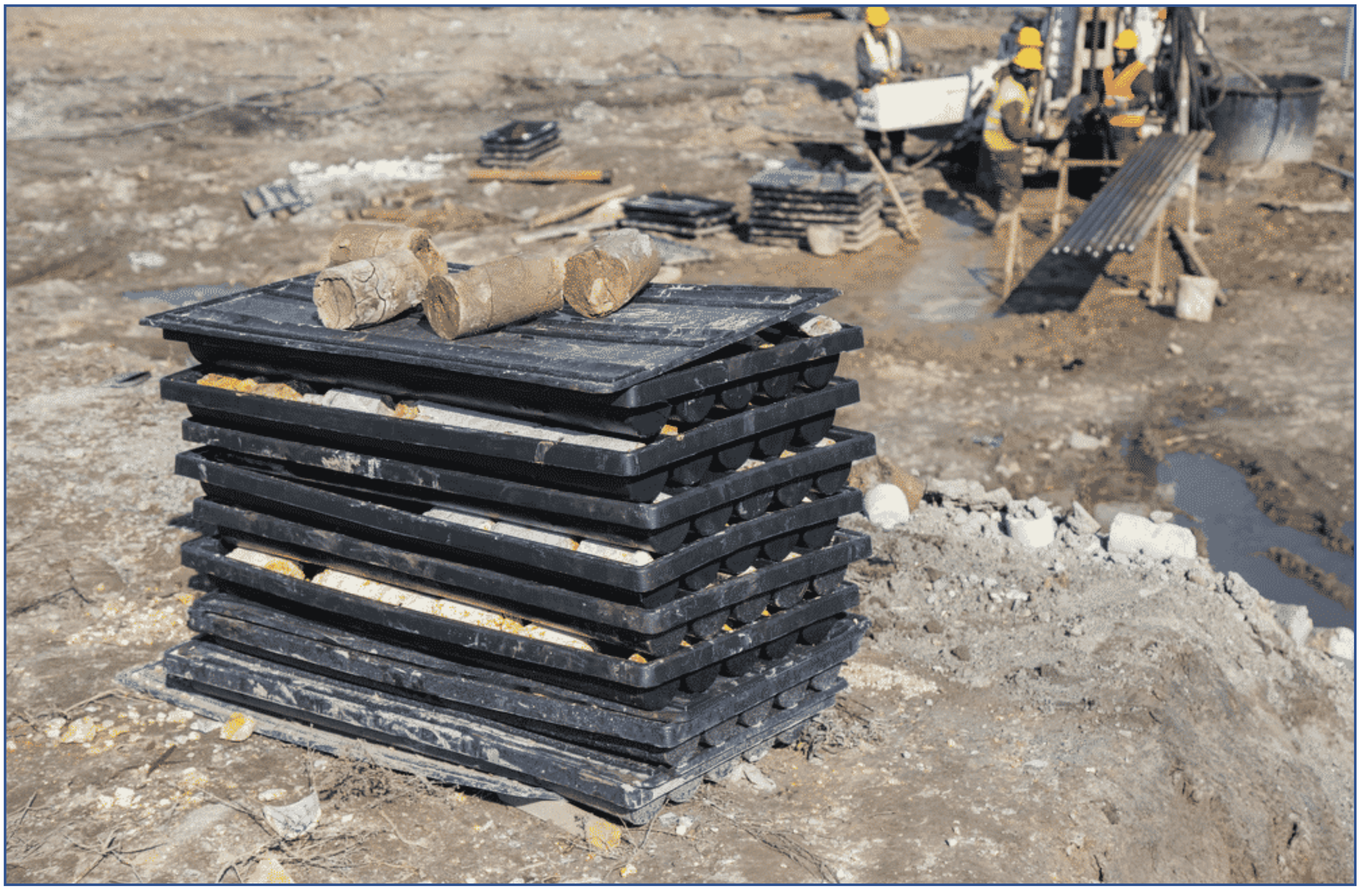

EXPLORATION REPORTS FOR NARAWA MINING COMPANY LIMITED

PREPARED BY;

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27/11/2019

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Technical Geological Study of Alluvial Deposit in part of the *Narawa* Concession Area – Grade and Weight Calculation of Gold

By:

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March 2010

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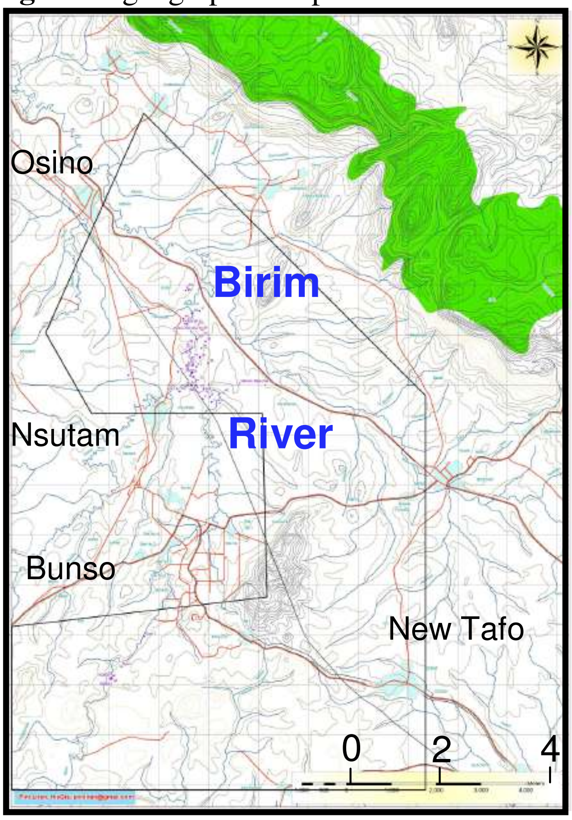
1. **Scope of the study** – Before developing the Narawa concession, a more advanced study was required to assess the gold concentration and its total reserve within the gravel volume in the defined area. As a continuation of the previous study from 2008, it was decided that at this stage, the efforts would focus on a limited area where alluvial deposits are known to contain gold. Since the actual study covered only a very small portion of the concession, it was clear that if the results were positive, the study must be expanded to other alluvial deposits along the Birim River as-well-as the existence of gold in the source rocks as mineralization and other phenomena which require deep studies since they are situated at the same geological frame-work.

2. **Location and general topography** – This study was concentrated in an area between the village of Nsutam (in the south) and Nsuapem (in the north), approximately 2.5X1 km (**fig. 1**). The area was bordered at the western side (left bank) of the Birim River at rather flat to very low hills, between +216 to +231 above sea level. A rural road connects the two villages and the washing plant which is situated some 0.6 km NE of the northern end of the present project (**fig. 2**).

Figure 1: geographic map of the concession and the studied area



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3. **Methodology** – The conceptual approach of this study was to evaluate the spatial thickness of the gravel units and their interaction with the gold grade in them. This approach was taken from the pilot study, where samples were collected and analyzed following a local project which took place long ago. The result of the previous study opened the way for the present study, which was mostly concentrated in an area defined as the "upper terrain" (August 2008 - **fig. 3**). It is clear that this study is also geographically localized and therefore limited in its implications. The study presented here is based on the following principles:
   a. *Previous studies* – the present study used the information gathered during the previous stage of the study (2008). This project was carried out at the base of the present trenching and pitting program.
   b. *Trenching and pitting program* – A 100X100 m grid was planned in an area where alluvial deposited were detected during previous works. This grid was used to systematically explore the gravel units and their geographical limits. Each point was measured using sub-meter GPS accuracy. Some additional points were selected, due to a local problem. In actuality, a grid of 100X200 m was used, which was about 50% of the original plan, including some points on the lower terrain (**fig. 4** – trench pictures).

Figure 2: representative pictures of the area.
a. Some corn field at the lower terrain.

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b. Some agriculture field at the upper terrain

c. *Geological descriptions* – each section exposed in the trenches was described and analyzed to identify: gravel unit thickness, gravel size, matrix/gravel ratio, gravel composition, matrix composition, composition of bedrock, composition of top soils. The description is accompanied with GPS measurement and photographs.
d. *Sampling* – Each gravel unit was sampled, from a theoretical line situated 20 cm below the gravel unit bottom, to its top (The lower 20 cm are considered to be part of the bedrock or soils on which the gravel unit was deposited, assuming to be a mixing zone containing gold). In cases where the gravel unit was found to be thick or not homogenous, another sample was taken representing the bottom gravel layer
e. *Laboratory tests* – The samples were marked and sent to the local branch of the international SGS laboratories. Tests requested included gold grade of un-milled material by fire assay since, in reality, the production of gold from alluvial deposits uses washing plants; the source material is not crushed and milled as it is when exploiting gold from source rock (**Table 1**).
f. *Analysis and reporting* – The analytical process included systematic reporting of each gravel unit from field observations (as mentioned above in section "c" above). All the collected data has been summarized in a detailed table (**Appendix 1**). The information table and the GPS measurements were the basis for production of the iso-maps. The accuracy of these maps is highly depended to the number of measurement points and the distance between them. It is to be noted that the original program suggested about twice as many points than were actually carried out; the continuation of the deposits is therefore unclear. The maps which are based on the information gathered during the analytical process are as follows:
    - Difference in the gravel thickness (**Appendix 2** - isopach map).
    - The gold grade dispersion (**Appendix 3 -** iso-grade map).
g. *Volume calculations* – The gravel thickness (Appendix 2) and gold grade

map (Appendix 3) are at the basis of the calculations of total existence of economically feasible gold in the study. The volume calculations were made in the areas (1 and 2) as defined in the maps. Each area was divided into 100X100 m square, forming boxes, of which the gold grade and the gravel thickness were averaged. The total estimated reserve was calculated by combining the values of all these boxes.

- Calculation of gold quantities in the specific studied area (**Appendices 4, 5**; **Table 2**).
- Recommendations for pilot exploitation.

h. Recommendations for further studies in other alluvial areas and in hard rocks (**Appendix 6**).

