-coloured sandy soil or “sand veld”. The general colour is white, but in the vleis it becomes grey. Quartz rubble derived from quartz veins and pegmatitic veins is ubiquitous. The bulk of the mines are associated with the eastern and east-north-eastern trending fissures within the stock within this area. Further west around the Thistle Etna had a general northerly strike similar to Inez North Mine, but most of the mines follow the general fabric of the gneissic banding and that of the surrounding greenstone belt. Most of the mines had sub-vertically dipping reefs around 70°-80°. It has been noted the high production mines were associated with the greenstone xenoliths, though the Thistle Etna was not associated with such xenoliths.

Overlying the whole geology is alluvium material along the river bank and bed. Alluvium is unconsolidated detrital material, transported and deposited by rivers. Within this area the alluvium stretches out to about over 500 m from the Sokosi River. This alluvium has mapped by Owen (1984) as a source of groundwater and revealed that they are alluvial aquifers.



*Pictures of the Sokosi River overlooking the high banks of the high terrace of the flood plain*



*Pictures showing the flood plain stretching over 500 m from the Sokosi River (left) and an ox-bow lake from the old drainage (right)*

#### 4.3 Mineralisation

The gold mineralization is placer/alluvium deposit hosted in an old river bed of the Sokosi River. The deposit is a low terrace and high terrace alluvial flood plain of the Sokosi River, which seems to be meandering.

#### Box 1: Placer Deposits

A placer deposits is a concentration of economically valuable detrital mineral grains which are formed by surface ore near-surface mechanical processes (most commonly running water) (Emory-Moore, et al, 1988).

## 5 EXPLORATION

Sokosi Consortium has conducted exploration at various types and phases which include the following:

- Ground truthing & geological mapping
- Geomorphological mapping
- Pitting

### 5.1 Ground Truthing and Geological Mapping

This involved the physical site visit of the area to determine the presence of gold mineralization within the placer deposits along the Sokosi River and its flood plains. The exercise managed to pick up that the flood plain had areas which would be swampy and show wetland plants during rainy season which coincided with the oxbow lakes picked up during the geomorphological mapping. Allow the Sokosi River banks are low terrace placer deposits which have been worked by artisanal miners. The Sokosi River bed is filled with sand but beneath the sand is a gravel layer which is mineralized by gold.



*Picture of the alluvium in the Sokosi River with a sand cover over the gravels below*



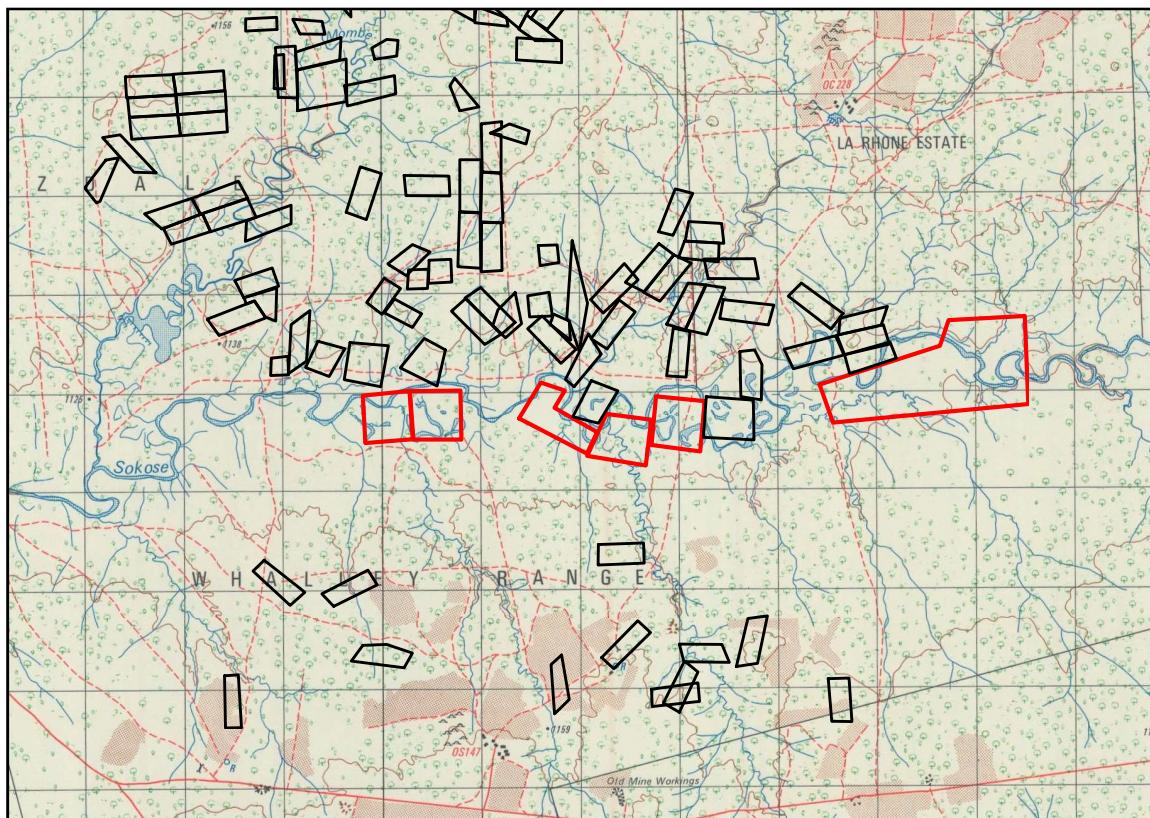
*Pictures of the oxbow lakes, which accumulate water during the rainy season and depict wetland plants*



