Ministry of Industry & Mineral Resources

INVEST SAUDI

EXPLORATION LICENCING ROUND 11

Technical Summary

Hail Terrane

Jabal Aqab

Afif Terrane

Al Khashabi

Al Khashimiyah

Jabal Maniyeh

Wadi Khayam

Ar Rayn Terrane

Ashab Al Dhiab

Jabal Idsas

Asir Terrane

Jabal Mikhyat

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- **Jabal Idsas**
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1.1. Regional Tectonic Setting

The Al Amar belt has long been recognized as a prominent lithospheric domain with elevated endowment of VMS-, Epithermal- and hybrid gold and base metal mineralization.

Mineralization within the Ar Rayn terrane (Al Amar belt) falls into three main categories: volcanogenic massive sulfides (VMS); epigenetic Au-Ag-Cu-Zn deposits in quartz veins or shear zones and magmatic segregation Ni-Cu-Fe-Cr deposits associated with ultramafic-mafic rocks.

In accordance with the Cu-Au metallogeny and tectonic framework of the Arabian Shield the following exploration models and deposit types could be hosted in the Al Amar belt and Ad Dawadimi terrane:

- Subduction-related porphyry-style mineralization.
- Subduction-related and rift-associated epithermal Au-Ag-Cu-Zn deposits (e.g. Al Amar and Samrah).
- Rift-related Volcanogenic Massive Sulphide Deposits (e.g. Al Amar and Umm Ash Shalahib).
- Orogenic - and Intrusive Related (IRG) gold.
- Magmatic segregation Ni-Cu-Fe-Cr deposits associated with ultramafic-mafic rocks (e.g. Jabal Ruga'an), and Ni-Cu in serpentinized ultramafic rocks (e.g. Humayyan).
- Iron-Oxide-Copper-Gold (IOCG) volcanic hosted magnetite deposits.
- Carbonate Replacement Deposits (CRD) and skarn mineralization, e.g., Khnaiguiyah.

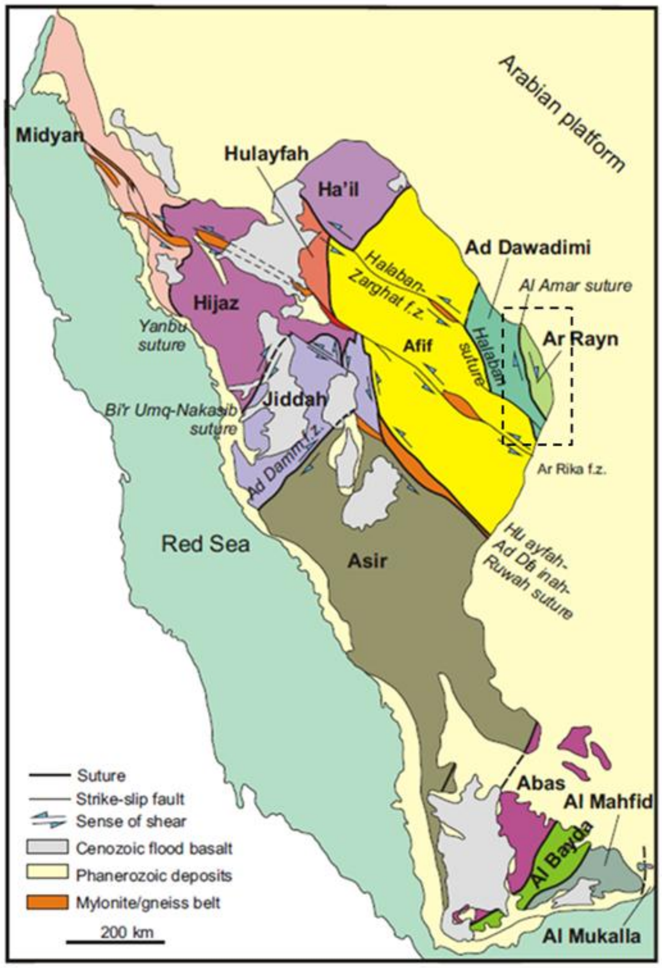

Fig.1: Tectonostratigraphic terranes in the Arabian Shield including Saudi Arabia and Yemen (after Stoeser and Camp, 1985). The Al Amar Belt and Ad Dawadimi terrane located in the east.

