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NI 43-101 Technical  
Report Coasa Property  
Puno, Peru



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**Document Control Information**

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## Date and Signature Page

The report titled “NI 43-101 Technical Report Coasa Property Puno, Peru” with an effective date of October 24<sup>th</sup>, 2018 was prepared on behalf of Palamina Corp. by David Seers (QP), representative of Mining Plus.

Name	Signed	Date Signed (dd/mm/yyyy)
David Seers		30/12/2018

## 1 EXECUTIVE SUMMARY

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Palamina S.A.C (Palamina) began staking the Coasa Property (Property) in January 2017, the Property currently consists of 20 contiguous mining concessions and concession applications, totalling 17,200 hectares, in the Puno region of southern Peru.

The Property is greenfield, its short exploration history includes, grab and channel sampling as well as geological mapping. Small-scale artisanal miners have been found to be active near the Property. The independent Pacacorral (Crucero) Project, owned by Gold Mining Inc., which hosts a reported 1.0 Moz Au Indicated Mineral Resource and 1.03 Moz Au Inferred Mineral Resource lies approximately 3 km south of the Property boundary.

Having physically prospected/explored approximately 60% of the Property, Palamina identified nine prospects with quartz veining hosted in fine-grained siliclastic sediments and varying levels of Au and pathfinder (As) anomalism.

The Veta prospect is particularly anomalous in Au and As; this anomalism occurs with quartz veining and is spatially related to a northeast trending strike slip-fault. Anomalism extends over 1.6 km and remains open, within the Property, to the northeast. Grab sample 2696, taken from the Veta prospect generated a peak Au grade of 620 ppm Au (Palamina News 2).

A northeast trending zone of Au anomalism (>0.1 g/t Au), measuring approximately 800m x 500 m, is recognised at the Veta prospect. This zone is spatially related to a northeast trending structure and remains under-tested and open to the northeast and southwest. Approximately 65% of the 614 samples taken in this zone assayed greater than 0.1 ppm Au and more than 13% of these samples assayed over 1 ppm Au up to a maximum of 620 ppm Au. Two 1 m channel samples and a selective sample assayed over 100 ppm Au, these samples align northeast over a 320 m extension of the Veta prospect.

A 3 m channel sample from the Cayos prospect, a south-westerly extension of Veta (not visited by Mr Seers), is reported by Palamina to contain 30.5 ppm Au over 3 m (Palamina News 3).

Compared to Veta and Cayos, Au and As anomalism recorded at the other prospects is significantly lower. Moderate As anomalism, spatially related to north-northwest shearing, is recognised at the Phusca prospect. Scorodite (iron-arsenate) is frequently observed in fine-grained carbon-rich beds particularly at the Phusca prospect.

Palamina recently completed a regional heliborne magnetic and radiometric survey. Survey lines were orientated NE-SW at an average elevation of 40 m above surface. Approximately 1,028 line kilometres were flown over the Coasa Property covering the main area of interest with 125 m spaced flight lines. Once processed magnetic and radiometric data is available it

will improve understanding of geology and structure and will contribute to focusing exploration at Coasa and regionally.

Palamina engaged Mining Plus and Mr David Seers (QP) to prepare a Technical Report in accordance with NI 43-101 for the Property. The purpose of the Technical Report is to detail exploration and offer recommendations for further exploration.

Mr Seers (QP) visited the Property, specifically the Veta, Phusca, Vetascunca and Julia prospects, between August 8<sup>th</sup> and 13<sup>th</sup>, 2018. Whilst at the Property Mr Seers took 19 independent grab samples, analysis of these samples confirms significant gold grades at the Veta Prospect where Mr Seers observed visible gold in irregular, discontinuous and brecciated quartz veins hosted in zones of northeast strike-slip faulting.

Mr Seers is satisfied that the exploration techniques used by Palamina are suitable for purpose (i.e. defining areas of anomalism) and in some instances Quality Control measures employed by Palamina exceed those typically encountered in other projects at a similar stage of exploration.

Mr Seers (QP) considers that the Property is prospective for orogenic style gold mineralisation and recommends:

1. Continued prospecting throughout the Property but prioritised in areas with northeast trending lineaments visible on satellite imagery.
2. Systematic rock and soil sampling combined with detailed mapping at the Veta, Cayos and Phusca prospects. Systematic sampling and detailed mapping will help define the extents of anomalism, continuity of grade and mineralising controls.

Mr Seers highlights the fact that orogenic gold deposits often form in clusters along a dominant regional structural trend. Accordingly, there is potential to identify other areas of Au anomalism, similar to that at Veta, within the Coasa Property and wider Puno Orogenic Gold Belt (POGB), Mr Seers considers that this potential is greatest in areas with northeast trending structures, which in his opinion are a significant mineralising control. More than 23 km of northeast trending structures, interpreted via satellite imagery, are recognised at the Property, many of which have not be prospected or explored to any extent.

Mr Seers has outlined a program of systematic rock sampling at Veta and soil sampling at Phusca. The estimated budget for this proposed work, inclusive of logistical and laboratory costs, is estimated at US \$84k and the expected time to complete the proposed sampling programs should not exceed 30 days.

Beyond the proposed program of systematic and superficial sampling, geophysics should be considered which would help see through cover and identify structure, which is evidently a major mineralising control. Mr Seers notes that Palamina commissioned a heliborne magnetic

and radiometric survey, which has been flown, but the data is not yet processed. When structural controls are understood, trenching across zones of interest should be considered. Trenches should be channel sampled using circular saws. Subsequent to trenching and assuming positive results, diamond drilling should be considered, given the possibility of nuggety gold in the orogenic environment wider gauge core, not less than HQ size, is recommended. Currently, the Veta Prospect is the best candidate for a 3000 to 5000 m exploratory drill program.

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## 2 INTRODUCTION

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Mining Plus was commissioned by Palamina S.A.C. (Palamina) to complete a Technical Report (Report) in accordance with NI 43-101 for their Coasa Property (Property) in the Puno region of southern Peru. This is the first Technical Report prepared in accordance with NI 43-101 for the Property.

Mining Plus assigned Mr David Seers (QP) to prepare all relevant sections of the Report. Both Mining Plus and Mr Seers are wholly independent of Palamina. Mr Seers visited the Property between August 8<sup>th</sup> and 13<sup>th</sup>, 2018, whilst at the Property he took 19 independent samples from four prospects.

The purpose of this report is to detail and record exploration completed at the Property, independently verify this work and, to offer recommendations for follow-up exploration.

Palamina Corp., the parent company of Palamina S.A.C., is listed on the TSX-Venture Exchange (TSX-V) under the ticker “PA”. The Property is one of eight properties listed on Palamina Corp’s website ([www.palamina.com](http://www.palamina.com)).

Information used in the preparation of this Report was taken from various sources:

- [www.palamina.com](http://www.palamina.com)
- The “Geocatmin” web-portal provided by the Instituto Geológico Minero y Metalúrgico (INGEMMET) was used to review:
  - Concession status
  - Regional geology
- Information provided by Palamina such as sample locations, descriptions and assays.

### **Units of Measure**

The metric system of measurement is used throughout this report and monetary values are given in US dollars.

### **Effective Date**

The effective date of this report is October 24<sup>th</sup>, 2018.

### 3 RELIANCE ON OTHER EXPERTS

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This report was prepared by Mining Plus Peru S.A.C. (Mining Plus) and specifically Mr David Seers (QP) on behalf of Palamina S.A.C. (Palamina).

The information, conclusions and opinions contained herein are based on:

- Information provided by Palamina; Standard Operating Procedures, Assay results and geological mapping
- Independent assessment of the Property by Mr Seers
- Independent sampling of the Property by Mr Seers.

For the purpose of this report, Mining Plus has relied on ownership information provided by Palamina. Mining Plus expresses no opinion as to the ownership status of the Property.

## 4 PROPERTY, DESCRIPTION AND LOCATION

The Property consists of 20 contiguous Mining Concessions (concessions), title for 14 of these concessions are granted, Palamina have submitted applications for the other 06 concessions (Table 4.1). Mr Seers (QP) is not aware of any reason why the pending concession applications would not be granted to Palamina. The total area of the Property is 17,200 hectares (12,600 hectares granted and 4,600 hectares pending).

Table 4-1: List of concessions that form the Coasa Property (October 24th)

Concession Code	Concession Name	Title Holder	Status	Mineral Type	Area (He)
10032917	COASA 1	PALAMINA S.A.C.	Granted	Metallic	1000
10033017	COASA 2	PALAMINA S.A.C.	Granted	Metallic	1000
10033217	COASA 3	PALAMINA S.A.C.	Granted	Metallic	1000
10033117	COASA 4	PALAMINA S.A.C.	Granted	Metallic	800
10033317	COASA 5	PALAMINA S.A.C.	Granted	Metallic	1000
10033417	COASA 6	PALAMINA S.A.C.	Granted	Metallic	1000
10033517	COASA 7	PALAMINA S.A.C.	Granted	Metallic	1000
10033617	COASA 8	PALAMINA S.A.C.	Granted	Metallic	1000
10033717	COASA 9	PALAMINA S.A.C.	Granted	Metallic	1000
10223417	COASA 10	PALAMINA S.A.C.	Granted	Metallic	400
10223517	COASA 11	PALAMINA S.A.C.	Granted	Metallic	800
10223617	COASA 12	PALAMINA S.A.C.	Granted	Metallic	600
10341017	COASA 13	PALAMINA S.A.C.	Pending	Metallic	900
10341517	COASA 14	PALAMINA S.A.C.	Pending	Metallic	1000
10341417	COASA 15	PALAMINA S.A.C.	Granted	Metallic	1000
10055818	COASA 16	PALAMINA S.A.C.	Granted	Metallic	1000
10055918	COASA 17	PALAMINA S.A.C.	Pending	Metallic	1000
10209618	COASA 18	PALAMINA S.A.C.	Pending	Metallic	500
10209518	COASA 19	PALAMINA S.A.C.	Pending	Metallic	400
10326318	COASA 20	PALAMINA S.A.C.	Pending	Metallic	800

Figure 4.1 is a map of the concessions that form the Property and third-party concessions. Two third-party concessions, that predate Palamina’s exploration initiative, lie within the Palamina block of concessions.

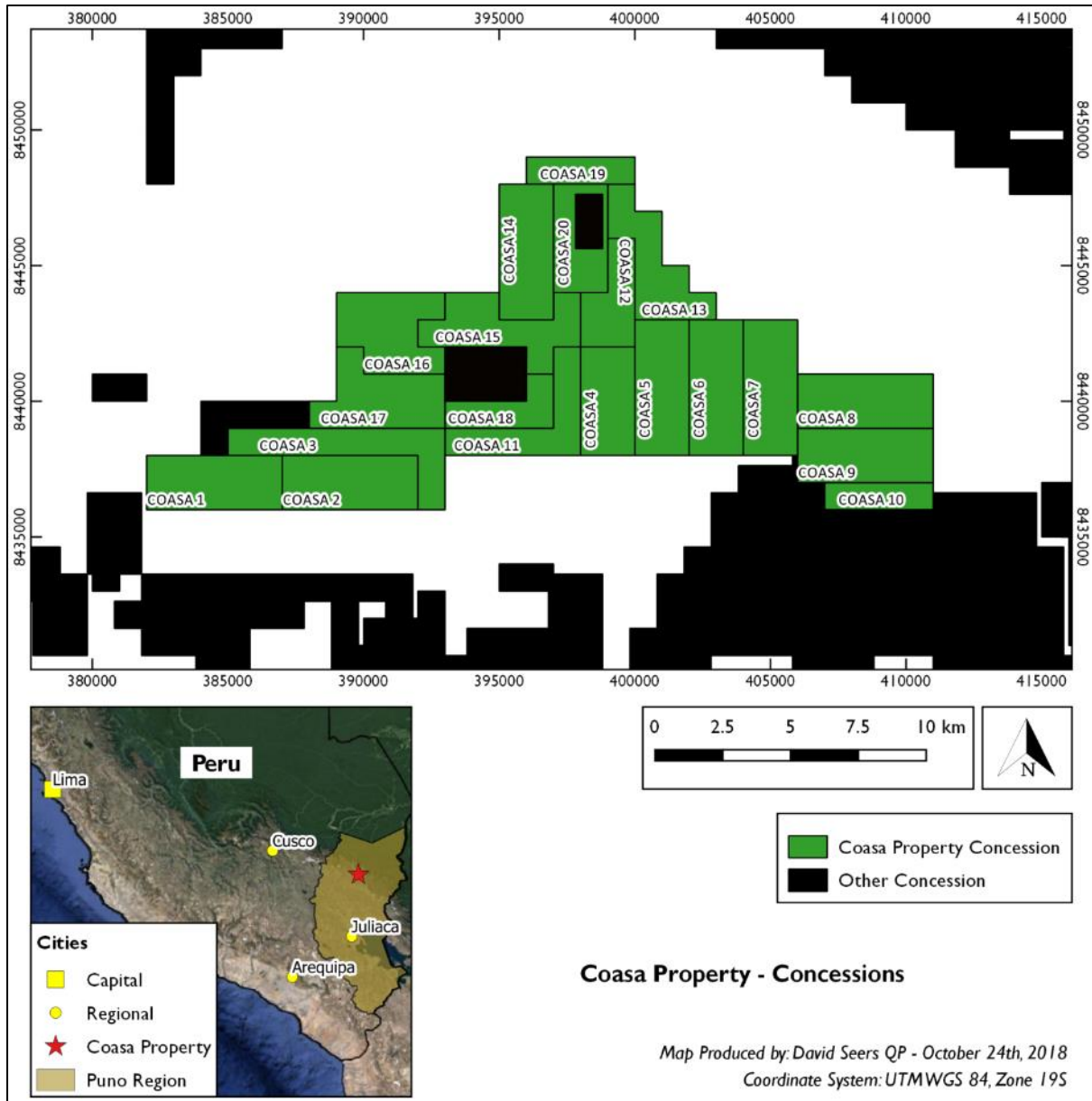


Figure 4-1: Coasa Property - Concessions

The 17,200 hectare Property is located in the Puno region of southern Peru, predominantly within the Usicayos community boundary, part of the Property crosses into the Coasa and Limbani communities (Figure 4.2).

The approximate centre of the Property, in the UTM WGS 84 and Lat/Long WGS 84 reference systems, is given in Table 4.2.