Fig. 3 – map of the previous pitting and the lab results of that study

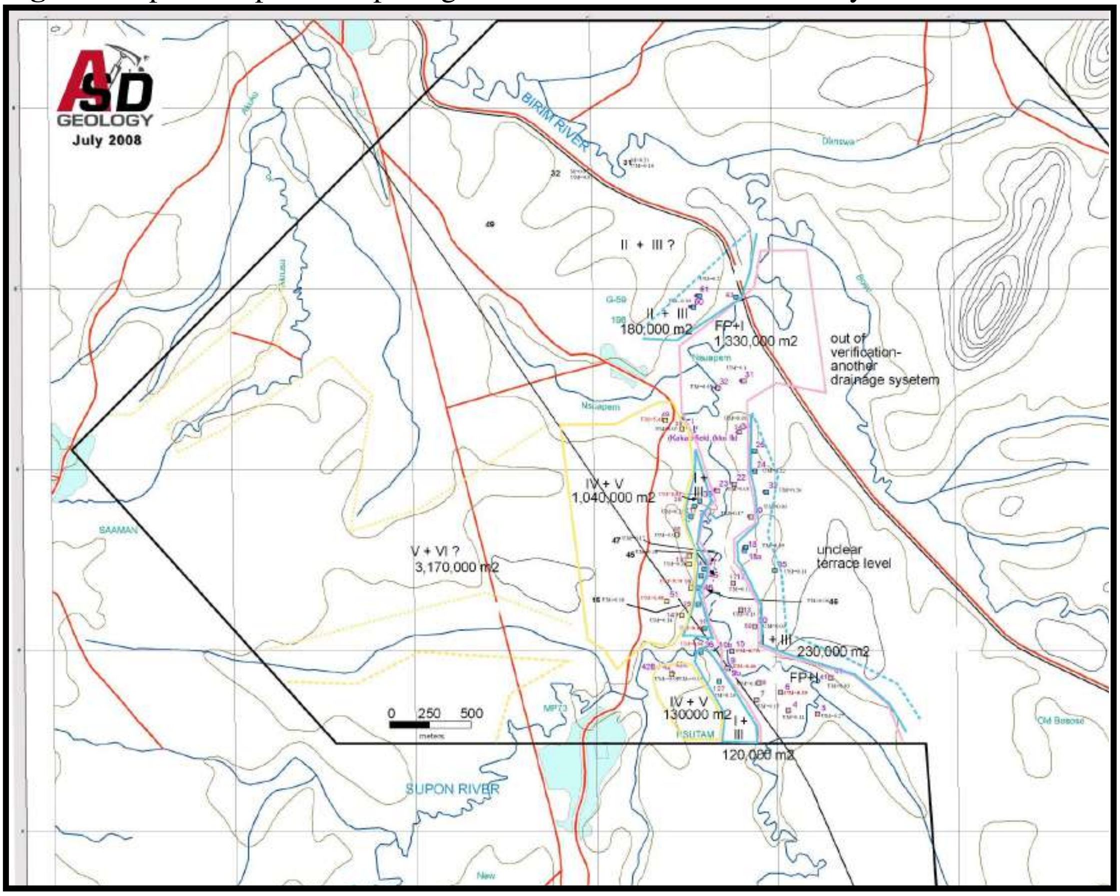

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Table 1: the original report of the SGS lab, Takwa:

SGS REPORT			T0015753 58	24
Au(S)	**Au(R)**	**Au**	**8682**	**010310**
FAA505	FAA505	FAA505	METHOD	
0.01	0.01	0.01	LDETECTION	
1000	1000	1000	UDETECTION	
PPM	**PPM**	**PPM**	**UNITS**	
-	-	1.46	E	
-	-	0.02	E(B)	
-	-	1.86	1230/1240	
-	-	0.04	1000	
-	-	0.64	1003	
-	-	0.03	1004A	
-	-	0.02	1004	
-	0.03	<0.01	1005	
0.02	-	0.02	1005A	
-	-	0.03	1007A	
-	-	0.03	1007	
-	-	0.02	1008	
-	-	0.06	1009	
-	-	0.02	1009B	
-	-	0.02	1100	
-	-	0.02	1100A	
-	0.02	0.01	1100B	
-	-	0.01	1106A	
-	-	0.02	1110A	
-	-	0.03	1110B	
-	-	0.12	1110	
-	-	0.05	1112	
-	-	0.06	1112B	
-	0.03	0.03	1113	
-	-	0.01	1114	
-	-	0.03	1150	
-	-	0.35	1170	
-	-	0.06	1170B	
-	-	0.42	1180	
-	-	0.02	1180B	
-	-	0.02	1190	
-	-	0.09	1200	
-	-	0.3	1210	
-	-	0.01	1220B	
-	-	0.43	1220	
-	-	1.41	1250B	
-	-	2	1250	
-	-	0.03	1260	
-	-	3.32	1270	
-	-	0.58	1280	

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-	-	0.05	1290
-	-	1.17	1310
-	0.05	0.04	1311A
-	-	0.42	1330
-	-	2.21	1330B
-	-	6.34	1340
-	-	0.3	1341A
-	-	0.51	1341B
-	-	2.81	1380
-	-	2.22	1380B
-	-	1.14	1390
-	-	3.21	1400
-	-	0.17	1410
-	-	0.04	1420B
-	-	1.39	1420
-	10.1	8.24	1481A
-	-	2.62	1490
-	-	0.93	1530

4. **Field observations** (**Appendix 1**)–
   a. *Gravel thickness* (**Appendix 2**) - The total thickness of the gravels and their spatial dispersion is a major factor for calculation of the total estimated reserves. The gravel thickness found in the trenches and pits varied between 0 to 2.5 m. 24 of the 55 points (43% of the points) of measured gravel units were less than 1 m and in 11 points (21%) the gravel thickness exceeded 1.5 m. In the remaining 20 trenches and pits (36%), the thickness varied between 1 to 1.5 m (**fig. 5**). The isopach map, indicating the different gravel thickness in the study area, shows that the highest values were found at the southern part of the studied area. Thicker gravel patches were found in the central area, and again in the northern area, near the Nsuapen village. The map shows some reconstructions of the major ancient streams, although (due to lack of complete information) these reconstructions tend to have low accuracy.
   b. *Gravel/matrix field relations*: It was found, as expected, that the gravel units tend to be rich in matrix where the gravel size is small. It was also noticed that in thicker units, the fining upwards was more observed.

Fig. 4 – Trench pictures.
a. A shallow gravel unit in point 105

b. A gravel unit covered by top soil in point


c. *Gold grade*: (**Table 1** - lab results; Appendix 3)
   - The laboratory results indicate that in 17 out of 54 trenches and pits (31%) the gold grades exceed 0.5 ppm. If we add 2 samples where the gold grades were above 0.4 ppm (close to lower arbitrary economical level), we conclude that ~35% of the samples can be considered rich with gold. It is important to note that in 10 of these samples (~19%), the values were higher than 1 ppm. Some as rich as far as 3 to over 8 ppm were also found. Some of the high results – 1.03-9.7 ppm – from the 2008 study were drawn on the present map, indicating a positive correlation with the present study. 3 areas rich with gold were

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identified – ***1.*** The richest and largest area is situated at the southern part of the study area; samples from that area show levels of up to 8.24 ppm, considered in any circumstances a very high value. The map is inaccurate further south, but from the contour lines it is estimated that the high gold concentration probably continues southwards. ***2.*** The northern part of the studied area, next to the village Nsuapem and the washing plant areas was found to be the second richest part of the studied area. Grades of samples from that area reach 3.21 ppm; the grades decline southwards. But a previous pit from the 2008 study, situated on the southern part of this area, contains gold grades of 5.41 ppm. As in the southern area, here too the contour lines may suggest a continuation of rich concentration further northward (to be checked!). Thus, it is very likely that during this study not all the rich gold pockets were detected. ***3.*** At the lower terrain there were indications of some high gold grade results, although not as rich as the high terrains. A rather large surface next to the Birim River (of the lower terrain), was found to contain 1.46 ppm. These results may coincide with the 2008 results at the southern part of area, a bit out of the present study – indicating that the **lower terrain also contains gold** although present knowledge indicates a lower economical value than the higher terrain.

- Common practice indicates that the high gold grade would be found in a thick gravel unit. In our study this work hypothesis was found correct in 6 out of 12 sections. For instance, high grades were found in trenches 138 = 2.81 ppm and 142=1.39 ppm, where the gravel thickness was 1.5 and 2.1 m respectively. But high grade was found also in much thinner units – for instance, in 1481, where thickness is 0.8 m, the gold grade reached 8.24 (!) ppm and in 134, which was 1 m thick, the gold grade reaches 6.34 ppm. The conclusion from this observation may be that exploitation of the gold should not automatically be concentrated in thick gravel units.
- Verification of the gold grade at the lower part of the thick section, including 20 cm of the mix-layer (known as upper part of "bedrock") was also carried out in 12 trenches (note: it was not logical to make sample separations where the gravel units were thinner than 1 m). A few remarks regarding these points: (1) the gold grade exceeded 0.5 ppm only in 5 samples from the lower sections; (2) the gold grade of the bottom exceeded the total gold grade found in the entire section only in 2 of them. From this we conclude that exploiting the 20 cm of the mix-layer below the gravel will not yield a considerable amount of gold. Also, observations lead to the conclusion that, in this case, the gold grades do not follow the common practice, maybe due to multiphase deposits throughout the region's geological history.

Figure 5:
a. Thin gravel layer in 105

b. Thick gravel layer in 124

e. *The relation between gold grade, grain size and gravel unit thickness*: In some of the trenches a good correlation was found between the gravel sizes and the gold grade. For example, it was noticed that in trench 134 the gravels size reached ~12 cm and the gold grade was found to be 6.34 ppm; trench 133, where gravels reached ~15 cm, contained gold grade of 2.21 ppm; trench 127 with gravel of up to ~20 cm contained gold grade of 3.32 ppm; trench 133 with gravels of up to ~15 cm contained gold grade of 2.21 ppm.. However, large gravel size also appears in other trenches without significant gold grade. The most significant observation is the correlation between the gravel unit thickness and the gold grade results. Comparison of these parameters indicate that a thick gravel unit is closely correlated with the highest gold grade – an observation that can be found clearly in the northern and southern rich gold areas. These observations, although lacking in detailed information, may be of great importance for volume calculations and for mining engineering purposes.

f. *Field relation gold grade, gravel thickness and terrain level*: One of the major work hypotheses of this study that was on the basis of the trenching plan of the present study – "the highest gold grades and gravel unit thickness are found at the higher terrains". But, due to some doubts trenches in the lower terrain were performed (where at the 2008 study was found with mostly low, show with moderate, gold grades). The results of this study indicate clearly that in the work hypothesis was correct – the high terrain indeed was found rich with gold concentration. Nevertheless, since moderate but valuable gold concentrations were found also in the lower terrain it is suggested to plan the exploitation of gold also from the lower terrain (see location of important gold grades in Appendix 3).