1.2. Location and Regional Geology

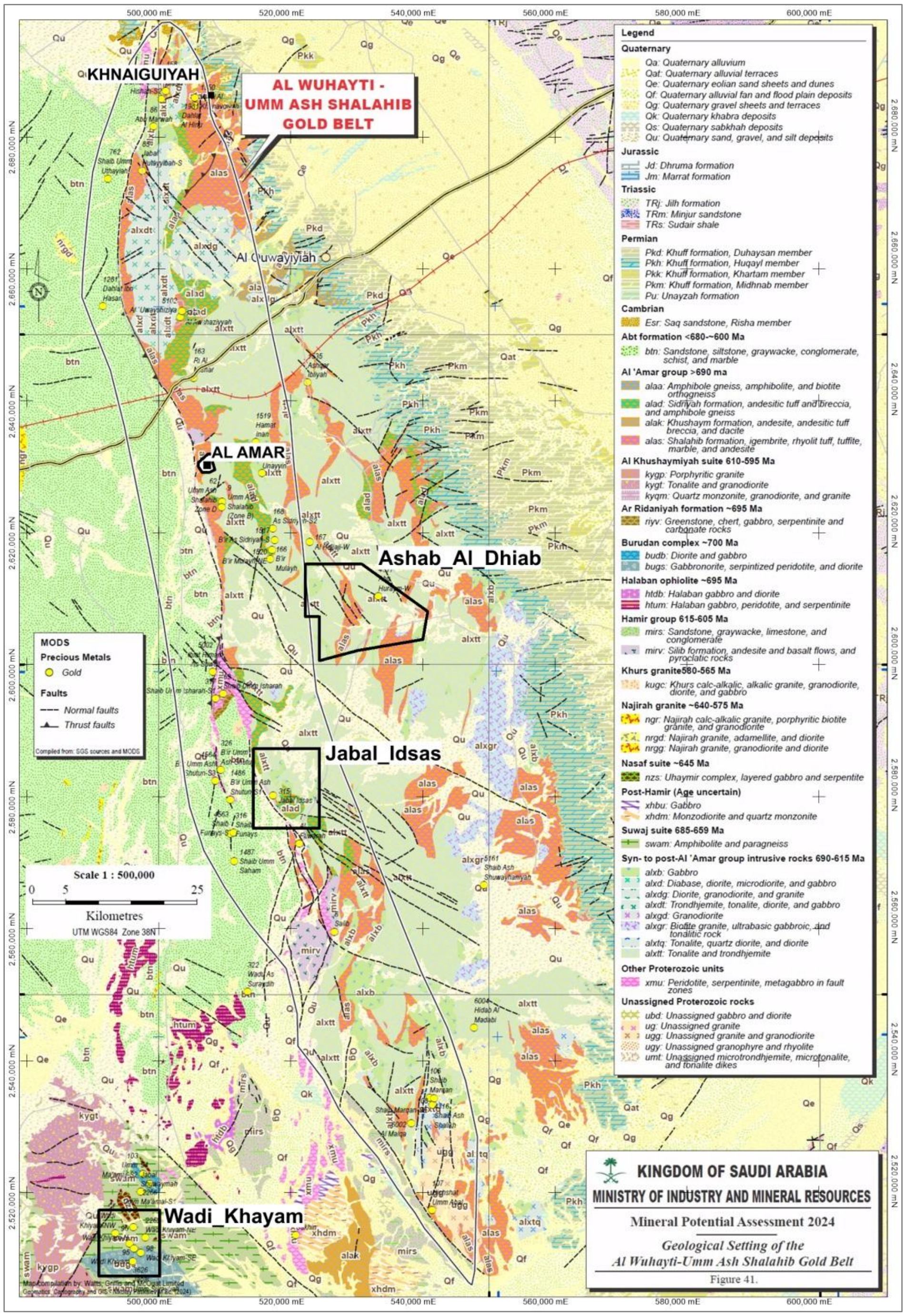

Fig.2. Geology and Mineral Occurrences of the Al Amar Gold Region.

The Al Amar Belt straddles the Ar Rayn and Ad Dawadimi Terranes, which represent the easternmost exposed terranes of the Arabian Shield and also the youngest accretionary event within the Arabian Nubian Shield. The Ar Rayn Terrane is composed of a magmatic arc complex extensively intruded by syn- to post-orogenic granitoids. The > 690 Ma Al Amar arc is composed of felsic volcanic rocks with minor basalt higher metamorphic grade amphibolite, greenschist, felsic schists, and subordinate andesite. Sedimentary rocks include conglomerate, arenite, wacke, siltstone and subordinate limestone and chert.

This terrane is one of the most endowed in the Arabian Shield in terms of metallic mineral resources. The types and distribution of mineral deposits in the Ar Rayn Terrane are diagnostic of its tectonic setting, within a subduction zone.

The Al Amar belt is aligned to the crustal-scale Al Amar-Idsas Fault forming the boundary between the Ar Rayn and Ad Dawadimi terranes. The fault zone juxtaposes the Abt schist of the Ad Dawadimi terrane to the west from the Ar Rayn terrane to the east (Doebrich et al., 2007). Collision of these terrains took place at about 620–605 Ma.

Epithermal gold deposits are mostly hosted by the Shalahib and Sidriyah formations (ca. 690 Ma) in the Ar Rayn terrane, with the exception of the Jabal Bitran – and Bir Umm Ash Shodden prospects, located approximately 40 kilometres south of Al Amar mine, which is hosted in schist of the Abt Formation that forms part of the Ad Dawadini terrane.

The Shalahib formation consists of andesitic-dacitic-rhyolitic lava and pyroclastic rocks, volcanoclastic sediments which are intercalated by limestone and local intrusions of tonalite–leucotonalite. The Sidriyah formation mainly consists of andesitic tuff, andesitic breccia, andesite, tuffite with subordinate limestone and siltstone. These rocks were formed in a continental margin magmatic arc setting, partly under sub-aerial and shallow-marine conditions.

The largest deposit within the Ar Rayn terrane is Al Amar, proximal to a terrane boundary and an associated subduction zone marked by the Al Amar Fault (AAF). It is characterized by some VMS-style orebodies superimposed by WNW-striking epithermal-style veins and breccias. The locations of the deposits in the belt are interpreted as volcanic centres, westward-dipping tilted calderas; proximal to rhyo-dacite intrusive complexes. The estimated age of epithermal deposits is 635–620 Ma. The remainder of the belt consists of mostly syn- to post Al Amar intermediate-felsic intrusives.

The Ad Dawadimi Terrane is separated from the Ar Rayn Terrane to the east by the Al Amar fault zone. Together, these terranes represent the youngest accretion event of the exposed ANS (Cox et al., 2012).

1.3. Mineralization and Prospectivity

Examples of different styles of mineralization hosted in the Al Amar belt would include volcanic hosted massive sulphide (VMS) and epithermal polymetallic deposits, including the VMS-Epithermal-hybrid gold and base metal Al Amar deposit, the Umm Ash Shalahib VMS ore body and the VMS-carbonate replacement (CRD)-style Khnaiguiyah deposit (hosting Cu-Zn+/Fe-Mn), all located in the Ar Rayn terrane near the eastern margin of the Arabian Shield.

Within the Arabian Shield, the majority of mapped vein- and shear hosted epithermal occurrences are located proximal to the Al Amar deposit.

In addition, the Al Amar Fault Zone (AAFZ) is characterized by sheared and serpentinized ultramafic rocks and listwaenite that has been interpreted as an obducted ophiolite that is in turn prospective for orogenic gold similar to the mineralization style present at the Masourah-Masarrah ore bodies.

1.4. Jabal Idsas Area

The Wadi Idsas area is located within the central Ar Rayn terrane and straddles the Al Amar Fault (AAF) that forms the boundary between the Ar Rayn and Ad Dawadimi terranes.

The Jabal Idsas magnetite deposits (MODS 0004, 1489, 0314 and 0315) are located 200 km southwest of Riyadh. The nearest town is Ar Rayn, 40 km to the northeast.

This occurrence and the adjacent Jabal IDSAS-SE (MODS 1489) are in the Sidriyah Formation of the Late Proterozoic Al Amar Group.

Mineral occurrences located within the area include:

MODS 0315 - Jabal Idsas North

- Host Rock - trondhjemite (leucotonalite); volcanic breccia.
- Country Rock - andesite; basalt; layered gabbro; tonalite.
- Mineralization Style - Hydrothermal; Magnetite-rich Fe-oxide Cu-Au (Kiruna-type).
- Commodity – Au, Fe.