*Pictures of diggings by artisanal miners for the low terrace gravels mineralized with gold*

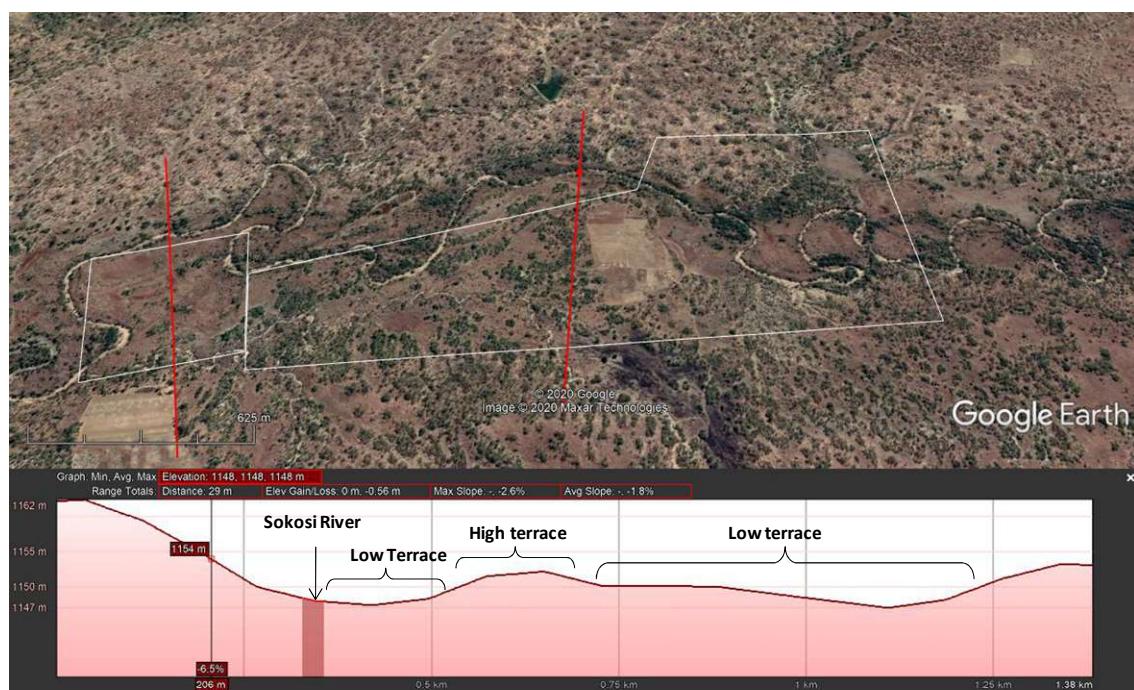
## **5.2 Geomorphological Mapping**

An analysis of Google Earth images and field work was done to determine the alluvial relief to be able to determine the alluvial flats, low terraces and high terraces and the surrounding provenance of any gold mining activities. It has been noted that all around the prospect are gold mining claims, which is a depiction of active reef gold mining in the area. On mapping it has been noted that gold reef mining is rife in the area mostly to the northern end of Sokosi River and this area drains into the Sokosi River. The mining areas are rich in rubbles which have been exploited for gold.