5. **Volume calculations** – The maps of Appendix 4 and 5 were produced by combining two maps – the distribution of gold grade (Appendix 2) and gravel thickness (Appendix 3). The map indicated 3 preferences zones for exploitation. Zone 1: Where the gravel unit is thick and the gold grades are high; Zone 2: Where the gravel unit is moderate and the gold grades are average; and, Zone 3: Where the gravel unit is rather thin and the gold grades are low. In order to estimate the gold reserve in each zone, imaginary squares of 100X1000 m were drawn to serve as a calculation unit. In each square the average gravel thickness and the average gold grade was estimated as detailed in the contour maps. The results are the best fit estimation which, although it has to be proven in further study, gives good enough information to evaluate the gold weight of the area under investigation and its economic value. The results of these calculations are as follows (table 2: data of total volume/weight calculations in zone 1 and 2).
   a. Zone 1 –
      - Gravel weight to extract – **640,120 tons**
      - Potential of gold weight – **999,867 gr.**
   b. Zone 2 –
      - Gravel weight to extract – **215,600 tons**
      - Potential of gold weight – **325,340 gr.**
   c. Zone 3 – was not calculated due to too small information

TABLE 2:

DATA OF TOTAL VOLUME/WEIGHT CALCULATIONS IN ZONE 1 AND 2

zone 2

gold grade (ppm)	gravel thick (m)
0.5	0.7
0.7	1
0.7	0.8
1.2	0.8
2.5	1.5
2.2	1.2
1.8	0.8
2.8	1.6
2.2	1.2
1	0.6
1	0.6
1.509090909	0.981818182
in average	in average
325,340 gr 10,494.85 ounces	215,600 tons

zone 1

gold grade (ppm)	gravel thick (m)
0.4	1.5
0.3	1.2
0.5	1.5
1.5	1.8
1.7	0.5
1.5	0.7
2	0.9
0.4	1.5
0.4	1
0.3	1.2
1	0.8
1	1.2
0.4	1.5
0.8	1.2
0.8	1.2
1.7	1.2
1.2	1.3
1	2
3	1.5
1	1.3
1	0.8
6	0.7
6	1
5	1.5
1	2
0.7	1
1.561538462	gravel thick (m)
in average	in average
999,867 gr 32,253.79 ounces	640120 tons

6. **Conclusions and recommendations-**
    a. The area under investigation proved to have rather rich in gold grade and its economical value.
    b. The major gold concentration was at the higher terrain, along the vicinity of the dirt road running between the two villages, more precisely north of the Nsutam village. But an important area was also detected near the northern village of Nsuapem.
    c. Other areas within the lower terrain were found rich with gold. It is recommended to exploit these terrains too, according to priorities indicated in the zoning maps.
    d. Due to a reduced investigation program (~50% of the original plan) there is some information missing regarding the continuation of the gold concentration within and at the vicinity of the explored study.
    e. Fast exploitation of gold can be carried out according to the gold richness zone maps mentioned above in section 5.

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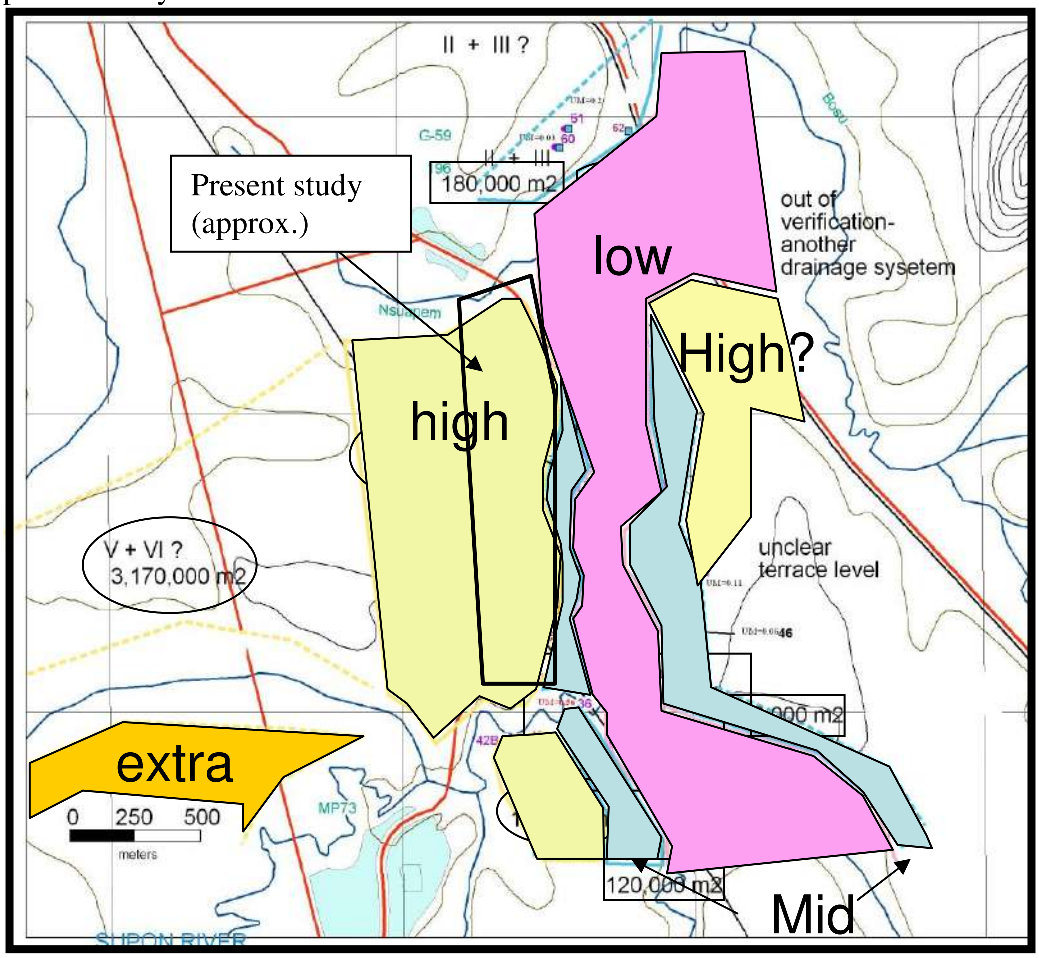
f. It is recommended to plan the gold exploitation with a mining engineer expert who will use the geological data and evaluate the field and technical situation (machinery and equipment required) to establish a cost effective mining process.
g. The framework of the geological situation found in this study, and the previous one, suggest the existence of other areas in the concession that may contain gold. It is highly recommended to invest in further studies in other areas of the Narawa concession, focusing on alluvial deposits (**fig. 6**).
h. Some preliminary studies from existing data of ***hard rock*** (locally called "cracks") may suggest their existence within the Narawa concession. Further investigation to study this type of rock mineralization is highly recommended, because it might host the majority of the gold in the concession and may be its main economic future.

Fig 6: Map of possible correlated alluvial deposits in the area of the Birim River along the lower terrain as well as the high terrain. Note the limited surface of the present study.



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i. Some preliminary studies from existing data of ***hard rock*** (locally called – "cracks") which are in our position, may suggest their existence also within the Narawa concession. It is highly recommended to invest on this type of rock mineralization, which might host the majority of the gold in the concession and may be its main economical future.

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NARAWA MINING COMPANY LIMITED

GEOLOGICAL REPORT OF INITIAL EXPLORATION WORKS IN THE NARAWA MINING CONCESSION

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EXECUTIVE SUMMARY

Shear zone - hosted hydrothermal gold mineral deposits style is among the highest grade world-class gold-producing mines in the world. This deposit styles are structurally controlled and can extend kilometers deep into the earth crust. A classic example is the shear hosted gold deposit of Anglo Gold Mines, Obuasi in the Ashanti Gold Belt, Ghana. Geogold Exploration Services Limited has discovered a classic gold bearing (fault/ shear) zone with considerable volumes of sulphides (arsenopyrite, pyrrhotite, pyrites) of secondary origin and opaque minerals in the Ettukrom Gold zone of Narawa Mining Company Limited concession in the Kibi Gold belt .This NE –SW structures is currently traceable on surface over 1.2 km outcropping in three branches and of (50 – 60) m in strike length and (15 – 20) m width each.

The fault rock is strongly chloritized, and sheared with intense silicification and carbonization. This fractured rocks (i.e. fault /shear zones) is most likely a conduits for transport of large fluid / metals volumes to surface. The evidence for this is ubiquitous in paleo – fault zones –fractures, where fractures are veined - filled, wall rock are often altered, and gouge zones are tight and cemented. This structure seems to exhibits a localized hydrothermal ore deposits system that were active at the same time the fluids were continues and active thus leading to volumes of sulphidation on surface. The structure is still under investigation and could be traceable for a minimum of 4km, striking northward extending to the metasedimentary Voltain basin. Intense soil geochemical sampling and geological mapping is currently ongoing to assist properly delineate the zones of surface mineralization for further exploration. The fault rock is also in contact with a felsic intrusive body possibly quartz diorite with a sharp contact partially outcropping on surface. The contact of this newly discovered intrusive is also faulted with intense carbonization, sericitization, and sulphidization and is strongly silicified. This outcropping shear structure is very interesting and overwhelming since it represent an all-important exploration target possible to be developed into a feature producing gold mine. The fault zones is strongly mylonitic with haloes of intense alteration and sulphidation.

Initial petrographic studies conducted at the University of Ghana Laboratory, reveals up to 10 % sulphides, and 20% opaque minerals in the fault zone. The zone, a carbonate-bearing chlorite-schist, shows significant deformation with abundant coarse deformed sulfide minerals visible in

hand samples. It appears to have undergone solid state deformation and ductile-deformation, with quartz and carbonate infiltrations and significant opaque and sulfide mineralization. The rock appeared to have been deformed poly-phase. Microscopically, the rock is dominated by opaque minerals and chlorite. The opaque minerals appear to be ferromagnesian-derived, most likely amphibole. Shear textures are shown by strong preferred orientation of constituent minerals, with an S1 schistosity overprinted by S2 in a somewhat anastomosing texture. This assemblage is impregnated by significant quartz and carbonate minerals. Aggregates of deformed sulfide minerals are preferentially oriented and within alteration. A total of nineteen rock chip samples were sent to SGS laboratory, Tarkwa to test the gold content of the rock chips using fire assay. Six rock chip (grab samples) gave values above 0.03 g/t representing 31.58 % of total samples tested from the outcrop. Detail structural mapping, sampling and petrological studies is underway to assist delineate the surface extent of the structure and to prepare a drill plan for resource. The managing of Narawa Mining Company in consultation with Geogold Exploration Services limited, invites the interested public, mining and mineral exploration companies for a site visit and possible interactions.

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CHAPTER ONE

Introduction

In March, 2017, the management of Narawa Mining Company Limited commissioned Michael Kwasi Dwumfuor of Geogold Exploration Services Ltd. ('GGES') to initiate and supervise a hard rock gold exploration project in the their approximately 64 Sq.Km concession in the Fanteakwa district of the Eastern region of Ghana. The program was to technically assess the potential of gold mineralization in surface exposures and to propose a detailed follow-up plan for subsequent green field exploration activities.

