# ALICE QUEEN LIMITED

#### ASX RELEASE DATE | 29 MAY 2019

## METAL ZONATION MAPPING FURTHER STRENGTHENS HORN ISLAND AS A LARGE-SCALE GOLD PROJECT

Advanced gold explorer Alice Queen Limited (ASX: AQX) (Alice Queen or the Company) is pleased to provide a summary report from recently completed soils sampling and a review of its multi-element geochemical database by leading North Queensland gold consultant, Dr Gregg Morrison, which has further strengthened Horn Island as a prospective large scale gold project. The Horn Island project is located in the Torres Strait, Queensland.

#### **HIGHLIGHTS**

- Two discrete hydrothermal systems are now recognised across Horn Island:
  - $\circ~$  A younger (~310Ma) gold-antimony-lead-zinc-arsenic system controlled by structures; and
  - o An older (~340Ma) tin-tungsten-molybdenum system, controlled by the host granite.
- The new soil geochemical survey reveals the gold system surface footprint covers the majority of Horn Island (approximately 53km²) and includes multiple gold mineralized structures;
- Two new gold target areas have been identified at Naboo North and Horned Hill in addition to the previously established gold targets at Horn Island Pit-Naboo, Cable Bay and SSR and signifies another positive development for the project;
- SSR gold target area now significantly extended across a NW strike for approximately 7km, which is consistent with a large geophysical de-magnetised zone;
- Identification of a newly defined 3km gold target zone extending from the Horn Island gold deposit across to the newly defined Naboo prospect, which is also consistent with a large geophysical de-magnetised zone;
- The gold system footprint at Horn Island potentially extends into the Kaiwalagal project areas with special interest focused towards Prince of Wales Island;
- There is a consistent metal zoning pattern for each of the gold-mineralised structures with peripheral manganese barium (Mn-Ba) going into antimony arsenic (Sb-As), lead-zinc (Pb-Zn) and a deeper core of copper-bismuth-tellurium (Cu-Bi-Te). The gold (Au) and silver (Ag) mineralised envelope is in the Sb-As and Pb-Zn zones with the best Au ore in the Pb-Zn zone. The extension of Au mineralisation into the Cu-Bi-Te zone is essentially untested;
- Metal zonation 3D modelling from drill hole data confirms the geometry and likely extensions of the near surface gold envelope at the Horn Island gold deposit (~0.5Moz gold) and SSR. This best summarised as follows:
  - o Horn Island gold deposit has the As zone at surface and best Au in the Pb zone in the drilling with a shallow plunging Au mineralised envelope that is open down plunge to the SW and along strike to the NW;
  - o SSR gold zone has Sb at surface and best Au with Pb in drilling and is a vertical structure open at depth and along strike to the NW and SW; and
  - The other prospects have similar metal zoning patterns that allow the most favorable gold zone to be targeted.

Alice Queen Managing Director, Andrew Buxton, commented: "This work by Dr Morrison confirms the significant potential of the Horn Island project. The metal zoning patterns indicate that the gold system footprint extends across most of Horn Island, that the two main gold structures have kilometre-scale extensions and that both structures have only been tested in their shallow parts. The report also reinforces the studies completed in 2018 by Ben McCormack and Scott Halley that indicated the most significant potential at Horn Island lies at depth. With a surface footprint that now appears almost the same size as the seven million ounce Ravenswood system, we have never been more excited by our prospects at Horn Island."

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#### Horn Island - Metal Zonation Mapping Review

Alice Queen is pleased to report on results from an extension soils sampling program across the Horn Island project and first pass review of the company's entire multi-element geochemical data base by leading North Queensland gold consultant Dr Gregg Morrison. The results of this work are presented below.

A soils extension sampling program was recently completed, targeting likely extensions of previously identified known gold zones across the island. In total, 184 samples were collected and tied in with the previously completed sampling grid of  $100m \times 400m$  spacings (refer to ASX release  $17^{th}$  October 2018).

This sampling program extended across the western parts of island from the Naboo prospect and SSR gold zones, with some sampling also being completed north of the Horn Island gold deposit [~0.5Moz gold] and southern-most areas of the island [Nul Hutta prospect] [figure 1].

Furthermore, the entire surface and drill hole multi-element geochemical data base has been reviewed and metal zonation modelling, using a Max Z score calculations, has been completed (figures 2, 3, 9 & 10). This work complements an integral part of the company's new exploration strategy to assist with vectoring towards the best gold zone (refer to ASX release 17<sup>th</sup> October 2018, ASX technical presentation 21<sup>st</sup> August 2018) and what is strongly considered positive steps leading to a potential new discovery.

