# Hannanmetals

# BASIN SCALE SEDIMENT HOSTED COPPER J SILVER PERU

CORPORATE PRESENTATION

OCTOBER 2020

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Qualified Person: The qualified person for Hannan's projects, Michael Hudson, CEO for Hannan, and a Fellow of the Australasian Institute of Mining and Metallurgy, has reviewed and verified the contents of this presentation.

October 2020

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- Key Points
- Hannan is a first mover. A new frontier basin-scale copper-silver district
- Early exploration results support the geological model for a **major sediment-hosted copper system**, some similarities to the Kupferschiefer/Spar Lake deposits
- Hannan recognized the exceptional potential for large copper-silver deposits in this part of Peru and has aggressively staked a commanding position over **940 square kilometres of prospective geology**

On a basin scale, the project exhibits district wide mineralization hosted in reduced

 sedimentary rocks covering at least 120 kilometres of strike and 50 kilometres of width in scattered outcrops, road cuts, and float & stream boulders

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# **Key Points**

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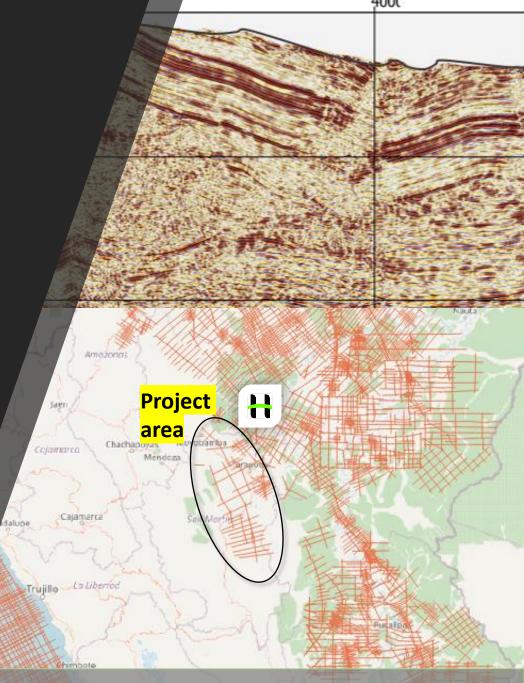


- The target areas are aligned along linear trends of ~ 100km strike length
- Two target styles identified structurally hosted and stratiform Cu-Ag mineralization
- Best results from outcrop (channel samples) 20km apart:
  - 3m @ 2.5% Cu & 22g/t Ag (LD190517-19)
  - 2m @ 5.9% Cu & 66g/t Ag (TC190536-38)
  - 0.6m @ 8.7% Cu & 59g/t Ag (TC190536-38)

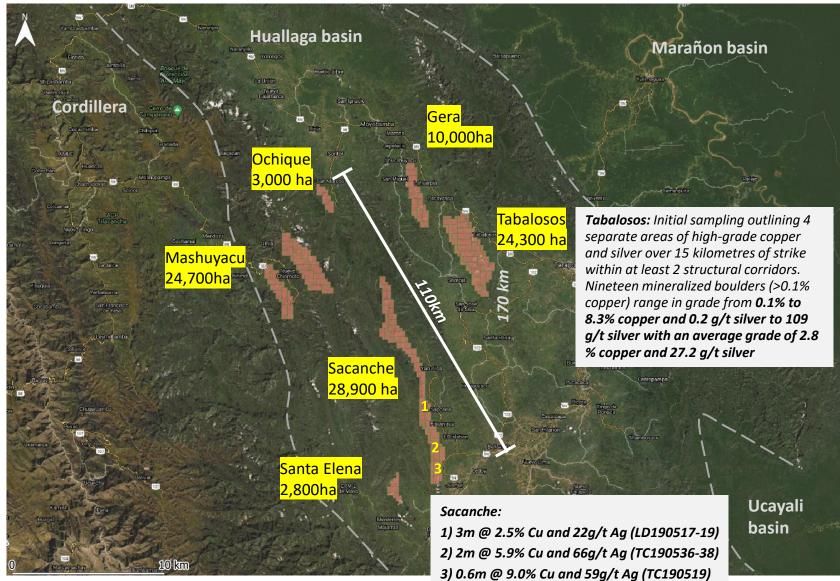
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# **Key Points**