MODS 0004 - Jabal Idsas

- Host Rock - metagabbro; tonalite; trondhjemite (leucotonalite).
- Country Rock - andesite; breccia-conglomerate; sericite-chlorite schist; tonalite.
- Mineralization Style - Magnetite-rich Fe-oxide Cu-Au (Kiruna-type).
- Commodity – Fe.

MODS 1489 - Jabal Idsas (SE)

- Host Rock - diorite; trondhjemite (leucotonalite).
- Country Rock - amphibolite; andesite; basalt.
- Mineralization Style - Magnetite-rich Fe-oxide Cu-Au (Kiruna-type).
- Commodity – Fe.

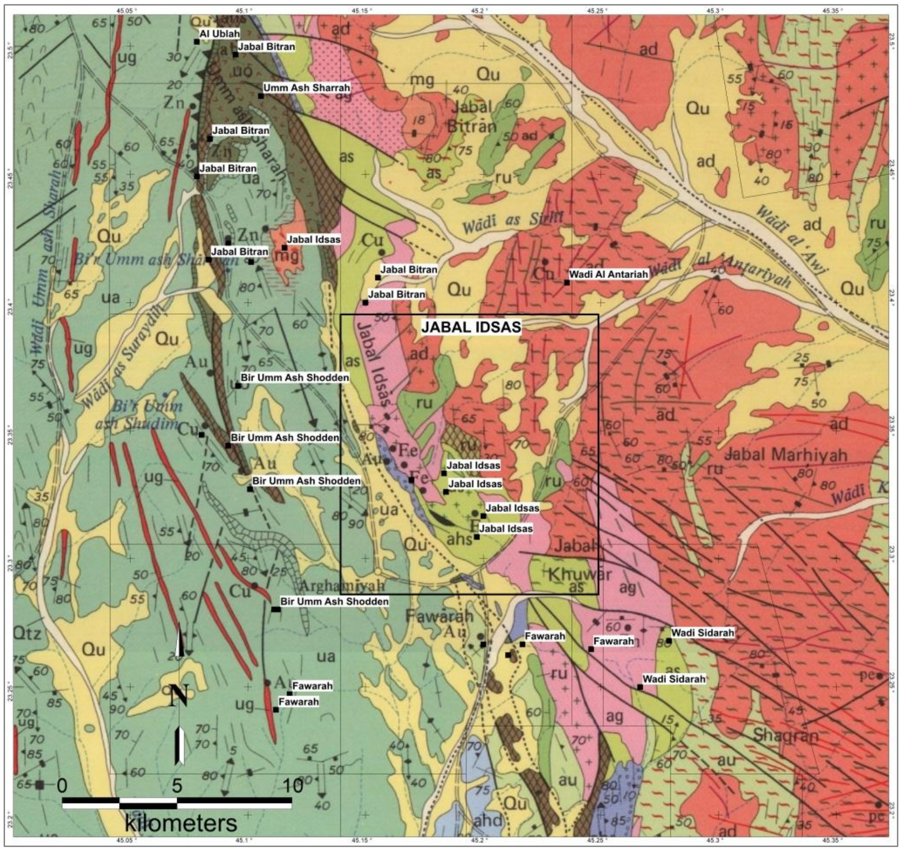

Fig.3. Jabal Idsas – Regional Geology

1.4.1. Tectonic Setting and Mineralization Style

The Sidriyah Formation consists of andesitic tuff and agglomerate and amphibole gneiss approximately 1 km east of the Al Amar – Idsas fault. Magnetite mineralization occurs in a belt of andesite and gabbro that is approximately 7 km in length and up to 1 km wide. A main body of disseminated magnetite and numerous small magnetite-rich lenses have been delineated.

Ashworth (1994) describes; *"Some joint faces show malachite staining and rarely, small amounts of chalcopyrite and pyrrhotite are present within the magnetite or on the joint faces"* that indicates some copper mineralization to be associated with mineralization which is permissible for either deposit type, i.e. Bushveld or IOCG volcanic hosted magnetite deposits. The IOCG-type model was favoured by Doebrich of the USGS and others at the SGS. If Jabal Idsas was of IOCG type then the chalcopyrite might contain or be associated with gold and other metals. An alternative model would be layered, Bushveld-type mafic-ultramafic intrusions (Cox & Singer).

Two potential mineralization models have been identified for the Jabal Idsas prospects.

A. Iron Oxide Copper-Gold ("IOCG")

The types and distribution of mineral deposits in the Ar Rayn Terrane are characteristic of its tectonic setting within a subduction zone. This a very prospective belt based on the concentration of epithermal Au-Ag-Zn-Cu, iron oxide copper-gold ("IOCG"), and porphyry Cu-Mo and related deposits immediately adjacent to the Al Amar Fault Zone.

A total of 40 mineral occurrences in the Ar Rayn Terrane have been classified as Fe-oxide Cu-Au occurrences and prospects which historically have not been explored as this type of model (WGM, 1994). Jabal Idsas, for example, was explored as a source of magnetite, not a potential gold occurrence.

IOCG deposits are largely structurally controlled and hosted by trondhjemite-tonalite-granodiorite-type intrusions. Jabal Idsas (Cu-Ni-Cr) primarily an iron and magnetite deposit. It was historically explored as a source of magnetite that has been classified in the MODS database as an IOCG (Kiruna-type) prospect. It is characterized as a magnetite-rich Fe-oxide Cu-Fe system hosted within meta-gabbro, tonalite and trondhjemite.

Table 1. Classification of IOCG Deposits

IOCG Synthesis

Table 1. Classification of magmatic-hydrothermal iron oxide deposits and related Cu Au deposits (after Gandhi, 2003, 2004a).