Interesting returns from the reconnaissance survey and detailed follow-up exploration works is positively indicative of a gold-bearing shear/fault structure in the concession, warranting further works to help delineate its surficial extent. The findings will produce a detailed independently verifiable technical report and resource estimate for commercial declaration.

The gold-bearing shear under investigation is a splay of a structure linked to a major reverse fault on the eastern flanks of the Kibi Gold Belt. The structure has a confirmed surficial lateral extent of approximately 10 Km in a NE – SW trend. This report documents initial field activities, laboratory reports and the necessary recommendations for further exploration works.

Scope of the study

Ettukrom gold zone has been identified as the initial exploration target and all current exploration activities are being concentrated within this zone of interest. This is an approximately 4 Km sq area. Exploration work being carried out includes geological and regolith mapping, soil sampling, petrological studies and structural mapping and analysis. However, periodic and systematic reconnaissance incursions are also done in areas on the Ettukrom periphery.

Property description and location

The Narawa Mining Limited concession is located within an area historically referred to as the "Kibi Gold District", or the "Kibi District" in southern Ghana. The concession has an area of 64 sq. km and has the town of Nsuapenso somewhat in its center, in the Fanteakwa District, of the Eastern region of Ghana (as shown in Figure 1). It is located approximately 80 km NNE of Accra, on the eastern flank of the Atewa Range, just off the main Accra-Kumasi highway.

Ownership

The Narawa mining Concession (NMC) is owned by a private corporation, Narawa Mining Company Limited of address, P.O. Box CT 3746, Cantonment, Accra, with a 90% share interest. The remaining 10% interest is being held by the Government of Ghana in trust for the republic. Pursuant to the Minerals and Mining Act, 2006 (Act 703) (the "Mining Act"), the Government of Ghana acquires a 10% free carried interest in all mining leases by way of 10% share ownership in all Ghanaian corporations who hold mining leases.

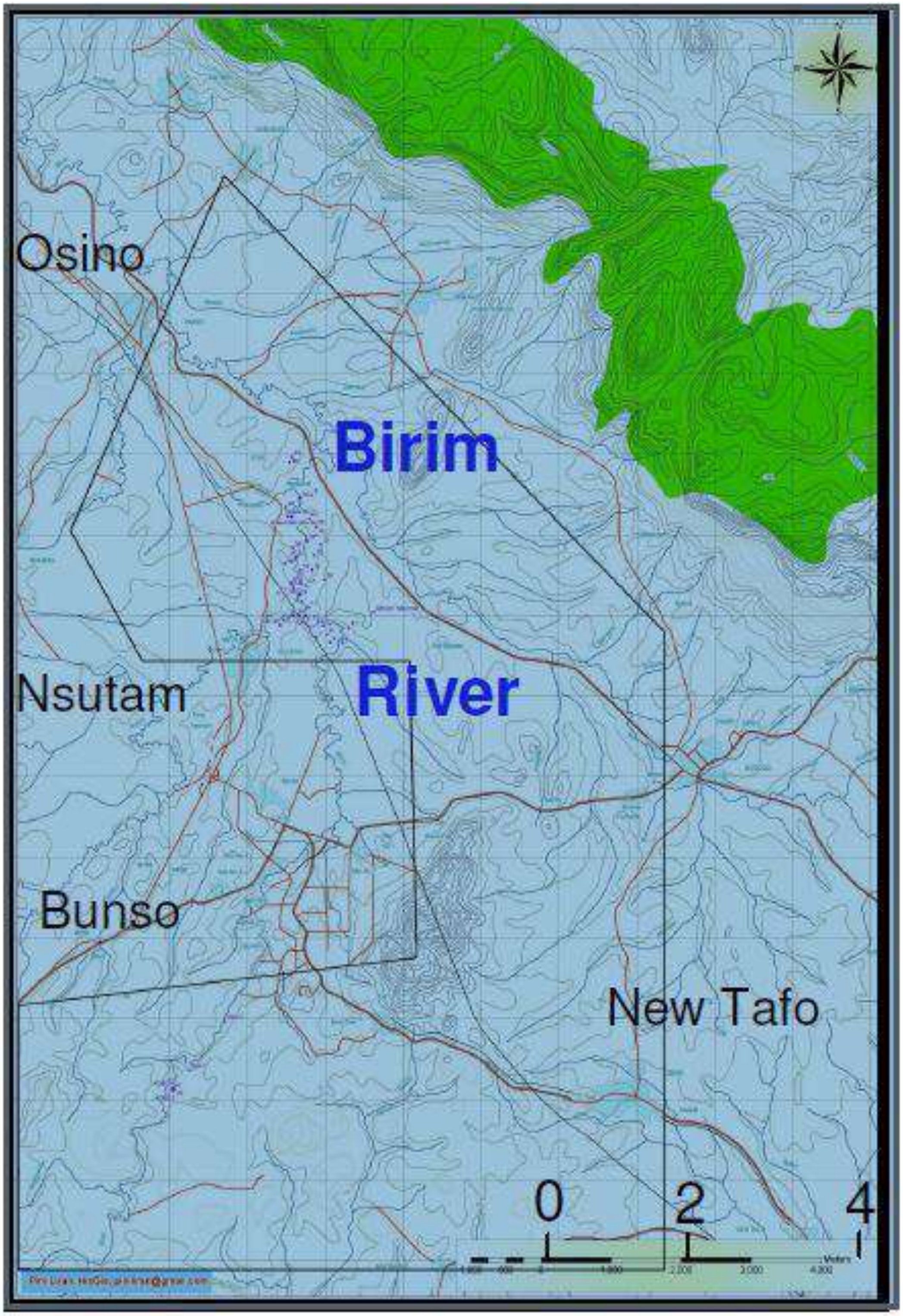


Fig 1. Approximate boundaries of Narawa Company Limited Concession

CHAPTER TWO

Brief geology

The Narawa Mining concession covers part of the Kibi Volcanic Belt, which is the easternmost of the four main Birimian volcanic belts in southern Ghana.

These volcanic belts and the intervening sedimentary basins were formed during the Paleoproterozoic and were deformed and intruded by granitoids during the Eburnean tectonothermal event which also occurred in the Paleoproterozoic. Generally, there are two types of granitoids in southern Ghana: the earlier belt-type granitoids, and the later basin-type granitoids. The volcanic belts, and major structures within the basins, trend NE-SW as a result of Eburnean deformation.

The concession contains steeply dipping, isoclinally folded Birimian Supergroup metasediments and metavolcanics of the Kibi Volcanic Belt. These rocks have been intruded by belt–type quartz diorite intrusions in at Ettukrom town in the southern part of the concession. These rocks are currently being studied for further classification at the Department of Earth Science rock laboratory, University of Ghana.

Mineralization

Ghana is one of the world's top gold producers. In southern Ghana gold occurs in three styles of mineralization:

1. Alluvial deposits found in river valleys.

2. Shear zone-hosted hydrothermal mineralization.

3. Granitoid-hosted hydrothermal mineralization.

While the alluvial deposits formed recently during the Cainozoic, the hydrothermal deposits formed as part of the Eburnean tectonothermal event in the Paleoproterozoic.

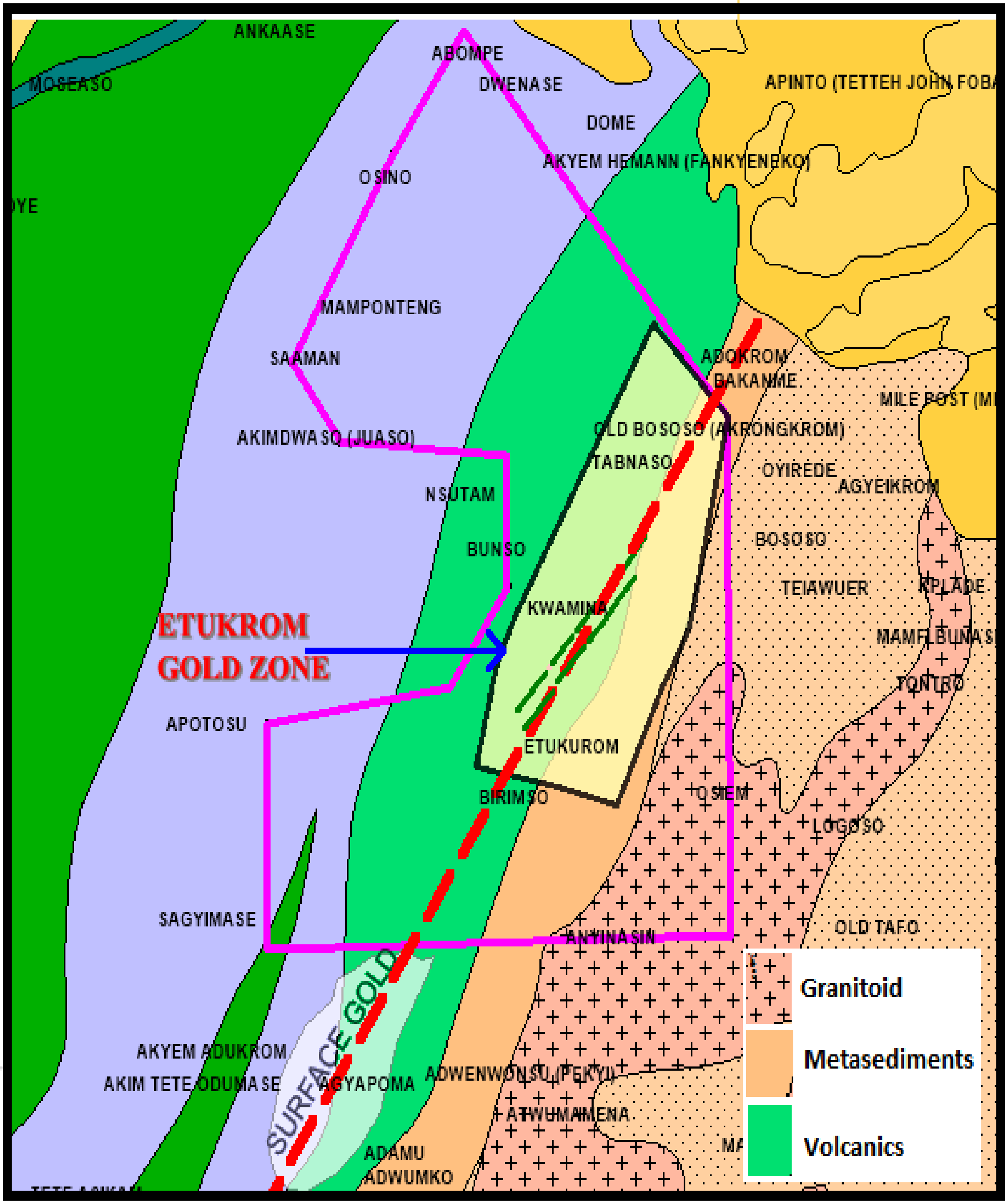


Fig 2. Geology of part of the Kibi belt, with the concession boundary

Whereas there are alluvial gold deposits in the Birim River valley within the concession, the main focus of Narawa Mining Company is on the more prolific granitoid-hosted and shear zone–hosted hydrothermal mineralization.

