

## Summary

### Cockie Creek Porphyry Copper Prospect (Greenvale)

- A maiden drilling program at the Cockie Creek Porphyry Prospect was completed during December 2023 and represents the first significant program in more than 30 years and the first to specifically target a porphyry system.
- Highly positive results have been returned from each of the holes, including confirmation:
  - that Cockie Creek is a porphyry Cu-Au-Mo system that is potentially of Ordovician age, similar to the Macquarie Arc deposits in NSW;
  - that Cu mineralisation is developed over a significantly greater area than historically understood; and
  - the porphyry Cu mineralisation is of relatively high grade in porphyry deposit terms with the first hole (CCDD001) returning **71m @ 0.48% Cu** and **70ppm Mo** from 16m, incl. **31m @ 0.65% Cu** and **80ppm Mo** from 36m.
- Current Mineral Resource Estimate: **13MT @ 0.42% Cu** (0.25% Cu cut-off grade) (JORC 2004), based on strike length of 1.2kms and a maximum depth of 250m.
- Two large, intense IP chargeability targets at depth beneath the defined structurally controlled mineralisation corridor, remain to be investigate by drilling.

### Bottletree Copper Prospect (Greenvale)

- The 2023 drilling program, targeting porphyry core(s) and delineating copper mineralisation within two Wall Rock Porphyry Zones was completed during December 2023.
- Due to seasonal field constraints, only holes targeting the main Wall Rock Porphyry Zone were completed.

### Steam Engine Gold Project

- A Processing Options Study was progressed with independent consultants.
- Planning of Resource expansion and exploration drilling programs was conducted.

## Superior Resources Limited

### ASX:SPQ

### Board

Carlos Fernicola – Chairman  
Peter Hwang – Managing Director  
Simon Pooley – Non-Exec Director  
Carlos Fernicola – Company Secretary

### Securities

Ordinary Shares – 2,001,220,418  
Top 20 holders: 33% issued capital

### Summary

Superior Resources Limited is a Brisbane based ASX-listed mineral explorer with a portfolio of large copper exploration projects, including a developing portfolio of nickel-cobalt projects in northern Queensland. The projects also include large targets for Mount Isa style copper and lead-zinc-silver deposits and uranium deposits in north western Queensland and exploration projects in northeast Queensland for VMS and porphyry style copper-gold-silver-molybdenum deposits.

### Share Registry

Link Market Services  
Level 15, 324 Queens Street  
Brisbane, QLD, 4000

### Web Site

[www.superiorresources.com.au](http://www.superiorresources.com.au)

### Contact

Peter Hwang  
(07) 3847 2887

Carlos Fernicola  
(07) 3831 4172

[manager@superiorresources.com.au](mailto:manager@superiorresources.com.au)

### PROJECT LOCATIONS



Figure 1. Location map showing the Company's current portfolio of projects.

### GREENVALE PROJECT

Operational activities during the Quarter were focussed entirely at the Company's 100%-owned Greenvale Project (Figs. 1 and 2).

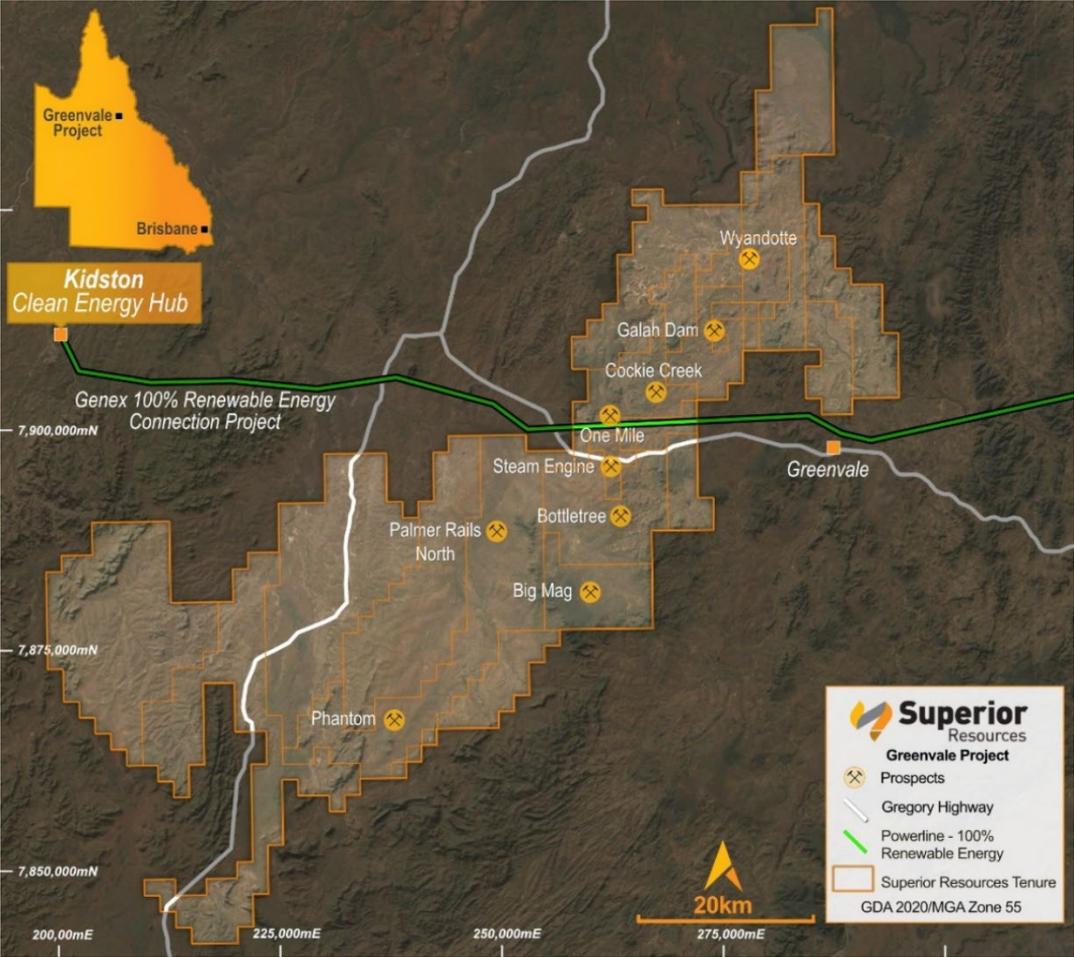
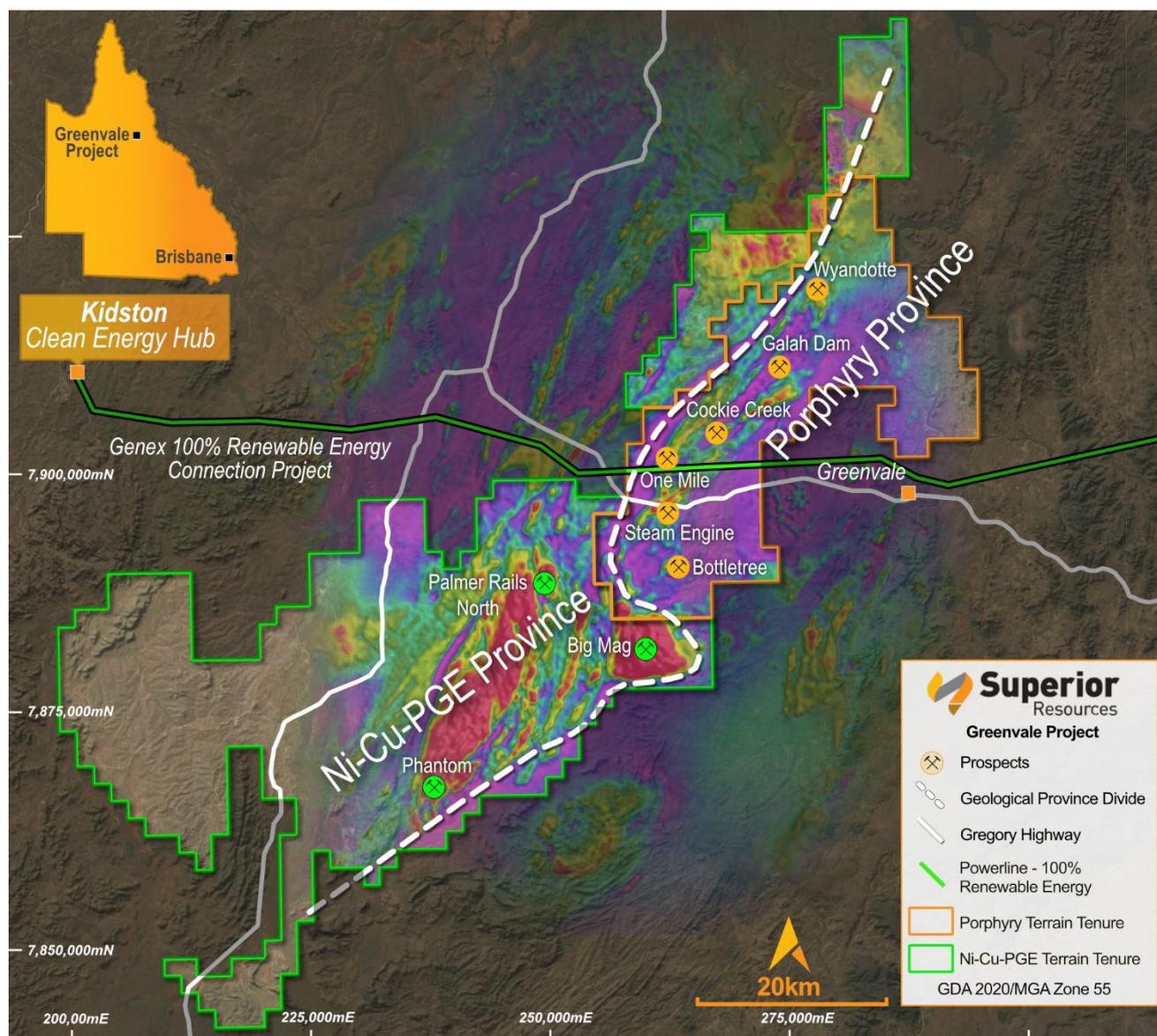


Figure 2. Greenvale Project tenements and prospects shown over satellite imagery. Note: new tenement applications are included, but not specifically identified.

## SUMMARY

The main activities of the Company during the Quarter were as follows:

- Completed the Company's maiden **Cockie Creek** diamond core drilling program;
- Commenced the Phase 3 drilling program at **Bottletree**;
- A Processing Options Study for the **Steam Engine Gold Project** was progressed with independent mining consultants, METS Engineering.
- Planning of Resource expansion and exploration drilling programs for the **Steam Engine Gold Project**.



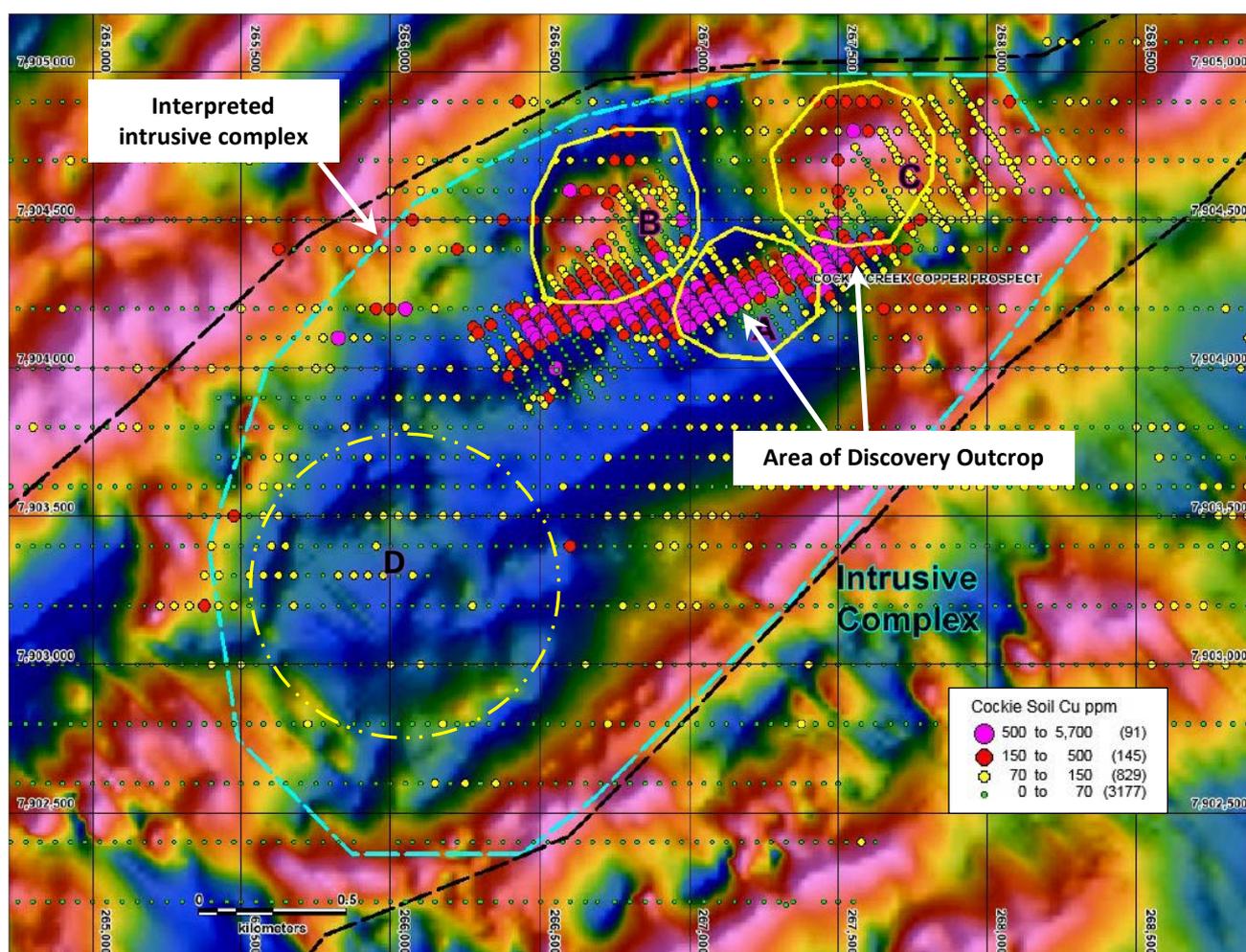
**Figure 3.** Regional aerial magnetics over the Greenvale Project area showing the newly recognised porphyry province (amber tenements) and the magmatic Ni-Cu-PGE sulphide province (green tenements). The approximate boundary between the two provinces is indicated by the white dashed line.