Table 4-2: Approximate centre coordinate of the Property

Reference System	East/Longitude	North/Latitude
UTM WGS 84 (Zone 19S)	398004	8441996
Lat/Long WGS 84	-69.94479	-14.09107

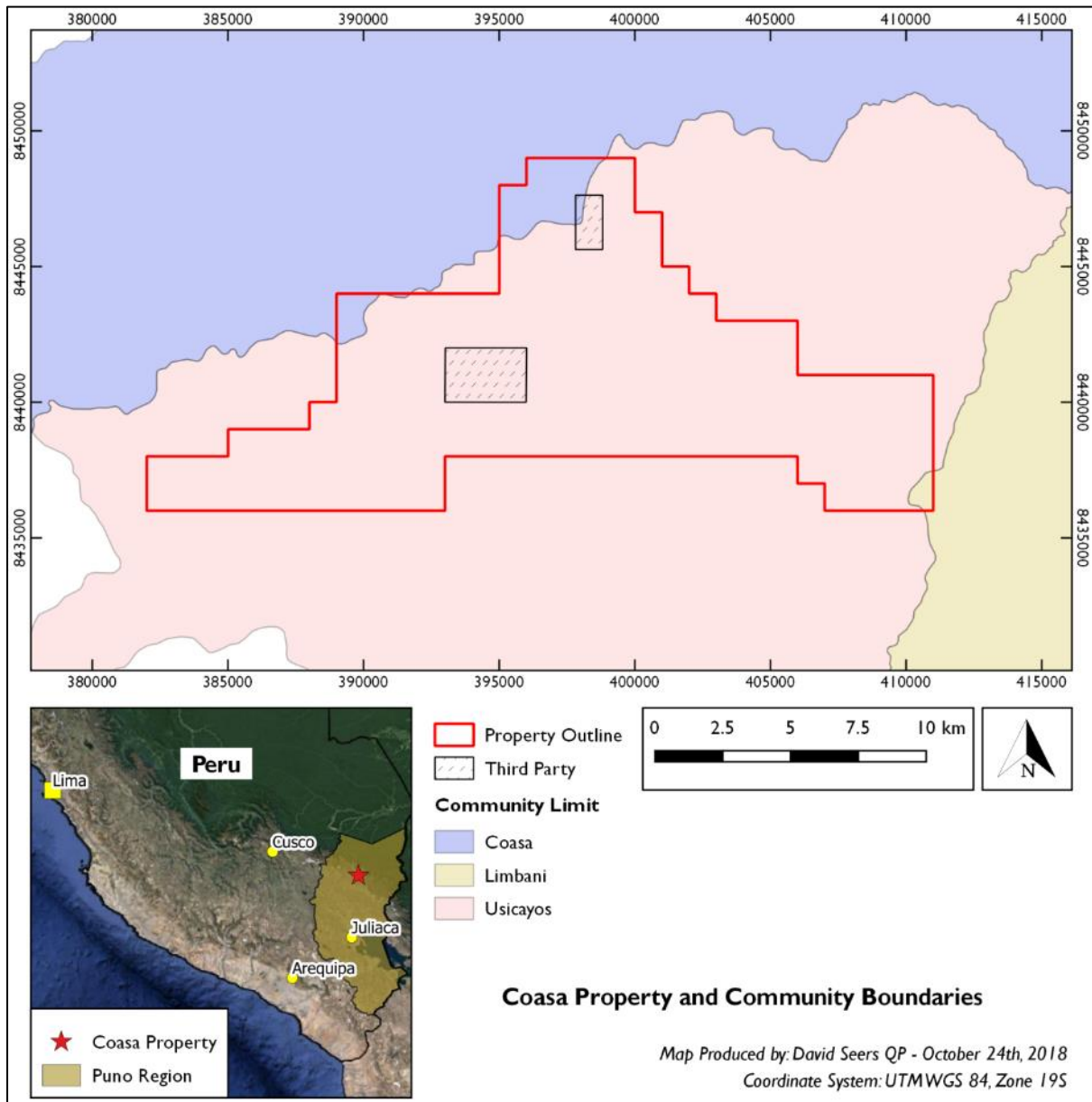


Figure 4-2: Property Location in relation to community boundaries

Mr Seers is not aware of any pending litigation or legal issues related to the Property. Assuming the requisite annual investment is achieved and annual maintenance fee (derecho de vigencia) payments are made, concessions are considered irrevocable.

Pursuant to article 39 of the General Mining Law, titleholders of mining concessions should pay an Annual Maintenance Fee (derecho de vigencia). The Annual Maintenance Fee is due on June 30<sup>th</sup> of each year and is paid one year in advance and is calculated at a rate of US \$3.00/ha. Failure to pay the Annual Maintenance Fee for two consecutive years causes the termination (caducidad) of the mining concession. However, according to article 59 of the General Mining Law, payment for one year may be delayed without penalty and the mining concessions remain in good standing. The outstanding payment for the past year can be paid on the following June 30<sup>th</sup>.

Any future production at the Property is not currently subject to Net Smelter Return (NSR) payments.

### **Surface Rights**

A mining concession does not grant the titleholder right of access. Right of access must be negotiated between the land owner(s) and concession holder. Palamina has good relations with local communities and landowners but has not yet negotiated legally binding rights of access.



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

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The Property is located in the Puno region of southern Peru, between 2900 and 4900 m above sea level. Vegetation cover varies considerably across the Property; higher elevations are sparsely vegetated compared to lower elevations and drainages that extend towards the Amazon Basin.

From Lima, the most efficient route to the Property is to fly to Juliaca and drive to the Property using the Pacific-Atlantic Interoceanic Highway and connecting routes of variable quality (Figure 5.1), approximate travel times are summarised in Table 5.1. Prospects within the Property are accessed via a combination of tracks accessible with 4x4 vehicles and walking across country.

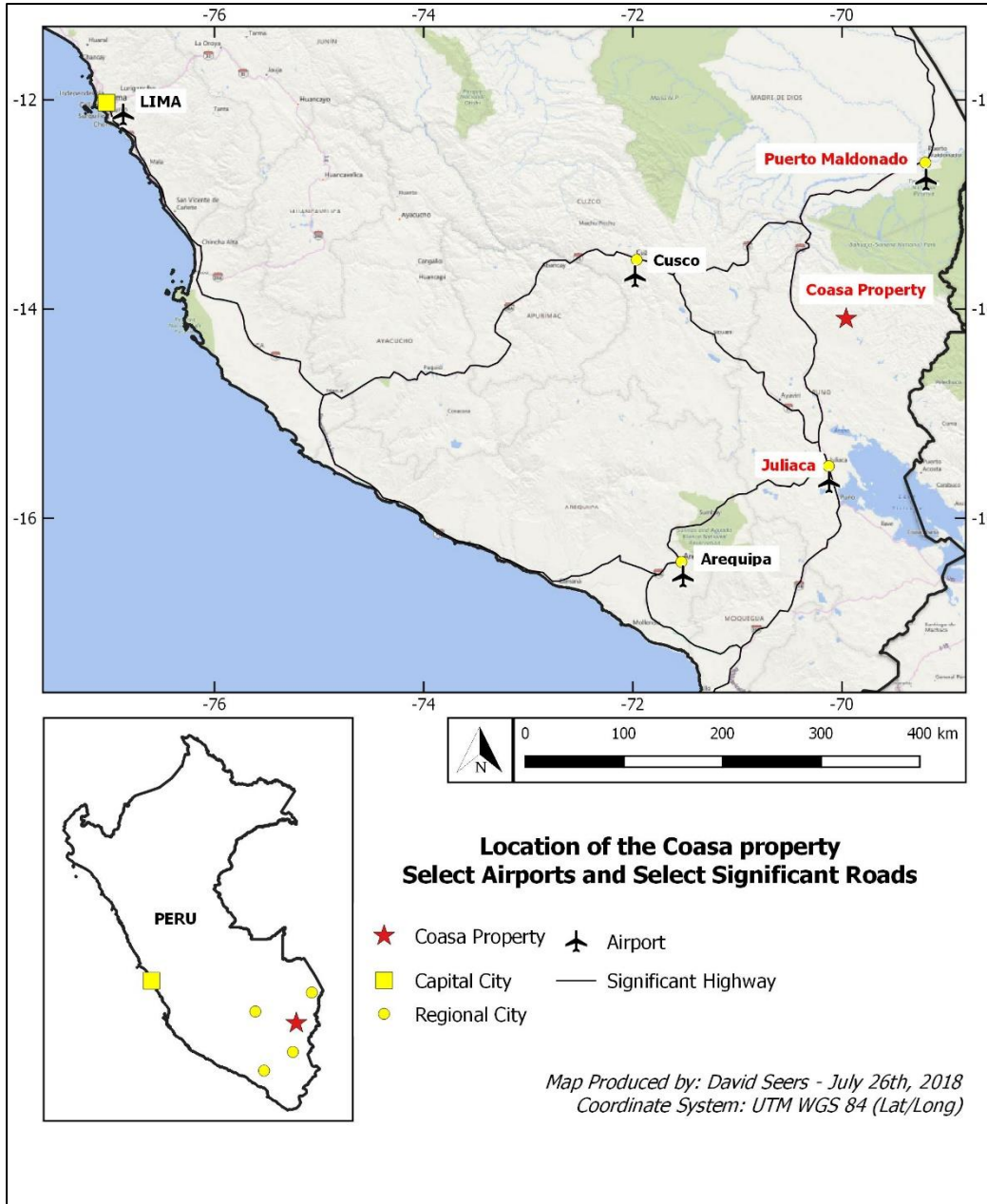


Figure 5-1: Access to the Property

Table 5-1: Approximate travel times to the Property

Section	Mode of Travel	Time (Hours)
Lima to Juliaca	Air	1.25
Juliaca to Property	Road	4

Juliaca (3,825 m elevation) and Puerto Maldonado (183 m elevation) are the two main population centres closest to the Property; these cities are served by direct flights from Lima.

The Property is accessible from Juliaca and Puerto Maldonado via the Pacific-Atlantic Interoceanic Highway and connecting routes.

*Table 5-2: Large Cities and approximate travel times and distances to the Coasa Property*

City	Population	Straight-line Distance to Property	Total Drive time to Property (Variable Road Conditions)
Juliaca	225,146	173 km	3.5 hours
Puerto Maldonado	56,000	168 km	8 hours

Climate at the Property is distinct at higher and lower elevations. According to weather-and-climate.com, October is on average the warmest month of the year whilst January is the coldest month of the year. Access to the Property can be affected during periods of heavy rain, which can trigger landslides. Exploration activities are best undertaken between March and December.

Three-phase electrical power from the national grid is available at the villages of Usicayos and Coasa both villages are within 10 km of the edge of the Property boundary. Abundant surface water is available year-round from the Toltojere River, which transects the Property. Access to electrical and hydro resources has not been negotiated or permitted.

## 6 HISTORY

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Palamina staked the first concession of the Property in January 2017; there is no record of formal exploration activity prior to this date and no Mineral Resource or Mineral Reserve estimates have been produced for the Property in accordance with section 2.4 of the Instrument.

Small-scale artisanal miners have been found to be operating westwards of the immediate vicinity of the Property. Mr Seers is not aware of any records detailing production from these informal small-scale mines.

## 7 GEOLOGICAL SETTING AND MINERALISATION

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### 7.1 Regional Geology

The Instituto Geológico Minero y Metalúrgico (INGEMMET), part of Peru’s Ministry of Energy and Mines, publish regional geological maps at 1:100k with accompanying bulletins that describe the regional geology of Peru. INGEMMET also publish geological maps at 1:50k scale for some areas of Peru.

The Property lies within the areas covered by:

- 1:100k map sheet 29V Macusani
- 1:100k map sheet 29W Limbani
- Boletín 79 – Geología Cuadrángulo Macusani
- Boletín 84 – Geología Cuadrángulo de Limbani
- 1:50k map sheet 29V1
- 1:50k map sheet 29X4

Based on the sources listed above, Mr Seers (QP) summarises key geological features (Figure 7-1):

- Cycles of distinct marine and continental sedimentary deposition are interrupted by episodes of compression and uplift and, intervening periods of extension and basin opening.
  - Three principle depositional cycles are recognised:
    1. Mid-lower Palaeozoic, marine sediments with lesser continental;  
COMPRESSION
    2. Upper Palaeozoic, continental dominated sedimentation with lesser marine sediments including carbonates;  
COMPRESSION
    3. Volcanic and plutonic activity  
EXTENSION
    4. Cretaceous deposition in local basins  
COMPRESSION
- North-northwest to northwest faulting (“Andean trend”) and antithetic transform faulting related to various orogenic episodes are evident on regional geological mapping.
- Boletín 84, describes three zones of metallic mineralisation with the following assemblages
  - Polymetallic (Pb, Zn, Cu and Ag) vein hosted mineralisation in upper Palaeozoic, Mesozoic and Cenozoic units

- Cu, Sn and W in Lower Palaeozoic, Mesozoic and Cenozoic units intruded by igneous rocks. The batholith zone is considered favourable for W and Sn mineralisation and associated copper
- Orogenic Au mineralisation is recognised in quartz veins hosted in upper Ordovician to Devonian age fine-grained sediment and placer deposits.

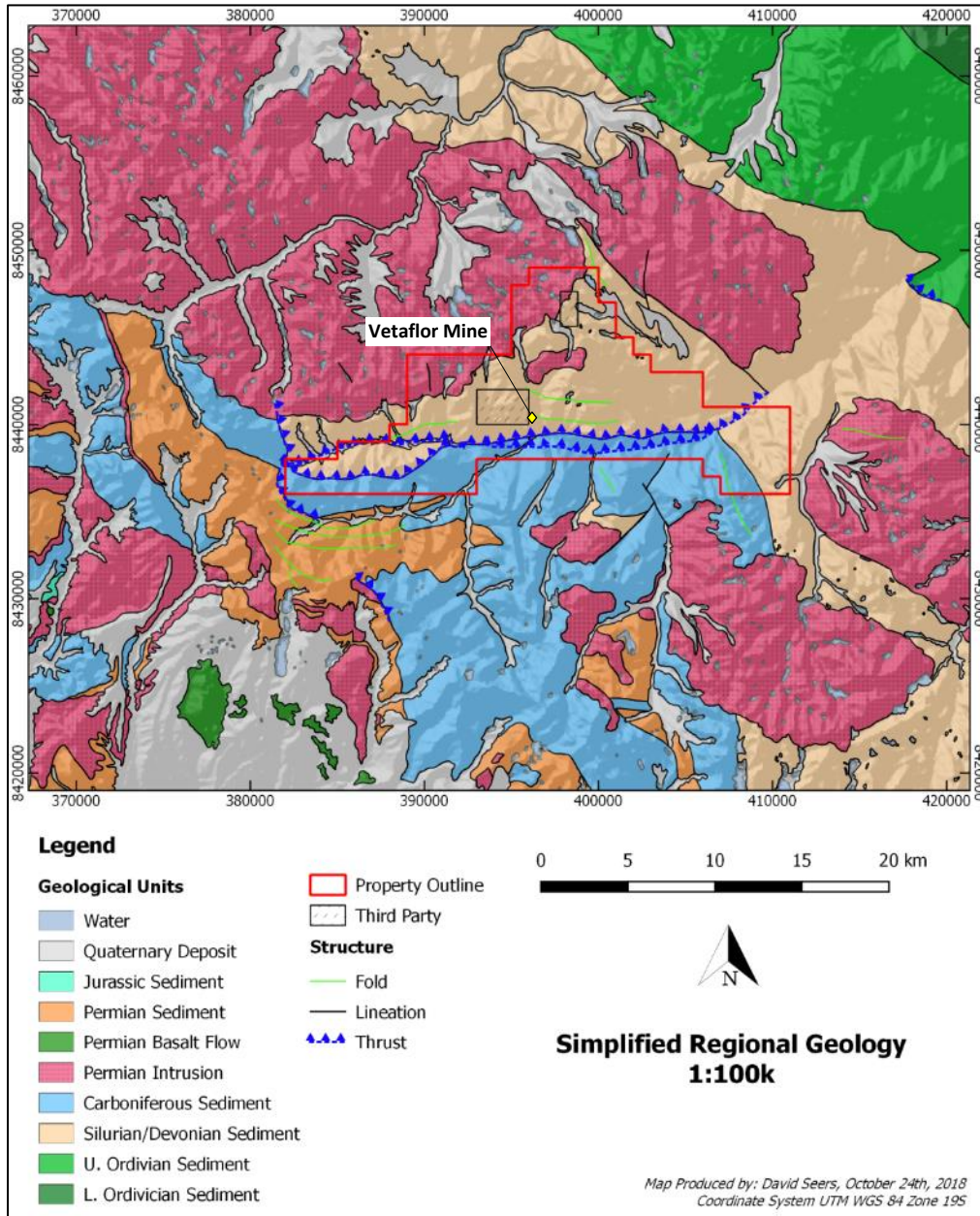


Figure 7-1: Regional Geology

## 7.2 Property Geology

Whilst at the Property, Mr Seers (QP) reviewed four prospects (Veta, Phusca, Vetascunca, and Julia, Palamina has identified a further five prospects (Figure 7.2). Observations made by Mr Seers whilst at the Property are summarised below:

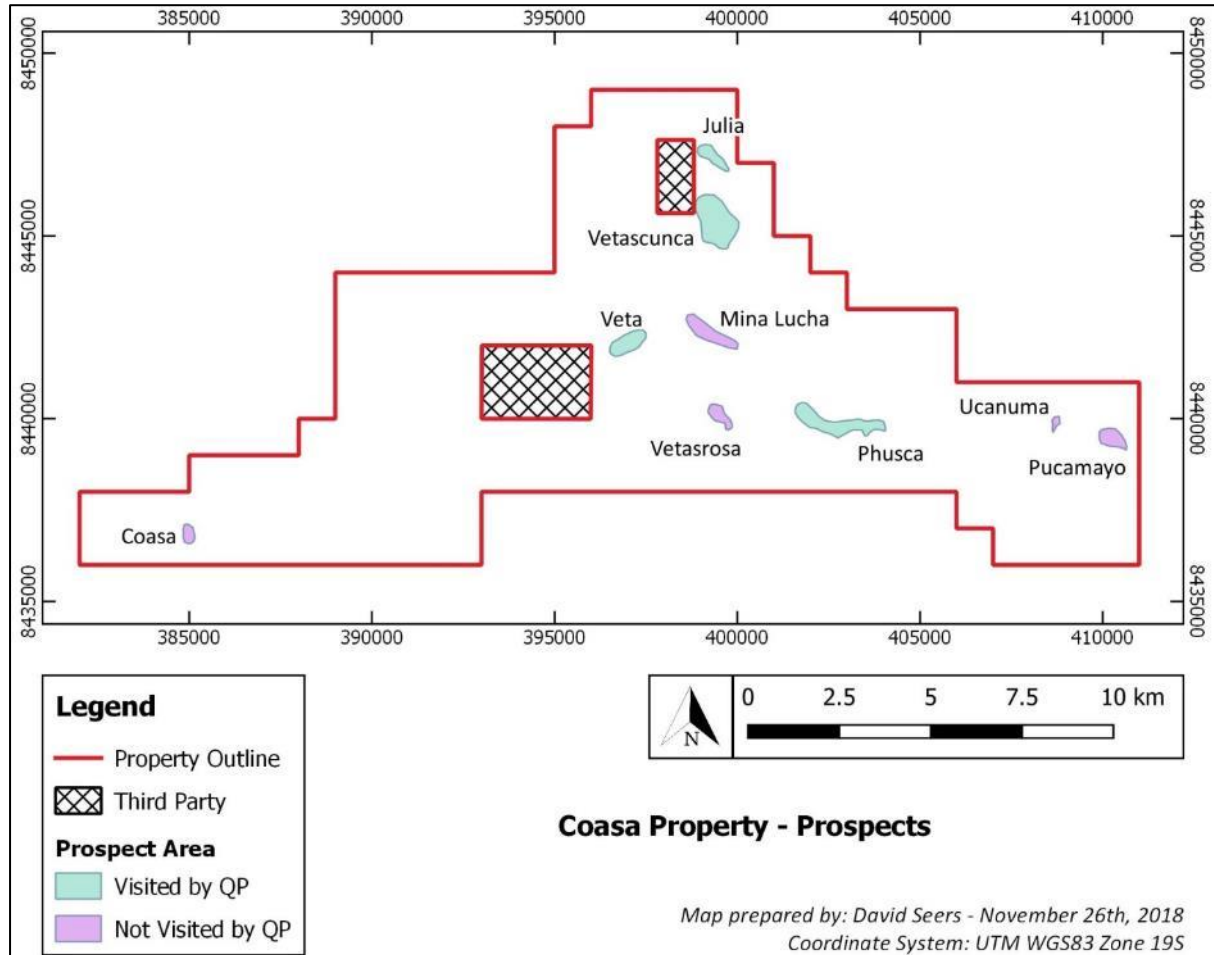


Figure 7-2: The Coasa Property and the Prospects visited by Mr Seers

- Geology is dominated by sequences of fine-grained siliclastic sediment including siltstone and shale with lesser mudstone and fine-grained sandstone. Diorite sills and dykes occur throughout the Property
- Overall metamorphism is low-grade. Localised hornfelsing is evident at the Veta prospect close to a hypabyssal intrusion. Greenschist level metamorphism is evident at Phusca
- Folding, faulting and shearing of sedimentary sequences is variably developed throughout the property
- Quartz veining was observed at the Veta, Phusca, Vetascunca and Julia prospects. Veining occurs parallel to or within bedding/foliation and can crosscut either. Quartz

veins range between millimetric and 40 cm wide, colour varies between grey, white and translucent. Quartz textures can be massive, coarse-grained, ribbon and brecciated. Quartz veins can occur in isolation, sheeted/sub-parallel and as localised stockwork.

- Sulphide content is typically low (<1%) and confined to the margins of veins at the contact with wall rock. Sulphides observed at the Property include; pyrite, arsenopyrite, pyrrhotite, galena, sphalerite and antimony. More carbon rich siltstone units often host coarse-grained cubic pyrite and scorodite (iron-arsenate).
- Zones of shearing with occasional ribbon quartz veining and boudinaged sills and dykes are observed locally. Fine-grained disseminated sulphide content in shear zones is increased compared to surrounding rocks
- Alteration is not extensively developed. Superficial iron oxides, with lesser manganese oxide and scorodite were observed throughout the Property. Scorodite is particularly well developed in fine-grained carbon-rich sediments at Phusca.
- Visible gold is present in irregular narrow quartz veins and veinlets spatially related to significant northeast trending strike-slip faults at the Veta prospect these veins are often brecciated.

### 7.2.1 Veta

Fine-grained siliclastic sediments are the main lithological units. A hypabyssal intrusion outcrops immediately north of the Veta prospect, sediments in contact with the intrusion are locally hornfelsed.

Pervasive N070/90 foliation, related to sinistral strike-slip faulting, is evident throughout the prospect. Irregular sub-parallel quartz veins, strike approximately N120/90. A zone of intensely foliated (N330/90) graphitic shales is partially exposed in a riverbank behind the hanging wall of a significant northeast trending sinistral fault.

Palamina has taken 709 samples from the Veta prospect including grab and channel samples. Selective grab sample 2696, taken from an irregular vein up to 15 cm wide, assayed 620 ppm Au. Five channel samples at Veta assayed over 15 ppm Au, these samples range from 1 to 2m wide.

Photos taken by Mr Seers whilst at the Veta prospect are presented in Figure 7-3 with descriptions.



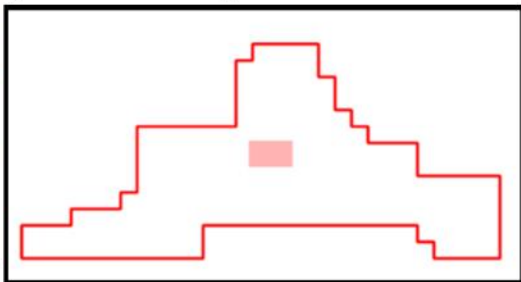
**Veta Prospect—Visited August 11<sup>th</sup> and 12<sup>th</sup>, 2018**

**Below:** Brecciated fault gouge material with heavy iron oxides



**Above:** Graphitic shear with quartz veining sub-parallel to N320/90 foliation.

**Left:** Graphitic shear (N320/90 with fine grained disseminated pyrite. Quartz veins are developed sub-parallel to vertical foliation, quartz veining hosts fine-grained disseminated pyrite.



**Right:** Visible gold in quartz veining related to synis-tral faulting (Not from the structure shown above).



Figure 7-3: Photos from the Veta prospect

### 7.2.2 Phusca

Phusca is a large area, much of which is undercover.

Folded sediments, including; shale, silt, fine-grained sandstone and diorite sills and dykes dominate outcropping geology. Coarse-grained cubic pyrite is recognised in narrow carbon rich layers.

Exploration by Palamina identified moderate arsenic anomalism and low gold values. 294 Samples have been taken from the Phusca prospect, the highest reported Au grade is 0.089 ppm and the highest reported As grade is 10000 ppm (upper detection limit). Scorodite is particularly prevalent in fine-grained carbon-rich sediments.

The strongest arsenic values are spatially related to north-northwest to north-south trending shears that interrupt sedimentary sequences. Within shear zones:

- Diorite dykes and sills are boudinaged. Quartz masses with variable sulphide content often accumulate around the pinch points of boudinaged diorite and,
- Ribbon quartz veins with fine-grained disseminated pyrite are disjointed.

Photos taken by Mr Seers whilst at the Phusca prospect are presented in Figure 7-4 with descriptions.

**Phusca Prospect—Visited August 9<sup>th</sup>, 2018**



**Left:** Shear zone with boudinage diorite dyke.

**Below:** Quartz veining formed a pinch point in boudinaged dyke.



Cavities after coarse-grained pyrite



Fine-grained disseminated pyrite and scorodite in fine-grained carbon rich sediment

**Below:** Shearing exposed in road cut at Phusca



**Right** Shearing exposed in road cut at Phusca. Disjointed ribbon quartz veining with fine-grained disseminated pyrite

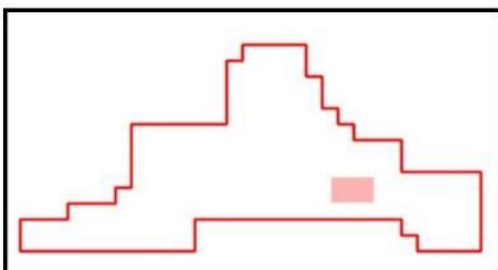


Figure 7-4: Photos from the Phusca prospect

### 7.2.3 Vetascunca

The Vetascunca Prospect is located at the hanging wall of a thrust fault; lithology is dominated by siltstones, shales and diorite sills. Multiple quartz veins are recorded parallel to the thrust front; strike extensions of veins are offset and variably rotated along transfer faults.

Quartz veins are observed in all lithologies.

Contrasting rheological properties under compression are a key control on where quartz veins develop. Under compression diorite sills and dykes fracture and open parallel to the direction of maximum compression, zones of more frequent veining develop within these fractures. More ductile sediments immediately adjacent to sills and dykes are often absent of veining.

Sulphides are concentrated at the contact between the vein and wall rock and are superficially oxidised. Palamina took 11 samples at Vetascunca and the highest gold grade recorded is 0.662 g/t Au, this grab sample (890) was taken from a vein close to a transfer fault.

Rock exposure at Vetascunca is close to 100% and it is unlikely that other veins will be identified. The potential for veins to extend to depth is likely to be confined to the hanging wall of the thrust fault. There is no sign of mineralisation at the thrust front between the hanging wall and footwall.

Photos taken by Mr Seers whilst at the Vetascunca prospect are presented in Figure 7-5 with descriptions.

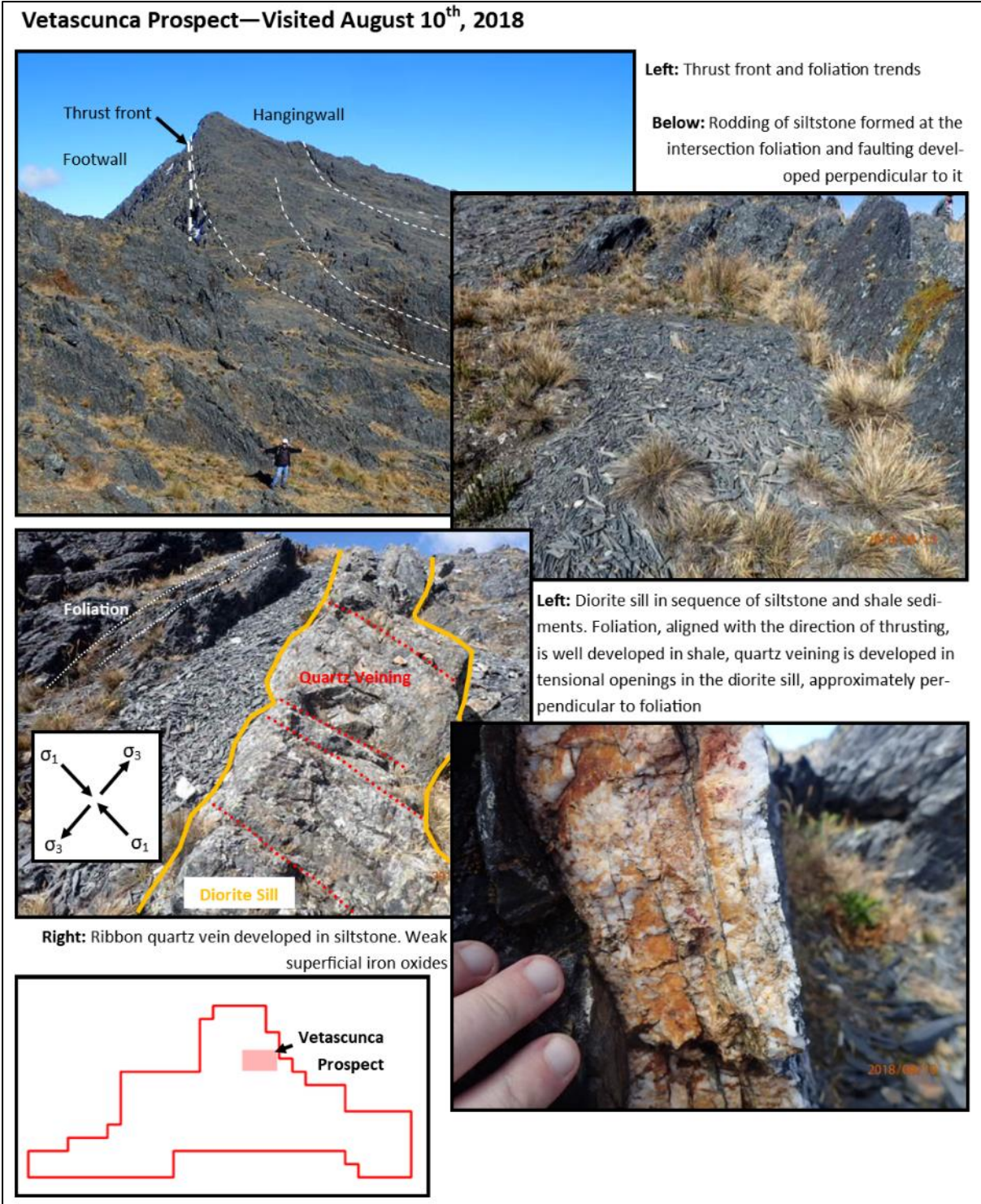


Figure 7-5: Photos from the Vetascunca prospect

### 7.2.4 Julia

Geology at the Julia Prospect is dominated by shales and silts with less frequent diorite dykes and sills. Disseminated pyrite is recognised in shale units, quartz veining predominantly occurs along foliation (N215/40SE).

Felsic dykes are intruded along zones of north-south faulting, quartz veining and sulphides increase in proximity to dykes

Exploration to date has not identified significant gold anomalism but arsenic values are elevated.

Palamina generated 23 samples taken from Julia from which two assayed above minimum detection limits (0.005 ppm), the highest assayed grade is 0.047 ppm over 1.5 m from chip channel sample 1789.