Source → Proximal → Distal

Calc-alkaline magma

Iron Skarn-type	Kiruna-type	Olympic Dam-type	Cloncurry-type
Massive magnetite-garnet-pyroxene	Massive magnetite-apatite-actinolite	Breccia (one or more stages), magnetite-hematite matrix	Hydrothermal veins & disseminations in older 'ironstones' or FeOx mineralization
Stratabound lensoid & irregular bodies at intrusive contact	Tabular, pipe-like & irregular bodies, dykes & veins	Pipe-like & irregular bodies, vent or fault controlled	Stratabound, breccia or fault controlled
Monometallic Fe and related FeOx-Cu-Au deposits	Monometallic Fe & related Cu-FeOx porphyry deposits	Polymetallic: Fe, Cu, Au, Ag, REE	Polymetallic: Cu, Au, Ag, Bi, Co, W
Alteration: Sodic	Alteration: Sodic	Alteration: Potassic	Alteration: Potassic
Magnitogorsk deposit, Russia	Kiirunavaara deposit, Sweden	Olympic Dam deposit, Australia	Osborne & Starra deposits, Australia

Source → Proximal → Distal

Alkaline-carbonatite magma

Phalaborwa-type	Bayan Obo-type
Within or marginal to intrusion	Hosted by country rock
Veins, layers, disseminations and aggregates; late intrusive phase	Veins, layers, disseminations and aggregates, stratabound lenses
Low Ti magnetite, apatite, olivine, phlogopite, carbonate, fluorite, Cu sulphides, pyrite, PGE, Au, Ag, uranothorianite, baddeleyite	Magnetite (replacive and/or pre-existing), hematite, bastnaesite, phlogopite, Fe-Ti-Cr-Nb oxides, fluorite, monazite, carbonate
Zoning in ore; Na & K alteration	Zoning in ore; Na & K alteration
Phalaborwa deposit, South Africa	Bayan Obo deposit, China

Several known MODS occurrences in the terrane, including Jabal Idsas, demonstrate similarities with IOCG deposits. These deposits are either deeper level magnetite or shallower level hematite-rich with most being relatively small, fault-controlled bodies of magnetite and/or specularite. Magnetite-rich deposits are enriched in LREE, whereas hematite-rich deposits are more enriched in copper and gold.

The magnetite deposits of the Jabal Idsas district represent the largest IOCG resource in the Ar Rayn Terrane and are characterized by fault-controlled massive magnetite lenses (1.3–6.7 Mt 64–65% Fe) and extensive areas of disseminated replacement magnetite in andesitic metavolcanics (300 Mt @ 18–20% Fe).

B. Mafic-Ultramafic Ni-Cu-PGE Complexes

An alternative geological model would be Ni-Cu-PGEs associated with mafic and ultramafic rocks. An example of this model-type in the Arabian Shield would be the Wadi Kamal layered complex located in the Midyan terrene with disseminated and massive magmatic nickel sulphide deposits hosted in mafic and ultramafic rocks.

The Jabal Rugaan complex is located 30 km south-south-east of Jabal Idsas and forms an intrusive layered sequence that consists of cumulate phases of dunite and peridotite at the base that is overlain by a sequence of gabbros. The complex is a potential host to magmatic Ni-Cu-PGE mineralization, however, it is relatively small and it is questionable whether sufficient magma flow through and processes were active to form economic deposits.

The Jabal Ruga'an-type layered ultra-mafic-mafic complex, including the Jabal Ruga'an- and the Jabal Idsas prospects, could be classified as a Bushveld-type layered mafic-ultramafic intrusive with the potential of hosting Cu-Ni mineralization similar to that hosted at the Wadi Kamal layered complex in the NW Arabian Shield.

The BRGM study concluded that there are similarities between the ultramafic and mafic units of Jabal Ruga'an and Jabal Idsas and that the parental magma consisted of silica saturated tholeiite compared to high alumina basalt of the Wadi Kamal layered complex.

At Jabal Idsas the magmatic evolution at high water pressure caused the formation of magnetite lenses. It also suggests a genetic relationship between magmatic activity that produced the Jabal Ruga'an-type layered complexes and the Cu-Zn sulphide mineralization of the regional Al Amar – Khnaigiuyah area.

Based on the historical work completed, including three percussion holes drilled (yielded a maximum of 0.07% Ni) and geophysics at Jabal Ruga'an and comparison studies at the Jabal Idsas complex, the BRGM concluded that the Ni-sulphide potential is relatively low. The lack of gossan development on surface might also indicate the limited potential of massive sulphide development at shallow depths.

1.5. Ashab Al Dhiab Area

The Ashab adh Dhiab prospect covers an area of approximately 190 km² that hosts several mineral occurrences.

Elevated gold values from samples collected at this prospect were reported by Schaffner in 1956. Two historical drill holes at the Ashab adh Dhiab Zn-Cu (Au) prospect (MODS 0174) predate a geophysical survey completed in 1963 (Agocs) that identified a number of EM conductors.

2. Afif Terrane

- **Wadi Khayam**
- **Al Khashabi**
- **Al Khashimiyah**
- **Jabal Maniyeh**

2.1. Regional Tectonic Setting

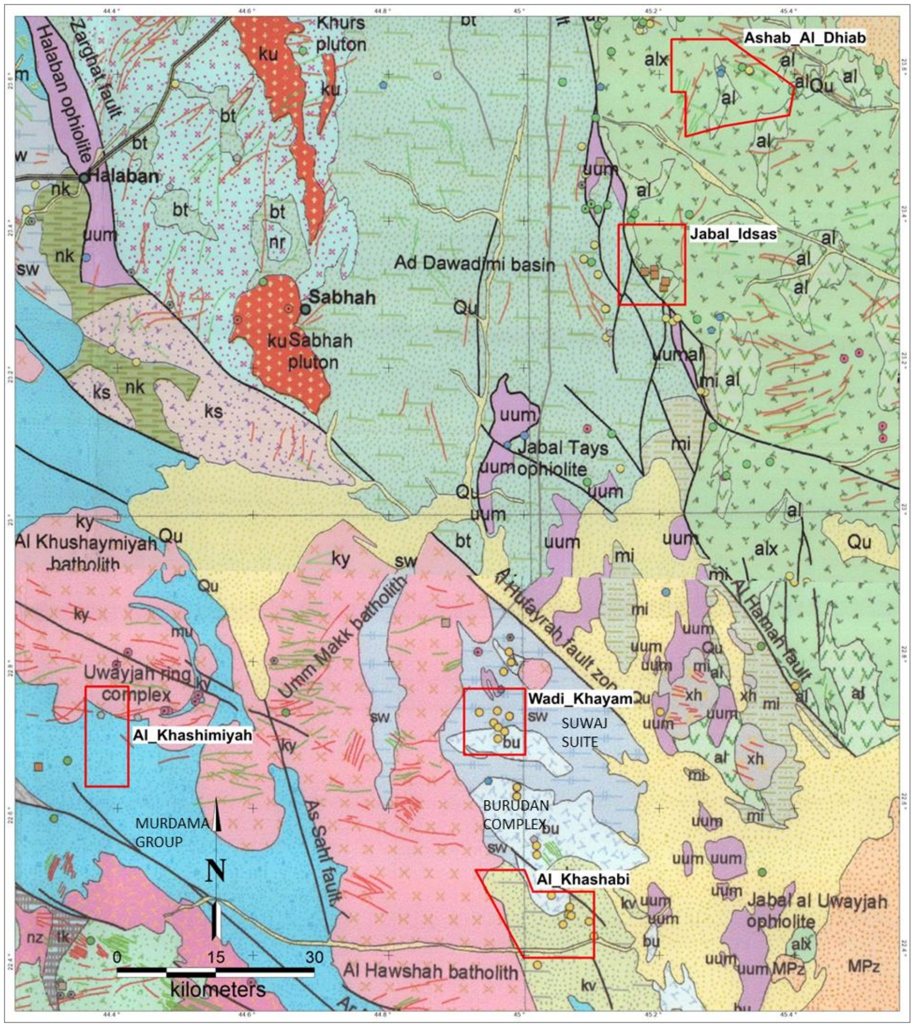

Fig.4. Regional Geology - Al Amar and Wadi Khiyam Gold Region.