Although the extension soil results were subtle compared with the more coherent anomalies identified from previous sampling (refer to ASX release 17<sup>th</sup> October 2018), the limited anomalous gold and pathfinder values (Sb, As, Pb, Zn, Ag etc) coincided with predicted extensions to known surface gold zones. The return of more subdued results likely attributed to complications caused by the thick alluvium cover.

However, the benefit of applying a Max Z score calculation method, using a gold correlation coefficient analysis and recognising highest order pathfinder enrichment values, the metals zonation pattern becomes more apparent and provides a vector toward the gold ore zone both along strike and down plunge.

In a significant advancement in the technical development for the project, two distinctive hydrothermal systems have been recognised, including an older tin-tungsten-molybdenum system and a younger gold system with associated lead-zinc-arsenic-antimony and silver (figure 8).

The tin-tungsten-molybdenum system appears to coincide with the development of the porphyritic and equigranular granites (traditionally known as the Badu and Horn Island granites). Dating from molybdenum and a number of granite phases from around the Horn island gold deposit suggest an age of at least 340Ma. The tin-tungsten-molybdenum hydrothermal system appears to have little input to the production of gold observed to date and would imply the porphyritic and equigranular granite phases are acting primarily as a host rock to gold.

The gold associated hydrothermal system appears to be a younger metal system with age dating indicating ~310Ma for this event (figure 8). Geological modelling suggests this gold event closely relates extensional reactivation of shallow dipping thrust faults with sericite alteration and intrusion of a younger rhyolite that all crosscut the older granite host. Importantly, this interpretation suggests a separate younger intrusive complex driving the gold system across Horn Island that is yet to be defined.

The recognition of these two distinct hydrothermal systems has important implications for exploration and the Company is actively undertaking work to refine this current interpretation. Further technical analysis of the metal petrogenesis of the Horn Island gold deposit and additional age dating is now warranted.



In light of the new genetic model, the interpretation of the geochemical data has focused on the metal zoning pattern and location of high-grade gold in the gold system and not the tin system. The new interpretation can be summarised as follows:

- Gold soil geochemistry reveals extensions to the known gold zones at SSR and Horn Island gold deposits (figure 2);
- The scale of the surface geochemical footprint of the gold system has increased markedly and appears to cover most of Horn island, approximately 53km² (figures 2 & 3). This is comparable with the hydrothermal footprint for the 7Moz Ravenswood deposit in North Queensland (figures 4 & 6);
- Surface metal zonation modelling outlines 5 extensive gold target areas each with associated coherent and enveloping metal patterns (figure 3). These 5 areas are considered the priority focal points for further exploration;
- SSR gold zone increases in a total NW strike length of approximately 7km (figure 3);
- Horn Island pit Naboo gold zone now extends for a total strike length of approximately 3km (figure 3);
- Cable Bay gold zone now extends across a total NE strike length for approximately 3km (figure 3);
- Two new gold zones identified at Naboo North and Horned Hill covering an approximate area of 1.3km² and 1.1km² respectively (figure 3);
- Metal zonation patterns defining the gold system appear open at the boundary of the Island and are likely to extend into the Kaiwalagal project, with special interest now focused on Prince of Wales [Muralug] Island;
- The metal zonation established from surface sampling and drilling across Horn Island has a consistent pattern for each of the gold-mineralised structures with peripheral Mn-Ba going into Sb-As, Pb-Zn and a deeper core of Cu-Bi-Te. The Au & Ag mineralised envelope is in the Sb-As and Pb-Zn zones with the best Au ore in the Pb-Zn zone, the extension of Au mineralisation into a Cu-Bi-Te zone is essentially untested;
- Most of the gold-bearing structures have the Sb-As zone at surface and mining or shallow drilling into the Pb-Zn zone. This represents the outer or distal parts of the gold system (figures 5 & 6). The best gold zone is likely associated with the deeper part of the Pb-Zn zone and could extend into the still deeper Cu-Bi-Te metal zone that is as yet untested (figure 7); and
- Metal zonation modelling at Horn Island displays similar patterns to known multi-million-ounce North Queensland intrusion-related (IR) gold deposits including the Kidston, Mount Leyshon, Mt Wright and Ravenwood gold deposits (figures 4, 5 & 6). These other models lend confidence to the interpretation of metal zoning at Horn island and can be used as initial templates for the scale of the overall system.