*Map showing the active mining claims registered under Mines Office and the prospect area (red)*

Google Earth has managed to show the old river channels and the ox-bow lakes. Coupled with the alluvial relief, it has been noted that most of the placer deposits within the prospect are alluvial flat and low terrace flood plain deposits (Chirico, et al., 2010). Geomorphological map was completed which depicts the alluvial flats and the low terrace deposits as outlined below.



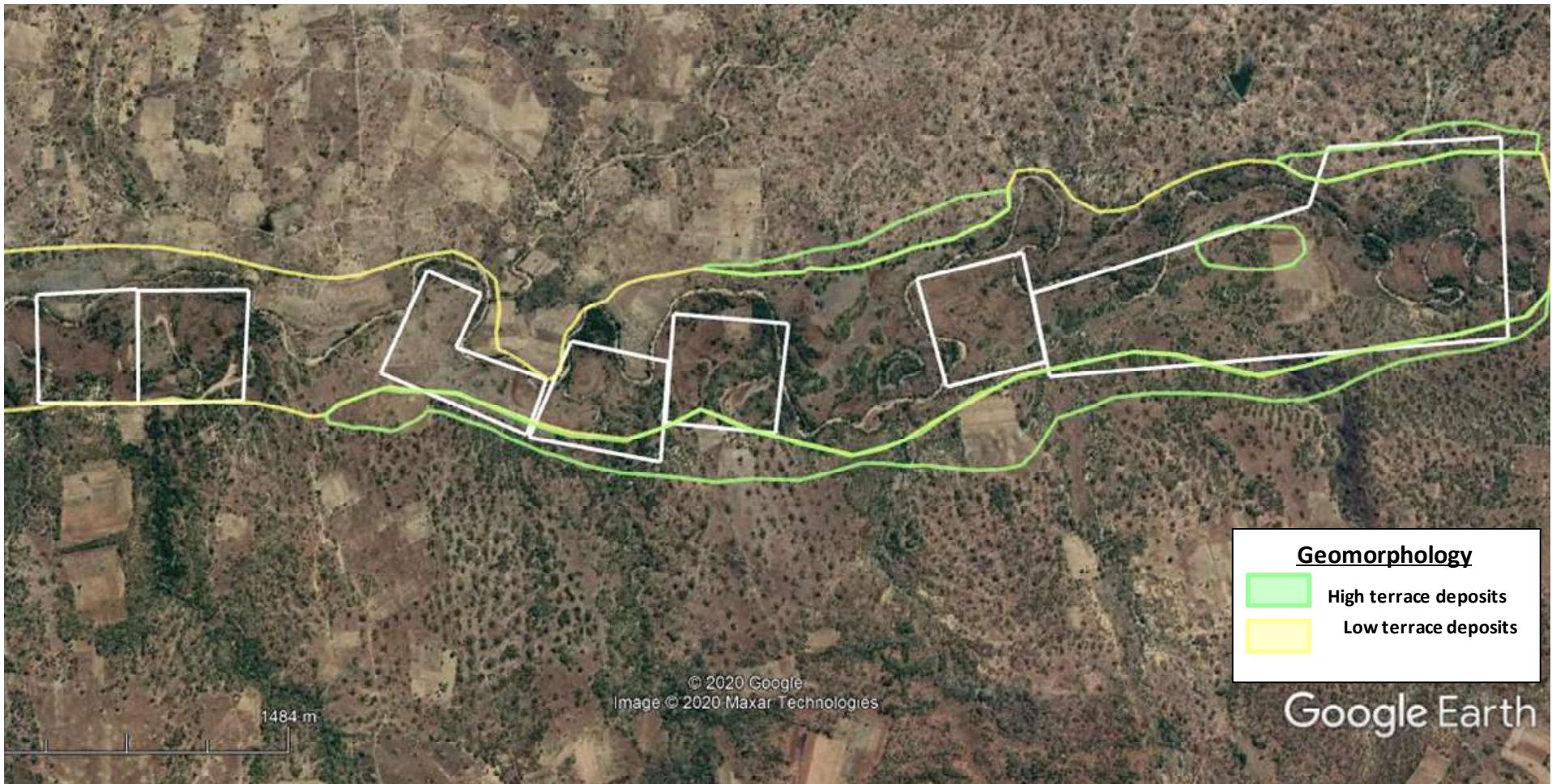
*Google Earth Image showing the geomorphology as interpreted and mapped*