2.2. Location and Regional Geology

The Wadi Khiyam Gold Belt is located in the eastern Arabian Shield and to the south of Ar Rayn terrane. It is approximately 55 km in length and it is marked by several parallel northerly striking shear zones and cross-cutting structures.

The belt is bounded by two major NW-trending Najd structures, the Al Hufayrah Najd fault zone to the north-east and the Ar Rika fault zone to the south-west. In the north the area is underlain by the southern extension of the NW-SE-trending Suwaj Suite. Volcanic and intrusive rocks of the Dhiran-Suwaj Suite runs parallel and flank the Al Hufayrah Najd fault in the north. Limited exposure of the Murdama meta-sedimentary basin is present in the south with a similar, NW-SE orientation. The volcanic Arika Formation and the Burudan (Rharaba) Complex, consisting of a suite of ultramafic to felsic intrusives, outcrop across large parts of the area.

The belt contains two main clusters of gold prospects, at Wadi Khiyam NW and SE (MODS 0097 and 0098) and Wadi Arakah (MODS 0427-0432 and 0444).

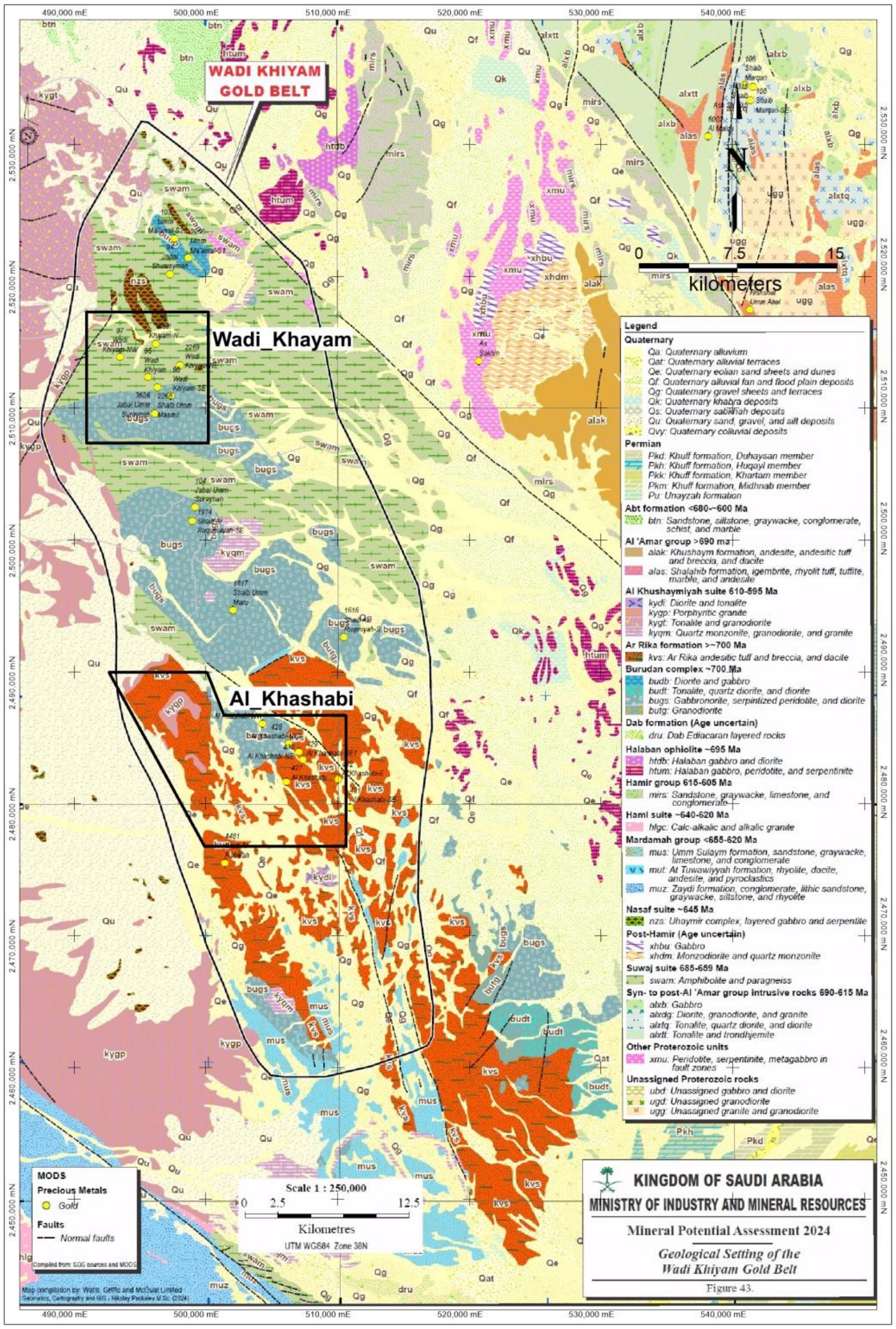

Fig. 5. Geology and Mineral Occurrences of the As Wadi Khiyam Gold Belt.

2.3. Wadi Khiyam Area

The Wadi Khiyam prospects cover an area of approximately 92 km² that hosts several mineral occurrences.

The occurrences in the Wadi Khiyam area consist of sulfide-bearing quartz veins within amphibolite gneiss and diorite, south of the major, NW-trending, Al Hufayrah Najd fault zone. They were first mapped and sampled by the BRGM as part of a regional exploration program. Ancient mine workings are developed on quartz-carbonate veins in sheared amphibolite (Lacombe and Letalenet, 1970). Chip sampling of pit walls at MODS 0097 and 0098 returned gold values as high as 3.5 g/t. Compilations of gold potential by Riofinex (1984) describe andesitic host rocks for auriferous quartz veins, locally intruded by diorite and granodiorite stocks. Extensive ancient alluvial workings, generally not directly associated with outcropping quartz veins, are noted.