## COCKIE CREEK (PORPHYRY Cu-Au)

### SUMMARY

- A maiden drilling program at Cockie Creek commenced during July 2023 and represents the first significant program in more than 30 years and the first to specifically target a porphyry system.
- Very impressive results have been returned from each of the holes with porphyry-style copper mineralisation, as chalcopyrite, present over a significantly greater area than historically known, expanding the mineralised zone by up to 40% in parts of the historical Mineral Resource:
  - **CCDD001** returned (refer ASX announcement, 25 September 2023):  
**71m @ 0.48% Cu and 70ppm Mo** from 16m (**CCDD001**)  
 incl. **31m @ 0.65% Cu and 80ppm Mo** from 36m;
  - **CCDD002** returned (refer ASX announcement, 16 October 2023):  
**117m @ 0.52% Cu, 0.11g/t Au and 109ppm Mo** from 20m (**CCDD002**)  
 incl. **71m @ 0.69% Cu, 0.13g/t Au and 158ppm Mo** from 27m  
 incl. **36m @ 0.77% Cu, 0.14g/t Au and 146ppm Mo** from 56m  
 incl. **10m @ 1.08% Cu, 0.20g/t Au and 44ppm Mo** from 56m;
  - **CCDD003** returned (refer ASX announcement, 6 November 2023):  
**248m @ 0.28% Cu, 0.06g/t Au and 44ppm Mo** from 56m to 303.7m (EOH) (**CCDD003**)  
 incl. **177m @ 0.35% Cu, 0.07g/t Au and 52ppm Mo** from 57m  
 incl. **130m @ 0.41% Cu, 0.08g/t Au and 49ppm Mo** from 57m  
 incl. **33m @ 0.68% Cu, 0.11g/t Au and 56ppm Mo** from 130m  
 incl. **14m @ 0.91% Cu, 0.12g/t Au and 79ppm Mo** from 140m;
  - **CCDD004** returned (refer ASX announcement, 11 December 2023):  
**120m @ 0.45% Cu, 0.09g/t Au and 126ppm Mo** from 92m (**CCDD004**)  
 incl. **62m @ 0.60% Cu, 0.10g/t Au and 190ppm Mo** from 127m  
 incl. **21m @ 0.78% Cu, 0.17g/t Au and 461ppm Mo** from 164m;
  - **CCDD005** returned (refer ASX announcement, 11 December 2023):  
**120m @ 0.20% Cu, 0.03g/t Au and 17ppm Mo** from 58m (**CCDD005**)  
 incl. **57m @ 0.31% Cu, 0.03g/t Au and 24ppm Mo** from 76m  
 incl. **19m @ 0.50% Cu, 0.05g/t Au and 22ppm Mo** from 113m;
  - **CCDD006** returned (refer ASX announcement, 11 December 2023):  
**108m @ 0.40% Cu, 0.09g/t Au and 104ppm Mo** from 204m (**CCDD006**)  
 incl. **80m @ 0.49% Cu, 0.11g/t Au and 137ppm Mo** from 228m  
 incl. **60m @ 0.55% Cu, 0.13g/t Au and 168ppm Mo** from 241m  
 incl. **36m @ 0.64% Cu, 0.14g/t Au and 224ppm Mo** from 242m; and
  - **CCDD007** returned (refer ASX announcement, 29 January 2024):  
**320m @ 0.21% Cu, 0.05 g/t Au and 31 ppm Mo** from 176m (**CCDD007**)  
 incl. **271m @ 0.24 % Cu, 0.05 g/t Au and 36 ppm Mo** from 225m  
 incl. **171m @ 0.32% Cu, 0.07g/t Au and 40 ppm Mo** from 225m  
 incl. **69m @ 0.52% Cu, 0.10g/t Au and 69ppm Mo** from 225m  
 incl. **23m @ 0.70% Cu, 0.12g/t Au and 68ppm Mo** from 265m  
 incl. **13m @ 0.89% Cu, 0.13g/t Au and 79 ppm Mo** from 265m.

- A total of seven holes for 2,773 metres of HQ-diameter core were drilled for the program.
- Individual porphyry intrusions and the mineralised zone are generally thickening with depth.
- The sulphide mineral assemblages, mineralisation grades and the presence of abundant porphyry “B veins” and late-stage “D veins” are all features typical of porphyry Cu-Au-Mo deposits.
- Current Inferred Mineral Resource Estimate: **13MT @ 0.42% Cu** (0.25% Cu cut-off grade) (JORC 2004)<sup>1</sup>, based on strike length of 600 metres and a maximum depth of 250 metres.
- The intrusive complex within which the historic Mineral Resource is located, is interpreted to be approximately 3.5kms by 2.5kms in size, based on aerial magnetic data. The Mineral Resource is located near the eastern end of the intrusive complex.
- Significant potential exists at Cockie Creek for the discovery of a large porphyry Cu-Au-Mo mineralisation system.



**Figure 4.** Cockie Creek thematic Cu soil data and interpreted porphyries on TDr VI NSSF processed airborne magnetics data, showing interpreted porphyry intrusions (A to C) within an interpreted intrusive complex.

<sup>1</sup> Refer ASX announcement dated 27 March 2013

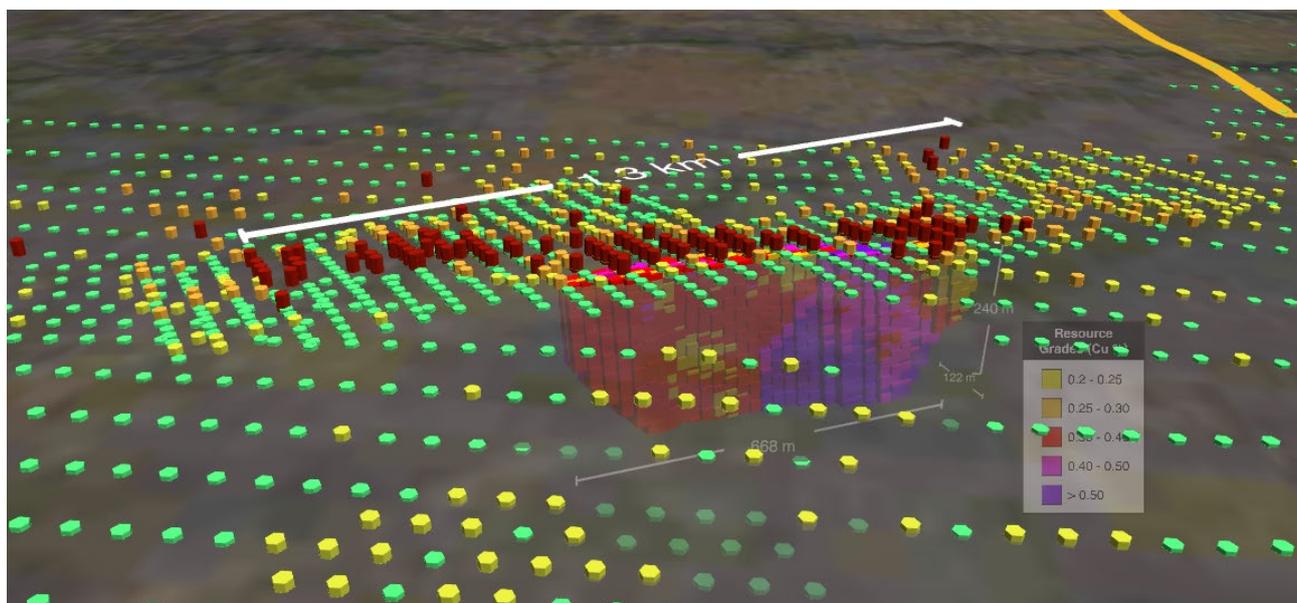
## PORPHYRY Cu-Au-Mo TARGET

Cockie Creek is referred to historically as a tabular zone of disseminated copper-gold-molybdenum mineralisation that crops out at surface and extends for over 1.2 kilometres in strike length with a true width of up to 60 metres. The mineralisation shows good continuity and has only been drilled to shallow depths (Figs. 4 to 6).

Directly beneath the mineralisation lies a strong IP chargeability anomaly that has not been adequately drilled. Modelling by the Company indicates that a second chargeability anomaly lies north of and parallel to the main anomaly. The northern anomaly has not historically been drilled.

The main target at Cockie Creek is one or more deeper porphyry cores, which are suggested to be the source of the copper mineralisation. The mineralisation identified by the historic drilling potentially represents leakage into the wall rocks from a nearby mineralised porphyry potassic core.

As is the case with the identified copper mineralisation at Bottletree, the wall rock-hosted mineralisation at Cockie Creek represents a potentially significant copper resource. **Copper grades at Cockie Creek are relatively high in porphyry deposit terms (Table 1). In addition, a significant zone of gold (3m @ 9.0 g/t Au, from 80m in hole CRC003) was returned immediately before the western chargeable zone.**



**Figure 5.** 3D view of soil copper geochemistry and block model of historic Cockie Creek Mineral Resource with block grades indicated. Viewed looking approximately north.