#### NEXT STEPS IN THE EXPLORATION PROGRAM

Alice Queen intends to undertake co-ordinated exploration programs to refine targets and vector towards potential main gold zones. These programs may include:

- Further surface geochemical sampling across areas yet to be sampled. Due to issues with thick alluvium, auger drill sampling may be warranted. Some infill surface sampling and hyperspectral work will also be considered;
- Further metal zonation modelling to better understand both tin tungsten-molybdenum and, more importantly, the gold related hydrothermal system across the Horn Island project;
- Magnetic inversion modelling to define the shape, geometry and location of a potential younger intrusive stock and alteration system which may be driving the main gold system;
- Targeted surface IP program to test for vertical extent and geometry of potential sulphide associated gold bodies, with these programs initially focusing across the SSR and Horn Island Pit-Naboo gold zone; and
- Continuing and advancing previously announced negotiations with several interested parties with a view to forming a joint venture arrangement.



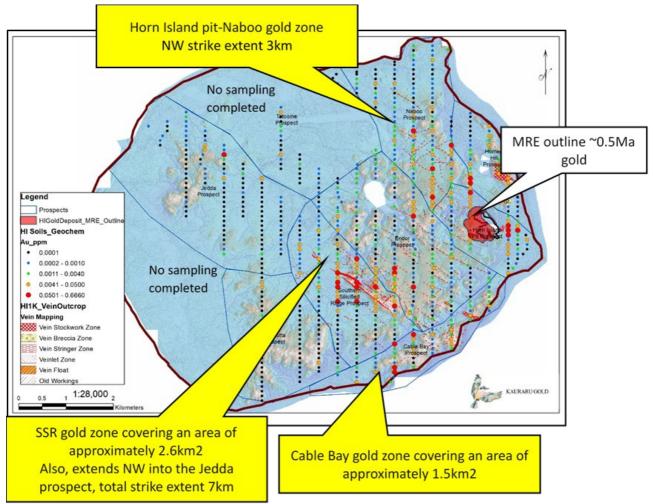


Figure 1 Surface soil gold (Au) results across Horn Island Project, defining large scale& coherent gold trends across the Horn island Pit-Naboo prospect, Cable Bay Prospects and SSR-Jedda prospect. The western half of the Island remains problematic for surface sampling due to thick alluvial cover.



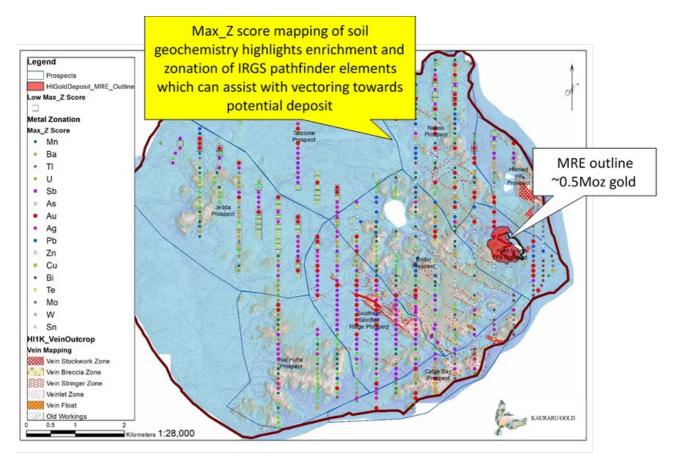


Figure 2 Max\_Z scores for surface soil samples highlight pathfinder elements across the Horn Island project. These elements assist with understanding metal zoning trends within different areas of IR gold deposits, i.e. distal-proximal-to core zones. The surface data indicates a strong Sb, As, Pb & Zn pattern suggesting the distal zone of a potentially significant & deeper occurring gold system/s. SSR\_Jedda prospects now defined by an extensive 7km NW striking antimony (Sb) & gold (Au) zone.