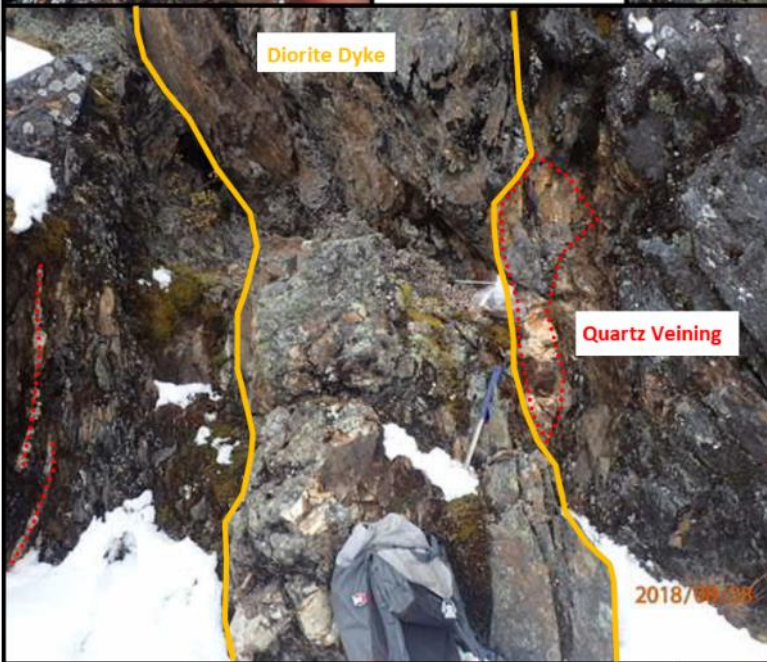
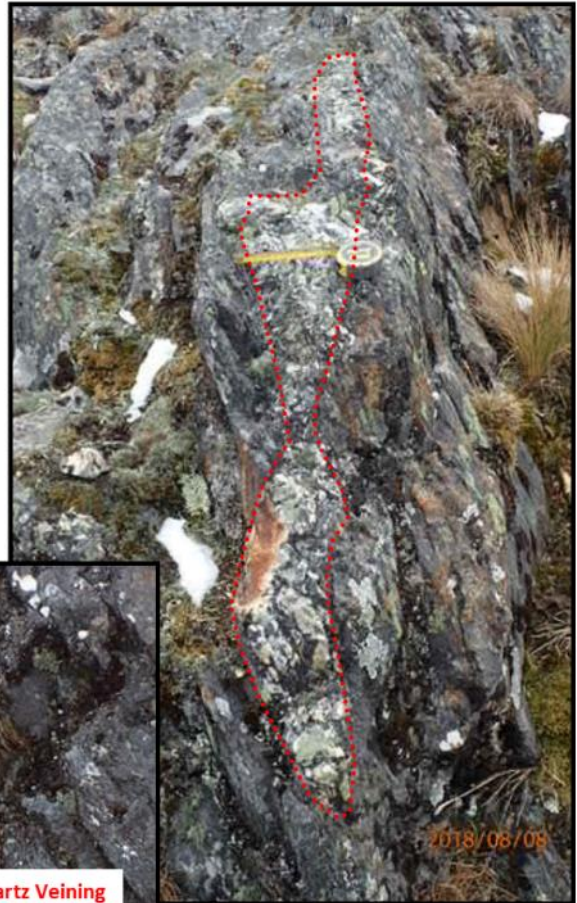
Photos taken by Mr Seers whilst at the Julia prospect are presented in Figure 7-6 with descriptions.

**Julia Prospect—Visited August 8<sup>th</sup>, 2018**



**Left:** Foliated siltstone with some shale. Quartz veining with weak superficial iron-oxides are developed along and across foliation planes.

**Below:** Pinch and swell quartz veining, up to 25 cm across developed in foliation plane



**Above: 399398/8447081**—Dacite dyke (N000/90) with quartz veining developed at margins. Sample 5301 was taken from a 12cm margin at the margin of this dyke

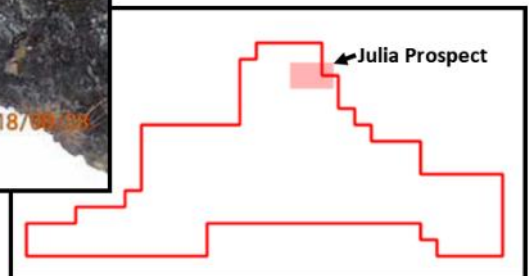


Figure 7-6: Photos from the Julia prospect

## 8 DEPOSIT TYPES

Palamina is investigating orogenic-style Au mineralisation at the Property and nine prospects with quartz veining have been identified to date with other areas are yet to be explored.

Globally, orogenic deposits are a major source of gold and there are numerous examples of such deposits that host in excess of 10 Moz Au such as Hollinger-McIntyre, Dome, Sigma-Lamaque and Norseman. Orogenic gold deposits often form in clusters and are mined as both open-pit lower-grade high-tonnage and higher-grade lower-tonnage underground mines. Clusters of orogenic deposits frequently align along regionally significant structures.

Groves et al (1998) define Orogenic gold deposits as follows:

*“Orogenic gold deposits are associated with regionally metamorphosed terranes of all ages. They form at convergent plate margins and are built by gold-bearing quartz veins, often with very simple mineralogy. They are characterised by a relatively high temperature and pressure of ore deposition which distinguishes them from a number of other types of gold deposits. Their fluids are also characteristic by increased CO<sub>2</sub> content. In general, however, there is no good single definition of these deposits.”*

Orogenic Au deposits are often associated with greenschist to amphibolite grade metamorphism (Figure 8-1). Au is often concentrated in quartz lodes formed in brittle structures and can be associated with other elements such as Sb, As, Te and W.

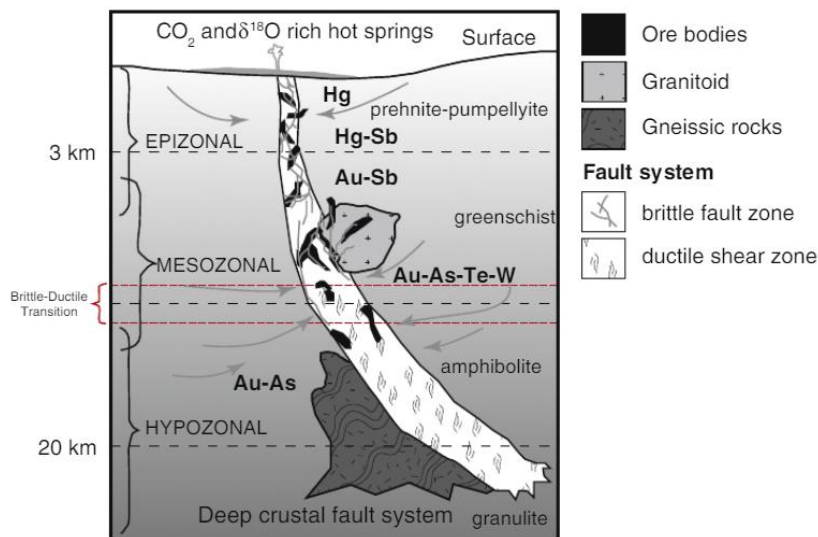


Fig. 2. Orogenic gold deposits can form over a variety of depths, from as shallow as 3 km to as deep as 20 km, typically during late orogenic shifts from compressional to transpressional or transtensional regimes. The majority of deposits form in the greenschist facies or at the greenschist-amphibolite boundaries from aqueous-carbonic, high  $\delta^{18}\text{O}$  fluids that have moved upward along trans-crustal fault zones. Modified after Groves et al. (1998).

Figure 8-1: Typical cross-section of an orogenic system



## 9 EXPLORATION

### Summary of Exploration

Palamina has explored approximately 60% of the Property and has identified nine prospects with quartz veining (Figure 7-2) which have varying levels of Au and As anomalism. These prospects have been explored to varying levels including; basic mapping, grab sampling and channel sampling. Mr Seers (QP) considers that all prospects at the Property are early-stage “greenfield” prospects.

Palamina targeted a package of siliclastic sediments, which, according to mapping by INGEMMET (INGEMMET 1), are Silurian in age and have been subject to multiple orogenic events. Palamina defined three, sub-parallel, northwest trending zones of shearing with a combined northwest-southeast extension exceeding 13 km. Shearing is confined to the northwest by plutonic intrusions and is lost to the southeast under younger sediments (Figure 9.1).

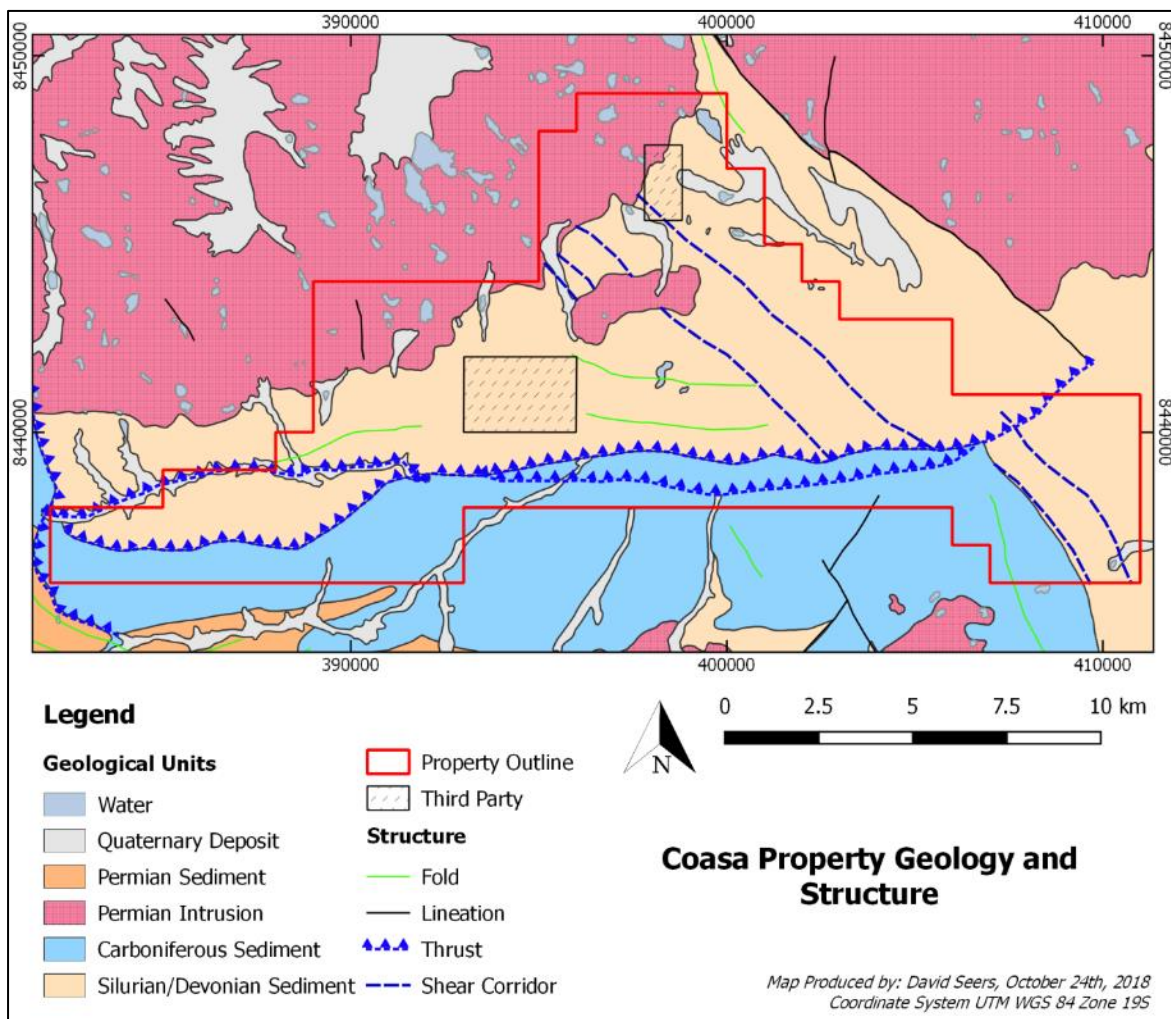


Figure 9-1: Coasa Property - Geology and Shear Zones

## Sampling Methodology

Not considering Quality Control (QC) additions, Palamina has taken 1729 samples from outcrop, subcrop and artisanal mine dumps, these samples are a mix of grab samples and channel samples (Table 9.1). Sample placement is guided by geological observation and is not systematic.

Grab samples are useful during prospecting as they are quick to take and can be used to indicate if an area is geochemically anomalous. Grab samples are taken selectively based on observations made by the sampling geologist. Grab samples are not representative of mineralisation and may be biased.

Channel samples might be taken to quantify anomalism indicated by grab sampling. When well-taken channel samples are more representative than grab samples. Channel samples are orientated across structure for a determined width and include all mineralised and non-mineralized material in that interval, they are not selective. Some channel samples were taken using hammer and chisel and other using circular saw, Mr Seers (QP) highlights that channel samples taken with a circular saw are less likely to be biased and are more reliable than samples taken with hammer and chisel.

## Significant Results and Interpretation

Gold assays range from below detectable limits (0.005 ppm) and 620 ppm. Twelve samples assayed >10 ppm, nine of these are channel samples (up to 3 m wide) and three are grab samples. 737 samples assayed at or below detection limits for Au and 249 samples assayed over 0.25 ppm Au

*Table 9-1: Sample type, count and Au ranges*

Sample Type	Count	Au ppm Minimum	Au ppm Maximum	Count >1 g/t Au
Channel	1246	BD	123	51
Grab	483	BD	620	38

*Channel samples are a combination of sawn and chip channels*

*BD – Below detectable limits*

Sample distribution relatively to geology is shown in Figure 9.2. The vast majority of samples were taken from the Silurian package of siliclastic sediments.

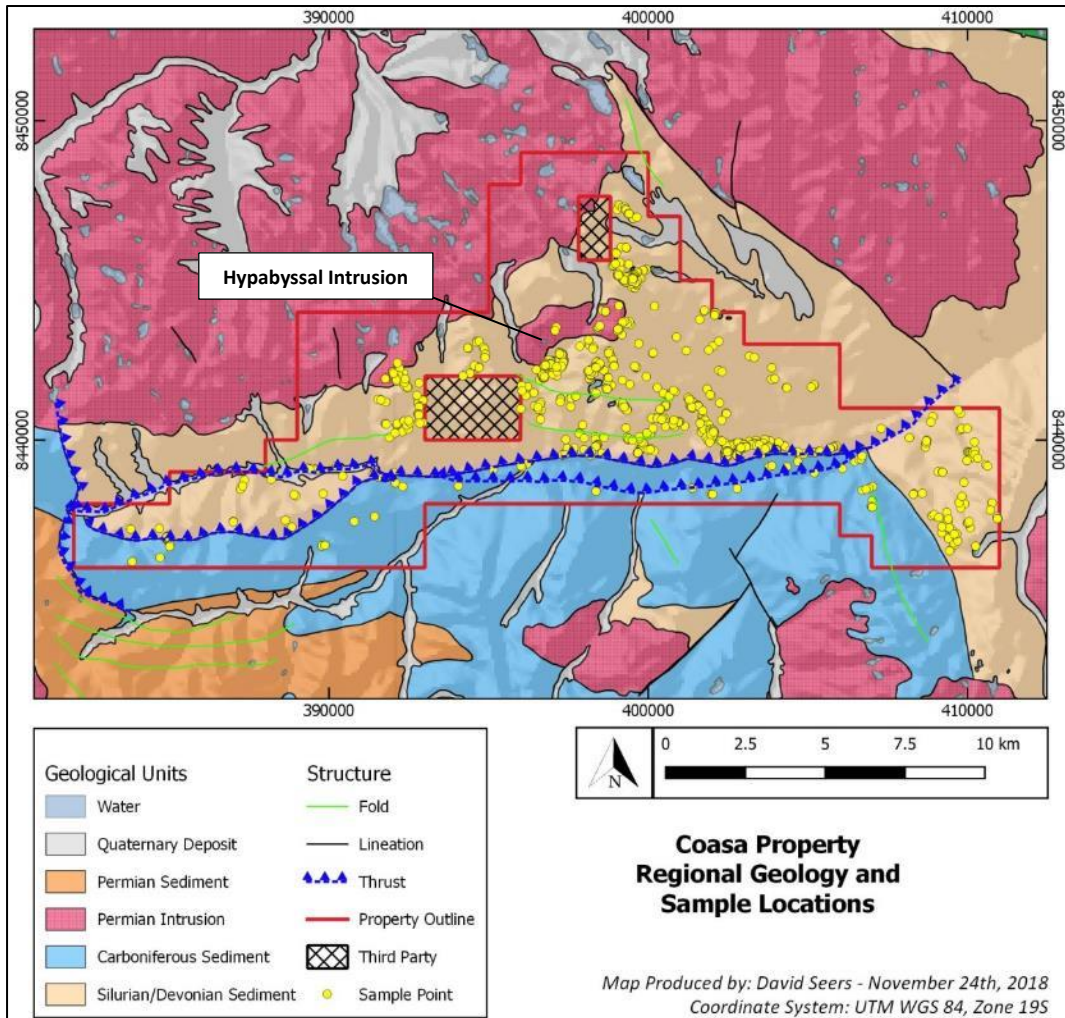


Figure 9-2: Distribution of samples relative to regional geology

Mr Seers (QP) plotted the locations of all Palamina samples and used probability graphs to determine populations of increasingly anomalous samples for gold and arsenic assays (Figures 9.3 and 9.4).