2.4. Al Khashabi Area

The Wadi Khiyam prospects cover an area of approximately 158 km² that hosts several mineral occurrences.

The cluster of Wadi Khashabi (Wadi Arakah) occurrences located near the southern end of the belt comprise Al Khashabi NW (0444), Al Khashabi NE2 (0428), Al Khashabi NE (0430), Al Khashabi NE1 (0429), Al Khashabi E (0432), Al Khashabi (0427) and Al Khashabi SE (0431).

The occurrences were samples and mapped by the BRGM in 1973. Six ancient workings located within volcanic rocks and associated diorite intrusions returned between 1 and 10 g/t Au in grab samples. Minor copper mineralization, in the form of malachite and chrysocolla, also present in veins, were observed.

2.5. Al Khashimiyah Area

The Al Khashimiyah Area is located within the southern Afif terrane and covers an area of approximately 98 km². It is located approximately 50 km to the west of the Wadi Khiyam area. The Al Khashimiyah prospect occurs close to the contact between meta-sediment of the Murdama Group to the south and the Al Khashimiyah batholith to the north. Riofinex interpreted the area to be located within the southern extension of the Ad Dawadimi terrane, potentially based on similarities of the vein structure, mineralogy and metal content of the mineralized structures at these occurrences to those of the Ad Dawadimi silver belt (Williamson, 1984).

The ancient Al Khashimiyah mine (MODS 0665) is located immediately to the south of the Al Khashimiyah batholith and in close proximity to the south margin of the Uyaijah ring structure is hosted in volcano-sedimentary rocks. An ENE-trending mineralized zone, comprising brown jasperoid with siderite-calcite veinlets and brecciated quartz fragments is hosted by amphibolite intruded by dacite and a swarm of porphyritic granite dykes. Silicified and carbonitized wall rocks are in contact with the mineralized zone. Pyrite, galena and sphalerite occur within the jasperoid. Gossaneous quartz vein material returned reported grades of 133 g/t Ag, 4.1% Zn and 0.95% Pb.

2.6. Jabal Maniyeh Prospect

The Jabal Maniyeh Au-Sn-W prospect (MODS 1598) is located within the northern Afif terrane and covers an area of approximately 282 km^2. It is hosted within the NNW-trending Suwaj Suite and located approximately 140 km to the NNW of the Suwaj Cu porphyry prospect and 100 km SE of the Mibari Cu-Au prospect.

The Jabal Hillet and Umm Adher cluster of prospects (MODS 2108, 2109, 2833) hosting gold-bearing quartz veins in gabbro, diorite, quartz diorite and andesite of the Umm Adher complex is located approximately 15 km SSE from the center of the Jabal Maniyeh area.

The Jabal Maniyeh mineralization is associated with quartz veins in diorite and hornblende schist. Sampling by SAMS (1936) returned values up to 36 g/t Au within ancient workings up to 300 metres long and 2 metres wide (Twitchell, 1937). An Fe occurrence (MODS 2830), hosted within the Umm Adher complex, is located close to the southern boundary of the Jabal Maniyeh area.

The district was mapped by the BRGM in 1984 and the major ancient workings were resampled. Regional work conducted by Riofinex during 1986, including heavy-mineral-concentrate sampling, detected a Sn-W-F anomaly near the Jabal Maniyeh occurrence. A regional geochemical survey by the USGS (1987) confirmed the Sn-W anomaly.

Results from the recent SGS RGP stream sediment sampling program identified a well-defined W-Bi (Ag) anomaly in the area of the Jabal Maniyeh prospect.

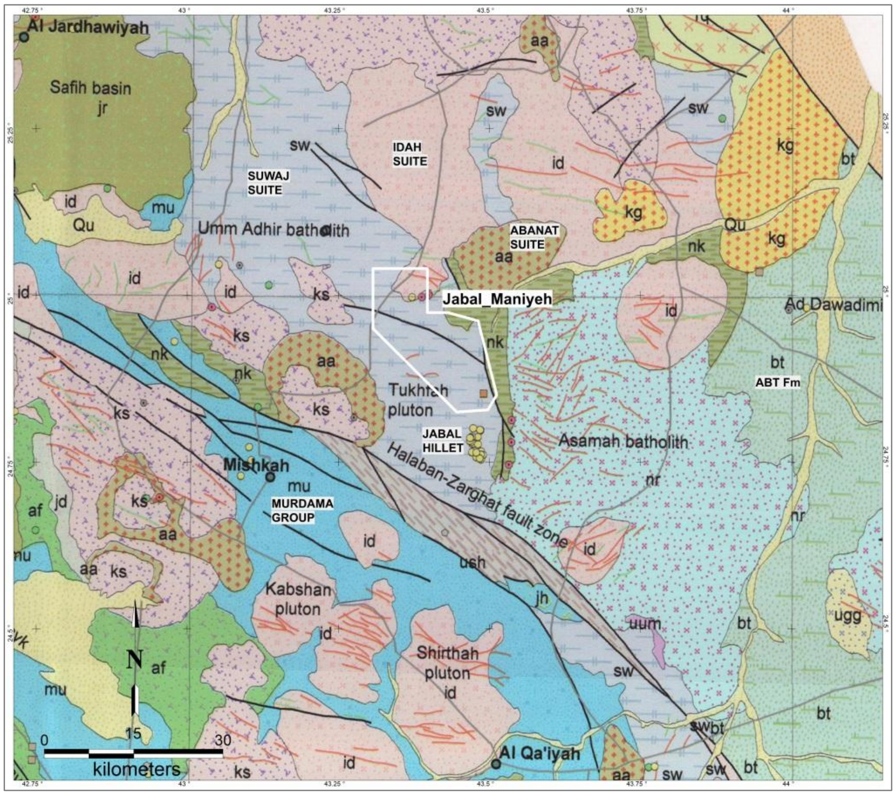

Fig.6. Jabal Maniyeh Prospect – Regional Geology

3. Asir Terrane

3.1. Jabal Mikhyat Area - Asir Terrane

The Jabal Mikhyat area is located approximately 60 km north of the city of Tathlith and covers an area of approximately 169 km^2.