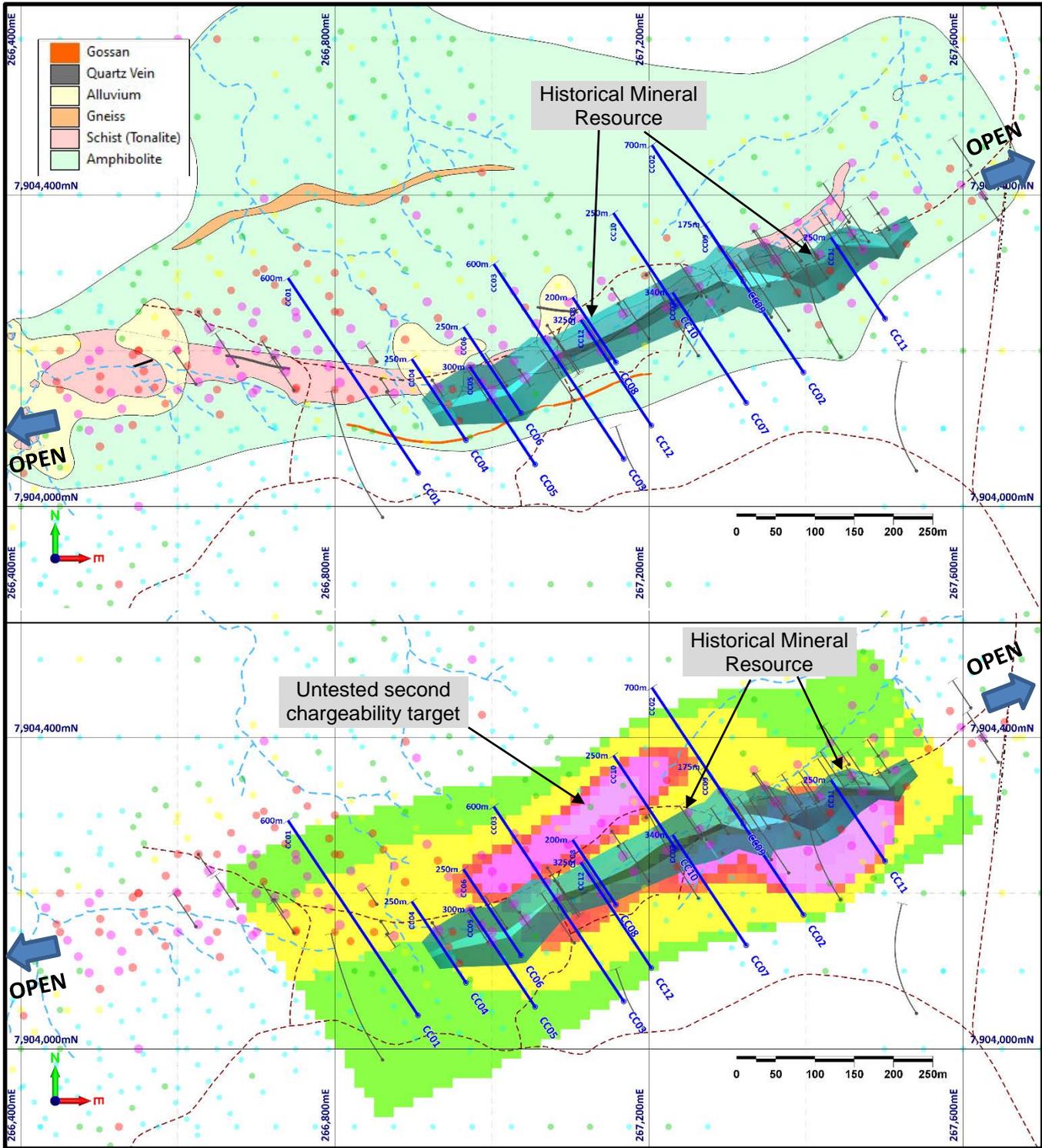


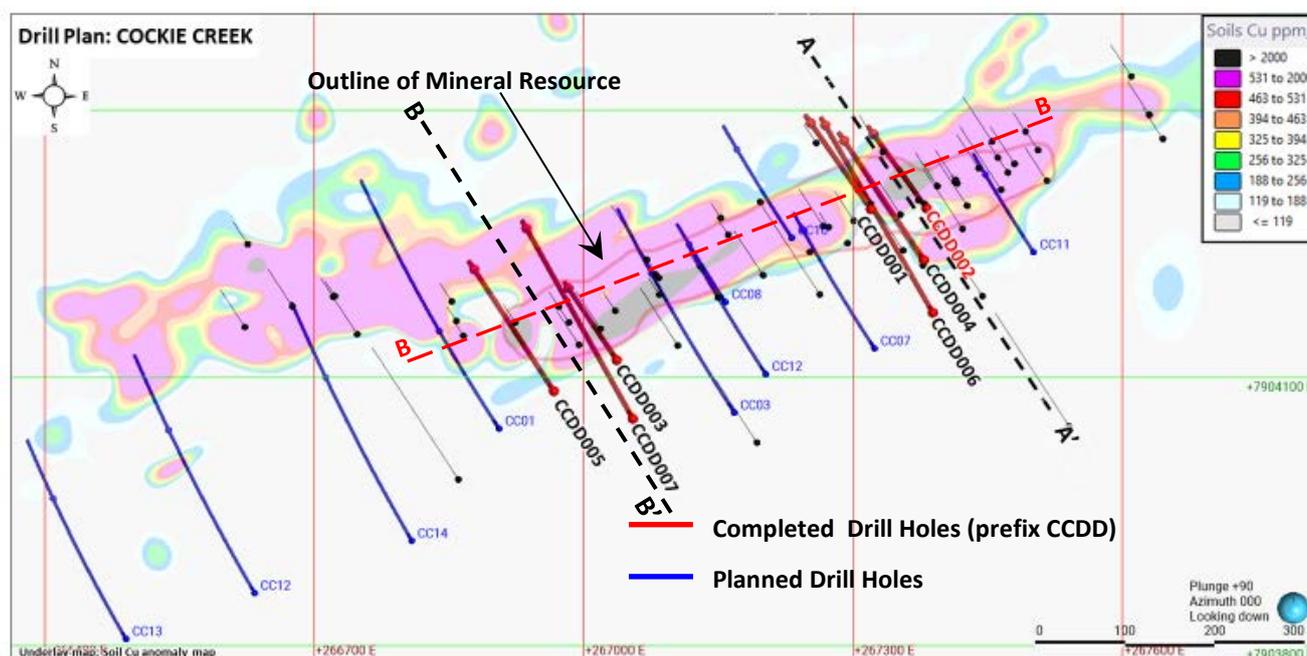
Figure 6. Plan views of the Cockie Creek Prospect surface geology (top) and IP chargeability data (bottom). Gridded copper soil geochemistry, 2023 planned drill holes (blue traces) and wireframe of the historical Mineral Resource (blue polygon) are shown in each plan.

**Table 1. Cockie Creek Copper Prospect - Selected historical drillhole intersections<sup>2</sup>.**

Hole	EastMGA	NorthMGA	From (m)	To (m)	Length (m)	Cu (%)	Au (g/t)	Mo (ppm)
CRC002	267380	7904295	0	68	68	0.74	0.12	92
CRC009	267356	7904243	66	163	97	0.48	0.07	114
CRC010	267353	7904283	11	85	74	0.42	0.08	78
CRC011	267320	7904295	1	80	79	0.45	0.06	76
CRC014	267019	7904155	15	56	41	0.50	0.10	48
CRC017	267378	7904226	121	215	94	0.53	0.08	99
CRC023	267037	7904120	53	141	88	0.43	0.06	49
CRC026	266995	7904137	11	84	73	0.44	0.05	22
D1	267448	7904183	180	216	36	0.57	0.10	28
D3	267075	7904227	56	104	48	0.48	0.10	94
P11	267403	7904244	50	108	58	0.64	0.07	-
P12	267339	7904345	50	100	50	0.44	0.07	-
P16	267370	7904307	0	40	40	0.75	0.13	-

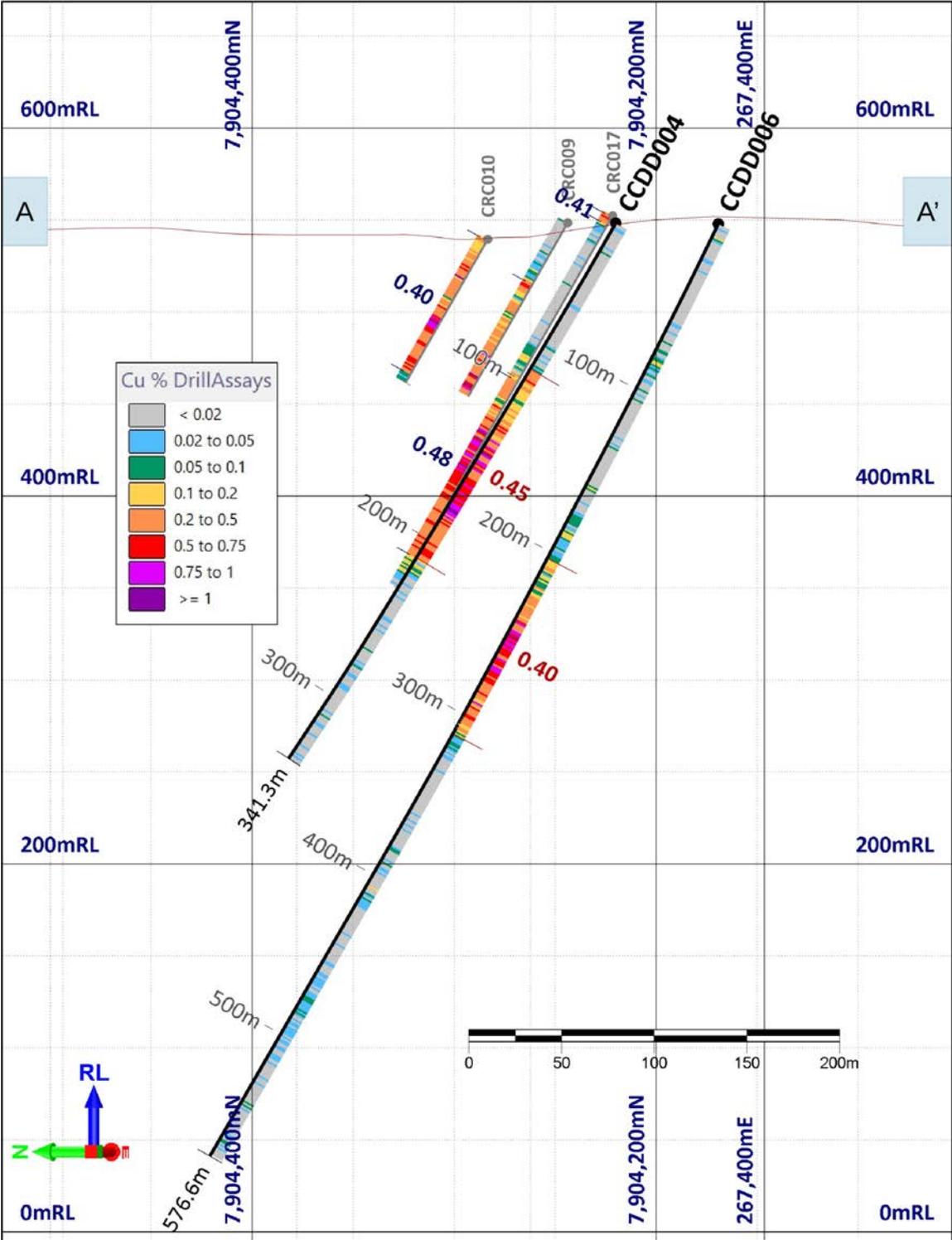
### 2023 MAIDEN DRILLING PROGRAM

Drilling commenced on the eastern end of the historical copper zone in early July 2023. A total of 2,773m for seven HQ diamond drill holes (CCDD001 – CCDD007) cored from surface were completed in the maiden program (Figs. 7 to 9).



**Figure 7.** Plan map of the Cockie Creek Discovery Outcrop area showing completed drill holes CCDD001 – CCDD007 (in black), planned but not yet drilled holes (in blue) and historic drill holes (in grey) over gridded Cu soil geochemistry. CCDD002 is labelled in red. Outline of Mineral Resource at surface and cross section A-A' are shown.

<sup>2</sup> Refer ASX announcement dated 27 March 2013



**Figure 8.** Cross-section (+/- 15m) taken along A-A' (as shown in Figure 7) looking east-northeast showing CCDD004 and CCDD006 plus historic CRC017 (twinned with CCDD004) and proximal historic drill holes CRC009 and CRC010. Down-hole copper assay values (1m intervals) are represented as grade categories (refer ASX announcement 11 December 2023).

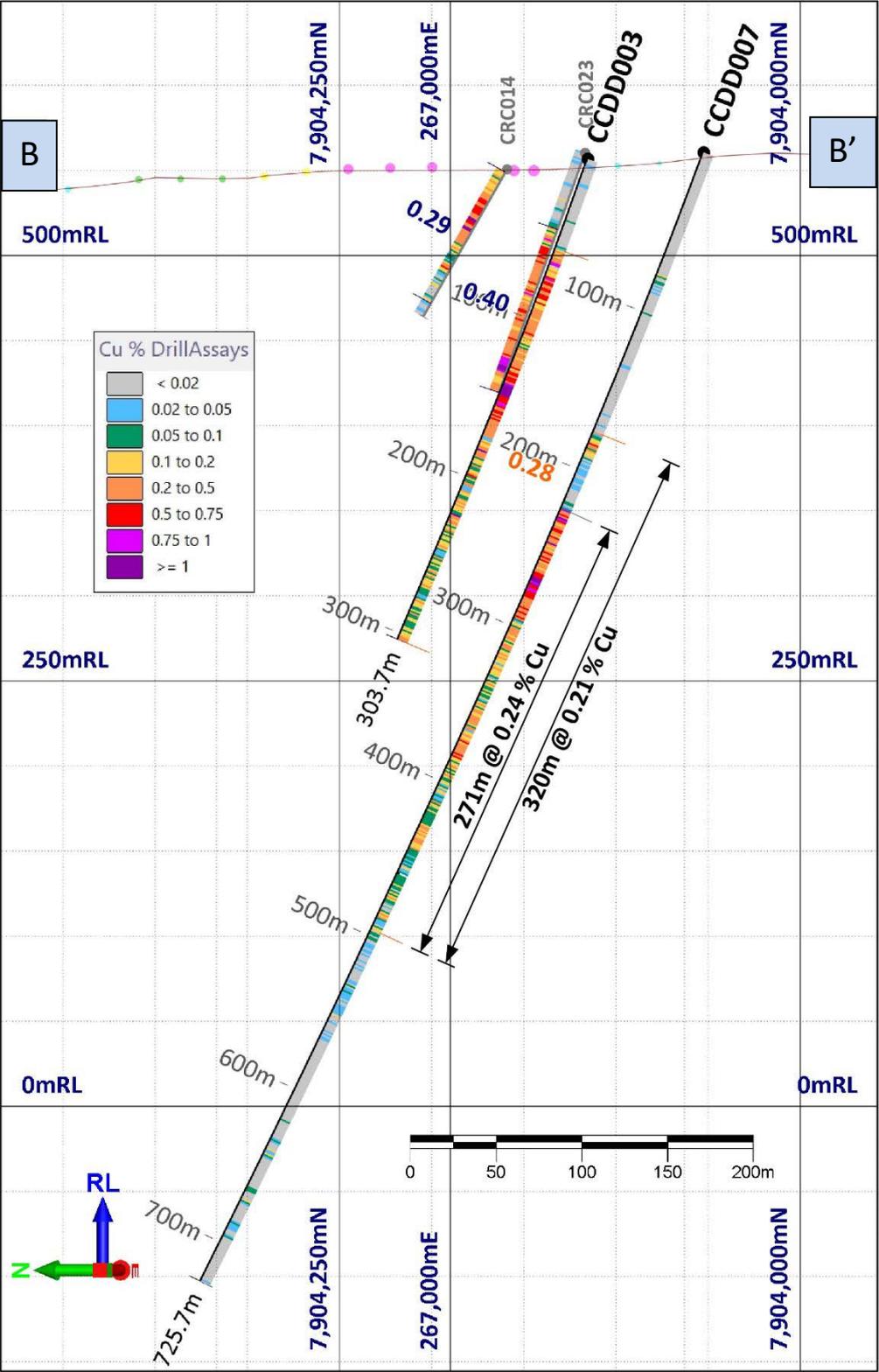


Figure 9: Cross-section (+/- 20m) taken along B-B' (as shown in Figure 7) looking east-northeast showing CCDD007 and CCDD003 and historic CRC023 (twinned by CCDD003), and proximal historic drill hole CRC014. Down-hole copper assay values (1m intervals) are represented as grade categories (refer ASX announcement, 29 January 2024).

## OBSERVATIONS ON GEOLOGY, ALTERATION AND MINERALISATION

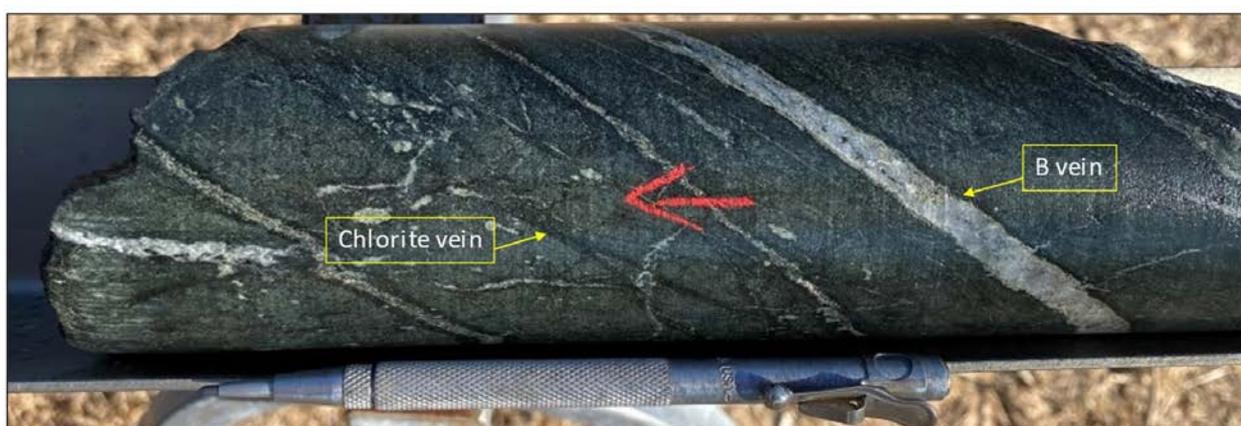
Each of the holes drilled to date have intersected a range of porphyritic intrusive rocks, which include quartz diorites, diorites and tonalites. These units have intruded several metavolcanic units.