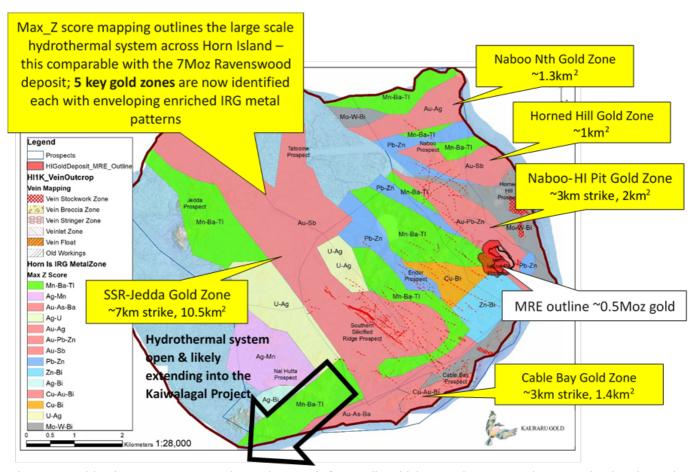


Figure 3 Combined Max Z score - metal zonation trends from soil multielement data across the Horn Island project. The metal zonation trends outline 5 key gold target areas each with enveloping coherent outer metal zoning patterns. Key target gold zones include 1. SSR-Jedda Zone (~7km strike,10.5km2), 2. Cable Bay Zone (~3km strike, 1.4km2), 3. Horn Island Pit-Naboo Zone (~3km strike,2km2), 4. Horned Hill Zone (~1km2), 5.Naboo North Zone (~1.3km2). Importantly metal zoning trends are open at edge of island and potentially extend into the Kaiwalagal projects. Special interest is focused on the Prince of Wales (Muralug) island. Red polylines and dashed polylines are vein structures.



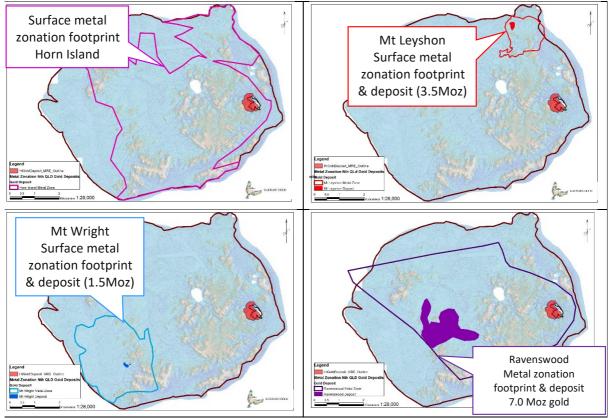
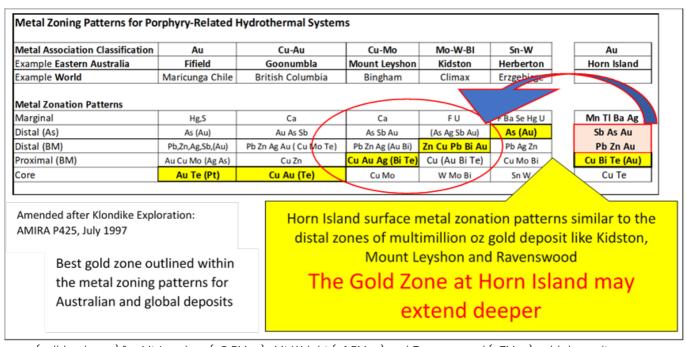


Figure 4 Surface hydrothermal footprint for Horn Island with scaled comparisons for the hydrothermal footprint with deposit



(solid polygon) for Mt Leyshon (~3.5Moz) , Mt Wright (~1.5Moz) and Ravenswood (~7Moz) gold de posits.

Figure 5 Metal zoning patterns for Nth Queensland and global gold deposits; Horn Island surface & drill data comparable with distal metal patterns for Mount Leyshon and Kidston deposits. Based on the Nth Queensland deposits best target gold zone for Horn Island is within As-Pb-Zn-Te metal zone. The gold zone may also extend deeper within the Cu-Bi-Te zone, this yet to be discovered. Company is actively planning for a coordinated exploration program to vector towards this zone