- Early stage yet advanced regional geological understanding
- Unique seismic database which includes
  - ~2000 km of 2D seismic, 618 km of geological traverses, gravity and aeromagnetic data.
- 10,000 sq km of photo in-house geological interpretation based on high resolution digital elevation data and Sentinel-2 data.
- 43 granted mining concessions for 329 sq km (from 940 sq km)

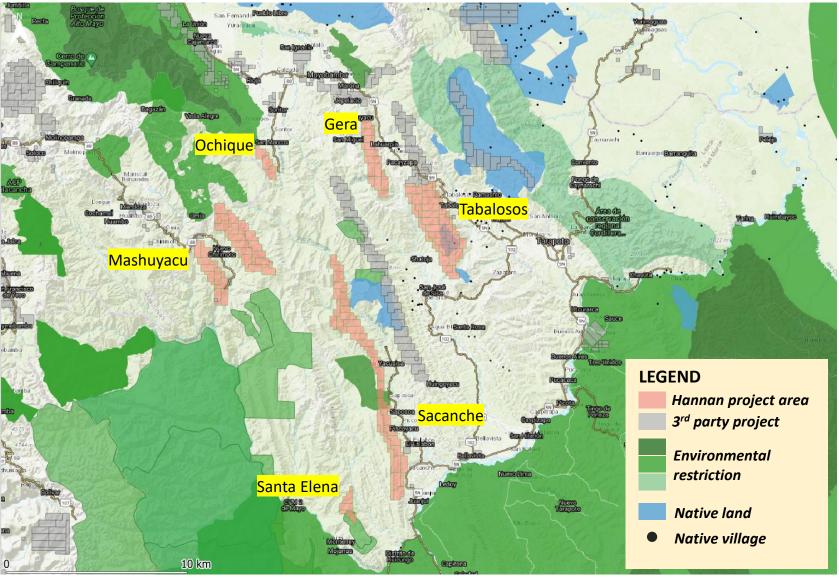


### An overview



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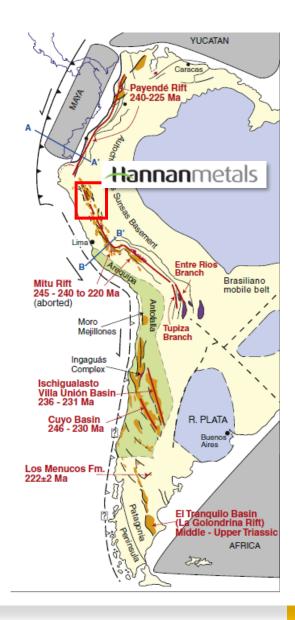
### **Access and restrictions**



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### History

- Located in **North Central Peru**, in the sub-Andean zone
- Initiated during the breakup of the Pangea supercontinent
- Historically mainly overlooked by the mineral industry, but has been the focus of the hydrocarbon industry for decades. Only <2 years RTX and privateco worked in area.
- **Only three diamond drill holes** have been drilled in the project areas.
- Described as: "One of the best surveyed thrust and fold belts in the world (for oil and gas)". At the San Martin project alone there is 2,000 kilometres of 2D seismic



# **Geological setting**

The Huallaga basin has been an active depocenter since the Triassic

The tectono-stratigraphic evolution can be subdivided into three main stages:

- Triassic rifting (245-220Ma) and deposition of the 1. Grupo Mitu, a failed rift.
- Jurassic rifting (175-120Ma) and deposition of the 2. Sarayaguillo Fm.
- 3. Andean compression (120Ma, 25Ma, 12Ma) and development of foreland basin

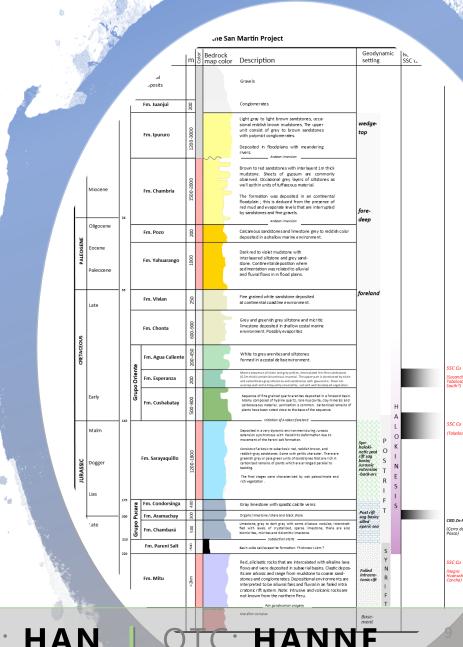
The **Mitu Group** forms the lowermost sedimentary rocks in the basin, unconformably overlying inferred crystalline basement.