Medium to coarse grained quartz diorite intrusions have, so far, been identified as the predominant intrusive unit that is mineralised with chalcopyrite. Consistently, this unit has been subjected to biotite and K-feldspar alteration, which is **typical of porphyry-style potassic alteration (Figs. 10 to 12)**.

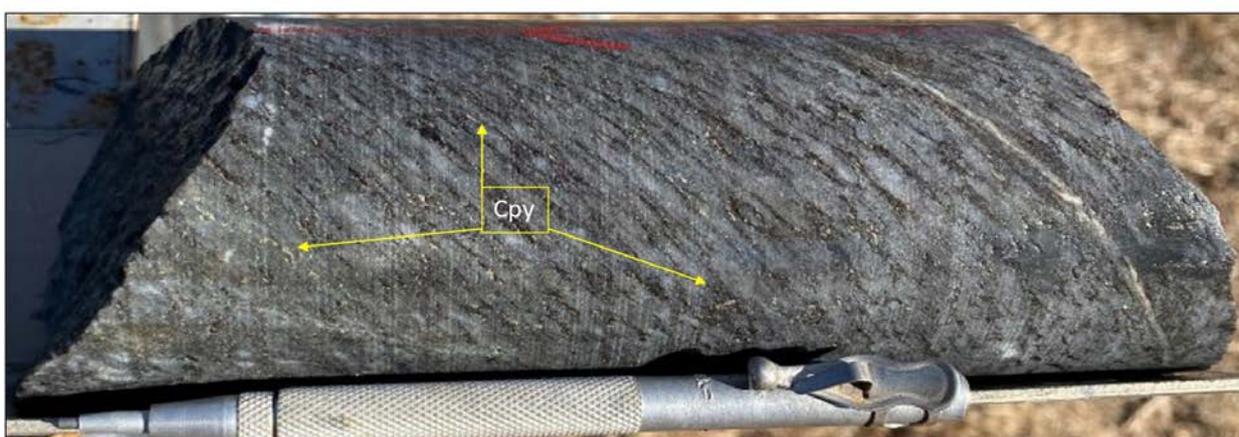
Copper mineralisation also appears associated with the tonalite and diorite, although to a lesser degree.

**The mineralisation is predominantly disseminated and focussed along strong foliation structures**, although some mineralisation appears to be remobilised out of **quartz vein structures that are possible typical porphyry B-veins**. These are evident within the quartz diorite units.

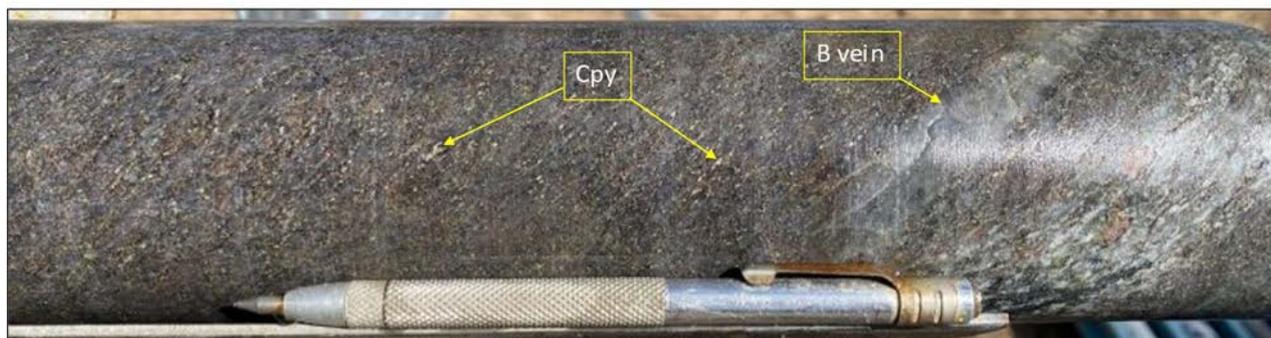
Other minor styles of mineralisation include fracture fill in brittle deformed quartz veins and vugs in quartz diorites (**Fig. 13**).



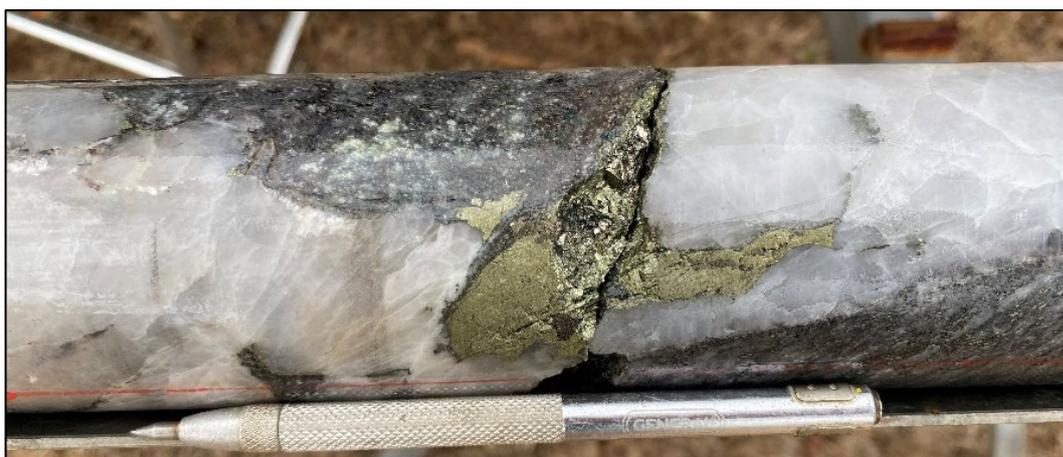
**Figure 10.** Core from CCDD001 (30.25m) showing meta-andesite unit with a porphyry B vein containing quartz, pyrite and chalcopyrite. Fine chlorite veining with patches of epidote alteration also present.



**Figure 11.** Core from CCDD001 (36.2m) showing quartz diorite unit with disseminated pyrite and chalcopyrite mineralisation (0.71% Cu) developed within strong foliation. Alteration includes minor chlorite and K-feldspar.



**Figure 12.** Core from CCDD001 (60m) showing quartz diorite unit with porphyry style B vein and disseminated chalcopyrite and minor pyrite mineralisation (0.57% Cu) within strong foliation. Mineralisation is associated with K-feldspar alteration.



**Figure 13.** Quartz diorite hosting a massive quartz vein with chalcopyrite and pyrite mineralisation, with biotite and minor chlorite and epidote alteration also present (CCDD001, 67m).

### MINERALISATION AND IMPLICATIONS ON COCKIE CREEK PORPHYRY GENESIS

Chalcopyrite mineralisation is predominantly confined within a strong foliation fabric developed within the porphyry intrusions and wall rock meta-andesite and related volcanic rocks. It is associated with pyrite, pyrrhotite and minor molybdenite.

The reduced nature of the sulphide mineral assemblage (pyrrhotite-bearing) and associated hydrothermal alteration (absence of primary anhydrite, gypsum, and hematite) in both intrusions and meta-andesite and related meta-volcanic wall rocks is consistent with Cockie Creek forming from relatively reduced hydrothermal fluids from a reduced I-type arc magma with a weak magnetic character underlying the prospect.

The weak magnetic character of reduced I-type arc magmas is due to the predominance of primary, non-magnetic ilmenite over magnetite in contrast to oxidized I-type arc magmas. Consequently, the large magnetic low associated with the interpreted intrusive complex within which Cockie Creek is located (refer **Fig. 4**) is entirely consistent with a reduced porphyry model. The Bottletree porphyry prospect is also located within a magnetic feature or domain that lacks rocks of high magnetic character.

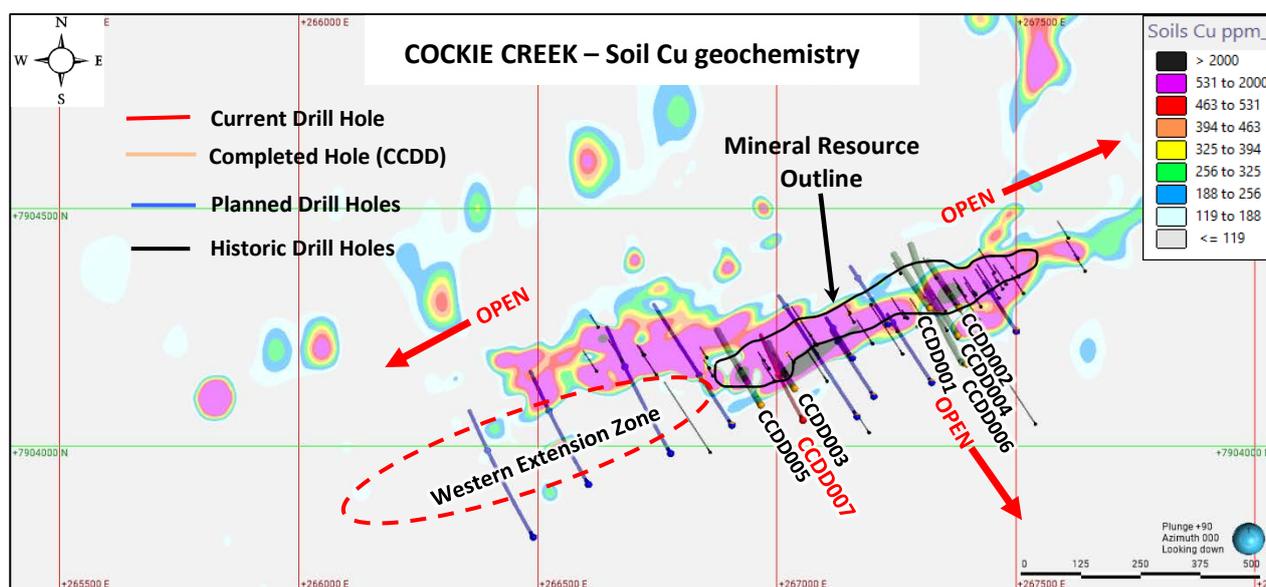
### WESTERN EXTENSION AREA

Analysis of core from the current drilling together with the geological and geophysical data has identified significant potential for the continuation of the main copper-mineralised zone westwards from the historical Mineral Resource. The continuation of the main copper zone (and consequently, the Mineral Resource) westwards, is evidenced in one western-most historical drill hole that intersected significant mineralisation at depth and strike of (but outside) the Mineral Resource. The mineralisation in this historical hole does not

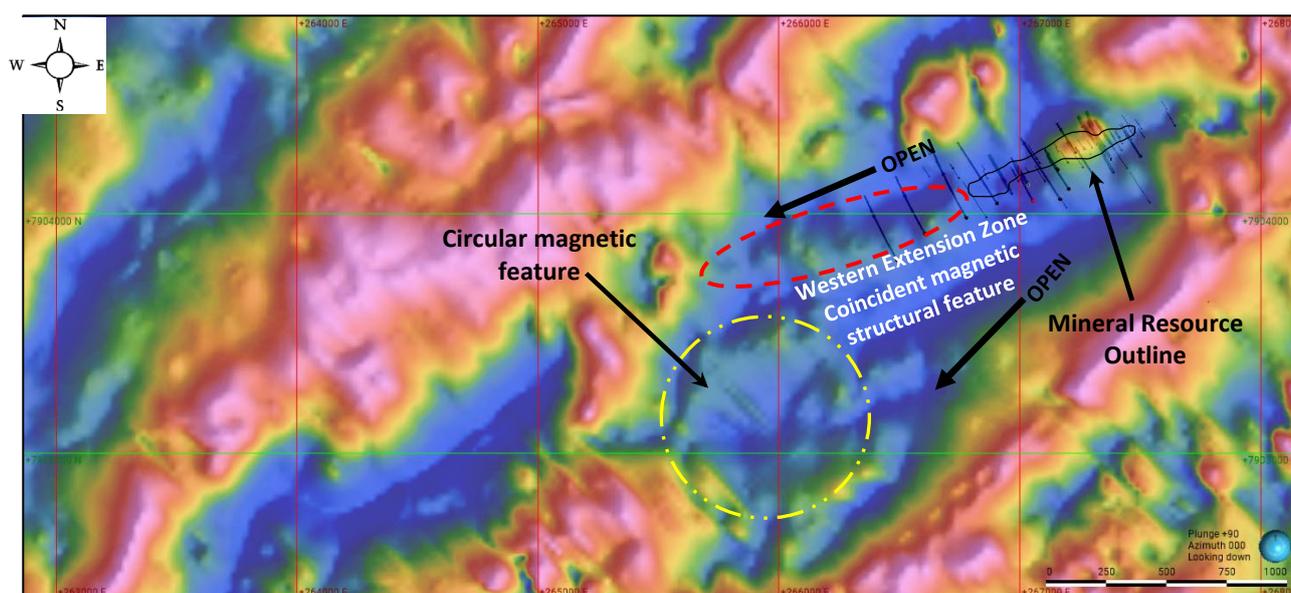
appear to reach the surface (i.e., a blind zone) and does not show a surface soil geochemistry expression (Fig. 14). In addition, aerial magnetic data clearly highlights a continuation of the same structure on which the main copper zone is developed. The Western Extension Zone continues for at least one kilometre and lies adjacent and to the north of a large circular magnetic feature (Fig. 15).

3D modelling of IP chargeability data shows substantial broadening of a large high chargeability zone at the western end of the historical Mineral Resource (Fig. 16). The limits of the IP survey prematurely terminates the high chargeability zone at the western and eastern ends of the prospect area. A large-scale modern IP survey is being planned for the Cockie Creek prospect area and surrounds to cover most of the interpreted intrusive complex.