Gold and arsenic anomalism is concentrated in the Veta prospect at the southern margin of a hypabyssal intrusion considered younger than the large Permian pluton to the north. Anomalism extends over a 1.6 km northeast trend and remains open, within the Palamina concession block, to the northeast (Figure 9.5 and 9.4); further sampling is required to determine if this anomalism extends further to the northeast.

The Phusca prospect is moderately anomalous in arsenic.

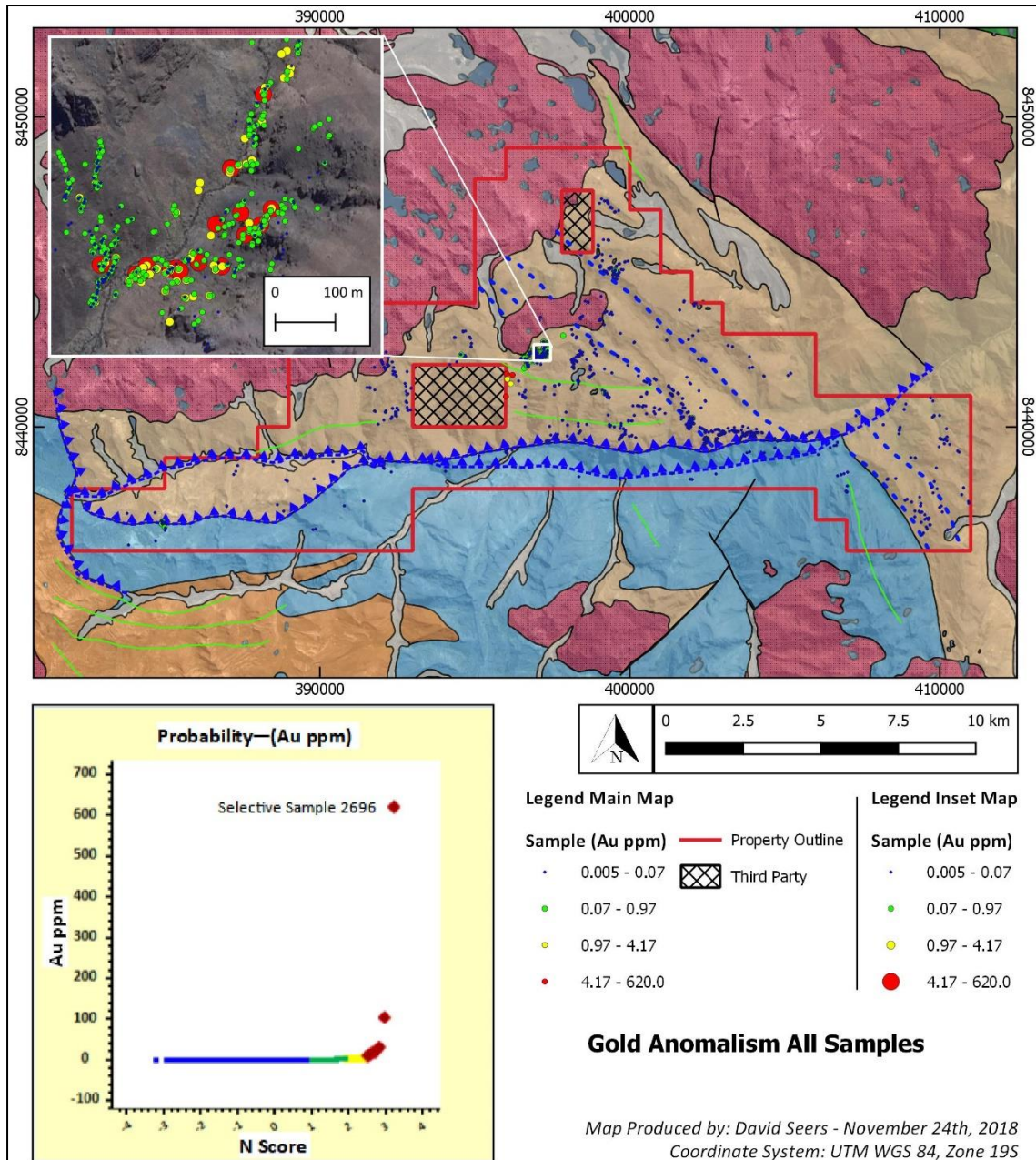


Figure 9-3: Gold anomalism (all samples) – Au anomalism at the Veta Prospect is shown in detail in Figure 9-5.

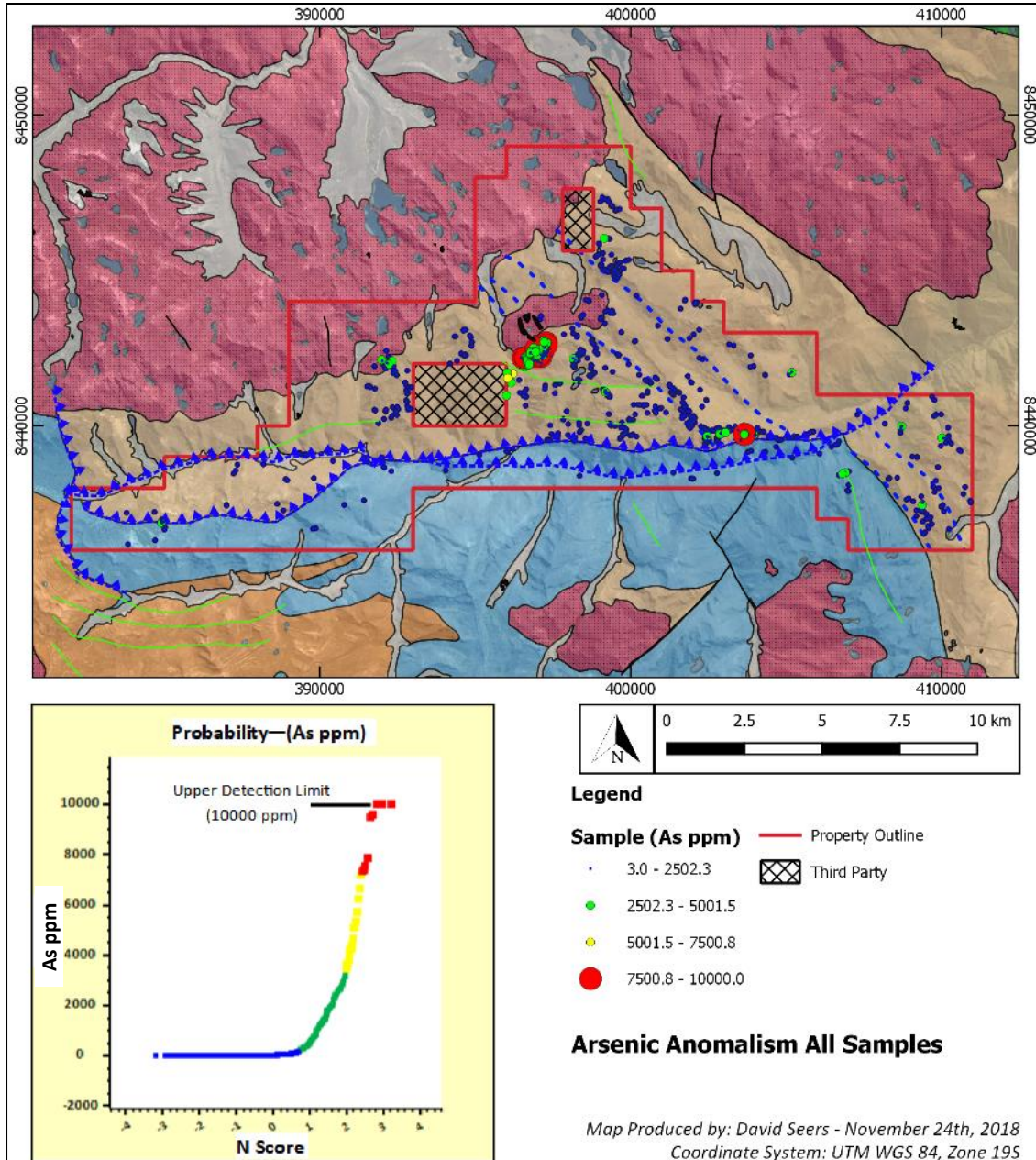


Figure 9-4: Arsenic anomalism

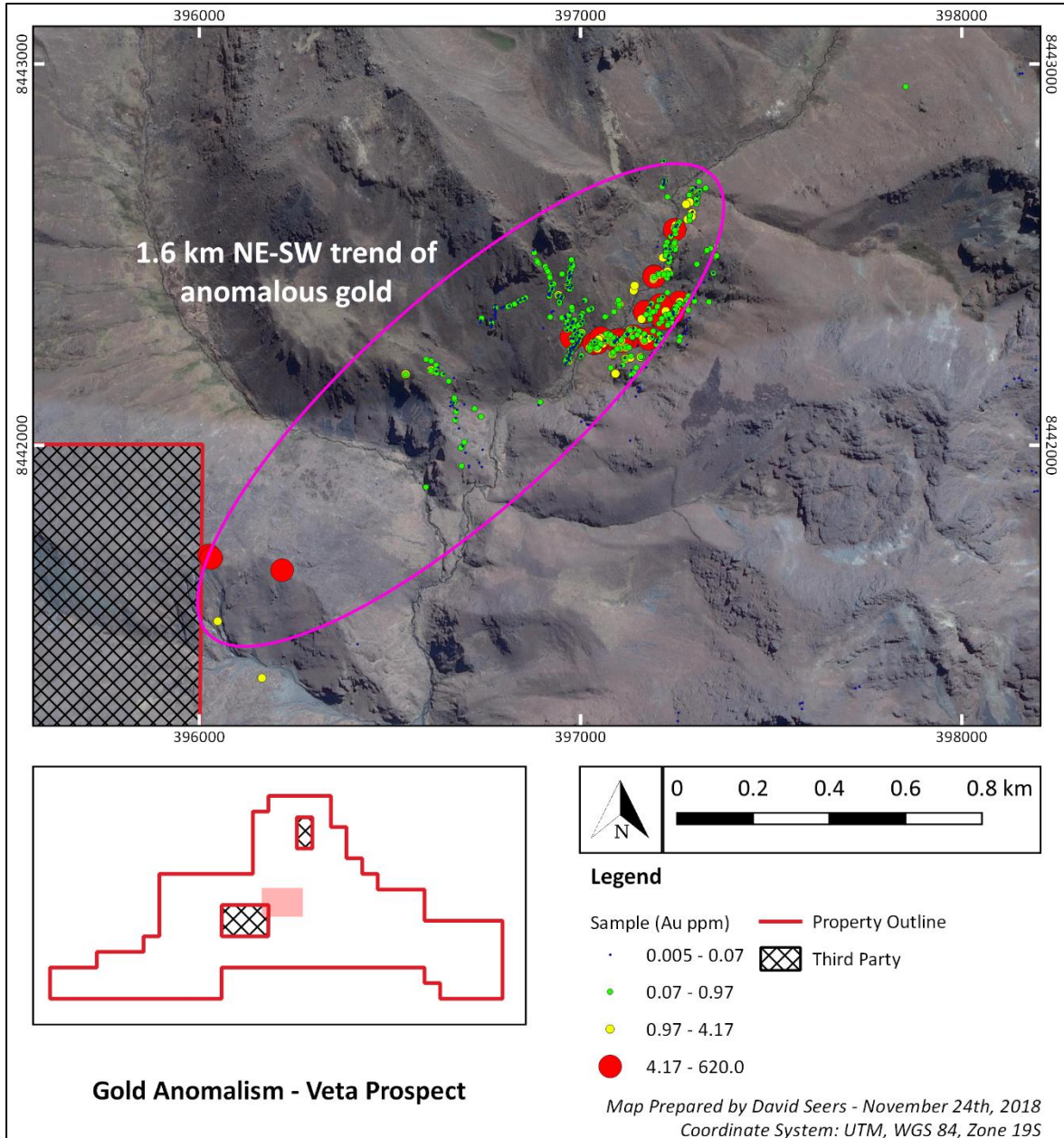


Figure 9-5: Gold anomalism Veta Prospect

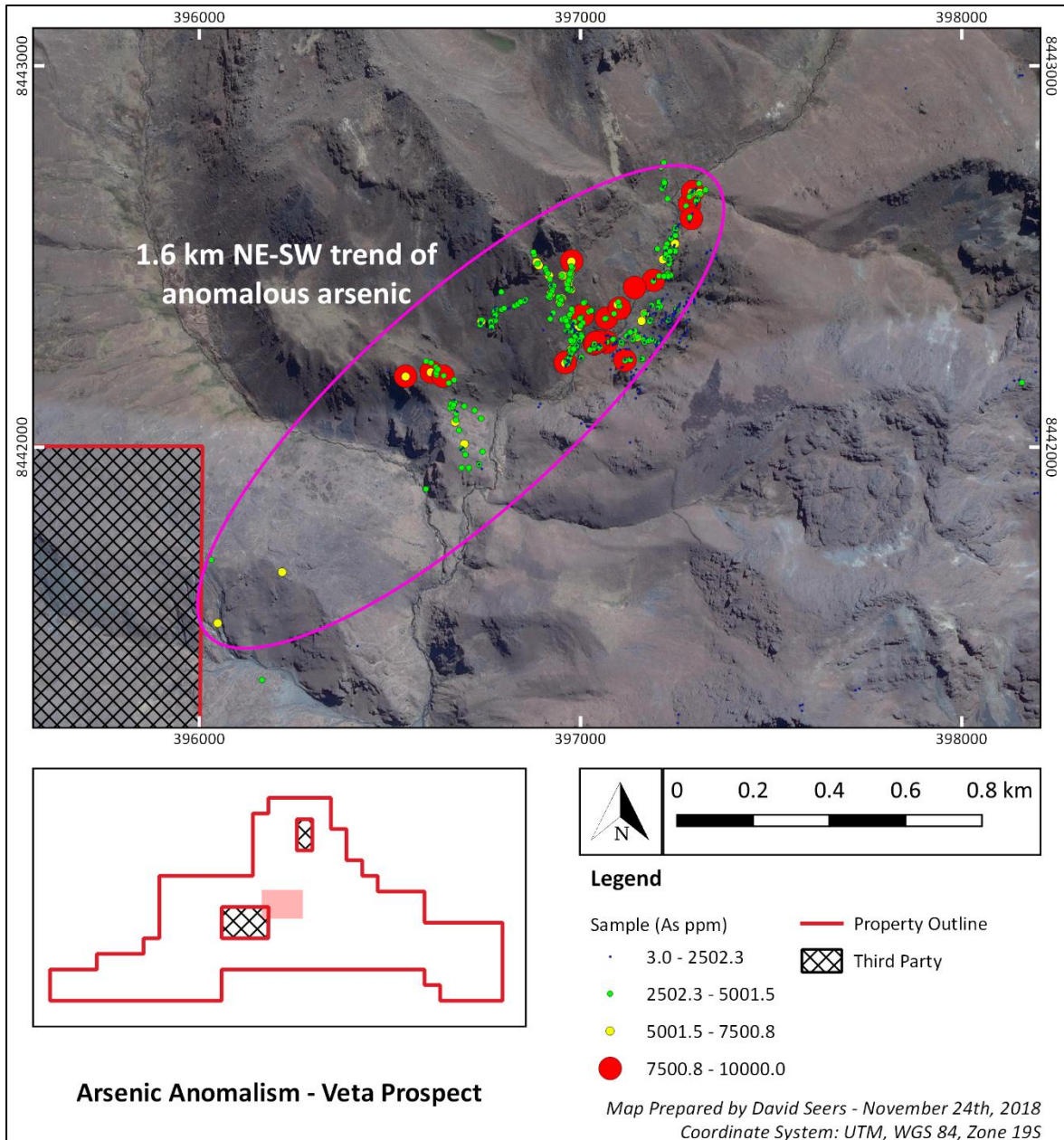


Figure 9-6: Arsenic anomalism Veta Prospect

Mr Seers (QP) considers that the exploration methodology used by Palamina is suitable for identifying areas with anomalous concentrations of gold, arsenic and other elements.