Mineralization in the NMC is suspected to be of the granitoid-hosted hydrothermal style. Quartz diorite occurs as a number of lenses, of varying sizes, within metasediments and metavolcanics in the southeastern part of the concession boundary analogous to that of Eastern Mining, Mos mining and Xtra Gold Mining. The granitoid lenses contain quartz vein stockworks near the margins of the lenses. These stockworks consist of a number of differently oriented sets of quartz veins. The veins and adjacent alteration, which includes disseminated sulphides, such as pyrite, pyrrhotite and arsenopyrite, are typically auriferous.

The newly discovered gold bearing shear currently under investigation also alludes to the Shear zone-hosted hydrothermal mineralization. The shear is traceable for about 1.5 Km on surface at the Ettukrom Gold Zone. Fault/shear fabrics are prominent, and silicification and sulphide mineralization are pervasive. This the main target for subsequent drilling operations.

There are several similarities between the mineralization and known gold deposits of the granitoid-hosted type, such as the Central Ashanti Gold Project, formerly known as the Ayanfuri deposit (Perseus Mining Limited), and the Anyankyerim and Nhyiaso deposits (AngloGold Ashanti Ltd.) located within the adjacent Ashanti Belt, and the Subika deposit (Newmont Mining Limited) and the Chirano deposit (Kinross Gold Corporation) located within the Sefwi Belt.

CHAPTER THREE

Exploration works

Exploration works by GGESL has identified gold anomalies in the newly discovered shear/fault zone structure in the Ettukrom Gold Zone Part of the Concession, which are yet to be tested and confirmed at depth by drilling. The structure outcrops and no trenching activities can be carried out. A soil sampling program is also ongoing in the Ettukrom Gold Zone but the management of Narawa Mining Company Limited aims to focus on developing the gold anomalies through drilling, for resource definition.

Exploration since March 2017 has included:

- Reconnaissance Survey of Ettukrom and Boartey – Agyapoma Gold Zone
- Soil sampling over 1km square Ettukrom Gold Zone
- Rock chip sampling (where possible)
- Petrographic Analysis of Rock Chips
- Initial Structural analysis of exposed structures for regional interpretation

i. Reconnaissance Survey of Ettukrom and Boartey – Agyapoma Gold Zone

Reconnaissance survey of the Ettukrom and Boartey - Agyapoma Gold zone has revealed interesting geological structures that worth following up. The southwestern part of the concession borders the Eastern mining Limited surface gold mineralization and a drilled confirmed resource of Abzu Gold Resources. A gold-bearing shear structure of XtraGold's (XtraGold Mining Limited) Zone Five mineral corridor, strikes through the diorite rocks in this area. This shear is a confirmed high grade gold mineralization. This is evident in the large number of hard rock artisanal miners in the area. This structure strikes through the NMC in a NNE –SSW trend with sufficient surficial exposure for mapping and geochemical soil sampling. The same shear is exposed in a number of locations at Ettukrom. Some parts of it is shown in the figures 3, 4, 5 and 6.

Careful analyses of this structure reveal a plane of reverse fault steeply dipping to the northeast. The volcanoclastic rock is faulted and folded by secondary deformation events.

Figure 3

Figure 4

Figure 5

Figure 6

Figure 3. Shear fabric in a metavolcanic outcrop with brecciated quartz veins.

Figure 4 and 5. Mylonitic textures and folding in a metavolcanic outcrop with brecciated quartz veins and carbonate alteration.

Figure 6. Brecciated quartz vein in mylonitic zone of the gold bearing shear.

This outcrop (figures 3, 4, 5 and 6) is particularly interesting. It is isolated and is the contact of two rock types, a felsic intrusive rock (granitoid) in contact with the volcanoclastic rock. Such contacts are zones of weakness, associated with mineralizing fluid emplacement. Detailed petrographic studies of some samples taken are underway study at the Department of Earth Science rock lab, of the University of Ghana.

ii. Soil sampling of the Ettukrom Gold Zone

Initial soil sampling program was planned to target an area of approximately 4 Km sq to help delineate the gold-in-soil anomalies. A 200 m line-sampling spacing interval was planned over prospective geological features. Samples were taken at every 25 m interval for mapping purpose and every 50 m prepared for laboratory testing. Sample depth ranges between 30 cm to 40 cm and analyses for gold at SGS laboratory using fire assay at Tarkwa.

The program is still ongoing and over 400 pieces of samples are still at the camp waiting for laboratory analysis. The figures 9 and 10 shows the catchment area where the soil sampling was undertaken.

Figure 7. Field technician sorting soil samples at Camp

Figure 8. Soil samples collected at Ettukrom

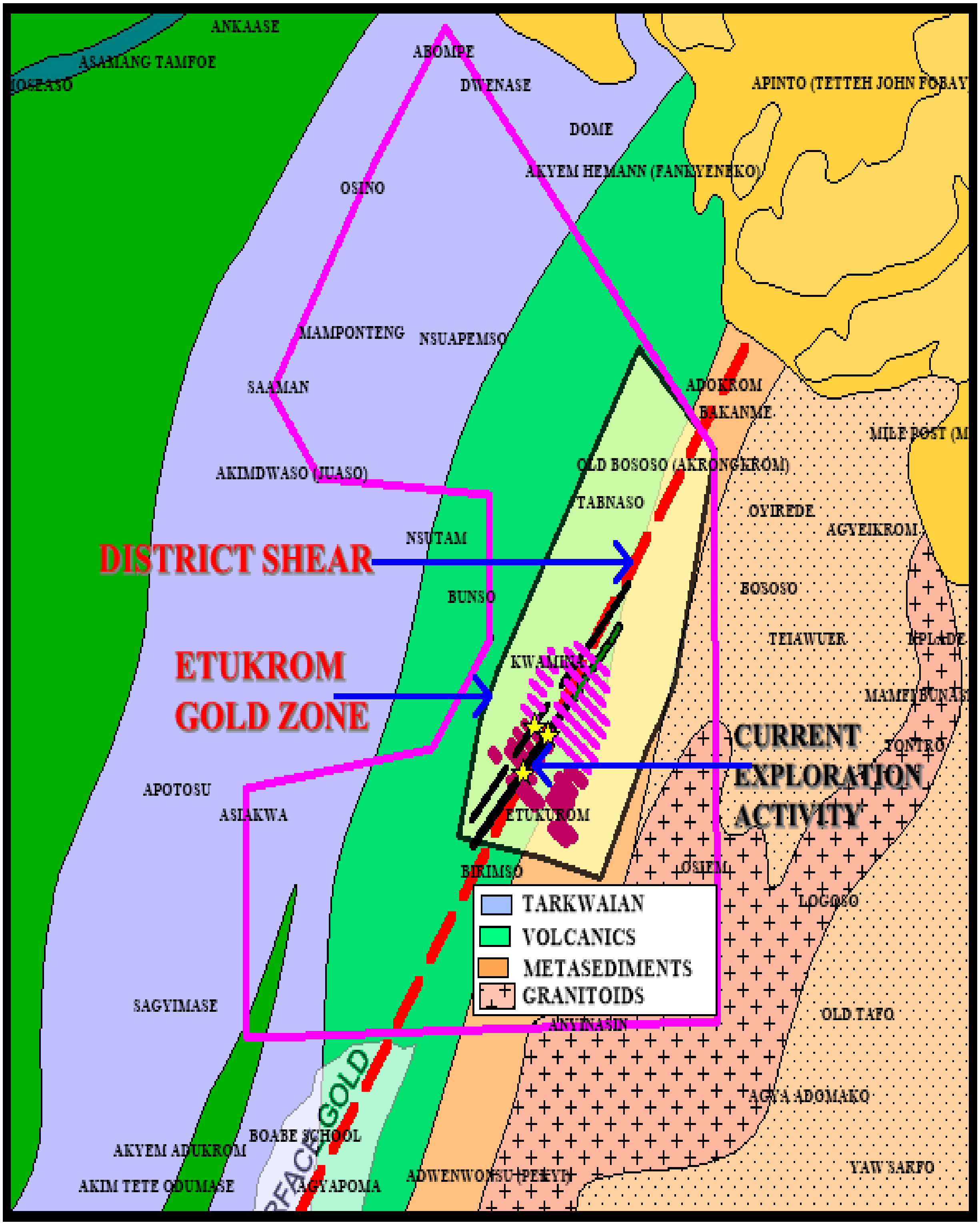


Figure 9. Sketch map showing the approximate position of the Shear (red area) and the sampling trend (black lines)

