



23 March 2016

## Breccias and Veins Key to Chanape's Potential

### HIGHLIGHTS

- Company receives reports from Mr Richard Sillitoe and ExploAndes Geological Consulting and Exploration Services
- Company's current view is that the :-
  - Hydrothermal breccias ("breccias") host majority of mineralisation at Chanape with porphyry-hosted copper (Cu) mineralisation believed absent at depths <1,000m
  - Breccias contain copper (Cu) ± gold (Au) ± silver (Ag) ± molybdenum (Mo) ± tungsten (W) with higher grades associated with breccia margins
  - Breccias and veins key to Chanape's potential
- Cu porphyry potential under review

Inca Minerals Limited ("Inca" or "Company") has received two separate and independent reports with the first being from Mr Richard Sillitoe (the "Sillitoe Report") and the second from ExploAndes Geological Consulting and Exploration Services, led by Dr. Miguel Cardozo (the "ExploAndes Report").

Mr Sillitoe logged over 6,000m of diamond drill core and has recognised that the Cu-mineralised sequences of CH-DDH001, CH-DDH011 and CH-DDH033 are hosted in breccias and/or brecciated diorite and monzodiorite porphyry (Figures 3 & 4). Consequently, the alteration pattern and metal zoning associated with these Cu-mineralised intervals are, in a similar way, associated with brecciation. A summary of findings is provided below.

#### The Nature and Style of Mineralisation at Chanape:

- The broad zones of Cu mineralisation at Chanape (220m @ 0.13% Cu in CH-DDH001; 284m @ 0.32% Cu in CH-DDH011 and 261m @ 0.19% Cu in CH-DDH033) are hosted in either distinctive tourmaline breccias or more subtly brecciated diorite/monzodiorite porphyry, and not in un-brecciated diorite/monzodiorite porphyry.
- The high grades of breccia-hosted mineralisation at Chanape, including the very strong grades contained in CH-DDH012 (55m @ 2.3% Cu, 0.6g/t Au, 42.9g/t Ag) and CH-DDH013 (68m @ 1.9% Cu, 0.9g/t Au, 42.9g/t Ag), are associated with the contacts between the breccia and the country-rock<sup>1</sup> (where open spaces are created as the country rock breaks). Mineralisation quickly decreases away from the contact in most cases.

Figure 1: **RIGHT** Arsenopyrite (grey) in a breccia clast (rock fragment) with pyrite (yellow) and chalcopyrite (deeper yellow) in the breccia matrix from the Clint Breccia (CH-DDH013). Cu and Au grades increase where "spaces" between rock fragments are volumetrically large, such as along breccia margins.



<sup>1</sup> Country rock means rock that the breccia cuts across, *ipso facto*, rock that pre-dates the breccia.



- The high grades of Cu mineralisation develop locally where chalcopyrite (a Cu mineral) occurs in significant quantities within the open spaces (matrix) of the breccia margins (CH-DDH012 & 13). Lower grades of Cu mineralisation develop where chalcopyrite occurs as disseminations (CH-DDH001, 011 & 033). However, classic porphyry Cu veinlets (A-, B-, D-, or EDM-type veinlets) are absent in drilling to date.

**The Nature and Style of Alteration Patterns at Chanape:**

- Phyllic alteration is associated with breccias and brecciation and not with the porphyry rocks.
- The majority of all other rocks at Chanape (including the volcanics and the intrusive rocks) have propylitic alteration.
- Based on the above and known alteration patterns of Cu porphyry systems, the hotter parts of the porphyry system, where Cu mineralisation usually occurs within potassic altered rocks, are deeper than current levels of drilling.

**The Nature and Style of Metal Zoning at Chanape:**

- Zinc (Zn)-Lead (Pb) metal zoning in the volcanics in several holes at the summit and in holes in the vicinity of the Clint/Pipe 8 Breccia Complex are also related to the breccias.
- The pervasive nature of arsenopyrite (an arsenic mineral) in the breccias reflects a slightly reduced mineralising environment throughout the Chanape porphyry system prohibiting normal arsenic (As) zoning (where As is concentrated at upper levels as enargite). Arsenic levels in high grade zones of mineralisation remain a consideration in future exploration.
- Cu mineralisation associated with the hotter “porphyry centres” (where classic porphyry Cu veining and potassic alteration may be expected to occur) are beyond the depths of current drilling at Chanape.