*Google Earth Image showing the geomorphology as interpreted and mapped*



*Google Earth Image showing the surficial geomorphology of the prospect*



*Google Earth Image showing the surficial geomorphology of the prospect - with the drainage visible*

### 5.3 Pitting

A couple of pits have been done to bed rock underneath within the low terrace deposits and were sampled for free gold. These were done as a reconnaissance exercise to firm up whether the placer deposits were mineralized with gold. The material collected from the pits was weighed and washed using a wooden pan dish and any gold found was weighed and recorded. It was noted that there was fine gold present with traces of small nuggets up to 1g in size. The average grade from the washing after recalculation is about  $0.9 \text{ g/m}^3$ .



*Pictures of the pits done during the reconnaissance pitting*

## 6 RESOURCE ESTIMATE

The Kadoma Gold Placer prospect is hosted over the low terrace deposits, which is covered by the prospect claims making 250 ha of areal extent. Basing on the conservative average grade of  $0.9 \text{ g/m}^3$  ( $0.5 \text{ g/t}$ ) of alluvium, of which most is fine gold with limited nuggets the following inferred resource estimate has been declared;

*Table showing the potential resource for the placer deposit*

Areal extent	Gravel thickness	In Situ			Potential Gold Output (kg)
		Volume ( $\text{m}^3$ )	Grade ( $\text{g/m}^3$ )	Potential Gold Output (g)	
250 ha ( $2,500,000 \text{ m}^2$ )	0.8 m	2,400,000	0.9	2,160,000	2,160

### Basis of Calculation

The resource estimate was calculated using the following assumptions:

- An assumed cross-sectional basal gravel resource with an estimated thickness of 0.8 m
- An average grade of  $0.9 \text{ g/m}^3$  ( $0.5 \text{ g/t}$ ) over an average thickness of 0.5 m was assumed from field visits

- It has been assumed that the segments to be mined will average 80 m across the active river channel
- A dilution factor of 5 % and 80 % recovery from machinery

The in-situ ‘Blue Sky’ inferred resource estimate for the placer is 2,160 kg of gold from the palaeo-placer low terrace deposit of the Kadoma Gold Placer prospect.

## 7 BACKGROUND

### 7.1 Placer Deposits

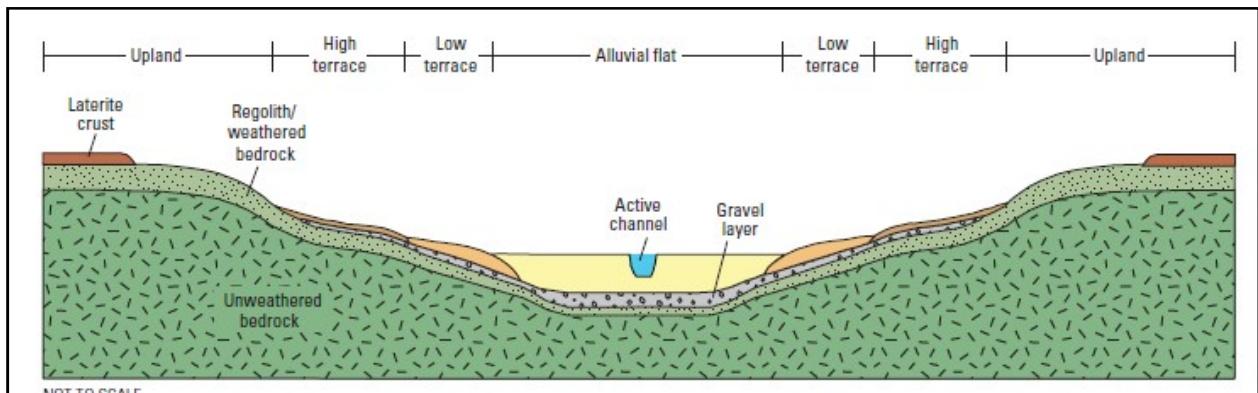
A placer deposits is a concentration of economically valuable detrital mineral grains which are formed by surface ore near-surface mechanical processes (most commonly running water). Placer minerals include ‘heavy heavy’ minerals- (specific gravity 6.8-21), such as native gold, native platinum and cassiterite; the ‘light heavy minerals’ (specific gravity 4.2-5.3), chromite, rutile, ilmenite, zircon and monazite; and the gem minerals (specific gravity 2.9-4.1), diamonds, rubies and sapphires (Emory-Moore, et al, 1988).