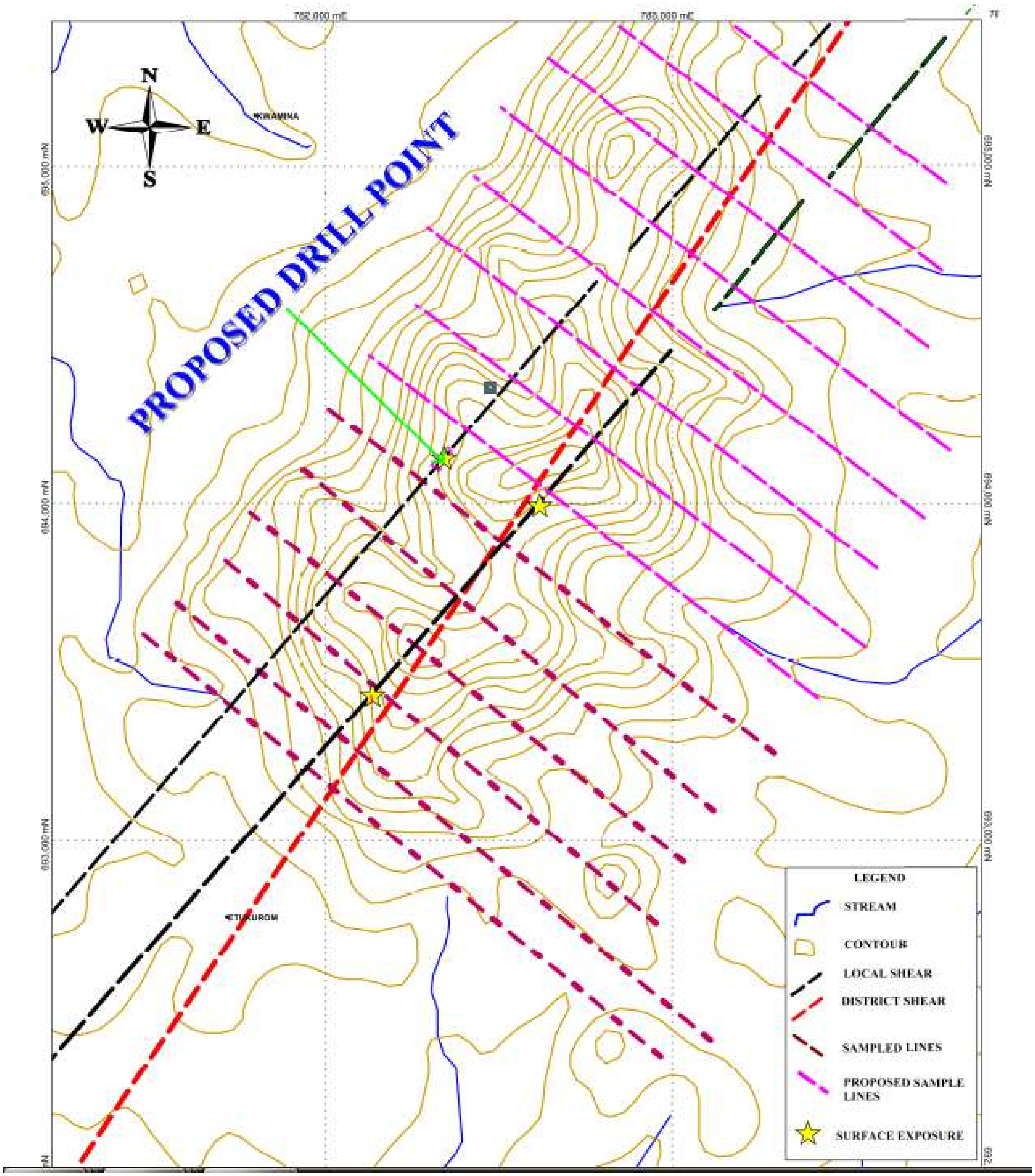


Figure 10. Sketch map showing the approximate position of the district Shear (red area) and the current exploration area (black lines)

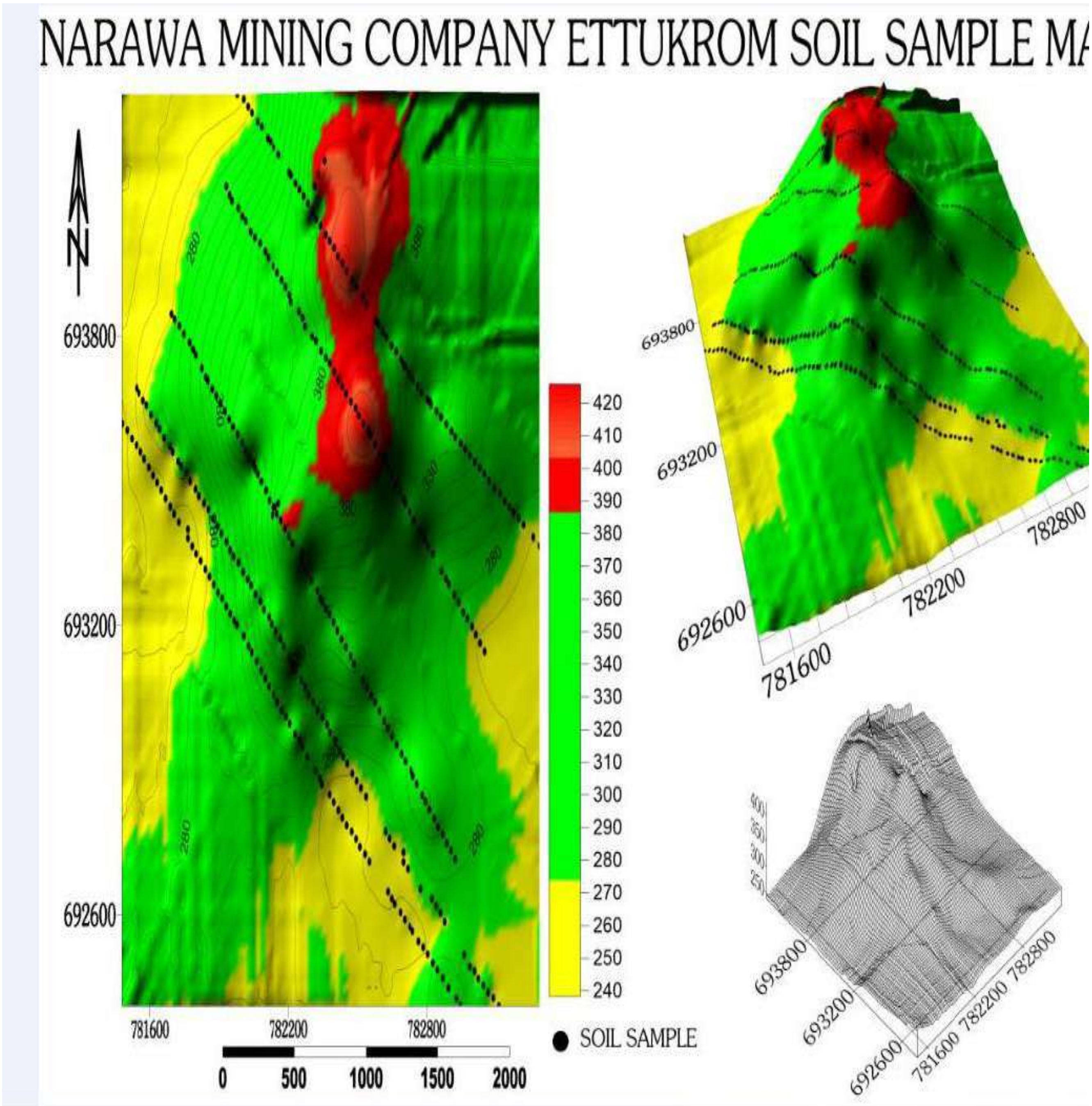


Figure 11. Elevation model of the sampling area.

iii. Initial structural analysis of exposed structures for regional interpretation.

Deciphering structural controls on the distribution of mineralization is a key component of mineral exploration principles. Some of these processes will need scale 3D modelling, structural and geological interpretation of geophysical data, and GIS integration of geological, geophysical and litho-geochemical data. Hydrothermal ore deposits are localized on faults / shears that were (repeatedly / continuously) active at the same time the hydrothermal system was active and metal pregnant. A typical example is the San Andreas Fault.

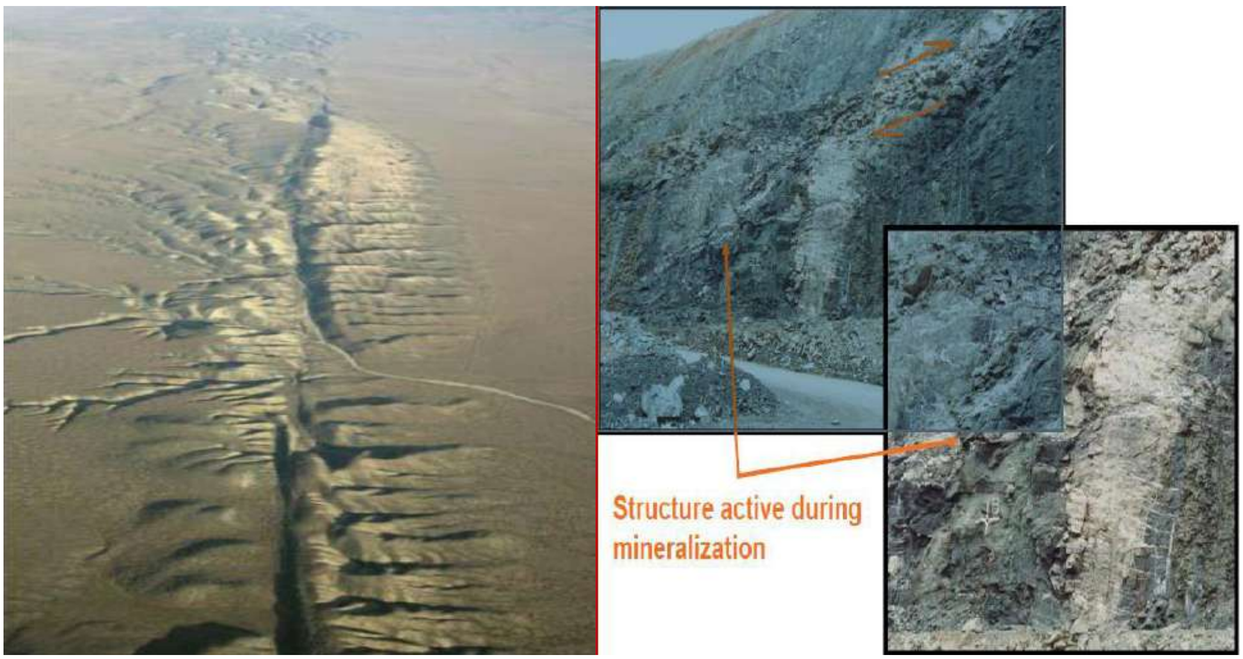


Figure 12. Surface exposure and zones of weakness in a face of San Andreas Fault

iv. Structural analysis and field observations of the gold-bearing fault/shear structure of the Narawa Mining Concession

The shear/fault structure in the NMC has makings similar to many world class deposit. Initial structural analysis of this gold-bearing structure reveals an intensely sheared fabric of secondary deformation on surface. A lot of flow textures associated with faulting zone / shear zones are predominant on various scale with metals/sulphides associated with gold impregnating the zones of weakness.

Figure 13

Figure 14

Figure 15

Figure 16

Figure 12. Initial cleaning up of the gold bearing structure by some members of the exploration team

Figure 13. Member of the exploration team showing the strike direction of the gold bearing structure to the North

Figure 14. A section of the exposed gold bearing shear /fault in the concession

Figure 15. A section of the mylonitic zone of the exposed gold bearing shear /fault in the concession

Figure 17

Figure 18

Figure 19

Figure 20

Figure 16. Section of the step-like zone (slickensides) of the exposed shear /fault.

Figure 17. Section of the mylonitic zone with brecciated quartz fragment along the direction of weakness of the exposed gold bearing shear.

Figure 18. Section of the exposed outcrop contact of two different rock types with along the direction of weakness of the exposed gold bearing shear /fault.