The basin contain thick widespread evaporitic strata - the Pareni Salt Formation.

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The Mitu Group is interpreted as the metal source

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RD Zn-Pb-

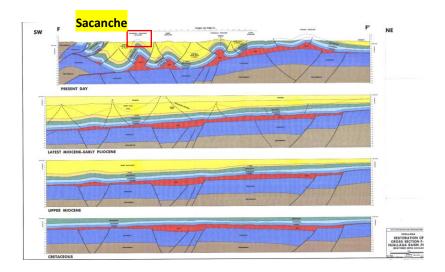
The Huallaga Basin lies within the Sub Andean thrust belt of Northern Peru

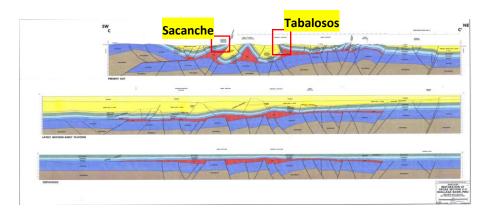
### Structural setting

Early halokinesis overprinted by the Andean thrust and fold belt. Both detached and basement involved compressional structures are present. The Pareni Salt is the main detachment level.

#### Deformational patterns associated with saltinvolved thrust are common:

Pop-up structures, symmetrical folds with steep limbs, fault propagation folds, backthursts





**Inverted basement structures** are comment along the eastern and western flanks. Seismics suggest these were originally extensional half grabens bounded by normal faults which were later reactivated as reverse faults during compression.

#### Strike slip and obligue faults

NE-SW "Huallaga River" fault zone – strike slip reactivation of older Paleozoic normal fault-oriented NE-SW

**Minor tear faults** common in thrust and fold belts

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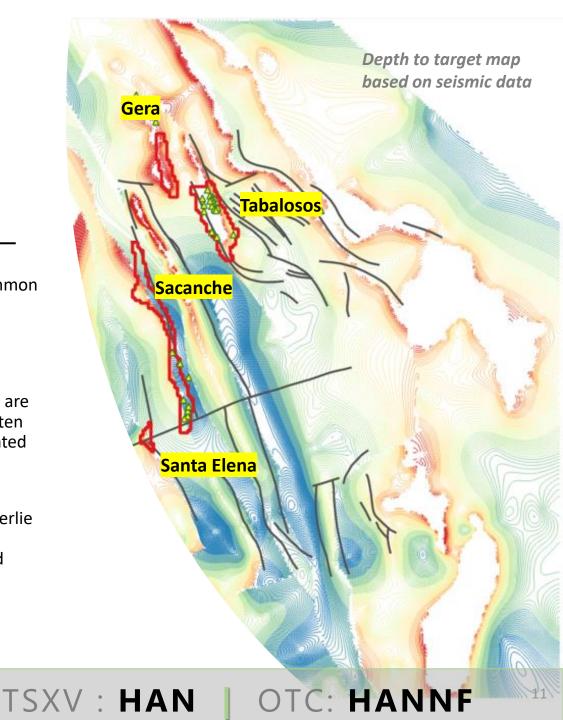
### Thickness Variation

• Stratigraphic thickness variations are common in the Cretaceous and lower Tertiary units

• Some variations are due to depositional thickness changes associated with early salt movement (Tabalosos area and Gera). Other are due to tectonic thickening during folding. Often the original thickness variations are overprinted and modified by tectonic thickening.

• A major basement involved platform underlie the NE part of the Huallaga basin. This is associated with thinning of both Tertiary and Mesozoic strata.

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# Mineralization and traps

Through Peru, sediment-hosted minor copper-silver mineralization is known to develop at multiple stratigraphic levels at localized redox boundaries.