The ExploAndes Report contains detailed logging results of CH-DDH033 and uses results from this and other observations to interpret the main geological events that led to the development of the Chanape porphyry system. In doing so, ExploAndes provides an explanation as to the possible sequence or chronology of mineralising events of Chanape as follows [*comments in parentheses are drawn from the Sillitoe Report*]:

- The deposition of the volcanic rocks at Chanape, including andesites and andesitic tuffs.
- The emplacement of pre-mineral intrusions of diorite and monzodiorite. They are not porphyritic and not mineralised. Propylitic alteration is the dominant alteration type. [*Hornfels alteration – inter alia biotite - develops at this time within the volcanics in proximity to the intrusions.*]
- The emplacement of monzodiorite porphyry along faults and fractures.
- The emplacement of hydrothermal breccias related to the monzodiorite porphyry. The breccias cut across the volcanics and the pre-minerals intrusives. The main “mineralising event” is associated with these hydrothermal (largely tourmaline-bearing) breccias. [*Phyllic alteration – inter alia sericite - develops at this time within the breccias and brecciated rocks.*]
- Post-mineral phreatomagmatic breccias are emplaced after the hydrothermal breccias.

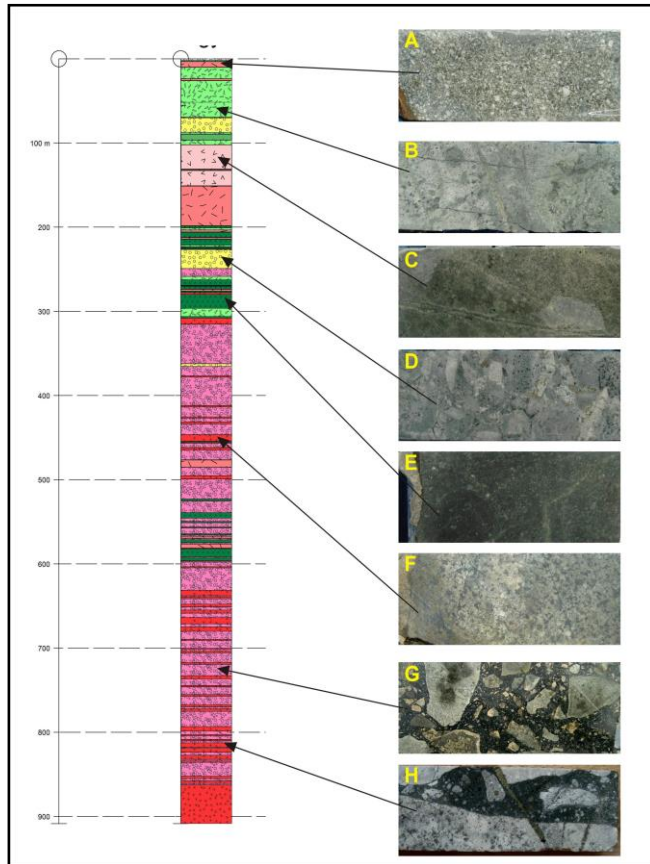


Figure 2: LEFT From Figure 1 of the ExploAndes Report: A geological column of CH-DDH033 (0-908.6m): Lithological types A) diorite B) lapilli tuff C) rhyodacitic tuff D) phreatomagmatic/ phreatic breccia E) andesite F) monzodiorite G) tourmaline breccia H) tourmaline breccia channel.

### Company Conclusions

The Sillitoe and ExploAndes Reports combine to present a clearer understanding of the porphyry system at Chanape and the exploration potential that remains. The net effect of the reclassification of *Cu-bearing porphyry sequences* as *Cu-bearing brecciated-porphyry sequences* is two-fold: 1) the lowering of the modelled position of a Cu zone of a porphyry system to depths beyond current drilling and 2): the increased role and importance of breccias and brecciation in the timing and distribution of mineralisation at Chanape.

It is therefore concluded that drilling has effectively only intersected the upper, albeit mesothermal (reasonably hot) parts of a large porphyry system. The lack of definitive potassic alteration affirms this. Deeper drilling than currently undertaken and/or deep holes from the valley floor, would be required to adequately test for classic Cu porphyry mineralisation at Chanape.

The discovery (through recognition) of additional breccias and extensions of the Cerro Ver and the Clint breccias by Mr Sillitoe, *ipso facto* means that brecciation is more widespread at Chanape than previously recognised. Based on the fact that the large 2.5km x 1km (double-bell shaped) chargeability anomaly is now believed to be associated with mineralised breccias and not, in the strictest sense, a Cu-porphyry, there is a likelihood of discovering more breccias at Chanape. ExploAndes has indeed recommended drilling to further test the chargeability anomaly at the summit.