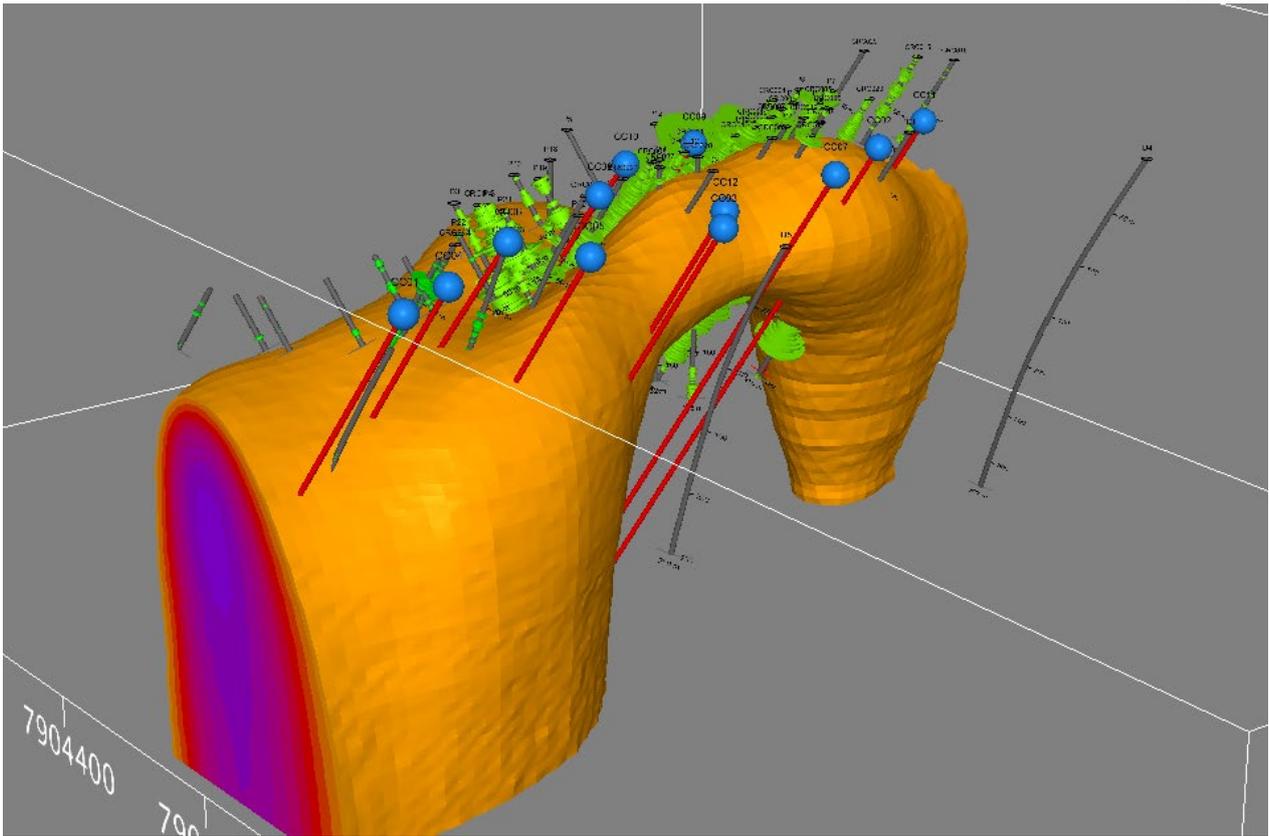
The mineralisation at Cockie Creek remains open in all directions and is surrounded by several significant magnetic features, potentially representing one or more mineralised Cu-Au porphyry system cores.



**Figure 14.** Gridded soil Cu geochemistry of the Cockie Creek area showing the Western Extension Zone, outline of historical Mineral Resource and current program drill holes.



**Figure 15.** Aerial magnetic image (RTP) of the Cockie Creek regional area showing the outline of the historical Mineral Resource and the Western Extension Zone (red polygon) as supported by a linear series of magnetic features. A prominent large circular magnetic feature is located south of the Western Extension Zone (yellow circle).

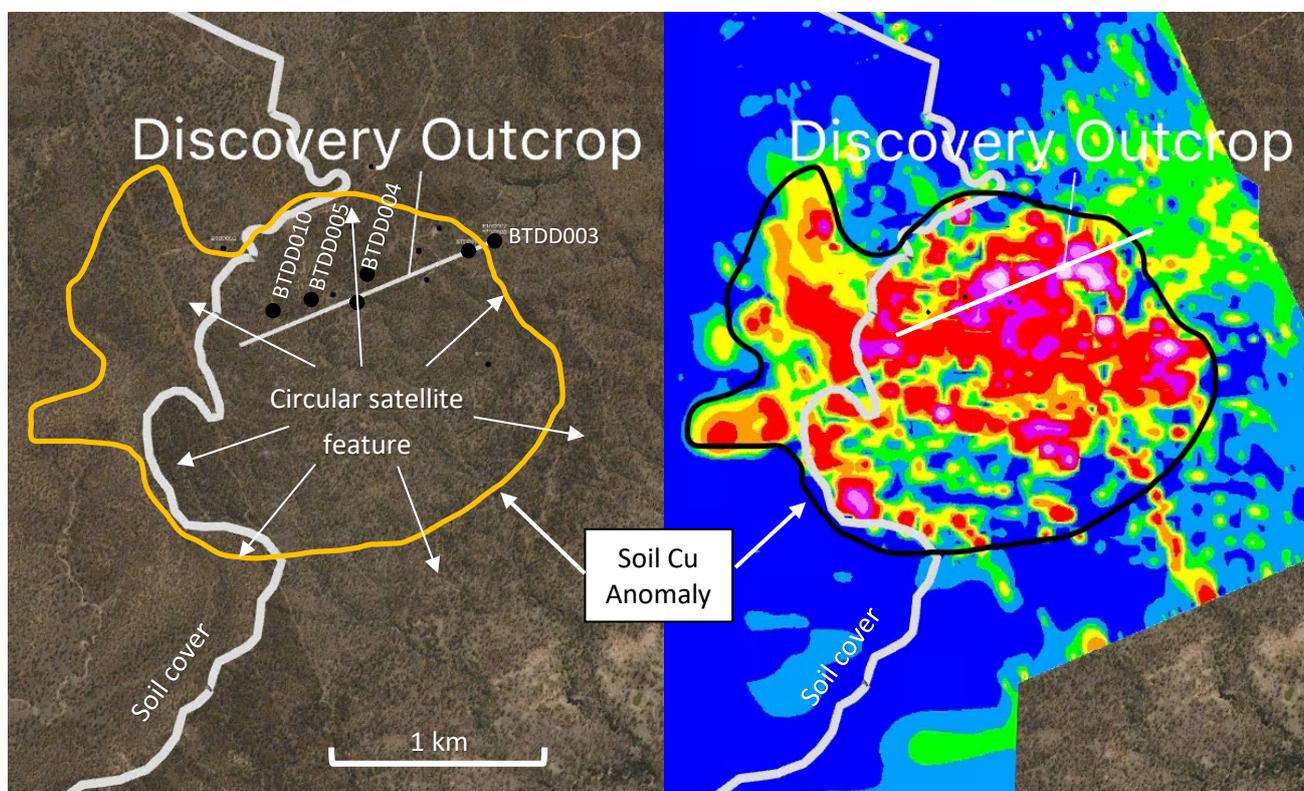


**Figure 16.** 3D IP chargeability model showing moderate to high chargeability zone. Historical drill holes (grey traces) and copper mineralisation (green) with 2023 planned drill holes in red. Viewed looking northeast.

## BOTTLETREE – DISCOVERY OF A Cu-Au-Mo PORPHYRY SYSTEM

*Large scale Cu-Au-Mo system emerging at Bottletree*

Bottletree is a large 2km x 1.5km soil copper geochemistry anomaly. Initial stages of drilling during 2018 and 2021 were focussed on the discovery outcrop which coincided with an intense induced polarisation (IP) chargeability anomaly, located at the northeastern edge of the soil copper anomaly (Fig. 17).



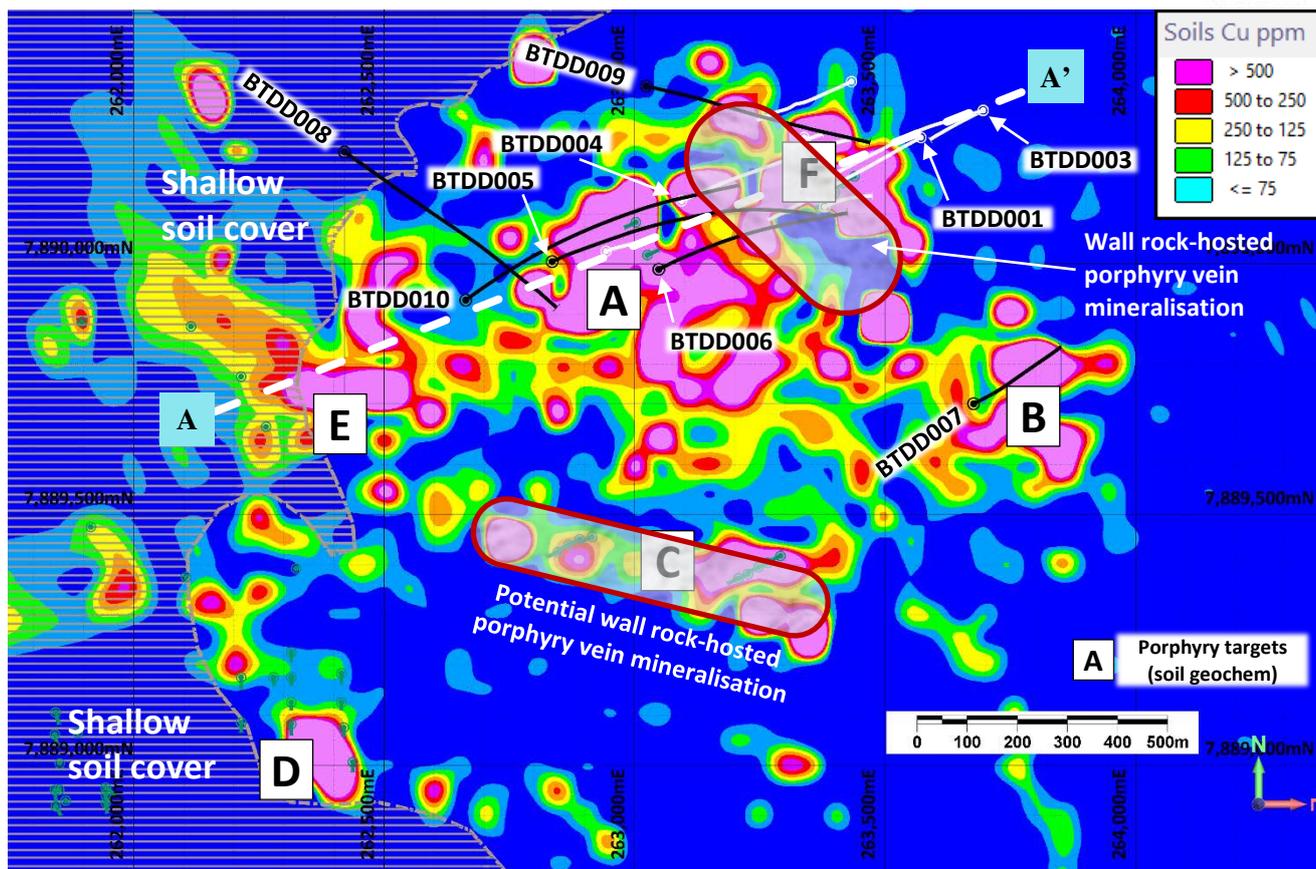
**Figure 17.** Two images of the Bottletree Prospect area showing satellite photographic (left) and regional soil copper geochemistry (right). High soil copper geochemistry anomaly, coincident circular photographic feature and 2021 and 2022 drill holes are indicated on the satellite image (left).

Recently completed studies of drill core indicated that 2022 Phase 1 drilling resulted in the discovery of a large (>1km diameter) porphyry-style alteration and copper-gold-molybdenum mineralisation system.

The cause of the mineralisation and alteration is considered to be a central porphyry intrusion, potentially at close proximity to the two western-most holes, BTDD010 and BTDD005, that were drilled along a line of holes that spanned from BTDD003 (eastern-most hole), BTDD001, BTDD004, BTDD006, BTDD005 to BTDD010 (western-most hole) (Fig. 14).

This single drill line crosses approximately half of the Bottletree soil copper geochemical anomaly and is considered to traverse along the northern outer edge of the system (Figs. 14 and 15).

Consideration of recent drill core studies together with structural and geochemical data indicate that the causative porphyry intrusion is potentially located in close proximity to the south or southwest of holes BTDD010 and BTDD005. An alternate or second source porphyry intrusion is potentially located further west-southwest towards Porphyry Target E (Fig. 15).



**Figure 18.** Plan of Bottletree diamond core drill holes over gridded soil copper geochemistry. Porphyry Targets A to F with highlighted zones of more intense wall rock-hosted porphyry vein mineralisation and alteration zones are indicated. Cross-section profiles in other figures are based on the dashed line A-A'. Area of recent alluvium and colluvium is shown as a hashed area over the western part of the image.