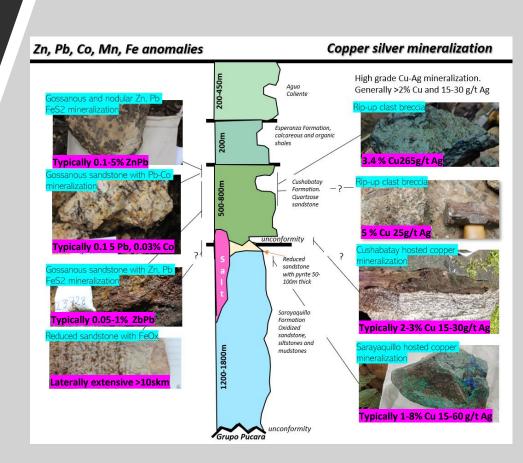
Best known examples in Peru are hosted by the Mitu: Group: Negra Huanusha (Central Peru) and Tambomachay hosted in arkosic red beds of the Kayra Formation (Lower Eocene) near Cusco,

The Huallaga Basin is unique due to preserved laterally extensive redox boundaries. These are critical for the formation for major sediment hosted copper deposits.

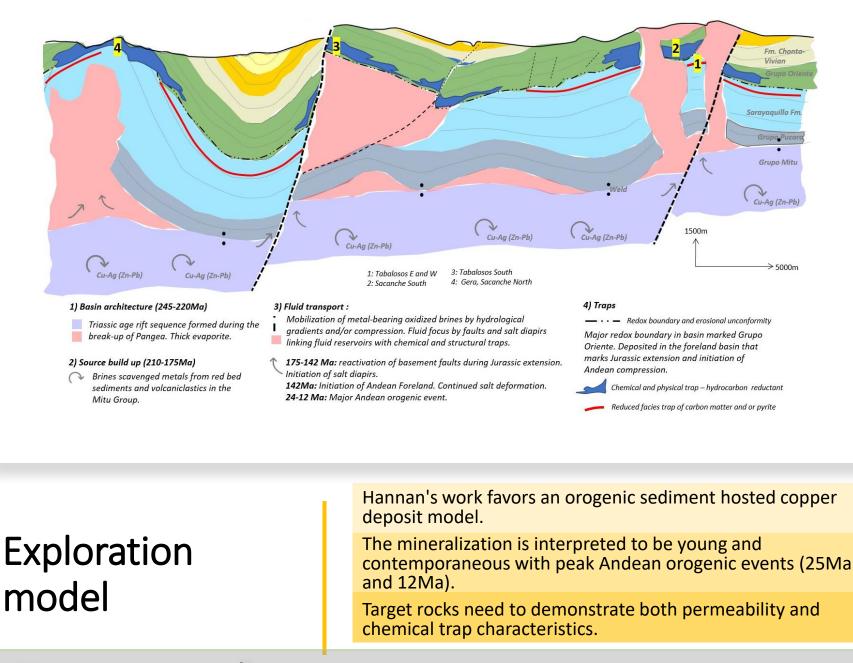
The two key redox boundaries are hosted within an 800 metre thick stratigraphic window:

1) Reduced stratabound and probably stratiform shale to siltstone with bitumen and pyrite (top of Sarayaquillo Fm)

2) Reduced sandstone with diagenetic pyrite (base of Cushabatay Fm and top of Sarayaquillo Fm).



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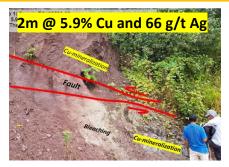
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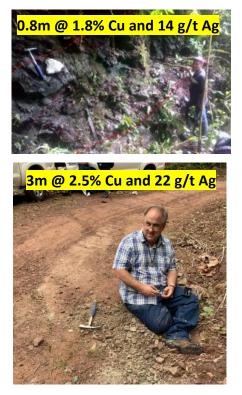
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### Sacanche stratiform Cu-Ag mineralization





This style of copper silver mineralization covers samples which are hosted by reduced silty to shaley unit with strong lamination of organic material and pyrite. Stratigraphically the unit is hosted by the upper part of the Sarayaquillo Fm. Close to the contact to the Cushabatay Fm.

The style of copper mineralization appears stratigraphically consistent and is interpreted to be stratiform. The intensity and texture of the mineralization varies across different areas. The underlying control is not understood due to poor exposure.

One textural variation depends on the nature of the carbon in the samples, either amorphic within bedding or with visible bedding parallel carbonized plant fragments. Another texture depends on the alteration of the host rock which sometimes seems albitized and silicified.