### Gold Anomalism at the Veta Prospect

A zone of persistent Au anomalism (AOI), extending northeast for approximately 800 m and northwest approximately 500 m, is defined at Veta (Figure 9-7). 614 samples of varying type (selective and representative) have been taken in the AOI, 398 of these samples (approximately 65%) assayed over 0.1 ppm Au and 81 of these samples (approximately 13%) assayed over 1 ppm (Figure 9-8). This zone of anomalous Au grade remains open and under

tested to the northeast and southwest. Much of this projection is obscured by vegetation and quaternary cover with little outcrop (Figure 9-7).

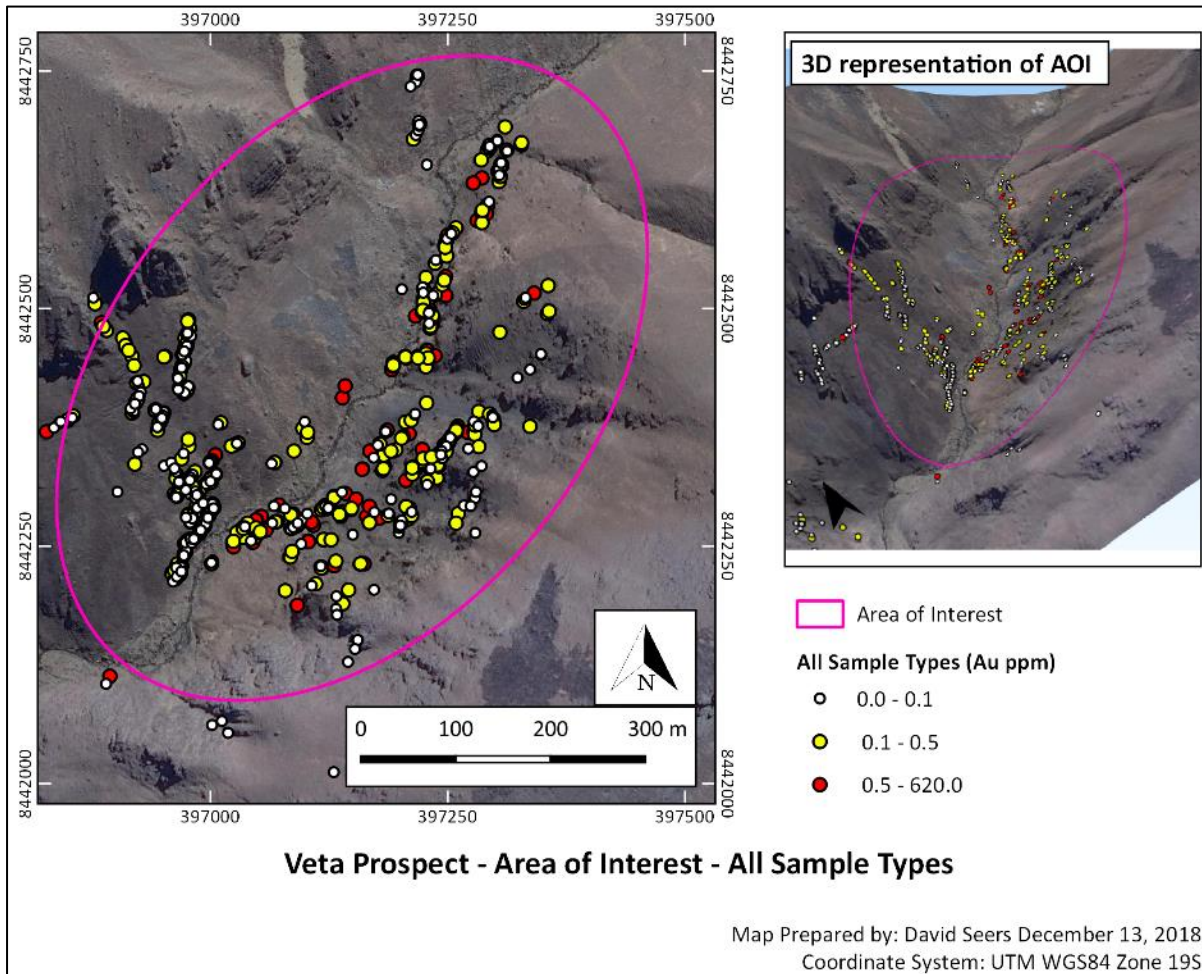


Figure 9-7: Veta Prospect - Area of Interest

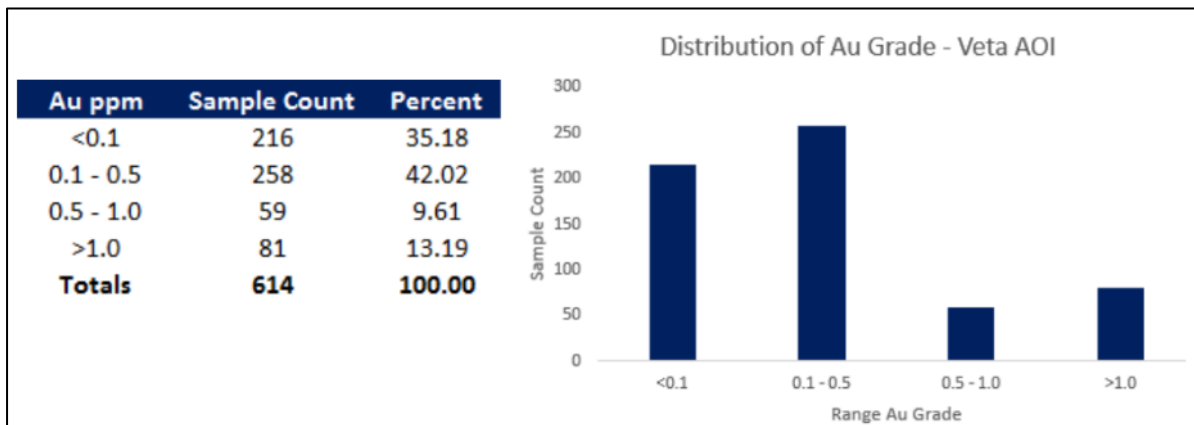


Figure 9-8: Distribution of Au grade - Veta AOI

Over 23 km of northeast striking lineation's are identified on topographic maps and satellite images, most of these structures have not yet been sampled/prospected (Figure 9-9).



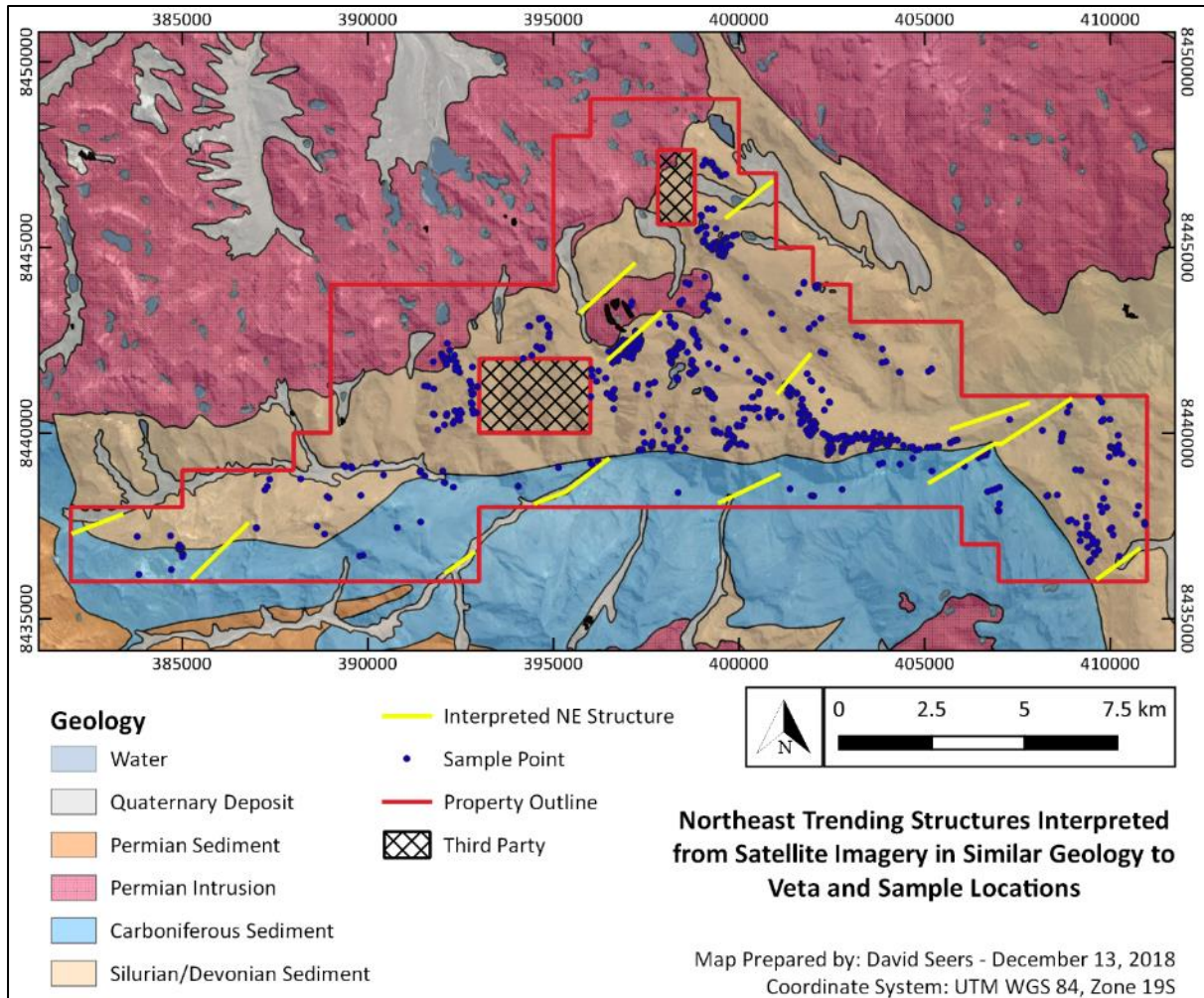


Figure 9-9: Northeast trending structures interpreted from satellite imagery shown with geology and sample locations

Palamina recently undertook a regional heliborne magnetic and radiometric survey (Palamina News 1). Survey lines were orientated NE-SW at an average elevation of 40 m above surface. Approximately 1,028 line kilometres were flown over the Coasa Property covering the main area of interest with 125 m spaced flight lines (Figure 9-10). Once processed magnetic and radiometric data is available it will improve understanding of geology and structure and will contribute towards focusing exploration at Coasa and regionally.

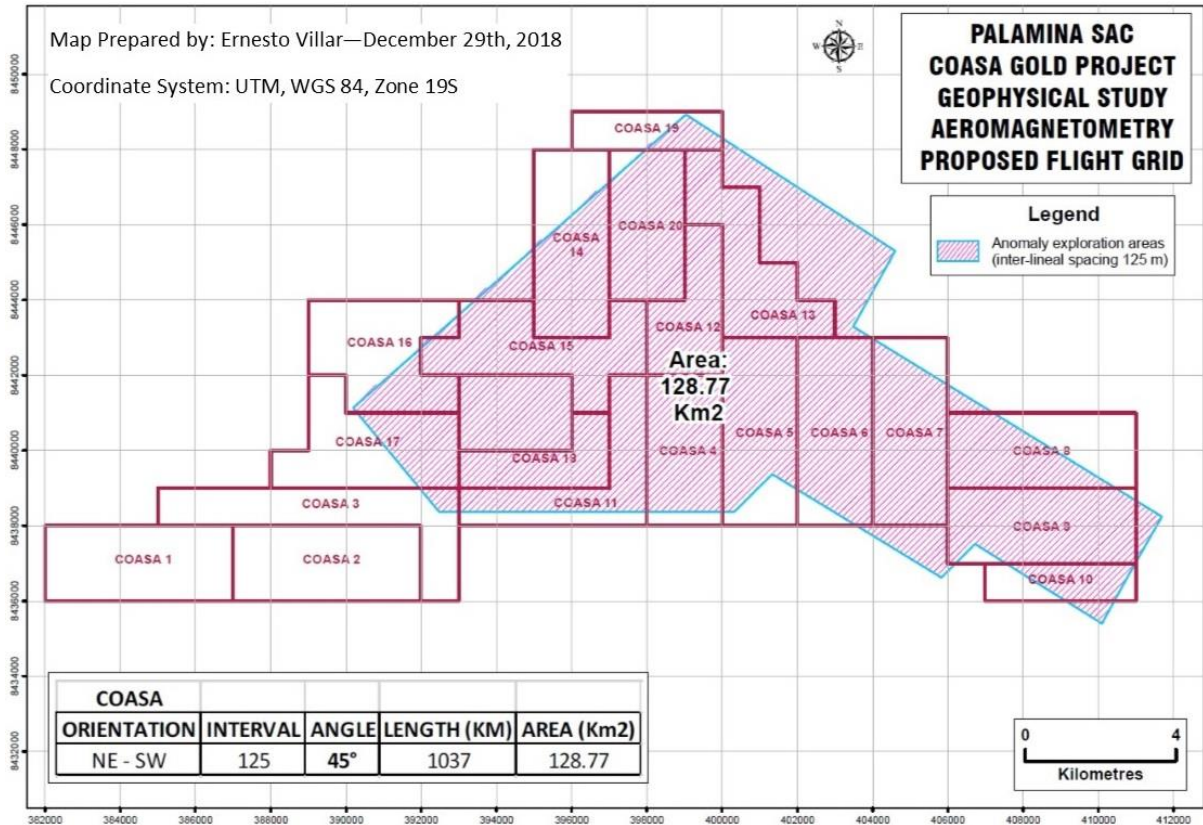


Figure 9-10: Coasa Property - Heliborne Survey Flight Line Coverage

## 10 DRILLING

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Palamina have not undertaken any drilling at the Property.

Mr Seers (QP) is not aware of any historic drilling undertaken at the Property and he did not witness any evidence of drilling during his site visit.

## 11 SAMPLE PREPARATION, ANALYSES AND SECURITY

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### Sampling Procedures

In addition to discussing sampling methodology with Palamina’s Geologists, Mr Seers (QP) reviewed Standard Operating Procedures (SOP’s) detailing a systematic methodology for various sample types. Mr Seers notes the following:

- The standardised sampling methodologies detailed in Palamina’s SOP’s are suitable for purpose
- Senior Palamina field personnel, who supervise sample collection, are familiar with the instructions contained in the SOP’s
- Palamina routinely inserts Quality Control (QC) samples, including, blanks standards and duplicates with field samples at a rate of approximately 1 in 6 (16%)
- Palamina routinely review the performance of QC sample
- Palamina take channel samples using chisel and hammer or circular saw. Mr Seers suggests that samples taken by circular saw are more reliable than samples taken by chisel and hammer.

Mr Seers (QP) considers that the SOP is aligned to industry best practice and is suitable for the current stage of exploration (i.e. defining areas of anomalism), he summarises the pertinent points here:

Source Document: *Palamina<sup>1</sup>, 2018 - METODOLOGIA DE RECOLECCION DE MUESTRAS*

### Grab Samples

- Equipment
  1. GPS, notebook, sample ticket book, plastic sample bags, zip ties, lump hammer, chisel, compass, hand lens, mineral scratcher.
- Methodology
  1. Use hammer and chisel to break free select pieces of rock “the sample” for analysis
  2. Review the sample using hand lens and scratcher
  3. The lead geologist records observations in notebook and sample ticket book, including; GPS location, rock type and observed mineralisation
  4. Place pieces of rock in plastic bag along with serialised sample ticket and seal using zip tie
  5. Samples are kept under the custody of Palamina staff until submission to the assaying laboratory

- Analysis
 

Palamina submit all samples for analysis by Certimin, samples are prepared in Certimin's Juliaca preparation facility and analysed in Lima. Certimin is ISO 9001 certified and is wholly independent of Palamina

  1. Certimin prepares a 50 g charge for fire assay analysis for gold; this analysis method has lower detectable limits of 0.005 ppm Au and upper detectable limits of 10 ppm Au.
  2. Certimin prepares a 1 g fraction for ICP-MS analysis for a suite of 35 elements with varying lower and upper detection limits.