### SIGNIFICANT POTENTIAL FOR LARGE WALL ROCK PORPHYRY COPPER DEPOSIT

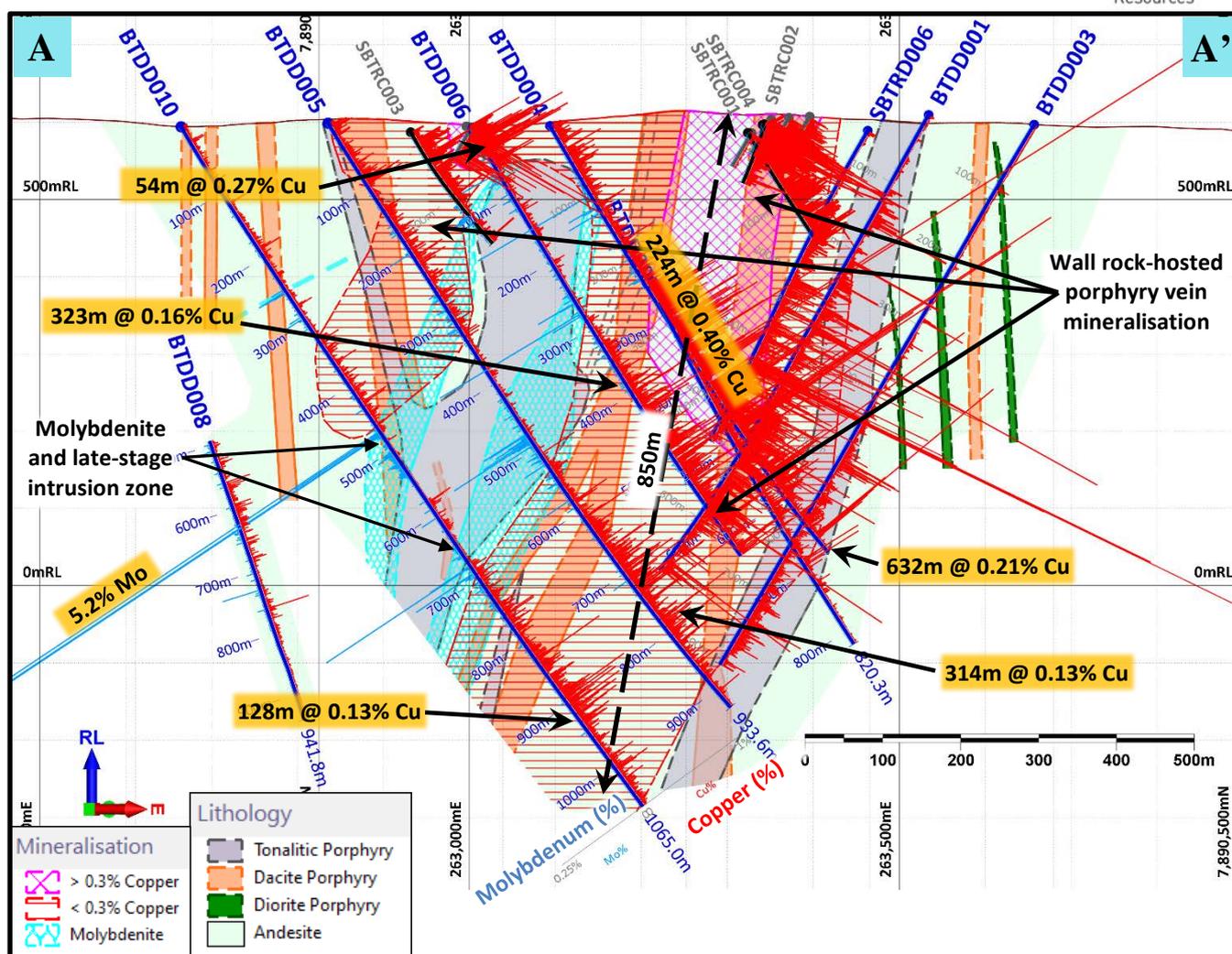
At least two zones of wall rock-hosted porphyry style vein copper and molybdenite mineralisation (**Wall Rock Porphyry Zone**) have been identified (Figs. 18 to 20).

Holes BTDD004, BTDD005, BTDD006 and BTDD010 intersected the northeastern Wall Rock Porphyry Zone at successively deeper intervals, indicating that copper mineralisation extends from surface down to 850 metres down dip (Fig. 19). This mineralised zone appears to have a strike length of at least 500 metres and a true thickness of approximately 300 metres (Figs. 18 and 19).

BTDD004 returned 224m @ 0.40% Cu within an overall interval of 632m @ 0.21% Cu<sup>3</sup>, indicating that significant copper mineralisation is present within the northeastern Wall Rock Porphyry Zone and that there is good potential for a significant copper deposit. Drilling to date has not investigated the subsurface strike extent of the northeastern Wall Rock Porphyry Mineralisation zone.

The southern Wall Rock Porphyry Zone has been identified at surface and by several shallow historical drill holes. Recent mapping has identified this zone over a strike length of approximately 700 metres. This zone has not been drilled by the Company.

<sup>3</sup> Refer ASX announcement dated 2 June 2022



**Figure 19.** Cross section A-A' showing geology, Wall Rock Porphyry Zone and averaged Cu and Mo grades. Higher grade zones of copper and zones of strong molybdenite mineralisation are also shown. Hydrothermal fluid flow, porphyry core and Wall Rock Porphyry Zone potentially sourced from off the section line towards the SSW.

## MOLYBDENITE

Bottletree exhibits an association of strong molybdenite mineralisation with late stage tonalite porphyry intrusions. At the western half of the current line of drill holes, a substantial tonalite porphyry has intruded into earlier copper mineralisation. Copper grades decline in the vicinity of the tonalite intrusion within which, early potassic alteration may display a strong sericite overprint with associated molybdenite mineralisation. **This and other tonalite intrusions are interpreted to overprint the earlier main copper mineralisation event(s), locally stopping out the copper (Figs. 19 and 20).**

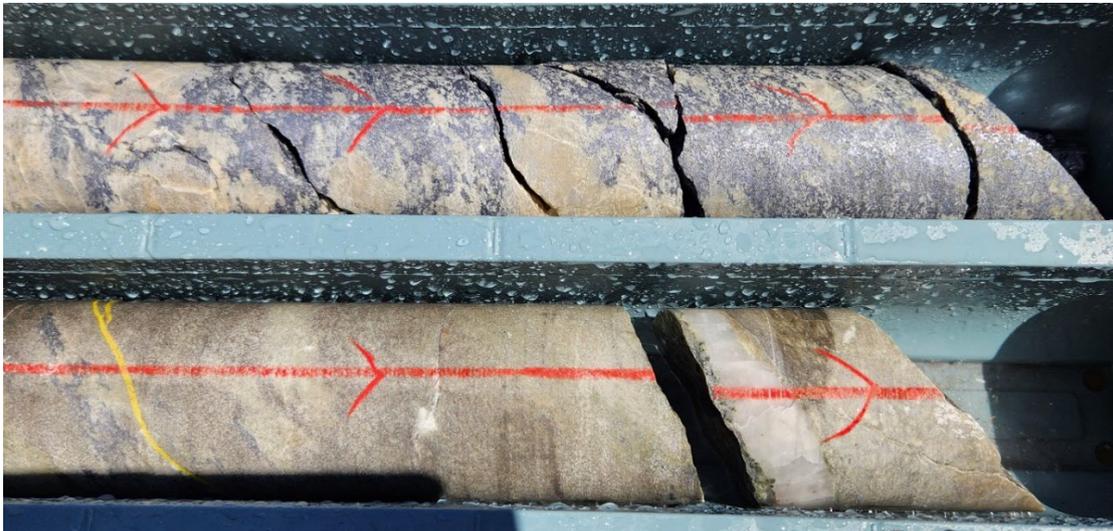
The mineralisation is mainly developed in veins and zones of structural weakness up to 50 centimetres in thickness along the margins and within the tonalite porphyry. **Grades up to 6m @ 1.39% Mo from 470m in BTDD010, including a spectacular 1m @ 5.2% Mo from 474m have been returned<sup>4</sup> (Fig. 20).**

The Mo soil geochemistry indicates that a significant molybdenum zone lies about 250 metres to the south of BTDD010. This zone will be tested for the possibility of a shallow molybdenum resource and a potential causative porphyry intrusion. **With the current molybdenum spot price at above US\$60,000 per tonne, the presence of one or more zones of high Mo grades is likely to have a significant upgrading effect on the overall**

<sup>4</sup> Refer ASX announcement dated 12 April 2023

economics of the system, particularly as an average global grade of porphyry copper deposits has been reported as 0.018% Mo (John, et al., 2010).

Although the temporal and spatial separation of copper and molybdenum mineralisation is common within porphyry systems, the separation observed at Bottletree is likely to indicate the existence of at least two different porphyry source intrusions.



**Figure 20.** Intense molybdenum mineralisation within tonalite porphyry (1m @ 5.2% Mo within 6m @ 1.39% Mo, BTDD010, 474m – 476m).



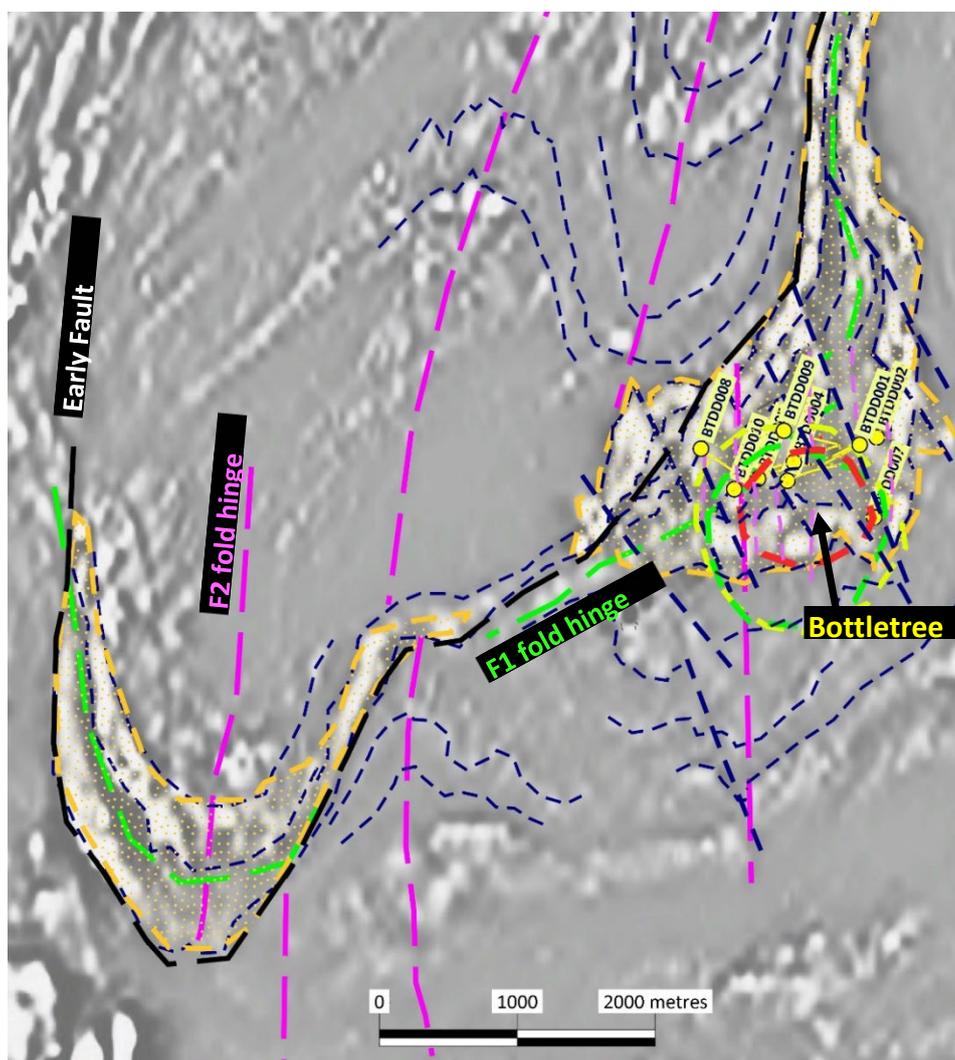
**Figure 21.** Examples of wall rock-hosted vein mineralisation: BTDD005 – 699.9m (left); BTDD005 – 708.5m (middle) – buck quartz vein with chalcopyrite-pyrite-pyrrhotite infill; and BTDD006 – 531.7m (right) – quartz-pyrite-chalcopyrite-pyrrhotite.

## PORPHYRIES AND THE BOTTLETREE REGIONAL SETTING

Porphyry Cu-Au deposits are usually developed within the collision zones of two tectonic plates where subduction of one plate under the other occurs. The Greenvale Project area covers a remnant island arc system formed from subduction, which has resulted in several porphyry Cu-Au prospects along the trend of the <60km belt.

Whilst collision and subduction events are dominated by overall regional compressional forces, localised dilational zones may develop during the collisional event and also as a result of a change in the tectonic dynamics with time. Zones or periods of dilational forces are considered to facilitate the intrusion of deeper magmas into shallower and cooler rocks. Porphyry Cu-Au deposits and the associated alteration systems are formed from magmatic fluids derived from the porphyry intrusions.

As mentioned above, the large alteration and mineralisation system discovered at Bottletree is considered to be caused by a nearby porphyry intrusion that has formed within the identified island arc system. Interpretation of regional magnetic data indicates that Bottletree is also located within a large, regionally-identifiable dilational zone (**Fig. 22**). It is plausible that more than one mineralised porphyry is developed within this dilational structure.



**Figure 22.** Background image of regional aerial magnetics data with interpretation of structures that are relevant to the development of a dilational zone near the eastern edge of the image within which, the Bottletree Prospect is located. The circular zones marked in red and green dashed lines represent a silver and lithium geochemical anomaly (respectively) highlighting the Bottletree alteration system.

## 2023 BOTTLETREE PROGRAM

Exploration drilling at Bottletree is at an early stage with only four holes targeting a porphyry core having been completed.

The 2023 Bottletree Phase 2 Drilling Program, as planned, comprised up to 10 diamond core holes for a total of 4,250 metres (**Figs. 23 to 26**). The hole depths range from 350 metres to 500 metres.

However, only a total of three holes were completed due to insufficient time being available before the end of the field season.

The objectives of the program, as originally planned, are summarised as follows:

**1. Target a high priority interpreted potassic porphyry core (*these holes were not drilled in 2023*)**

A large, intense and untested Cu-in-soil geochemical anomaly that is coincident with a Mo-in-soil anomaly, magnetically low, interpreted intrusion feature and an interpreted satellite feature. This is also the potential location of the source of hydrothermal fluids as interpreted on the basis of limited 3-dimensional modelling from porphyry pathfinder indicators identified from the 2022 drill holes.

A “fence” of 3 southeast-oriented holes (**BTP002, BTP003, and BTP009**), a deeper southeast-oriented hole and a northeast-oriented hole are designed to target this zone;

**2. Delineate extent of wall rock porphyry mineralisation associated with Discovery Outcrop (*these holes and one additional hole at this target were completed in 2023*)**

Based on 2022 drill holes, the wall rock porphyry zone extends from surface to at least 850m down dip depth, with a thickness of at least 250m. The strike extent of this zone has not yet been determined and remains open along strike and at depth.