The area is located within the southern Asir tectono-stratigraphic terrane. It straddles the north-south-trending Nabitah Fault Zone that forms the contact between the Khadra Belt to the west and a crustal block, the Tathlith sub-terrane, to the east. The major northwest-trending Ruwah Fault Zone that separates the Afif Terrrane to the north from the Asir Terrane to the south and straddles the southern boundary of the Duwayhi West Gold Region (Mineral Round 10) is located approximately 125 km to the north of the Jabal Mikhyat area.

The Nabitah-Bishah Gold Belt and the overlapping Ash Shaib VMS Belt covers the area. It is underlain by meta-volcanic and meta-sedimentary rocks including high-grade metamorphosed rocks in the As Sha'ib area (Johnson, 2012). The Jabal Mikhyat area is situated approximately 15 km to the SSE of the GMCO (Gold and Minerals Company) advanced Jabal Qutman gold project along the southern extension of the prospective Nabitah-Tathlith Fault Zone. The Ash Sha'ib Zn deposit (MODS 0625) is located approximately 85 km towards the SSE.

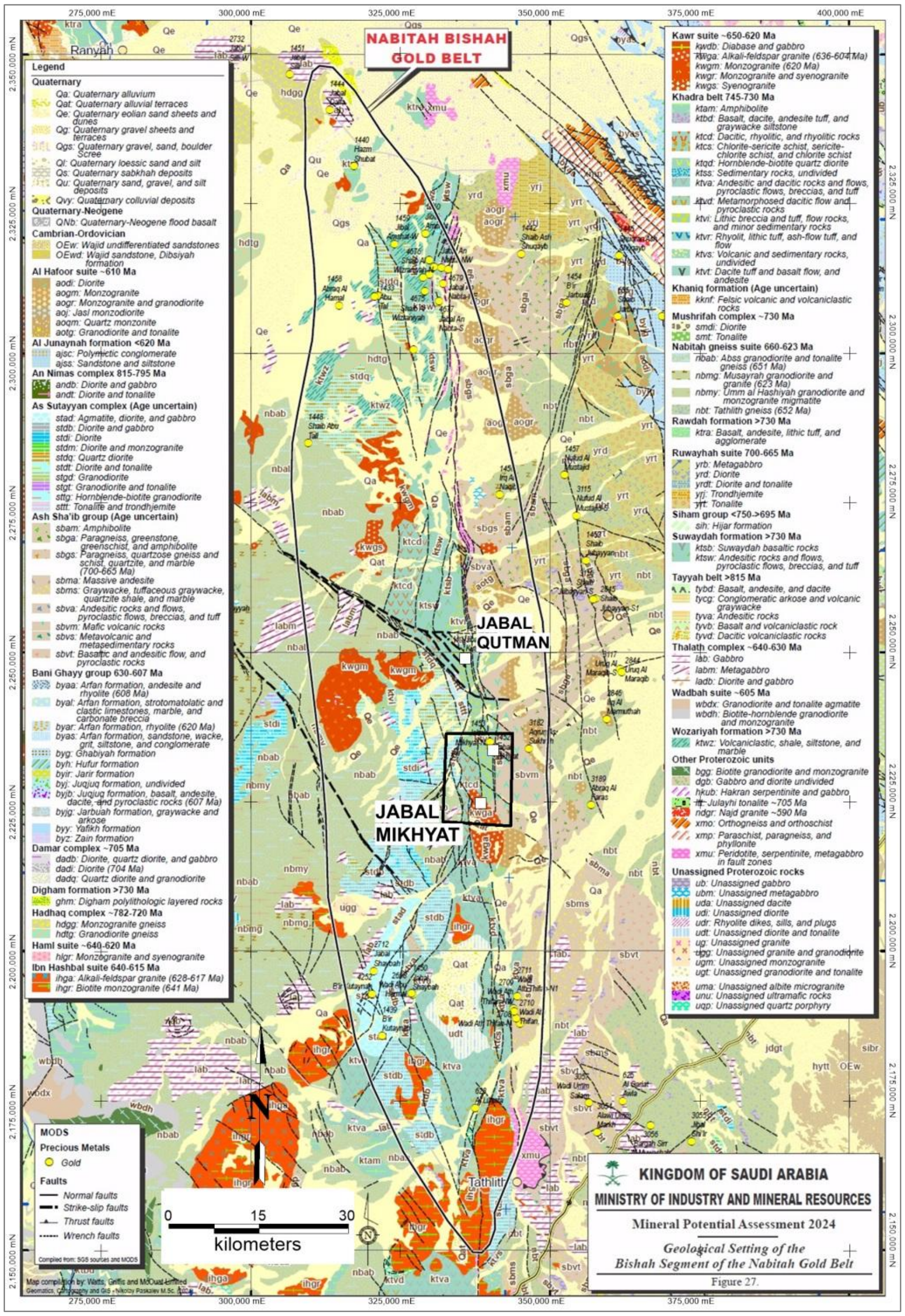

Fig.7. Nabitah Gold Belt - Jabal Mikhyat area – Regional Geology.

3.2. Mineralization and Prospectivity

The Bishah Segment of the Nabitah Gold Belt is approximately 175 km in length and strikes approximately north-south. The northern end of the gold belt is marked by the NW Rawah Fault, a Najd Fault that displaced the northern extension of the gold belt in a left-lateral sense towards the northwest. Approximately 20 gold occurrences are located along this segment of the Nabitah Fault Zone (WGM, 2024).

The Jabal Qutman gold project (Bani Qutman - MODS 1436) lies within the north-trending Nabitah Fault Zone. Mineralization is associated with a discontinuous series of north-trending quartz veins within a zone marked by ancient workings approximately 400 m long. The fault zone cuts a sequence of intermediate to felsic tuffs with minor intercalated sedimentary units.

The Jabal Mikhyat (Jabal Mokhyat) area is located 15 km SSE of Jabal Qutman and consists of the Jabal Mikhyat (MODS 5270 & 5272) in the south and the Jabal Mikhyat North cluster of prospects (MODS 1452-3 & 5426-7). Historical recorded ancient mine workings occur both in bedrock and in alluvium material with gold mineralization hosted in discontinuous quartz veins scattered over an area of 7.5 km. Grab samples were reported to contain maximum values of 17 g/t Au.

3.3. Historical Exploration Work (WGM, 2024)

These workings were first reported by Schmidt et al (1981) on the basis of 728 samples taken by the USGS from pits and trenches 2.5 m in depth. The average gold content was reported to be 4.4 mg/m3. The highest grading areas contained 40 mg/m3. The USGS reported that the ancient placer diggings, worked approximately 2,600 years ago, are located in small headwater wadis distributed over a 30 km2 area with an aggregate area of approximately 1.2 km2. It was estimated that the workings produced 50 kg of gold in total. The USGS concluded that the potential for a present-day placer gold operation is very poor.