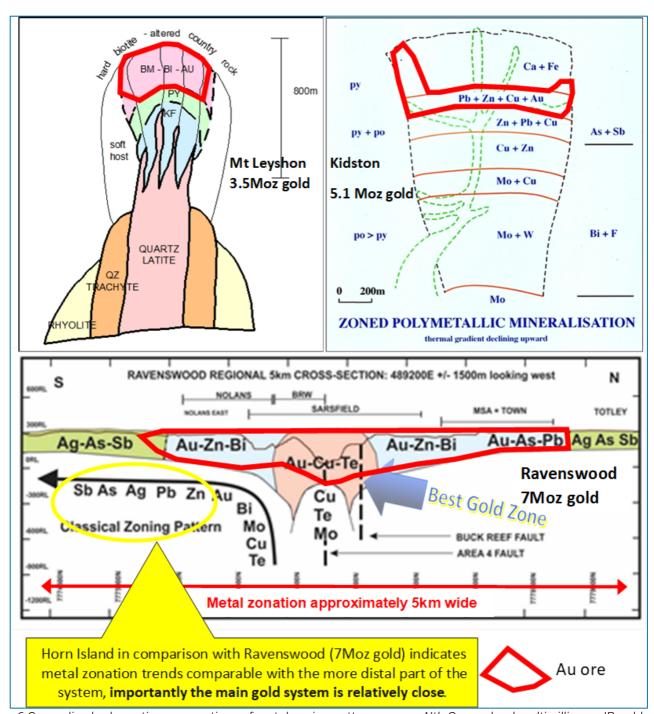


Figure 6 Generalised schematic cross sections of metal zoning patterns across Nth Queensland multimillion oz IR gold deposits. Important to note, each deposit forms a distinctive metal pattern which can be used as a vectoring tool to define spatially where the best gold zone occurs. Horn Island metal patterns are consistent with the distal areas to these deposits.



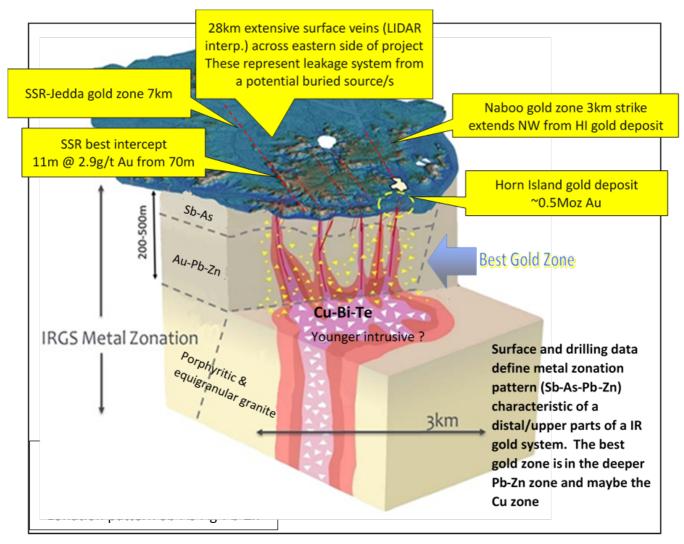


Figure 7 Conceptual 3D-schematic metal zonation model for the Horn Island project, defining the potential of a younger intrusive body driving the main gold system, Vast extent of vein structure at surface suggestive of leakage zones potentially sourcing from a number of main gold feeders with best metal trends modelled at depth between 200-500m. The depth extent of the gold zone is yet to be defined.



Age_M	Rock Type/Mineralisation	Dating Technique	Hydrothermal/Metal System Horn Island Project
?	Andesite		?
310	Rhyolite Dyke	U-Pb	Gold + Sb-As-Ag-Pb-Zn (Distal) Cu-Bi-Te (Proximal)
?	Main gold event at Horn Island		
320	Sericite altered granite	Ar-Ar	
343	Molybdenite veins	Re-Os	Tin-Tungsten-Molybdenum
344	Horn Island Granite	U-Pb	
350	Torres Strait Volcanic	U-Pb	

#### 2 hydrothermal metal system defined across Horn Island Project

- Older ~340Ma Tin-Tungsten-Molybdenum; &
- Younger ~310Ma main gold event

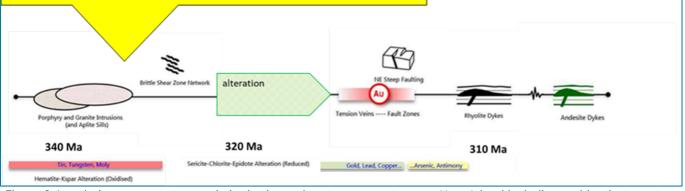


Figure 8 Age dating suggests two main hydrothermal system present across Horn Island including a older tin-tungsten-molybdenum (~340Ma) associated with emplacement of the Horn Island granites and a younger gold event (~310Ma) likely associated with a younger instructive body yet to be identified. Recognising these two distinctively age metal system has important implications on exploration. Lower diagram summarises the petrogenesis for the main magmatic phases, alteration and development of each metal system for Horn island.