Target “gaps” or areas lacking drill coverage in zones of best developed Cu mineralisation in the northeastern part of the prospect area. New holes (350-500m in length) are planned to expand the dimensions of this mineralised zone, with a focus on the shallower zones.

Two holes (**BTP014 and BTP004**) are planned to cover the intervening gap between SBTRD006 and BTDD004;

**3. Second potential wall rock porphyry zone (*this hole was not drilled in 2023*)**

Target the western extension of the east-west-trending Cu gossan in the southern part of the prospect area.

Short (60m), shallow, historical reverse-circulation drill holes have already demonstrated that the gossan zone is mineralized below well below surface. However, a large Cu-mineralised gossan exposed on surface to the west is completely untested at depth. This zone coincides with strong Cu and Au-in soil geochemical anomalies and a strong magnetic high.

Drillhole **BTP018** is oriented towards the southwest to test the surface Cu gossan; and

**4. Western copper anomaly (*this hole was not drilled in 2023*)**

Targeting a very strong and extensive Cu-in-soils geochemical anomaly that coincides with a very prominent northwest-trending magnetic low feature (potential prospect-scale structure) and the western extension of the main east-west-trending Cu mineralised zone identified in the 2022 drilling program.

Drill hole **BTP016** is oriented to the southwest to test this zone.

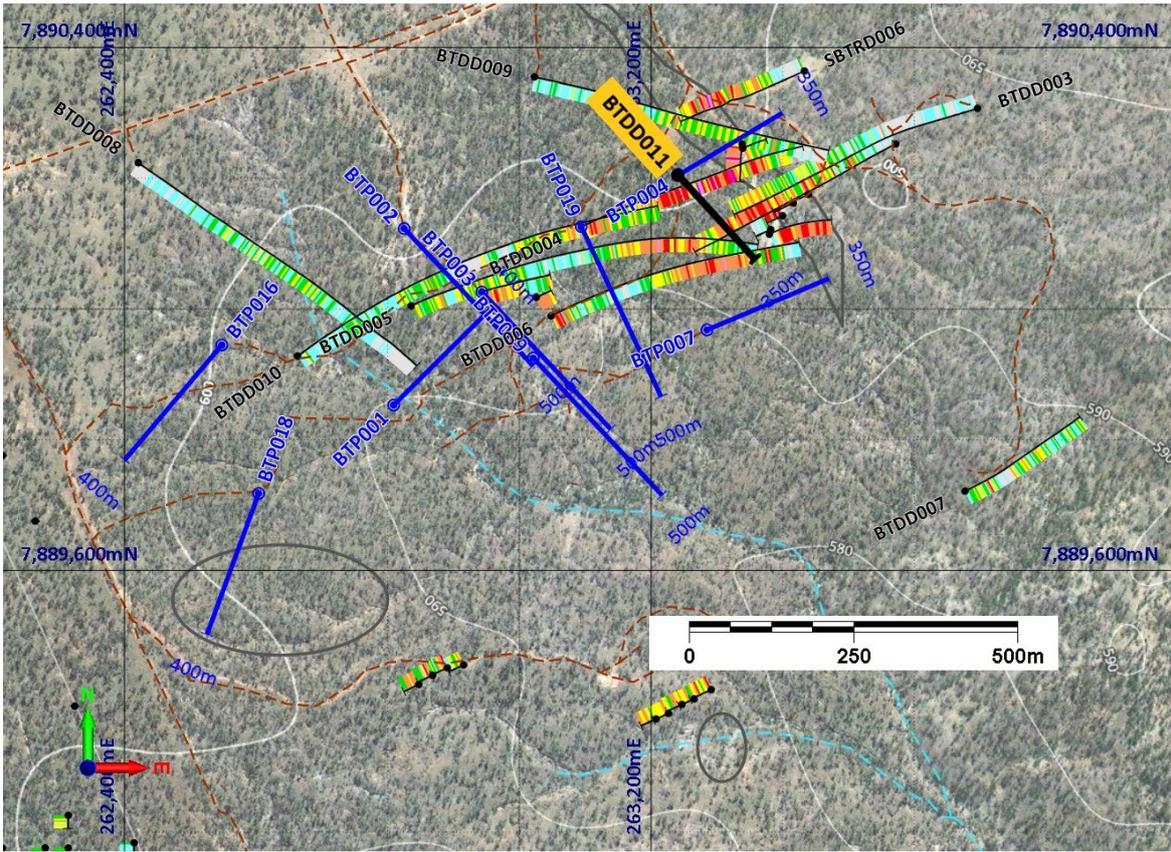


Figure 23. Satellite plan view of Bottletree Prospect area showing planned 2023 program holes (prefix BTP), current hole BTDD011 and 2021 and 2022 drill holes with Cu grade categories indicated as histograms along drill hole traces.

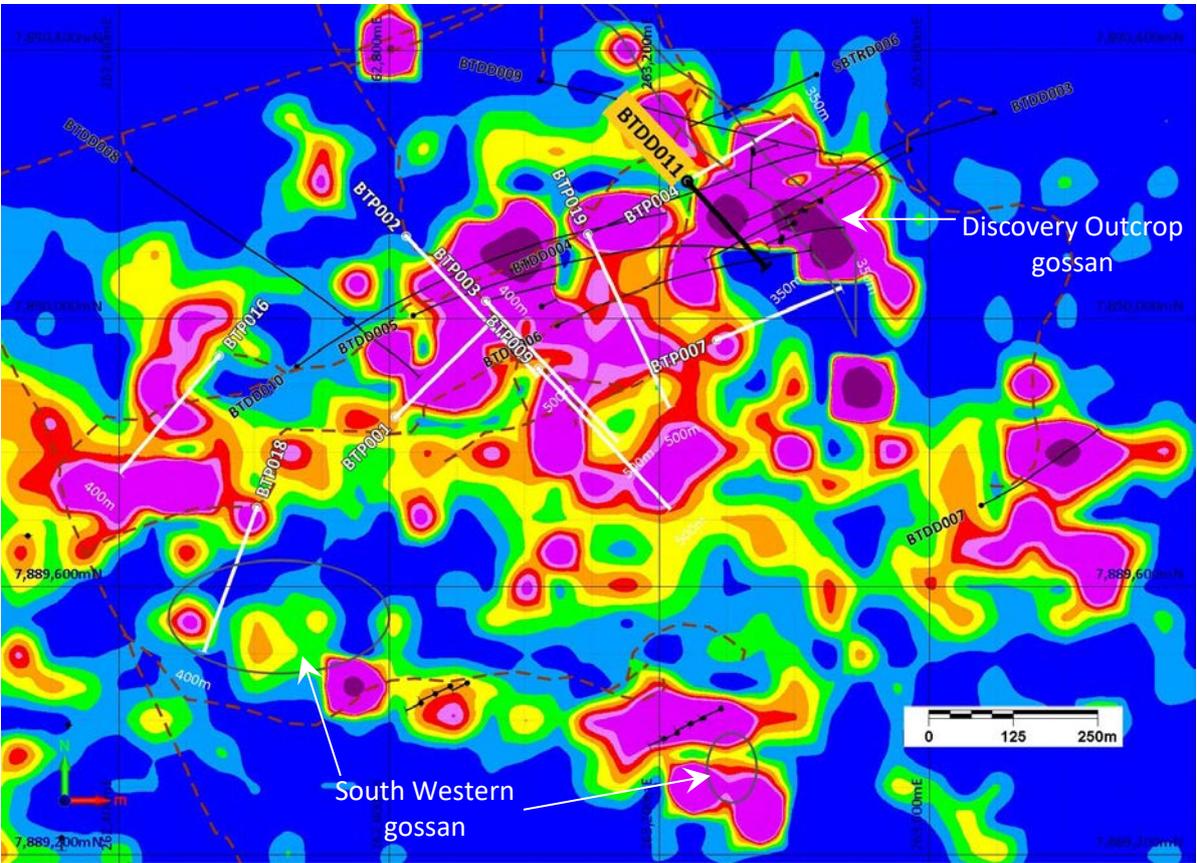


Figure 24. Plan view of Bottletree Prospect area showing gridded Cu soil geochemistry, planned 2023 program holes (prefix BTP), current hole BTDD011 and 2021 and 2022 drill holes.

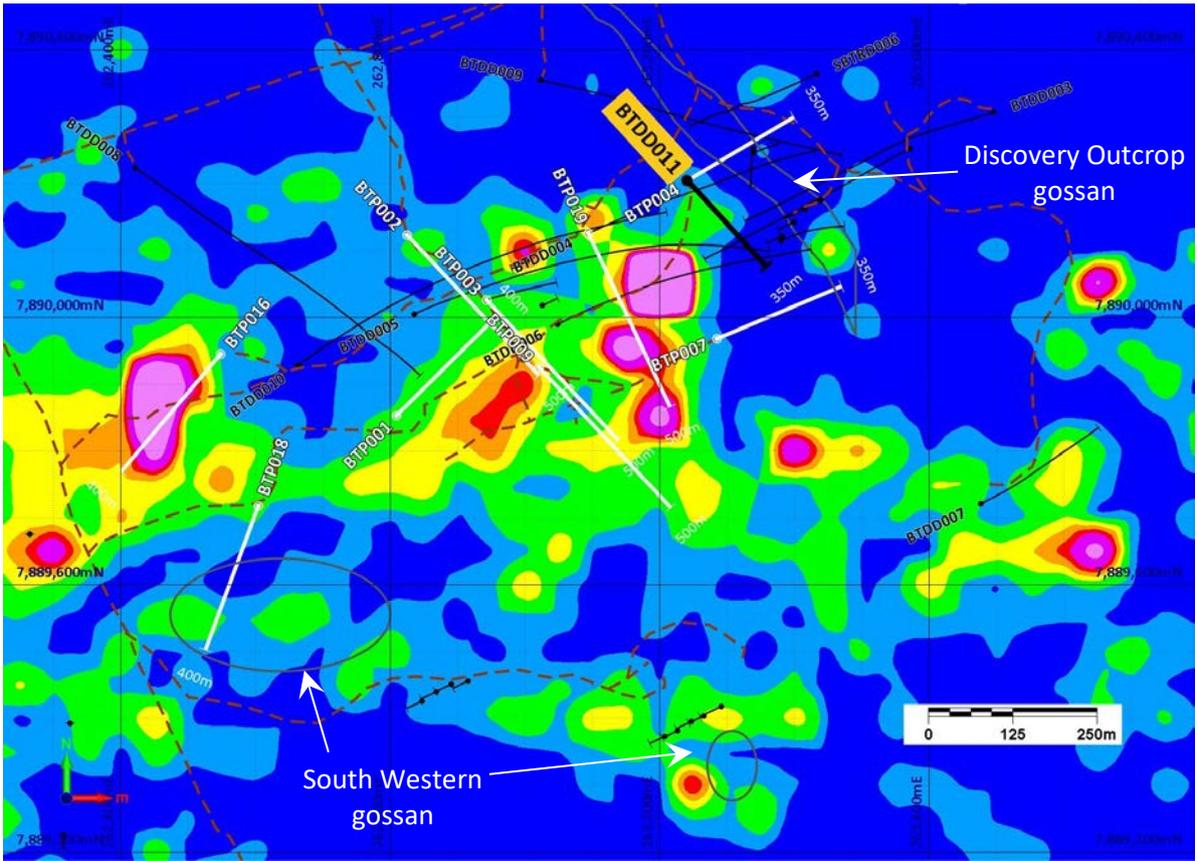


Figure 25. Plan view of Bottletree Prospect area showing gridded Mo soil geochemistry, planned 2023 program holes (prefix BTP), current hole BTDD011 and 2021 and 2022 drill holes.

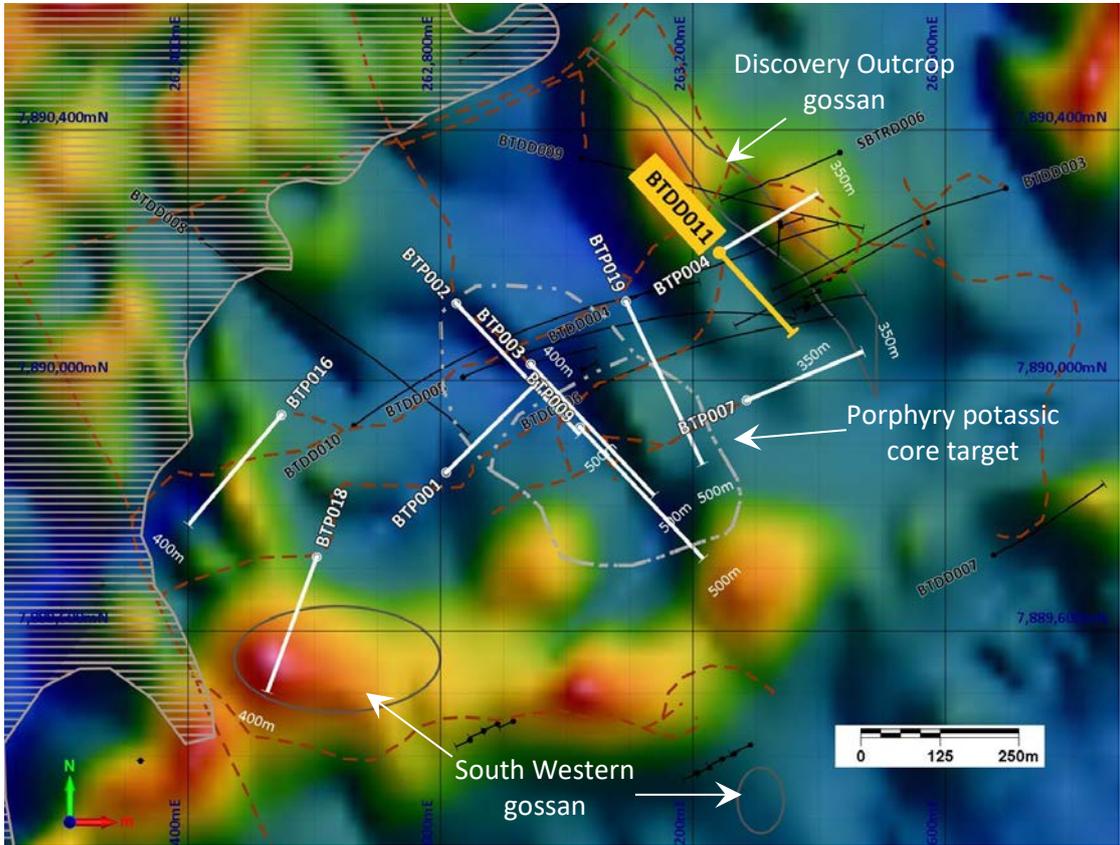


Figure 26. Plan view of Bottletree Prospect area showing planned 2023 program holes (prefix BTP), current hole BTDD011 and 2021 and 2022 drill holes against aerial magnetic (RTP) processed image.