### **Channel Samples (Chip-channel and Sawn-channel)**

- Equipment – the same equipment used for grab samples with the addition of; paint and brush, circular saw, tape measure
- Methodology
  1. Hammer and chisel is used make a clean surface from which the channel sample will be taken, the cleaned surface is greater than the area sampled
  2. Chip-channel samples are taken using hammer and chisel to create the most continuous channel possible across the sample interval. Channel samples are taken using a handheld circular saw, parallel lines are cut and a hammer and chisel are used to free rock from the channel. As rock is freed it is collected in plastic bags
  3. Review the sample using hand lens and scratcher
  4. The lead geologist records observations in notebook and sample ticket book, including; GPS location, rock type and observed mineralisation
  5. Place pieces of rock in plastic bag along with serialised sample ticket and seal using zip tie
  6. Samples are kept under the custody of Palamina staff until submission by Palamina to an ISO certified laboratory
  7. The sample interval and number are painted on to the rock face so the sample can be located at a later date
- Analysis – Channel samples are submitted for the same analysis as grab samples

### **Quality Control (QC)**

Palamina routinely includes quality control samples with samples submitted for analysis, these samples include; certified blanks, certified reference materials (CRM's/Standards) and duplicates. Approximately 1 in 6 samples (16%) submitted for analysis is a QC addition, Mr

Seers believes that this rate of QC additions surpasses typical industry practices for Properties at a similar level of exploration.

Mr Seers (QP) reviewed a document produced by Palamina (Palamina<sup>2</sup>, 2018) detailing QC performance that considered analysis of 1260 samples from within the Property and beyond, key points are summarised here:

- 48 blank samples were submitted for analysis, 47 of these analysed below detectable limits for Au (<0.005 ppm). The samples that assayed above detectable (1322), assayed 0.053 ppm Au
- 7 different CRM's were submitted for analysis, a total of 44 CRM's were analysed. These CRM's analysed within certified ranges and are considered acceptable. Sample populations are too small (maximum 10 per CRM) to determine independent ranges
- 48 field duplicates were submitted for analysis, the original assay for half of these samples was at or below the lower detectable limit for Au (0.005 ppm). Comparison of gold grades for other half of the field duplicates demonstrates some differences of around 45% (47.68 versus 69.66 ppm Au).

Mr Seers (QP) considers that the sample techniques, analytical methods and sample security employed by Palamina at the Property are appropriate for the stage of exploration. Mr Seers recommends that sawn channel samples be taken in preference to chip channel samples.

The high variability of Au grade in duplicate samples might reflect nuggety gold as might be expected with localised visible gold in the field. However, this variability might also reflect poor sample preparation in the field and or at the laboratory. Mr Seers recommends sending the pulps of original and duplicate samples to an umpire laboratory and the possible introduction of screen fire assay for high-grade samples (i.e. >30 ppm) Au.

## 12 DATA VERIFICATION

Mr Seers undertook a personal inspection of the Property between August 8<sup>th</sup> and 13<sup>th</sup>, 2018. Whilst at the Property, Mr Seers (QP) reviewed four prospects (Veta, Phusca, Vetascunca and Julia) and took 19 independent samples (Table 12.1). Mr Seers targeted his sampling at areas he deemed to be of merit including areas where Palamina generated positive results (i.e. significant gold grade).

Mr Seers personally delivered his samples to the Certimin preparation laboratory in Juliaca. Once prepared the laboratory sent the samples for ICP (35 elements) and fire-assay analysis at its Lima laboratory. Two samples assayed over 10 ppm Au and a further sample assayed over 10,000 ppm As, these samples were re-analysed to determine Au and As grade (Appendix - Annex 1). The location of the independent samples, shown in relation to prospect areas and Au grade is plotted in Figure 12.1.

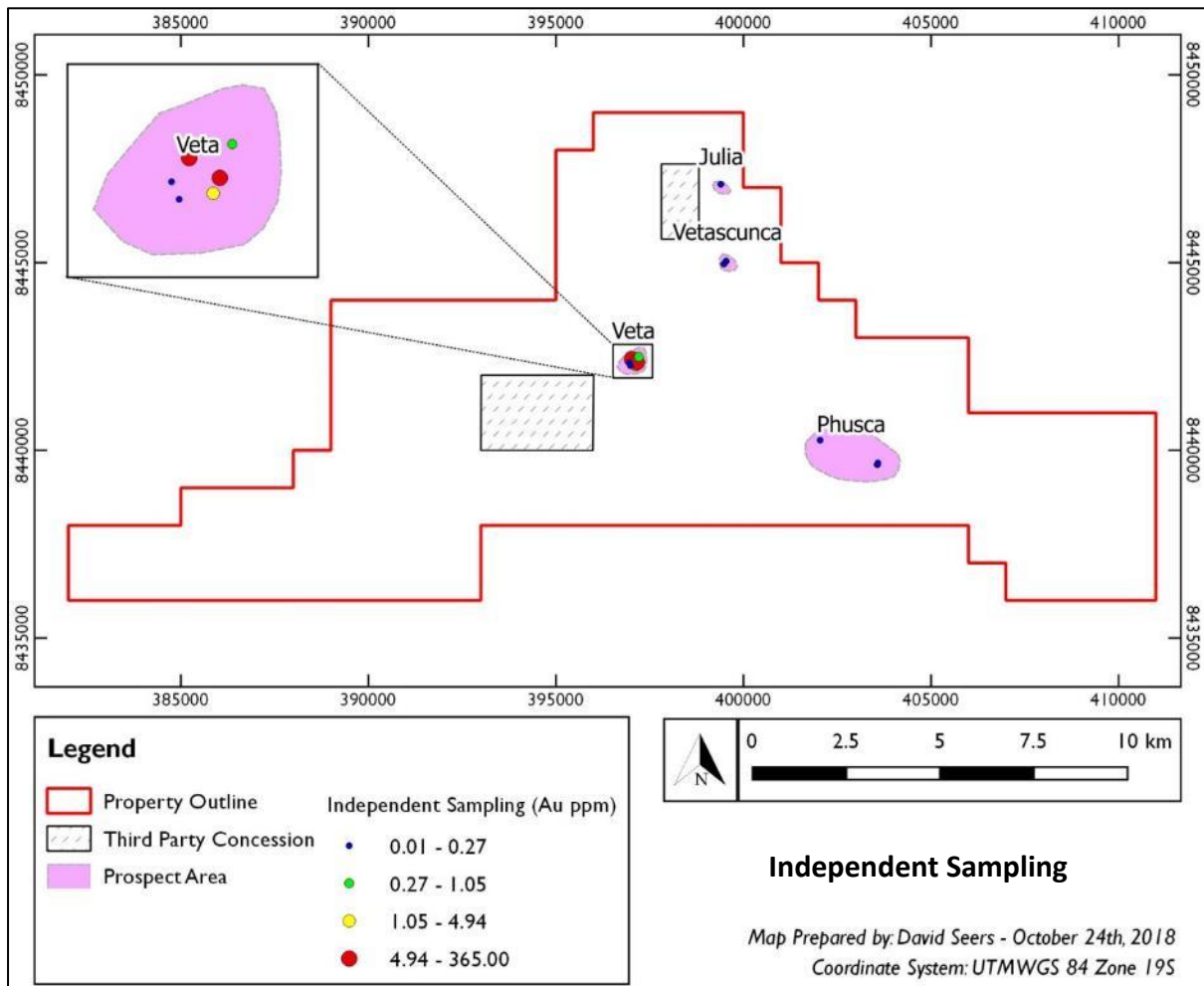


Figure 12-1: Independent Sample Locations and Au grade

Based on his inspection of the Property, Mr Seers makes the following comments:

- Regional mapping published by INGEMMET and mapping by Palamina broadly reflect that seen by Mr Seers on the ground
- Visible gold occurs at the Veta prospect in irregular and discontinuous brecciated quartz veins formed in northeast trending strike-slip faults
- Irregular quartz veins hosted in northeast trending strike-slip faults were sampled by Palamina and independently by Mr Seers and generated significant Au anomalism at the Veta prospect
- Analysis of independent samples taken by Mr Seers confirms that the Coasa Property hosts gold mineralisation in quartz veins related to northeast strike-slip faulting and zones of northwest shearing. The laboratory certificate associated with Mr Seers' independent sampling is given in Annex 1
- Channel samples taken by Palamina are clearly marked with paint in the field
- Au and As anomalism is concentrated in quartz veining hosted in siliclastic sediments
- Further investigation is required before the continuity of mineralisation and its economic significance can be determined.

Table 12-1: Independent Sampling (Certificate AGO0211.R18)

Sample Number	Easting	Northing	Prospect	Description	Au ppm	As ppm
5301	399398	8447087	Julia	Quartz vein at margin of dyke	<b>BD</b>	<b>BD</b>
5302	402045	8440268	Phusca	Iron oxide stained shale with quartz veining	0.008	76
5303	402911	8439739	Phusca	Arsenic and Iron oxides in shale in zone of vertical foliation	0.036	11100
5304	403571	8439620	Phusca	Composite channel 1 of 3 (1m) fault FW shale strong iron oxide	<b>BD</b>	23
5305	403571	8439620	Phusca	Composite channel 2 of 3 (0.5m) fault zone shale strong iron oxide	<b>BD</b>	37
5306	403571	8439620	Phusca	Composite channel 3 of 3 (1m) fault HW shale strong iron oxide	<b>BD</b>	39
5307	403584	8439662	Phusca	8m wide shear zone. Ribbon quartz vein with >> carbonate. Disseminated pyrite and arsenopyrite	0.031	66
5308	399479	8444963	Vetascunca	Coarse-grained white quartz vein with micaceous and iron oxide margins. Box-work after pyrite	<b>BD</b>	17



Sample Number	Easting	Northing	Prospect	Description	Au ppm	As ppm
5309	399539	8445033	Vetascunca	Crackle-brecciated quartz vein - Close to transfer fault in quartz vein - strong superficial iron oxide	0.057	32
5310	399539	8445034	Vetascunca	15 cm ribbon quartz vein with moderate iron oxide, trace pyrite	0.023	44
5311	399539	8445042	Vetascunca	10 cm ribbon quartz vein with weak iron oxide	0.023	21
5312	397031	8442428	Veta	Irregular quartz vein in weakly graphitic shale - VISIBLE GOLD - weak iron oxide	365	1495
5313	397132	8442280	Veta	Pseudo channel across 5 (approx. 3cm wide) quartz veins and host siltstone	1.09	280
5314	397160	8442345	Veta	Brecciated quartz carbonate fill in fault plane (N040) - VISIBLE GOLD	196	4566
5315	397212	8442487	Veta	Weakly silicified siltstone	0.317	274
5316	396989	844225	Veta	Gossanous material from N040/60SE sinistral fault. Iron and arsenic oxides	0.867	4383
5317	396989	8442255	Veta	Various sub-parallel veins in N340 orientated shear	0.109	2020
5318	396989	8442255	Veta	Graphitic and pyritic shales and lesser silt in N340 shear zone	0.021	357
5319	396957	8442329	Veta	Strong iron oxides in N150/40W orientated fault zone up to 10 cm wide	0.045	3553

**BD** = Below Detectable limits

Mr Seers (QP) is satisfied that the data used in this report reasonably reflects what is known as of the effective date of this report.

## **13 MINERAL PROCESSING AND METALLURGICAL TESTING**

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No mineral processing or metallurgical testing has been carried out for the Property.

## **14 MINERAL RESOURCE ESTIMATES**

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Exploration at the Property is insufficient to support the estimation of a mineral resource in accordance with NI 43-101.

## **15 MINERAL RESERVE ESTIMATES**

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This is not an advanced study and this section is not part of this report.

## **16 MINING METHODS**

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This is not an advanced study and this section is not part of this report.

## **17 RECOVERY METHODS**

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This is not an advanced study and this section is not part of this report.

## **18 PROJECT INFRASTRUCTURE**

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This is not an advanced study and this section is not part of this report.

## **19 MARKET STUDIES AND CONTRACTS**

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This is not an advanced study and this section is not part of this report.

## **20 ENVIRONMENTAL STUDIES, PERMITTING AND SOCIAL OR COMMUNITY IMPACT**

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This is not an advanced study and this section is not part of this report.

Mr Seers (QP) highlights that prior to more advanced exploration such as trenching or drilling it is incumbent upon Palamina to gain approval from the authorities.

Palamina invited three local social and environmental consulting companies to submit proposals during June 2018 for the elaboration of all environmental permits as required to facilitate the beginning of more advanced exploration activities (i.e. drilling) on the Coasa Gold Project (Veta and Phusca Anomalies). Since August 2018, a Declaracion de Impacto Ambiental (DIA) permitting procedure supervised by Greenprint Consultants E.I.R.L. has been in progress. Palamina expects to have all permits as required to facilitate exploration drilling in place by Q219.

## **21 CAPITAL AND OPERATING COSTS**

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This is not an advanced study and this section is not part of this report.

## **22 ECONOMIC ANALYSIS**

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This is not an advanced study and this section is not part of this report.

## 23 ADJACENT PROPERTIES

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Artisanal miners are known to operate in the immediate vicinity of the Property including within the third party concession surrounded by the Palamina Concessions. Mr Seers (QP) is not aware of any publicly available information relating to the artisanal mines.

The Crucero Orogenic gold deposit, owned by GoldMining (TSX:Gold), lies approximately 3 km south of the southeast corner of Property (Figure 23-1). On January 16<sup>th</sup>, 2018, GoldMining released an NI43-101 gold resource for Crucero reporting 1.0 Moz Au Indicated Mineral Resource and 1.03 Moz Au Inferred Mineral Resource, further details of this resource can be accessed via:

<http://www.goldmining.com> or by searching <https://sedar.com/>

Mr Seers has not been able to independently verify the information reported by GoldMining in the January 16<sup>th</sup>, 2018, NI43-101 Technical Report.

Mr Seers highlights that mineralisation reported at Crucero is not necessarily indicative of mineralisation on the Property.