Inca Minerals' Managing Director, Mr Ross Brown concludes "We understand, from the Sillitoe Report in particular, that brecciation is perhaps even more widespread at Chanape than initially believed; that the breccias, sometimes highly mineralised, were formed as a result of hot mineralising fluids escaping from underlying intrusive rocks; and that these intrusive rocks do not necessarily host economic levels of Cu. Nevertheless, we have discovered a large porphyry system at Chanape. This porphyry system hosts over 100 known breccia occurrences" Mr Brown adds "and whilst the hotter parts of the porphyry system are believed deeper than current drilling levels (where classic porphyry Cu may reasonably be expected to occur), the extensive at/near-surface breccia system is sufficiently mineralised to constitute a valid exploration target. Finding additional Clint Breccias or Li Veins, for example, could be worth additional drilling."

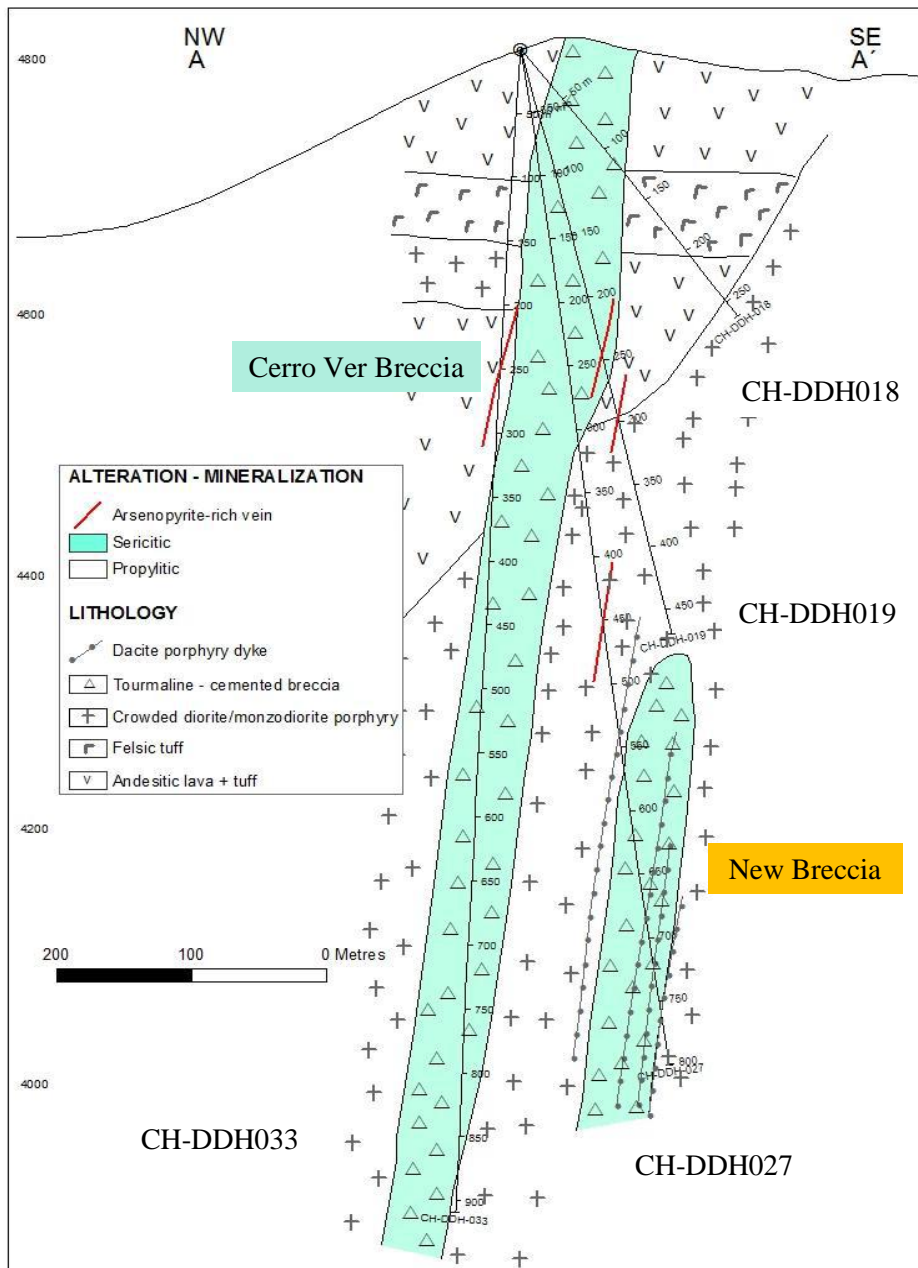


Figure 3 **LEFT**: From Figure 2 of the Sillitoe Report NW-SE geological section of Cerro Ver Breccia area, Chanape. The cross section shows the sericitic Cerro Ver Breccia (sericite is a mineral associated with phyllic alteration) extending from surface to open at depth (a vertical range of approximately 900m). Much of the monzodiorite porphyry is now recognised as being "broken" and therefore part of the breccia pipe. The surrounding volcanics and (un-brecciated) porphyry is propylitic. Also evident in this cross-section is the recognition of a new breccia pipe in drill hole CH-DDH027. The numerous arsenopyrite veins marked on the cross-section correspond mostly to the high-grade Chujcula Gold Veins. The chargeability anomaly (not shown) broadens at depth which reflects the width and body of the sulphides in both breccias at depth. NOTE: The orientation of the cross-section is presented in Appendix 1.