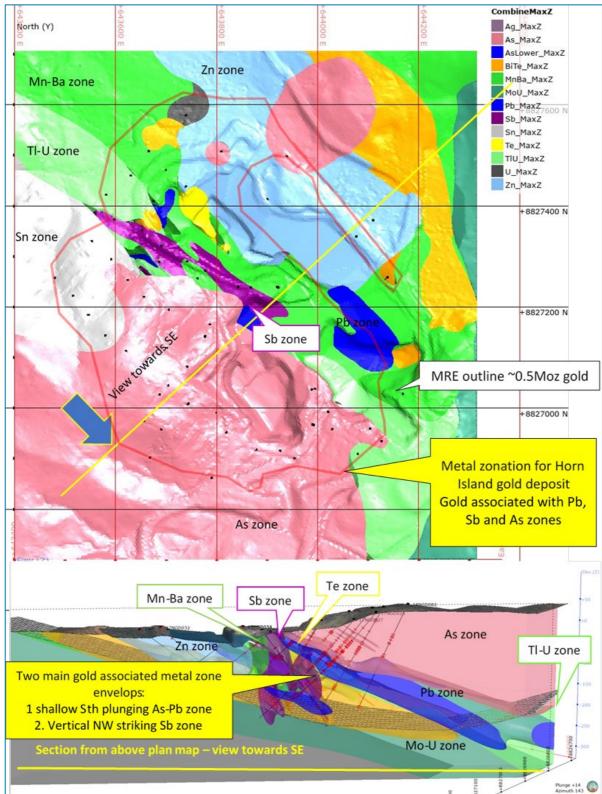


Figure 9 Metal zonation modelling for Horn Island gold deposit (~0.5Moz gold) completed using the drill hole multielement geochemistry database. Key points include near surface gold associated with As, Pb and Sb zones. Two distinct gold hydrothermal envelopes can be defined including a shallow south plunging As-Pb zone and a vertical NW striking Sb zone. This appears to be trending towards Naboo prospect – totalling a prospective 3km strike. These gold envelopes remain open and provide opportunities for further & immediate resource expansion.



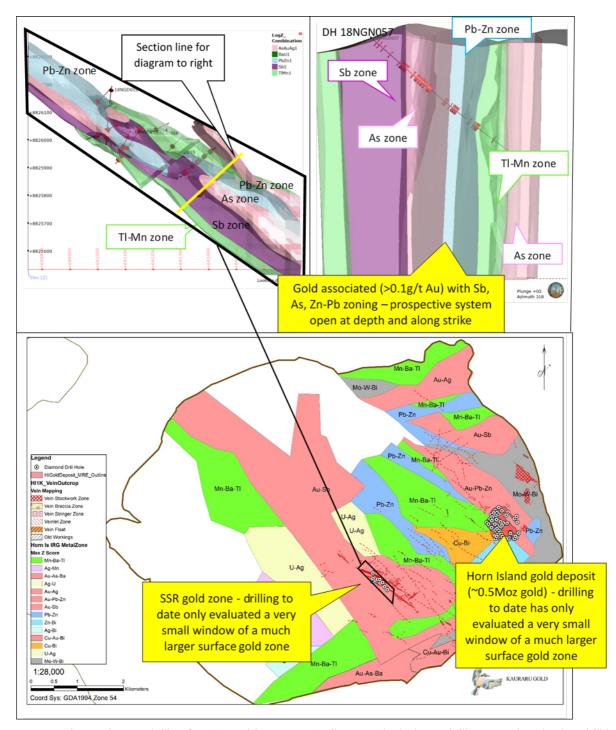


Figure 10 Metal zonation modelling for SSR gold zone; top 2 diagrams include modelling completed using drill hole multielement data. Key points include near surface gold associated with Sb, Pb, Zn & As. Gold & the associated metal zone envelope [Pb-Zn, As, & Sb] is defined by a vertical system which remains open at depth and along strike. Bottom diagram emphasises the very small area which has currently been drill tested along 7km NW striking prospective surface gold zone at SSR. Five [5] surface gold zones now defined across Horn Island project area

12



#### **COMPETENT PERSON STATEMENT**

The information in this announcement that relates to exploration results is based on information compiled by Mr Adrian Hell BSc (Hons) who is a full-time employee of Alice Queen Limited. Mr Hell is a member of the Australasian Institute of Mining and Metallurgy (AusIMM). Mr Hell has sufficient experience that is relevant to the style of mineralisation and type of deposits under consideration and the activity being undertaken to qualify as a Competent Person as defined in the 2012 edition of the "Australasian Code for Reporting Exploration Results, Mineral Resources and Ore Reserves". Mr Hell consents to the inclusion of this information in the form and context in which it appears in this report.

#### For and on behalf of the board

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