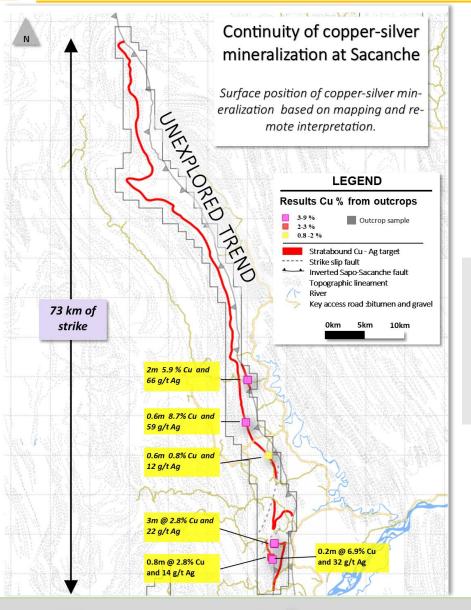
Chalcocite is the dominant copper mineral.

The host rock, which varies between 0.5-5m in thickness (av. 2-5% copper), and was probably deposited as an oxidized sediment with interbedded carbon matter from plants and micro organisms. During diagenesis, the sediment was reduced by the organic material. It now acts as a very efficient trap across the basin and has been traced for over 100km.

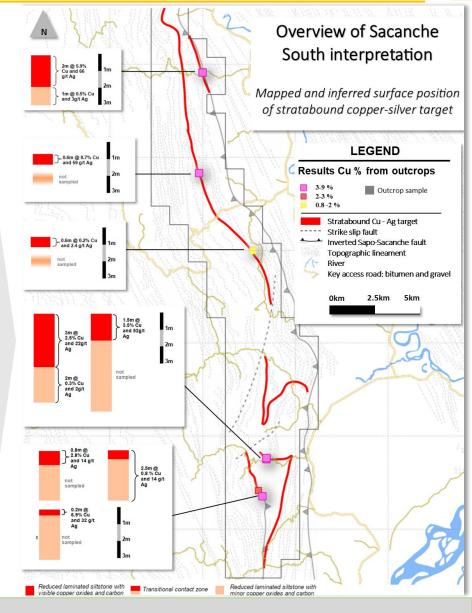
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### Sacanche stratiform Cu-Ag mineralization



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#### Sacanche structurally hosted **Cu-Ag mineralization**

Numerous outcrops and boulders. The core area is 1.3km long and 600m wide but outcrops of similar style has been found over 8km strike.

The gossans appears to be **controlled by NNE trending shear zones** which cut the host rock at low angle. The thickness of the gossans are up to **20m wide** and away from the gossanous zones they die out. The altered zone with iron oxides (after pyrite and akerite) is 80m wide at Rio Sacanche

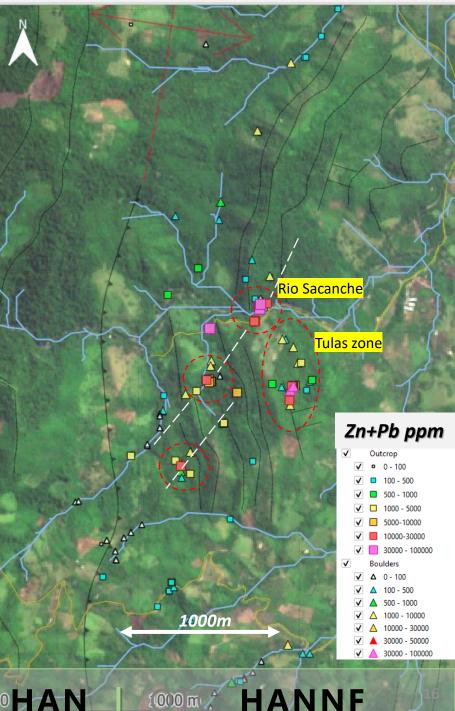
The host rock is even grained quartzose sandstone with calcite and diagenetic pyrite in matrix.

The **mineralization at "Tulas Zone"** are situated close to the contact of Cushabatay Fm and a micritic limestone, likely from the Esperanza Formation. The host rock is the sandstone of the Cushabatay Fm, but locally it has textural differences to the other zones of mineralization at Sacanche South. In parts the mineralization is characterized by rounded nodules of calcite which are replaced by a zinc mineral. No local structural control has been observed in here, but large part of the zone remains undercover and it is open in all directions.

Assay data suggest clear spatial zonation between Fe and Mn+Zn+Pb).