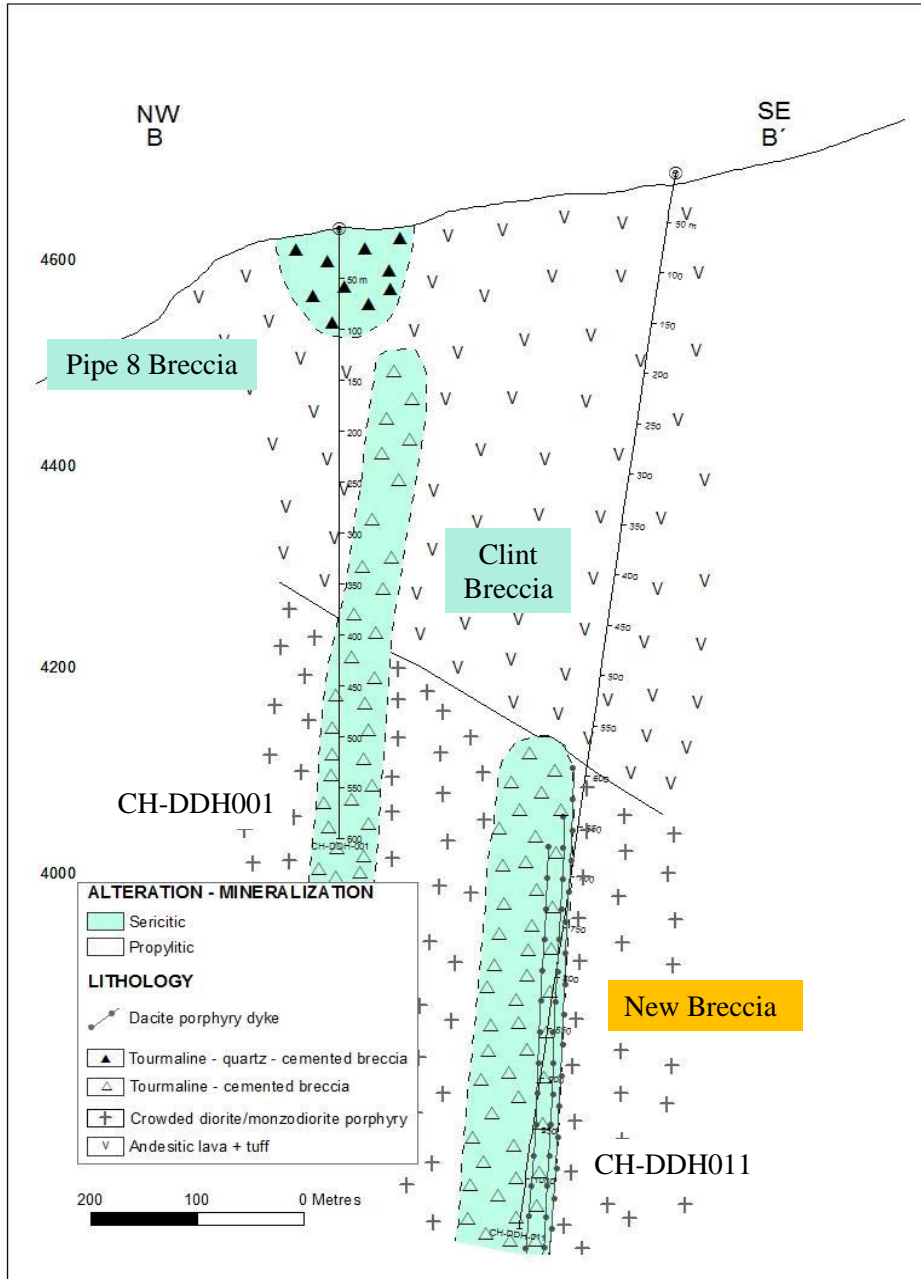


Figure 4 LEFT: From Figure 3 of the Sillitoe Report NW-SE geological section of Pipe 8 breccia area, Chanape. This cross-section shows Pipe 8 extending to shallow depths and terminating. The Clint Breccia extends downwards beyond the limit of drilling into the monzodiorite porphyry. A new breccia sequence is recognised in CH-DDH011. It occurs entirely within the monzodiorite porphyry. The likely source of the not inconsequential amounts of mineralisation in these breccias appears to be from sulphide filled miarolitic cavities within the porphyry. NOTE: The orientation of the cross-section is presented in Appendix 1.

### Project Portfolio and Future Developments

The Sillitoe/ExploAndes interpretations see the Company now reviewing whether the classic Cu porphyry-hosted part of the Chanape Porphyry system is too deep for further exploration. However, retaining the focus on high grade, at/ near-surface mineralisation (eg. Breccia Pipe 8, the Clint Breccia, the Chujcula Veins and the Li Vein) is consistent with the Company's broader project management strategy, which also includes the high grade Zn-Pb-Ag vein targets at the Company's Cerro Rayas Project. The Company is seeking to renegotiate the terms and conditions of the Chanape Mining Option and Assignment Agreement currently contracted to end 31 December 2016. An extended agreement, subject to terms therein, would provide the Company additional time to pursue the at/near surface targets at Chanape.



The Company continues to review other precious and base-metal projects with known high-grade, at and/or near-surface mineralisation. The availability, quality and terms of acquiring such projects, have improved markedly over the past 12 to 18 months.

### **About Mr Richard Sillitoe**

*Richard Sillitoe graduated from the University of London, England, where he went on to obtain a Ph.D. degree in 1968. After working for the Instituto de Investigaciones Geológicas (Geological Survey of Chile) and then returning to the Royal School of Mines at the University of London as a Shell postdoctoral research fellow, he has operated for the last 44 years as an independent consultant to more than 500 mining companies, international agencies, and foreign governments. He has worked on a wide variety of precious, base-, and lithophile-metal deposits and prospects in 90 countries worldwide, but focuses primarily on the epithermal gold and porphyry copper environments. His specialty is deposit modelling using field observations and drill core. Published research has earned him awards in Europe, Australia, and North America, including the Silver and Penrose Gold Medals of the Society of Economic Geologists, of which he was President in 1999–2000.*