Figure 19. Section of the exposed contact of two different rock types possibly metavolcanic to the top and belt granitoid down

Figure 21

Figure 22

Figure 23

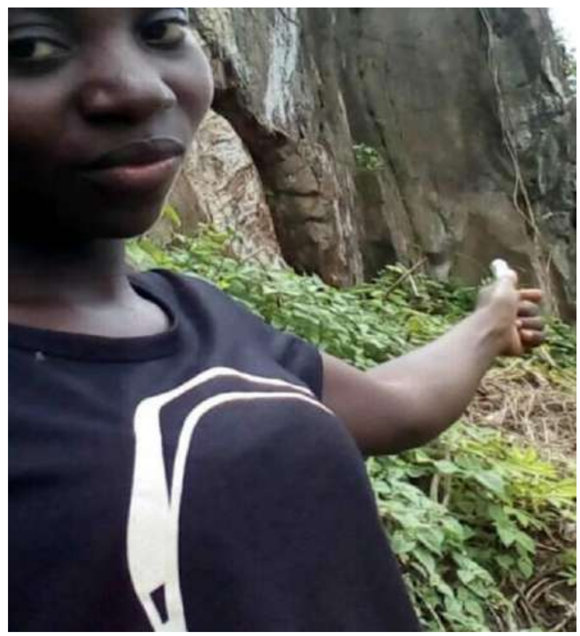


Figure 24

Figure 20. Section of the exposed sharp outcropping contact of two different rock types in the exposed shear

Figure 21Sheared brecciated quartz vein in mylonitic zone of the gold bearing shear.

Figure 21. Flow textures in the sheared rock

Figure 22. A member of the exploration team showing the strike direction of the gold bearing structure to the South.

Figure 25. Sample of the contacting belt granitoid Figure 26. Sample of the contacting metavolcanic rock

Extensive structural analysis of the shear reveals three different surface exposed branches of the faulted contact between the volcanoclastic sedimentary rocks and the supposed intruded belt granitoid. Each exposure is approximately 60 m in strike length and 20 – 30 m wide.

v. Initial field analysis of gold mineralization and sulphide association in the gold bearing shear/fault

The newly discovered gold bearing shear exhibit similar gold mineralization style as the Birimian rocks in Ghana. Gold mineralization associated with this reverse fault contact and shear structure is of mesothermal origin and can be tied to the splay of structure in the eastern flank of the Kibi gold belt, east of the Atewa range. Gold mineralization is similar to the Ashanti Shear-style of Anglogold Ashanti's Obuasi Mine and also more precisely exhibit same characteristics as Newmont Akyem deposit.

Mineralization has the following characteristics;

Mineralogy is simple with a strong positive correlation between gold and arsenopyrite. Accessory minerals include pyrite, chalcopyrite, pyrrhotite, and bornite. Mineralization is along zones of weakness in the rock fabric and along the salvages of the quartz veins.

- Gold mineralization is also following the contact of the volcaniclastic sedimentary rock and the outcropped body under investigation.
- Gold mineralization is also conformant to the hanging wall of the metasedimentary rock. Though steeply deeding.

- Strong silicification is common, accompanied by sericite and carbonate alteration.
- Tourmaline is also present and gold may appear as coarse visible nugget in the veins and along the salvages of the veins.

vi. Petrographic Analysis of rock chip samples

Certain petrographic features are known to be associated with mineralization. As such, petrographic and textural analysis of rocks is an integral component of exploration. Rock chip samples of exposed outcrops of interest were studied microscopically, and forwarded for microscopic analysis at the department of earth science rock laboratory, of the University of Ghana.

Figure 27

Figure 28

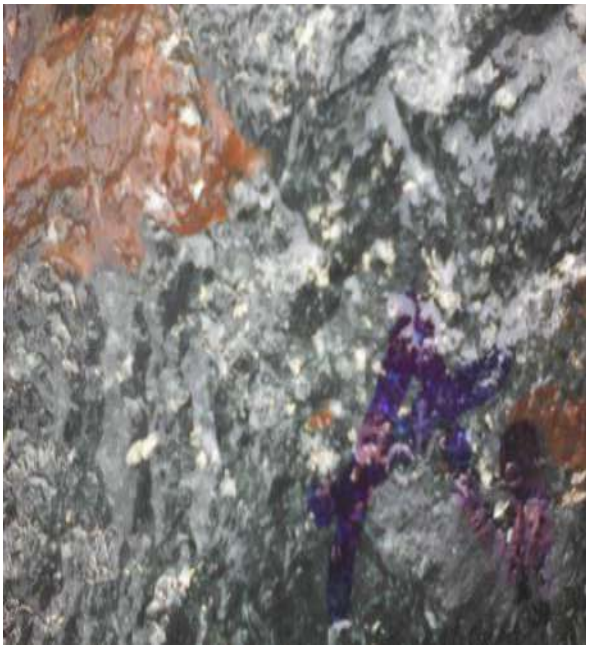


Figure 29

Figure 30

Figures 23, 24, 25 and 26. Various forms of sulphidation along the planes of weakness in the belt granitoid

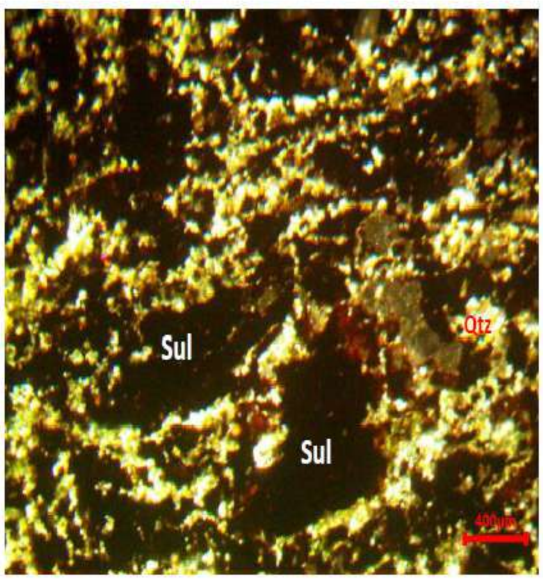
Most prominent feature in hand samples were the intense sulphidization, pervasive along planes of cleavages in the granitoids. Sulphides are known mineral associates, and indicators of some of the most prolific gold mineralization in Ghana. Sulphization and alteration observed become increasingly pronounced near the tectonic contacts and shear zones. The rocks also showed forms of shear fabric, grain elongation and mylonitization. These features are overwhelmingly similar to those of the confirmed mineralized shear reported by Xtra Gold.

Three (3) representative rock samples, A1, A2 and A3, carefully chosen out of a submitted 15 samples for further microscopic studies, have been analyzed. The objectives were to determine the mineralogical and textural composition of the rocks for classification. Two slides were prepared from each sample and were analyzed using a leica trinocular polarizing microscope.

Two of these (A1 and A3) were found out to be of metavolcanic affinity, strongly sheared and significantly altered. These rocks are metamorphosed into various greenschists, which are dominantly chlorite-rich, strongly silicified and carbonate mineralized. They showed significant deformation, contained opaque, sulfide and carbonate mineralization. The sulfide minerals were found to be associated with the alteration haloes.

A1, a carbonate-bearing chlorite-schist, showed significant deformation with abundant coarse deformed sulfide minerals visible in hand samples. It appears to have undergone solid state deformation and ductile-deformation, with quartz and carbonate infiltrations and significant opaque and sulfide mineralization. The rock appeared to have been deformed poly-phase.

Microscopically, the rock is dominated by opaque minerals and chlorite. The opaque minerals appear to be ferromagnesian-derived, most likely amphibole. Shear textures are shown by strong preferred orientation of constituent minerals, with an S1 schistosity overprinted by S2 in a somewhat anastomosing texture. This assemblage is impregnated by significant quartz and carbonate minerals. Aggregated of deformed sulfide minerals are preferentially oriented and within alteration.



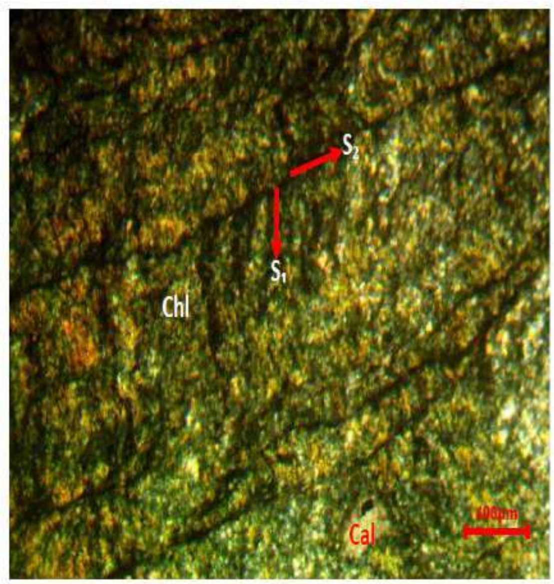


Figure 31. Micro texture with overprints (sulfide and opaque)   Figure 32. Micro texture with S1 and S2 fabric

Table 1. Modal composition for the carbonate-bearing chlorite-schist

mode	Volume %	characteristics
Chlorite	50	Fibrous, elongated and oriented, may be altered from amphibole. Shows two generations of s and S2 anastomising texture.
Opaque minerals	20	Very prominent, appear to be from the alteration of ferromagnesian minerals. Preferred oriented
Quartz	15	Secondary and vesicle fillings or impregnation
Sulfide minerals	10	Coarse deformed aggregates in alteration haloes
Carbonate minerals	5	Possibly calcite, fine aggregates in quartz impregnations
Sericite	<1	Very fine grains

A3, a quartz carbonate schist, was carbonate-mineralized, strongly foliated and significantly silicified and sulfide disseminated. The rock appears to be of a volcanic/subvolcanic origin of mafic protolith abundant in opaque minerals. The primary mafic minerals have been chloritized, and infiltrated by calcite and quartz. The rock has prominent shear fabric.

In thin section, the rock is significantly altered and now dominated by chlorite, carbonate and quartz along the shear fabric. The assemblage is cut at places by a network of veins filled with quartz and carbonate minerals. In alteration haloes, and also in some of the veins are cubic, sub-cubic deformed sulfide minerals. Chlorite is fibrous; quartz is recrystallized and occurs as veins or impregnations. Calcite is coarse and associated with quartz. Remnants of amphibole are found as pseudomorphs in alteration haloes.