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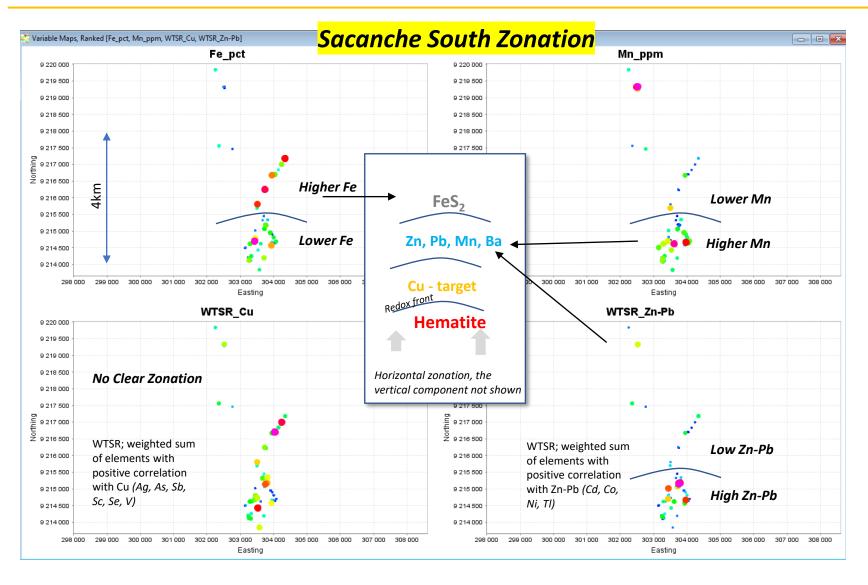
The **copper rich part of the system** may be located both horizontally and vertically below the base metal anomalous zone.



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### Sacanche structurally hosted Cu-Ag mineralization

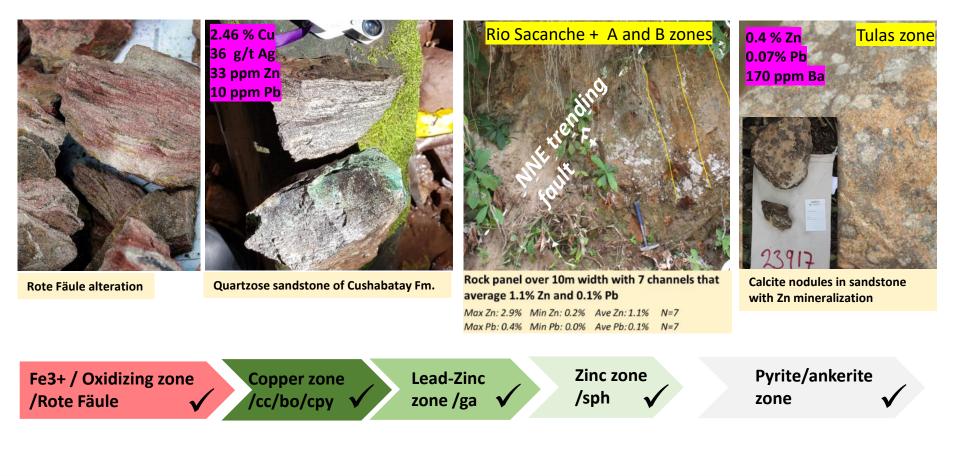


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### Sacanche structurally hosted Cu-Ag mineralization

### All key components of a zoned Copper-Silver system



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Sacanche South high grade Cu-Ag mineralization in a rip up clast breccia

New discovery in Sacanche South, stratigraphic position middle to upper Cushabatay Fm.

*Located over 4km of strike in boulders and outcrop.* 

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### **Tabalosos Cu-Ag mineralization**

**Stratiform copper silver mineralization** discovered in boulders over 30km of strike.

 The host rock, which varies between 0.5-5m in thickness, it was probably deposited as an oxidized sediment with interbedded carbon matter from plants and micro organisms.

**High grade black shale mineralization** discovered in small floats

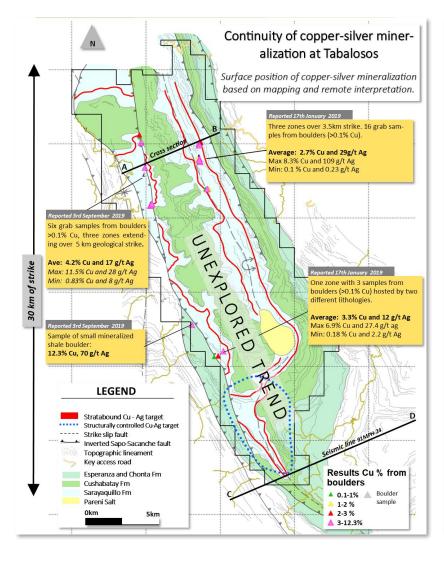
**Structurally hosted target** with evidence of pyrobitumen as reductant to copper bearing fluids