Although placer deposits are not worked at present in the EU, there is abundant archaeological evidence to show that they were exploited in the past. In Western Europe, for example, many gold artefacts have been recovered from sites in known gold producing areas (including Ireland, Wales, northern and southwestern Spain, Portugal, central France and Austria) from the late Bronze Age through to the time of the Roman Empire. One of the most important gold placer deposits exploited in Roman times was the ‘Las Medulas de Corucedo’ near Leon in the northern part of the Iberian Peninsula. Estimates of the amount of gold recovered from the ‘Las Medulas’ and other gold deposits in the north of the Iberian Peninsula vary considerably. According to Sanchez-Palencia, the deposits of this area produced almost 580 000 kg of gold in Roman times (Viladevall, et al., 2015).

Previous studies suggest that the alluvial sediments are divided into alluvial floodplain (valley-flat sediments), low terrace, and high terrace deposits (Chirico, et al 2010). Long river profiles, low-gradient stream reaches, channel confluences, incised channels, and abrupt channel widening concentrate diamonds in the alluvial sediments of the river valley. Bedrock traps in the river bed are key locations for the concentration of alluvial gravel deposits. Often rich placer deposits are associated with coarse gravels, and data show that gravel size is an important indication of favorable deposits (Kesse, 1985).

Chirico, et al (2010) suggests that diamonds are found in the gravel layers of Birim River alluvial flats, low terraces, high terraces and, to a lesser extent, uplands within the watershed. The largest and richest concentrations of diamonds are found in the deep deposits of the main Birim River flood plain, as well as valleys of very small streams, particularly those with low gradients and wide valley flats. Diamond concentration tends to decrease with increasing slope (Chirico, et al., 2010). Concentrations are high where a stream of a lower order joins a stream with

a higher order when the slope is not significantly different. Diamond deposits are also found in bedrock potholes in the active channel of river beds.



*Sketch profile of a flood-plain geomorphology - adapted from Chirico, et al (2010)*

Alluvial diamonds in South Africa have been concluded to be have been formed by the following processes, which played a role in the distribution of diamonds liberated from South African kimberlites (Van der Westhuizen, 2012):

- Pre-Karoo drainages, now mostly obliterated by erosion/denudation.
- Dwyka ice sheets and glaciers.
- Post-Karoo drainages, of which the Vaal-Orange System is the most important, and
- Marine processes that concentrated diamonds washed into the sea in lucrative beach deposits and bedrock trap sites.

## 7.2 Placer Deposits in Zimbabwe

Placer deposits in Zimbabwe have been explored mostly for diamonds and for gold, not much has been documented. The prospecting and mining of diamonds has been done on the Somabhula and Marange diamond-fields. The first discovery of diamonds was the Somabula alluvial diamonds in 1903 and the Marange diamond fields were discovered in 2006. In 2001, De Beers, via their subsidiary Kimberlitic Searches Ltd, were exploring for kimberlites within their tenement, EPO 1523, when they discovered what was to become the Marange alluvial deposit. However, the stones were of low value and it was only later that high value gems were found (Vernon and Stocklmayer, 2016). The tenement expired in 2006 and exploration rights were taken up by British-registered African Consolidated Resources. Diamond discoveries in June 2006 were followed by a chaotic diamond rush, which involved up to 20 000 illegal small-scale miners.