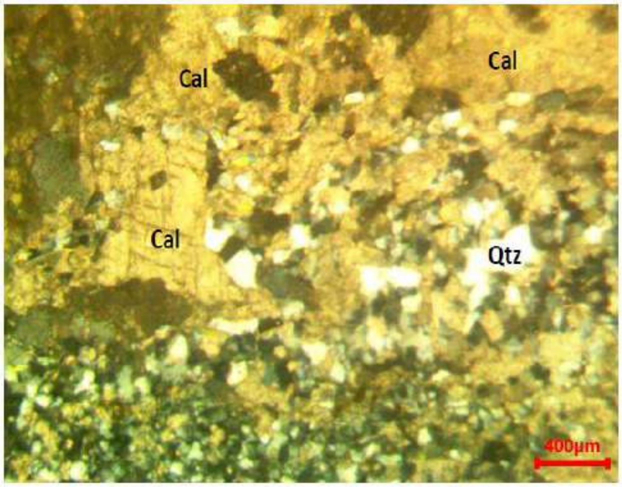


Figure 33. Carbonate alteration in rock

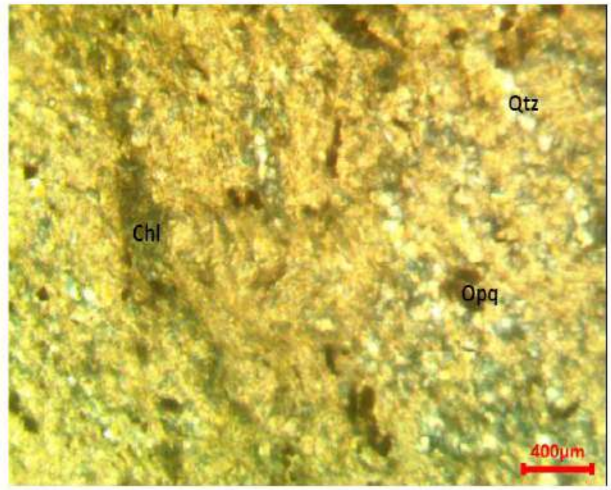


Figure 34. Preferred orientation in rock

Table 2. Modal composition for the quartz carbonate schist

Mode	Volume %	characteristics
Chlorite	45	Fibrous, elongated and interleaved. Possibly altered from primary ferromagnesian minerals.
Calcite	30	Occur in relatively coarse aggregates and in veins with quartz or along shear foliation
Quartz	20	Relatively coarse recrystallized aggregates in veins or along foliation with the carbonate. Mostly undulose
Opaque	5	Occur as coarse patches around alteration haloes. May have been altered amphibole
Sulfide mineral	<<1	Isolated tiny disseminations.

A2, a mylonitized quartz chlorite schist, was strongly mylonitized and silicified, massive, cherty and poly-deformed. It appears to have suffered contact metamorphism and rich in opaque minerals.

In thin section, the rock is fine-grained and partly foliated. It is composed of elongated and fibrous chlorite-sericite microtexture that has been cut by coarse grained quartz and overgrown by opaque minerals. Quartz is strained and occurs as recrystallized aggregates and individual crystals along cracks or weak zones of the rock. The whole assemblage has a preferred orientation, defined by prominent elongated chlorite and opaques.

Table 3. Modal composition for the mylonitized quartz chlorite schist

Mode	Volume %	characteristics
Chlorite	40	Occur as elongated fibrous grains with prominent preffered orientation or as contorted crystals with sericite. Altered at places into opaques minerals.
Quartz	20	Fine, medium and coarse aggregates, undulose, recrystallized; appear to have been associated with cracks earlier formed minerals. Mostly undulose, the relatively coarse grains are drawn-out along foliation.
Opaque minerals	20	Relatively coarse recrystallized aggregates in veins or along foliation with the carbonate. Mostly undulose
Sericite	10	Very fine grains, may have been alteration from the chlorite, or introduced secondarily
Sulfide mineral	<1	Occur as tiny cubic to formed individual stocks and disseminated grains.

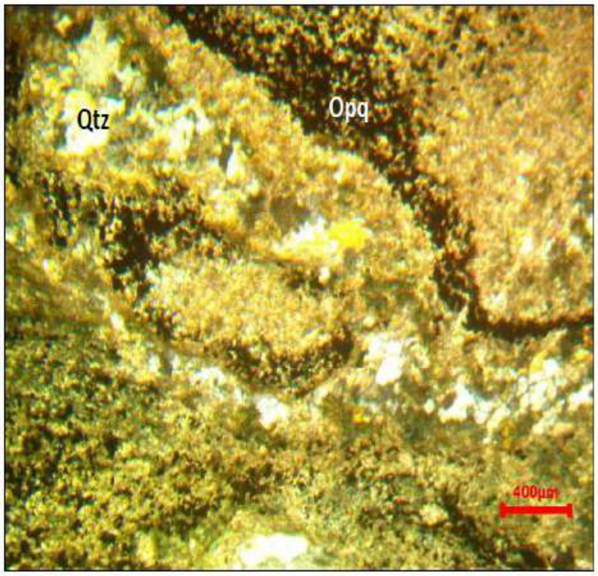


Figure 35. Chlorite-sericite shear fabric

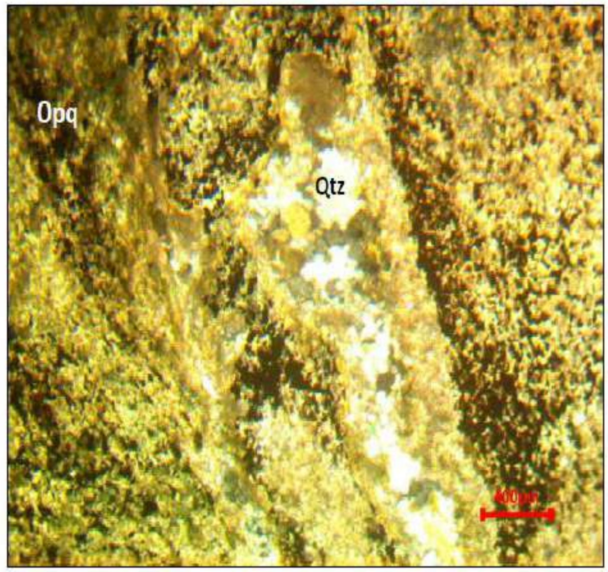


Figure 36. Opaque mineralization and quartz veins

vii. Work to be done / further exploration works

There is a need for further exploration work on the Etukrom Gold prospect to allow for definition and delineation of prospective gold zones. Exploration activities are to be executed in two years. An outline is been provided below.

1. Access construction / Farmers Compensation and Drill pad preparation
2. Drilling of the first prospect (Newly Discovered Gold Bearing Shear)
3. Geological / Structural Mapping
4. Petrographic studies
5. Structural mapping
6. Line Cutting
7. Geochemical Sampling
8. Geophysical survey
9. Trenching

10. Reserve estimation: Initial reserve estimate would be attempted based on the results from the planned drill holes in the gold bearing shear.

Phase I and II (Six month duration of the first year on Ettukrom Gold Zone)

- The Drilling Program: The management of Narawa mining company Limited in consultation with Geogold Exploration Services Limited has decided to conduct a 500m diamond drill test programme of the newly discovered gold bearing shear / fault in the current study area. This drill target is believed to be an exposed channel or fluid pathway serving as a conduit for mineralization fluid. Each drill hole is program to test the depth extent of the gold bearing shear up to a 100 m and within a 200 m strike periphery. This program is designed to operate on a single shift basis and would last for two weeks. Additional two weeks would be used for detail core logging, sampling and dispatch. A period of one month is planned for this activity.

- Geological and structural Mapping; The Etukrom gold zone is within a highly tectonized setting with intense ridges. There are several outcrops with interesting surface structures for detail structural and geological mapping. The zone is isoclinally folded with pronounced localized faults and quartz floats outcropping on surface. Reconnaissance survey reveals different rock types within the 4 sq. km study area. This would be continuous and analogous to the entire exploration period

- Petrological Studies: Both the structural setting and the geochemistry of the rocks needs to be studied in order to understand the source of the fluid and the Temperature-Pressure conditions that have affected the zone. Rock samples would be occasionally sent for petrographic studies to help decipher the various tectonic events associated.

- Line cutting and geochemical sampling; the soil geochemistry needs to cover the approximately 4 km length of the structure. Only a (2 km * 12 Km) base line has been sample soil samples lines has been established and sample so far. The remaining (3 Km * 15 km) amount to approximately 650 soil samples are yet to be established.

- Geophysical Survey. The shear hosted gold deposits has shown a lot of sulphides on surface. This requires a further ground geophysical survey to help decipher the depth extent of gold mineralization. An IP resistivity survey would be recommended over the entire Etukrom zone for delineation purpose.

- Trenching: A trench program has been designed to investigate the depth extent of insitu oxide mineralization over interesting surface exposures and geochemical anomalous zone.
- Reserve estimates: Initial reserve estimate would be attempted based on the initial planned drill holes in the gold bearing shear

CHAPTER FOUR

Conclusion and recommendation

From the analysis of the lithology, structures, alteration, minerals and laboratory data resulting exploration work in the Narawa Mining concession. I, Michael Kwasi Dwumfuor of Geogold Exploration Services Limited after performing intense structural analysis of these structure is convinced that the newly discovered shear/fault structure is gold-mineralized and may have the potential to amount unto producing gold mine. The structural and mineralogical features present are overwhelmingly similar to that of established more prolific mines such as Newmount’s Ahafo resource, and Anglogold’s Obuasi mine.

Narawa mining concession’s mineralization is of hydrothermal origin, occurs along tectonic contact between volcanoclastic sediments and the intrusive bodies to the southern part. Also the newly discovered sheared/fault structure may amount to a shear hosted gold deposit style associated with, sulfide-rich alteration zones similar to Anglo Gold Obuasi mine. Microscopic analysis of rock samples confirmed the presence and abundance of opaque minerals. Such metal occurrence associated with sulfides and alteration have most often than not, turned out to be the metal gold.

Further work is needed to define well the extent of the mineralized zone laterally, and at depth. Geophysical mapping would be needed to determine the vertical extent of the shear zone. Ip, magnetic and electrical resistivity geophysical surveys would be ideal for this type of definition. Detailed structural mapping would also be needed to help properly establish the character of structures associated with the mineralized shear. This would be used as indications in identifying its occurrence in other outcrops. Extensive surveying of the structure will be necessary to build a 3D model for proper structure characterization and resource estimation.

Geogold Exploration Services Limited is convinced of the indications of mineralization in the concession. Narawa Mining Company Limited is proceeding to carry out test drilling of the structure. The company acknowledges the potential of this newly discovered shear, and is as such open for interactions with the interested public. Narawa mining company by this extends an invitation to all such parties.

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DECLARATION AND CERTIFICATION

This report is a result of field work and analysis carried out on the Nawara Mining Limited Concession in the Kibi gold belt, southern Ghana. Assertions made are true, and independently verifiable. The details of the author are as below.

Signed this day.

………………………………………………………………………………………..

I, Michael Kwasi Dwumfuor, am a practicing geologist with eleven years' experience in the the gold mining and exploration industry. I completed my first degree (BSc. Geological Engineering) in Kwame Nkrumah University of Science, Tarkwa. I also hold Masters of Science in Mineral Exploration (2014) and Petroleum Geophysics (2016) from the University of Ghana.