For further information contact Ross Brown (Managing Director).

Office: +61 (0)8 6145 0300

Email address: [info@incaminerals.com.au](mailto:info@incaminerals.com.au)

### **Competent Person Statements**

The information in this report that relates to epithermal and porphyry style mineralisation for the Chanape Project, located in Peru, is based on information compiled by Mr Ross Brown BSc (Hons), MAusIMM, SEG, MAICD Managing Director, Inca Minerals Limited, who is a Member of the Australasian Institute of Mining and Metallurgy. He has sufficient experience, which is relevant to the style of mineralisation and types of deposits under consideration, and to the activity which has been undertaken, to qualify as a Competent Person as defined in the 2012 Edition of the “Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves”. Mr Brown is a full time employee of Inca Minerals Limited and consents to the report being issued in the form and context in which it appears.

Some of the information in this report may relate to previously released epithermal and porphyry style mineralisation for the Chanape Project, located in Peru, and subsequently prepared and first disclosed under the JORC Code 2004. It has not been updated to comply with the JORC Code 2012 on the basis that the information has not materially changed since it was last reported, and is based on the information compiled by Mr Ross Brown BSc (Hons), MAusIMM, SEG, MAICD Managing Director, Inca Minerals Limited, who is a Member of the Australasian Institute of Mining and Metallurgy. He has sufficient experience, which is relevant to the style of mineralisation and types of deposits under consideration, and to the activity which has been undertaken, to qualify as a Competent Person as defined in the 2004 Edition of the “Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves”. Mr Brown is a full time employee of Inca Minerals Limited and consents to the report being issued in the form and context in which it appears.





**Appendix 1:**

Sillitoe's Figure 1 contained in the 2016 Sillitoe Report: Geological Plan showing the orientation of cross-sections