There are various articles that have been published by several authors and prospectors including bulletins and technical reports, the likes of, (Master, 1985; Moore and Moore, 2006; Buhrman, 1997; Phaup, 1958 and Macgregor, 1921) on the Somabhula diamond-fields. Various prospectors and individual diggers carried out evaluations of the economic potential of the Somabula deposit and came up with technical reports. South African Option Syndicate did initial investigations till 1908

and other notable companies were Consolidated African Selection Trust (CAST) during the tenure of Exclusive Prospecting Order (EPO) 58 (1957-1958); Rio Tinto (Rhodesia) Limited (1966-1967, EPO182) (Morrison 1974); Southern Sphere (1980-1982, EPO 559) (Osterlen, 1998) and more recently Somabula Explorations (Pvt) Limited and Trans Hex Zimbabwe Limited (1993-1997, EPOs 771 and 808) (Buhrman, 1997; Moore and Moore, 2006).

The basal sediments of the Umkondo Group comprise both arkosic material and rounded pebble conglomerates, suggesting both distal and proximal sources (Vernon and Stocklmayer, 2016). The diamonds are typically sub-rounded and worn indicating considerable transport distances. The Marange eluvial-alluvial diamond deposits are derived through in situ weathering of the Umkondo bedrock predominantly the proximal outcropping conglomerate, grit and diamond-bearing sandstone (Vernon and Stocklmayer, 2016). They comprise poorly sorted unconsolidated silt and clay with some sand and gravel and few pebbles. The bulk of the early mining took place in these rich, easily worked eluvial and alluvial deposits referred to as the Chiadzwa (Marange) deposits (Vernon and Stocklmayer, 2016).

The Somabula diamonds appear to have been typical of southern African stones, thus no unusual internal features have been described in the available literature. The Marange diamonds are different. Not only are there a high proportion of large composite crystals but the stones are predominantly rounded and abraded with colours ranging from dark brown to dark green. Some stones show interesting internal features. Faceted gems, polished crystals and sawn slices reveal internal features such as numerous platy inclusions causing haziness, short baton-like and longer filamentary channels and complex star phenomena

## **8 CONCLUSIONS AND RECOMMENDATIONS**

The following conclusions were drawn from this report:

- The Kadoma Gold Placer prospect is hosted in alluvium material of the Sokosi River mostly on the low terrace flood plain which is Recent in age.
- The geomorphological and geological mapping managed to delineate an area of the placer deposit within the low terrace deposits of the flood plain.
- The pitting has managed to map out an average gravel thickness of 0.8 m within the placer deposit.
- The placer deposit has got gold mineralisation, with an inferred resource of 2.4 Million cubic metres (4.32 million tonnes) of material with a potential output of 2,160 kg of gold.
- The prospect has potential to be developed into a commercially medium scale to large scale gold mine.

In light of the conclusions drawn above, the following recommendations are suggested:

#### Geology

- Further pitting and trenching of the placer deposit on defined spacing so as to further evaluate the resource.
- Carry out geophysical survey in the form of ground penetrating radar (GPR) to determine the old river bed morphology so as to target potholes and sinkholes.
- Drilling is recommended so that one has more confidence with the resource.
- Further exploration work has to be done focusing on feasibility study - bulk sampling, trial mining and trial processing.

#### Site Establishment:

- Identify a spot for the establishment of the Mine Offices, Site Camp and Processing Plant. Fence it off and set it up as the nucleus of the mine establishment.
- Set-up ablution facilities, water & power supply facilities.

#### Pre-Mining Technical Work:

- Set-up a solid Project Management team that oversees the strategic implementation of the project.
- Plan and design a mine plan for implementation.
- Develop Business Cash Flow Model to help guide the mining operations.
- It is also critical to undertake a detailed Surface Survey work so as to have the full accurate base-line on positioning of all the workings and infrastructure the mine.

#### Environment

- Mining is prescribed to have an environmental impact assessment (EIA), hence the need to comply with the environmental laws and regulations in terms of the EIA legislation, waste management, etc. so there is need to acquire an EIA.

#### Legal

- The full list of legal issues required for an operating mine must be followed. Issues to do with explosives handling, health & safety issues, marketing issues, environmental issues, inspections, monthly returns and general mine management issues.

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