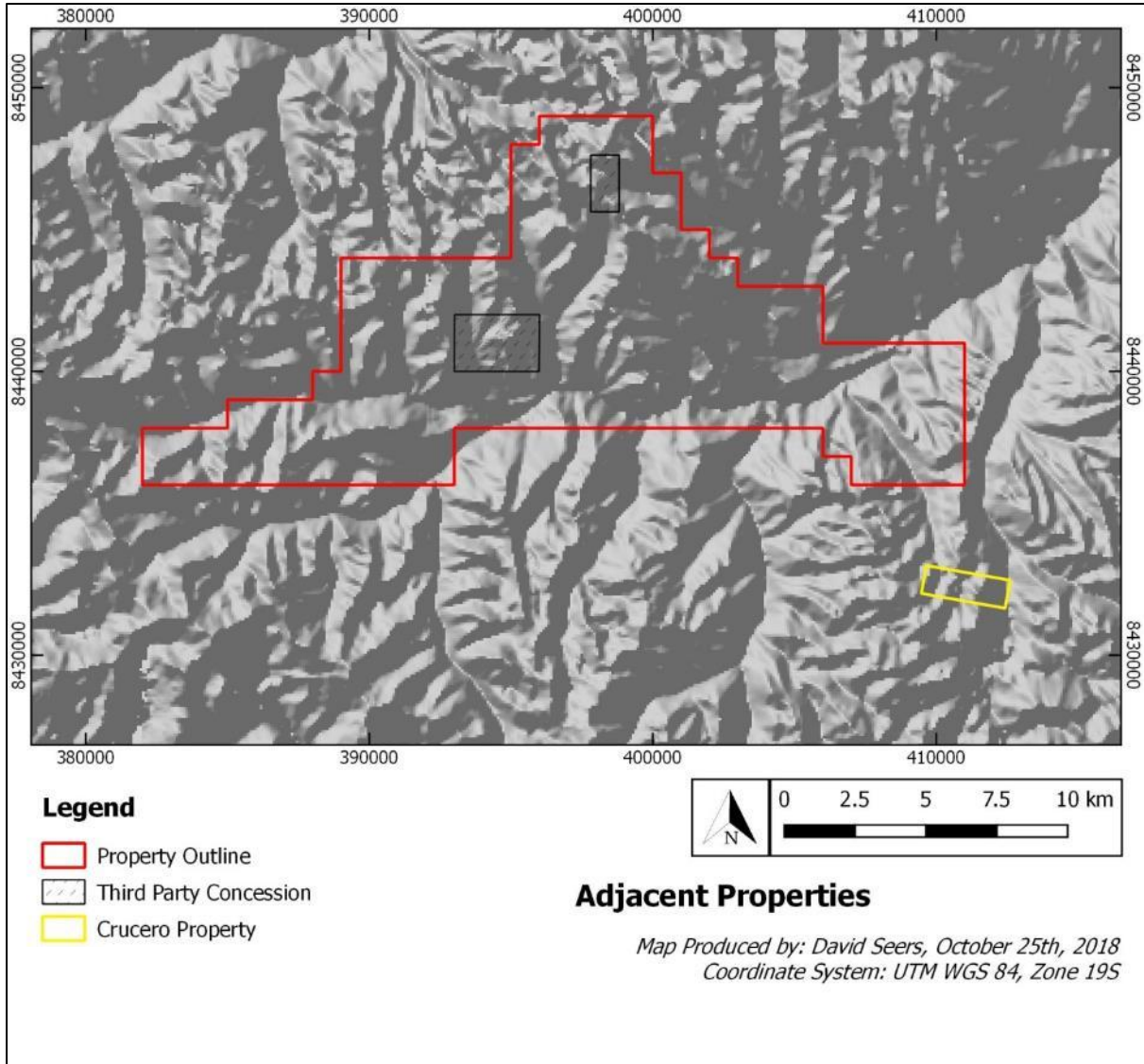


Figure 23-1: Adjacent Properties

## 24 OTHER RELEVANT DATA AND INFORMATION

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Mr Seers (QP) believes all information relevant to the accurate understanding of the Property is included within this Technical Report.

## 25 INTERPRETATION AND CONCLUSIONS

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Mr Seers (QP) makes the following interpretations and conclusions:

- Coasa is a greenfield property with a short exploration history and is underexplored - 40% of the Property has not yet been explored.
- 9 prospects in the Property are identified with varied styles of quartz veining and associated gold and arsenic anomalism hosted in a package of sheared fine-grained siliclastic sediments
- The Property exhibits several characteristics typical of the orogenic class of deposit and, as such, is considered prospective for orogenic gold:
  - Packages of regionally metamorphosed siliclastic rocks
  - Compressional setting with various recognised orogenic events and shearing
  - Quartz veining with minor carbonate including localised ribbon veins
  - Geochemical signature of gold with arsenic
  - Visible gold in quartz veining
- Structure is an important mineralising control but is not fully understood, however: Northeast trending strike-slip faults and northwest shears are associated with anomalous Au and As. Visible gold is related to northeast strike-slip faults
- Gold and arsenic anomalism is focused at the Veta prospect, this anomalism is spatially related to a hypabyssal intrusion, northwest shearing and northeast strike-slip faulting. It has not yet been determined if any one of these features or a combination of multiple features are related to or control mineralisation
- A northeast trending zone of Au anomalism (>0.1 ppm), measuring approximately 800 m x 500 m, is recognised at the Veta prospect. Anomalism is spatially related to a northeast trending valley and remains under-tested and open to the northeast and southwest. Approximately 65% of the 614 samples taken in this zone assayed greater than 0.1 ppm Au and more than 13% of these samples assayed over 1 ppm Au and up to 620 ppm.
- Other northeast trending structures in similar geology are clearly visible via topographic data and satellite imagery. These trends are considered by Mr Seers to be prospective for mineralisation similar to that identified at Veta.
- It is not yet established if increased sulphide content in fine-grained carbon-rich sediments is related to syngeneic processes or a mineralising event.

## 26 RECOMMENDATIONS

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Mr Seers (QP) considers that the Coasa Property is prospective for orogenic style gold mineralisation and makes the following recommendations:

- Negotiate right of access with all pertinent parties
- Arrange to visit artisanal mines in the area to determine what is being mined, the geological setting and structural controls
- As far as practically possible, use a circular saw in place of hammer and chisel to take channel samples.

Concerning subsequent phases of exploration, Mr Seers (QP) recommends the following:

- Undertake a structural interpretation of the Property. Understanding the structural controls on mineralisation will improve exploration targeting
- Geophysics would be useful for tracing structure undercover (i.e. vegetation and quaternary deposits)
- Projected northeast and southwest extensions of Veta should be mapped and sampled, this might require trenching
- Northeast trending structures, interpreted from satellite imagery, traversing geology similar to Veta, are considered by Mr Seers to be prospective and should be explored as a matter of priority.

In combination with continued prospecting, two phases of systematic exploration are recommended; these phases can be undertaken simultaneously and are not dependent on one another:

1. Gold and arsenic anomalism at the Veta Prospect remains open; systematic (gridded) rock sampling should be used to determine the extensions of anomalism, in areas of limited exposure soil sampling might be more appropriate

Estimated Costs Assuming:

50 x 50 m grid covering 2 km<sup>2</sup> (1681 Samples)

Assay cost/sample \$30 (ICP and FA)

Days sampling 16 (Two crews - 50 samples per crew per day)

Logistical cost per day (wages, transport, food etc...) Est. \$800/day

**\$63,500**

2. Arsenic anomalism at Phusca is spatially related to north-northwest trending structures. These structures are lost along their projection to the north-northwest (towards Veta) under cover; wide-spaced soil sample lines with close spaced samples should be considered to see if As anomalism can be traced to the north-northwest.



Estimated Costs Assuming:

20 m sample spacing - 250 m spaced lines – 9 x 1 km long sample lines (459 samples)

Assay cost/sample \$30 (ICP and FA)

Days sampling 8 (Two crews - 30 samples per crew per day)

Logistical cost per day (wages, transport, food etc...)

**\$20,200**

Once systematic exploration is concluded, results should be incorporated in to the Property data set and potential further exploration should be considered.

Dependent on positive results, further exploration should be considered, including;

- Geophysics - to aid structural interpretation
- Trenching - to define near surface extensions of mineralisation and,
- Exploratory diamond drilling to test the down-depth continuity of mineralisation, given the possibility of nuggety gold in the orogenic environment wider gauge core, not less than HQ size, is recommended. Currently, the Veta prospect is the best candidate for a 3000 to 5000 m exploratory drill program.

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## APPENDIX

### Annex 1 – Assay Certificate Results for Mr Seers Independent Sampling

RESULTADOS		Elementos															
Muestras																	
Nº	Codigo de Servicio Elemento Unidad Límite Inferior Límite Superior	G0207 Weight+ kg	G0107 Au ppm 0.005 10	G0014 Au ppm 2.00 1000	G0146 Ag ppm 0.2 100	G0146 Al* % 0.01 15	G0146 As* ppm 3 10000	G0342 As* % 0.01 30	G0146 Ba* ppm 1 10000	G0146 Ba* ppm 5 10000	G0146 Be* ppm 1 10000	G0146 Bi* ppm 5 10000	G0146 Ca* % 0.01 15	G0146 Cd* ppm 1 10000	G0146 Co* ppm 1 10000	G0146 Cr* ppm 1 10000	
1	005301	1.60	<0.005	--	<0.2	1.03	<3	--	7	<0.5	<5	0.04	<1	11	283		
2	005302	0.95	0.008	--	<0.2	4.22	76	--	19	<0.5	<5	0.03	<1	18	109		
3	005303	1.20	0.036	--	<0.2	2.03	>10000	1.11	7	<0.5	<5	0.11	<1	12	135		
4	005304	1.68	<0.005	--	<0.2	2.58	23	--	36	<0.5	<5	0.07	<1	9	53		
5	005305	1.00	<0.005	--	<0.2	2.91	37	--	50	0.6	<5	0.07	<1	11	45		
6	005306	1.72	<0.005	--	<0.2	2.46	39	--	30	<0.5	<5	0.38	<1	12	52		
7	005307	1.12	0.031	--	0.3	0.95	66	--	12	<0.5	<5	0.06	<1	25	255		
8	005308	1.21	<0.005	--	<0.2	0.20	17	--	3	<0.5	<5	0.05	<1	1	179		
9	005309	1.08	0.057	--	<0.2	0.14	32	--	2	<0.5	<5	0.02	<1	<1	209		
10	005310	1.12	0.023	--	<0.2	0.21	44	--	3	<0.5	<5	0.02	<1	1	241		
11	005311	1.14	0.023	--	<0.2	0.12	21	--	2	<0.5	7	0.02	<1	<1	205		
12	005312	1.42	>10	365	44.9	2.05	1495	--	47	0.5	21	0.07	<1	6	155		
13	005313	1.94	1.090	--	<0.2	1.97	280	--	54	0.5	<5	0.07	<1	12	90		
14	005314	1.95	>10	196	11.0	0.78	4566	--	34	<0.5	45	0.04	<1	3	169		
15	005315	1.27	0.317	--	<0.2	3.56	274	--	107	2.0	<5	0.11	<1	21	102		
16	005316	1.09	0.867	--	0.5	0.74	4383	--	<1	<0.5	13	0.02	<1	2	7		
17	005317	1.00	0.109	--	<0.2	0.30	2020	--	12	<0.5	<5	0.03	<1	9	176		
18	005318	1.33	0.021	--	<0.2	1.46	357	--	50	0.6	<5	0.07	<1	6	62		
19	005319	1.59	0.045	--	0.5	1.76	3553	--	25	1.1	<5	0.02	<1	19	28		

[IC-VH-33] Los elementos Al, Ba, Be, Ca, Cr, Ga, K, La, Mg, Na, S, Sc, Sn, Sr, Ti, W, Zr la digestión podría ser incompleta  
(\*) Los métodos indicados no han sido acreditados por el INACAL-DA

Muestras		Elementos													
N°	Codigo de Servicio Elemento Unidad Límite Inferior Límite Superior	G0146 Cu ppm 0.5 10000	G0146 Fe* & 0.01 15	G0146 Ga* ppm 10 10000	G0146 K* & 0.01 15	G0146 La* ppm 0.5 10000	G0146 Mg* & 0.01 15	G0146 Mn* ppm 2 10000	G0146 Mo* ppm 1 10000	G0146 Na* & 0.01 15	G0146 Nd* ppm 1 10000	G0146 Ni* ppm 1 10000	G0146 P* & 0.01 15	G0146 Pb ppm 2 10000	G0146 S* & 0.01 10
1	005301	18.8	2.86	<10	0.06	3.8	0.23	152	<1	0.02	<1	20	0.02	29	<0.01
2	005302	53.9	10.08	<10	0.08	10.2	1.68	93	<1	0.01	<1	38	0.20	42	0.14
3	005303	48.0	6.14	16	0.07	<0.5	0.69	118	<1	<0.01	<1	22	0.06	49	2.05
4	005304	24.1	4.18	13	0.15	19.7	0.60	162	<1	0.03	<1	29	0.07	7	0.01
5	005305	31.4	4.45	10	0.13	22.9	0.70	143	<1	0.02	<1	36	0.09	12	<0.01
6	005306	59.7	3.34	<10	0.12	11.9	0.83	82	<1	0.02	<1	28	0.20	17	0.18
7	005307	297	2.21	<10	0.08	6.3	0.30	50	1	<0.01	<1	30	0.04	36	0.15
8	005308	35.0	0.97	<10	<0.01	<0.5	0.06	22	<1	<0.01	2	10	0.02	17	<0.01
9	005309	19.4	1.58	<10	<0.01	<0.5	0.01	26	<1	<0.01	<1	10	0.01	17	0.01
10	005310	86.9	2.64	<10	0.02	<0.5	<0.01	25	2	<0.01	2	9	<0.01	32	0.03
11	005311	46.2	1.11	<10	<0.01	<0.5	<0.01	21	<1	<0.01	<1	6	0.01	47	<0.01
12	005312	48.4	4.46	11	0.22	39.7	0.47	158	<1	0.04	<1	28	0.06	45	0.01
13	005313	164	4.66	10	0.25	44.4	0.35	181	1	0.02	<1	22	0.06	17	0.02
14	005314	211	2.18	<10	0.19	22.4	0.06	26	<1	0.01	2	9	0.12	125	0.12
15	005315	27.8	4.97	15	0.48	54.6	0.60	292	<1	0.05	<1	49	0.08	20	0.07
16	005316	10.5	>15	<10	<0.01	<0.5	<0.01	37	13	<0.01	<1	11	0.10	77	0.57
17	005317	27.8	1.29	<10	0.06	6.0	0.06	112	1	0.02	2	14	0.02	16	0.16
18	005318	15.9	1.91	<10	0.29	36.1	0.44	110	3	0.02	<1	11	0.04	6	0.19
19	005319	229	>15	<10	0.17	13.6	0.10	70	<1	0.01	<1	16	0.26	10	0.20

Muestras		Elementos												
N°	Codigo de Servicio Elemento Unidad Limite Inferior Limite Superior	G0146 Sb* ppm 5 10000	G0146 Sc* ppm 0.5 10000	G0146 Sn* ppm 10 10000	G0146 Sr* ppm 0.5 5000	G0146 Ti* % 0.01 15	G0146 Tl* ppm 2 10000	G0146 V* ppm 2 10000	G0146 W* ppm 10 10000	G0146 Y* ppm 0.5 10000	G0146 Zn ppm 0.5 10000	G0146 Zr* ppm 0.5 10000		
1	005301	<5	0.6	<10	6.8	<0.01	<2	10	<10	0.5	46.8	<0.5		
2	005302	10	4.8	<10	5.2	<0.01	<2	54	<10	3.1	128	<0.5		
3	005303	33	5.9	<10	18.1	<0.01	<2	39	<10	0.7	64.2	<0.5		
4	005304	9	2.9	<10	6.8	<0.01	<2	24	<10	7.8	54.3	0.7		
5	005305	13	3.5	<10	12.8	<0.01	<2	28	<10	6.3	60.0	<0.5		
6	005306	20	2.7	<10	6.9	<0.01	<2	26	<10	4.3	54.0	<0.5		
7	005307	69	0.8	<10	3.0	<0.01	<2	10	<10	0.9	33.5	<0.5		
8	005308	<5	<0.5	<10	1.3	<0.01	<2	2	<10	<0.5	14.6	<0.5		
9	005309	5	<0.5	<10	1.2	<0.01	<2	3	<10	<0.5	10.5	<0.5		
10	005310	<5	<0.5	<10	1.4	<0.01	<2	5	<10	<0.5	10.3	<0.5		
11	005311	6	0.7	13	0.8	<0.01	<2	4	<10	<0.5	8.2	<0.5		
12	005312	<5	2.0	<10	7.2	0.01	<2	25	<10	3.1	59.8	<0.5		
13	005313	<5	2.0	<10	6.8	0.01	<2	23	<10	3.8	44.6	<0.5		
14	005314	23	1.1	<10	5.5	<0.01	<2	11	<10	1.9	15.4	<0.5		
15	005315	5	6.4	<10	15.5	0.11	<2	66	<10	5.6	77.3	1.0		
16	005316	21	<0.5	<10	0.9	<0.01	<2	10	<10	<0.5	118	<0.5		
17	005317	11	<0.5	<10	8.3	<0.01	<2	3	<10	<0.5	66.4	<0.5		
18	005318	9	1.3	<10	9.3	<0.01	<2	12	<10	3.2	27.6	<0.5		
19	005319	25	3.1	<10	5.6	0.05	<2	64	<10	2.2	55.6	2.5		