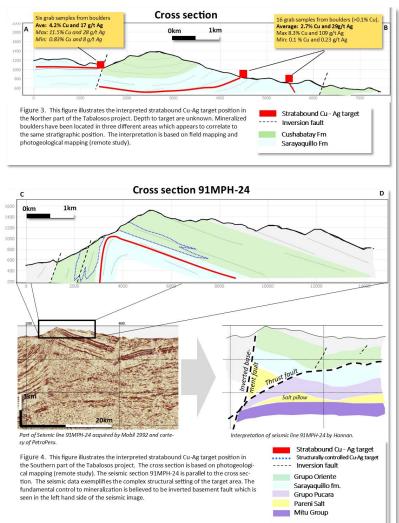






### **Tabalosos Cu-Ag mineralization**

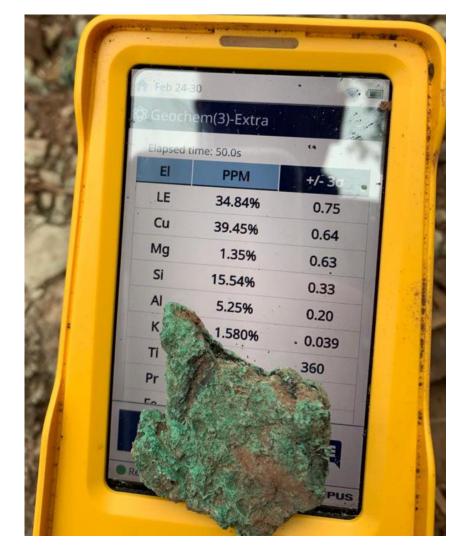




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### SUMMARY

- Opening up new search spaces via grassroots discovery
- Previously unexplored sediment-hosted highgrade copper-silver district identified in northcentral Peru
- Similarities with sedimentary copper-silver deposits including the vast
  Kupferschiefer deposit in Eastern Europe, one of the largest copper districts on earth;
- Hannan recognized the exceptional potential for large copper-silver deposits in this part of Peru and has aggressively staked a commanding position over 940 sq km of prospective geology;
- Collecting data, making discoveries, creating value



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### **Capital Structure**

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16%
80.9 M
111.0 M
C\$0.365 (07 Oct)
C\$28.7 M
C\$2.0 M
C\$26.7 M

Options			
Expiring November 9, 2020	\$0.28	50,000	
Expiring November 14, 2021	\$0.10	861,000	
Expiring November 15, 2021	\$0.10	120,000	
Expiring February 1, 2022	\$0.26	50,000	
Expiring January 23, 2023	\$0.25	3,545,000	
Expiring May 28, 2023	\$0.28	100,000	
Expiring July 21, 2023	\$0.44	250,000	
Expiring August 11, 2023	\$0.455	250,000	
Expiring September 4, 2023	\$0.13	250,000	5,476,000
Warrants			
Expiring April 24, 2021	\$0.15	1,402,500	
Expiring April 30, 2021	\$0.15	322,500	
Expiring July 6, 2021	\$0.25	6,984,300	
Expiring February 18, 2022	\$0.30	14,016,588	
Expiring July 13, 2023	\$0.35	2,000,000	24,725,888



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# **Directors & Officers**



Michael Hudson (Chairman & CEO): B.Sc. (Hons), GDipAppFin, FAusIMM, MAIG



Lars Dahlenborg (President): MSc.



David Henstridge (Director): B.Sc. (Hons), FAUSIMM, MAIG, MGSAUST



Georgina Carnegie (Director): B.Com, AM Harvard



Ciara Talbot (Director): B.Sc. (Honours)



Nick DeMare (Director): CPA, CA



Mariana Bermudez (Corporate Secretary)



**Quinton Hennigh – Technical Adviser** 

Hannan is managed by a group with careers built in the exploration industry.

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In recent years, the group has raised more than US\$100M for European and Peruvian exploration and development.

Hannan management is highly experienced with a long history of working in Peru.

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# **Peru Copper Silver**



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# **Peru Copper Silver**



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### **Contact Us**



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#### HANNAN METALS LTD INVESTOR RELATIONS (CANADA)



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