Riofinex sampled the ancient mine dumps in 1982 followed by the USGS in 1989. The initial sampling resulted in gold assays as high as 92 g/t in quartz material (Schull, 1993). Bedrock sampling showed that 17 samples out of 97 carried in excess of 1 g Au/t.

The USGS returned to the Jabal Mokhyat prospects in 1992 and 1993 (Schull, 1993) and reported the bedrock geology to consist of gold-bearing "buck" quartz veins. Only 8 samples out of 139 assayed greater than 0.5 g Au/t. The predominantly north-south trending veins were interpreted to be associated with Nabitah shear zone. The highest gold assay was 10.3 g/t in white milky crystalline quartz. The USGS estimated that a near surface resource of 25,000 ounces of gold might be present at a grade of 3 g/t and gave a low-priority recommendation for 500 m of shallow RC-percussion drilling to test the main gold-bearing vein.

In addition, the ancient alluvial gold workings were re-examined. Two 65 kg bulk samples were collected and then processed through a Knelson concentrator. The concentrates were visually examined for gold nuggets and only one small nugget was recovered from one of the samples. A total of 32, 10-kg samples were collected from which a 500 g split was cyanide leached to test for the presence of gold of any grain size. No gold was detected, indicating that the ancient placer miners recovered nearly all of the gold of the Jabal Mokhyat placers, or that originally there was little to recover. The study concluded that the ancient tailings had no potential for redeveloped as a source of gold.

During 2005, the SGS carried out a reconnaissance of the site and confirmed that gold mineralization was associated with chalcopyrite, galena, sphalerite and pyrite and that it was metallogenically related to the Nabitah Fault Zone. The SGS also assessed the potential for alluvial gold in the area due to the presence of many ancient gold placer mines.

The recently completed SGS RGP stream sediment sampling and airborne geophysical program covered the area.

4. Hail Terrane

- **Jabal Aqab**

4.1. Jabal Aqab Prospect - Hail Terrane

The Jabal Aqab Cu-Au-Ag prospect (MODS 3104 & 3899) is located within the under-explored Hail Terrane, approximately 90 km north of the advanced Shabah gold project (Ma'aden), 160 km north of the Sukhaybarat gold mine and 70 km SSE of the city of Hail. It covers an area of approximately 977 km^2.

Historical regional geological mapping by the USGS and BRGM outlined a NE-trending belt hosting Hulayfah Group-equivalent rocks that are prospective for VMS-style mineralization. A portion of the Hail Terrane is underlain by volcano-sedimentary rocks of the Nuf- and Banana Formations intruded by mafic to felsic plutonic rocks of various ages. It has been interpreted as an equivalent of the Hulayfah Group that hosts several exhalative stratiform / VMS Au-Cu-Pb-Zn deposits elsewhere in the Shield, e.g., the Ar Rjum zinc-, Nuqrah- and As Safra prospects. Evidence of bimodal volcanism within the upper formations, including felsic volcanic units has been identified.

During a 1984 regional program conducted by Riofinex a stratiform gossaneous zone within graphitic schist and rhyolitic tuff (Nuf Fm.) returned assays of 1.4% Cu and 6.2 g/t Au (Grootenboer, 1985). The Jabal Aqab base-metal occurrence (MODS 3104) consists of an iron-gossan within mafic to felsic volcanic rocks and diorite. A wadi-sediment, grab rock sampling and reconnaissance mapping program was subsequently completed. Results of a regional heavy-mineral-concentrate (HMC) survey outlined several Ag, As and Sn anomalies within felsic and mafic volcanic units over a strike length of 10 km. in the Jabal Aqab area. Two grab rock samples of gossaneous material that were collected immediately to the south of the HMC anomaly returned values of 5,600 ppm Cu and 1.6 g/t Au. Due to the encouraging results together with the presence of gossans hosted in the volcano-sedimentary units the area was regarded as prospective for stratabound Cu-Zn-Au-Ag deposits and recommended for additional work.

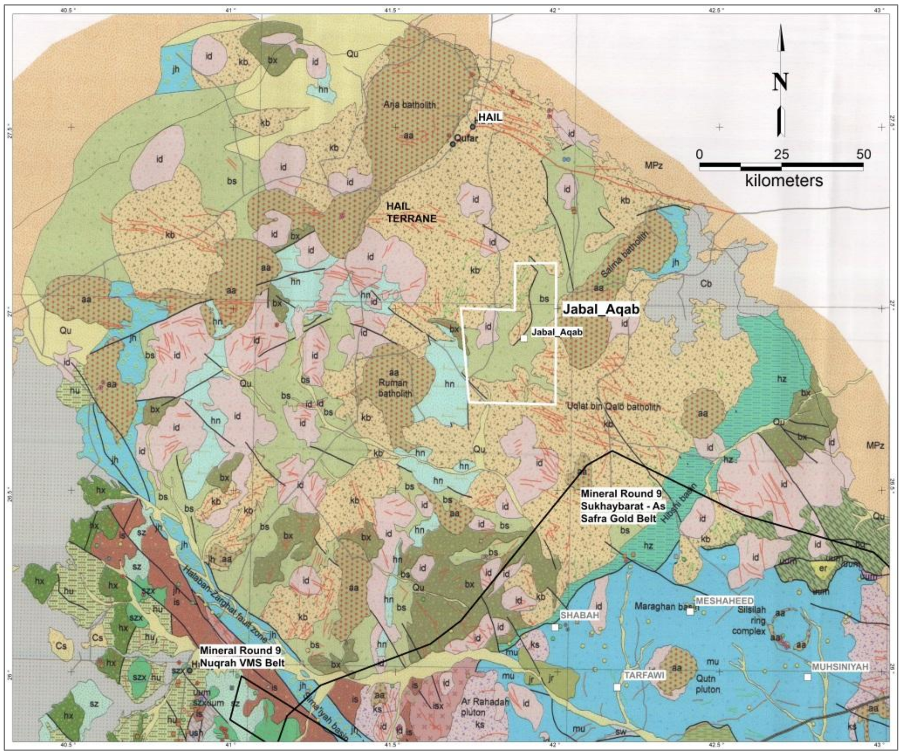

Fig.8. Jabal Aqab Prospect – Regional Geology (bs=Banana Fm., hn=Hadn Fm., jh=Jibalah Group)