## STEAM ENGINE GOLD PROJECT

The Company continues to evaluate the potential to realise revenue generation as presented by the Steam Engine Mineral Resource Estimate, which is currently up to **196,000 oz Au @ 1.5 g/t Au (Table 2)<sup>5</sup>** (Figs. 27 and 28).

**Table 2. Steam Engine Gold Project updated JORC, 2012 Mineral Resource Estimates**

Model	Classification	Tonnes	Grade (g/t Au)	Ounces (Au)
<b>OWNER OPERATOR MODEL</b> (0.25 g/t Au block grade cut-off)	MEASURED	800,000	2.1	53,000
	INDICATED	1,420,000	1.5	68,000
	INFERRED	1,960,000	1.2	75,000
<b>TOTAL</b>		<b>4,180,000</b>	<b>1.5</b>	<b>196,000</b>
<b>TOLL TREATMENT MODEL</b> (1.0 g/t Au block grade cut-off)	MEASURED	590,000	2.6	49,000
	INDICATED	1,020,000	1.9	62,000
	INFERRED	1,110,000	1.7	60,000
<b>TOTAL</b>		<b>2,720,000</b>	<b>2.0</b>	<b>171,000</b>

During 2022, the Company was conducting a pre-feasibility study process on the basis of a haulage and toll treatment operation. However, as a result of fluctuating cost base assumptions at the time, the study was put on hold. After further strategic review, METS Engineering Group Pty Ltd was engaged during mid-2023 to undertake a **Process Options Study**.

The objective of the Process Options Study is to compare the available options for gold recovery processing methods for the Steam Engine Project. The processing options considered to be potentially applicable are:

1. Toll milling;
2. CIP plant on site;
3. Vat leach on site;
4. Float a concentrate to ship off site;
5. In situ leaching; and
6. Beneficiate the ore and ship off site.

As a potential outcome, it is considered possible that the study may indicate that the Mineral Resource requires further upgrade by the addition of a certain amount of gold Resources in order to ensure an economically feasible outcome.

The study is nearing completion and the Company anticipates the delivery of a draft report during mid to late February 2024.

<sup>5</sup> Refer ASX announcement dated 11 April 2022

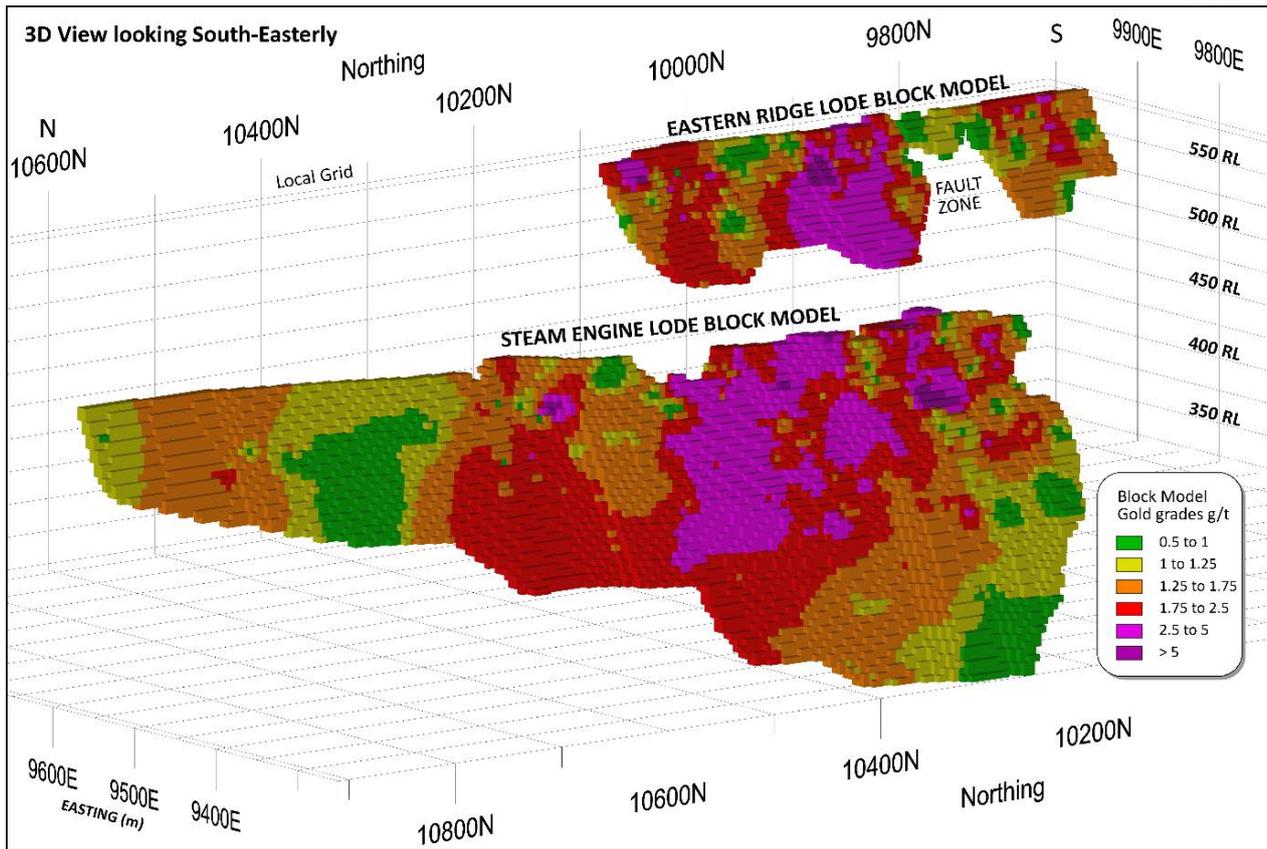


Figure 27. Oblique 3D view (from above GL) of the Steam Engine and Eastern Ridge lode high-grade block models (1.0 g/t Au cut-off) viewed towards grid south easterly showing block grade categories.

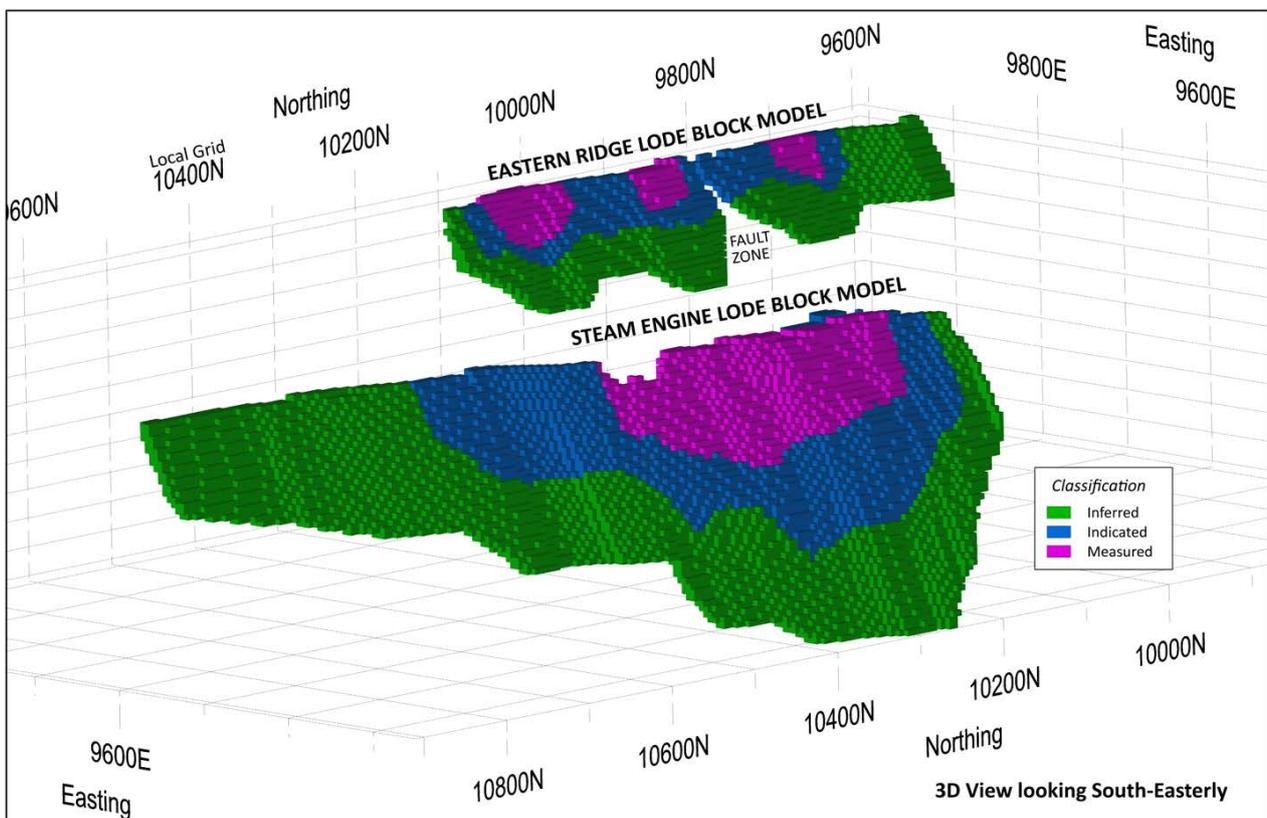
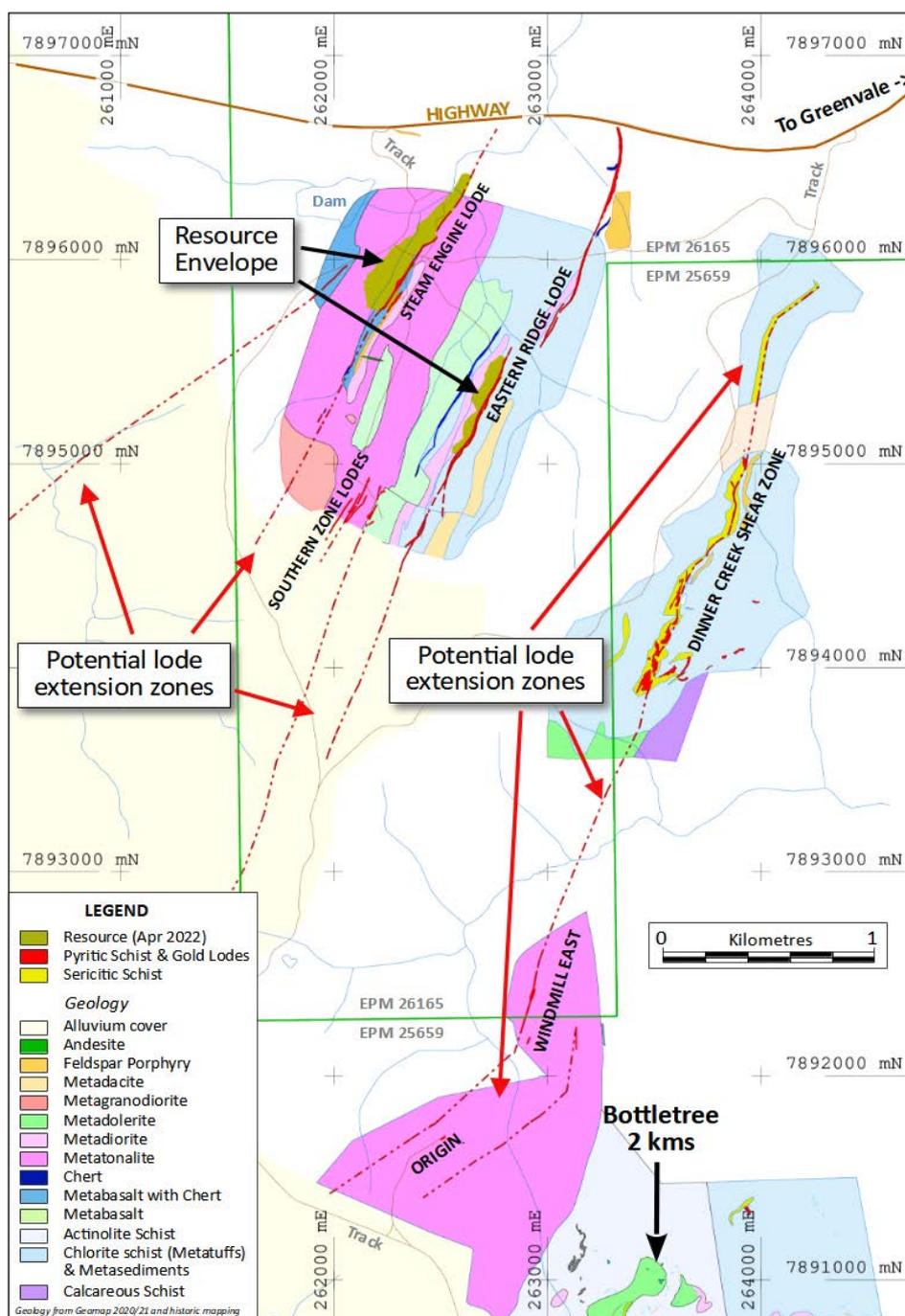


Figure 28. Oblique 3D view (from above GL) of the Steam Engine and Eastern Ridge lode high-grade block models (1.0 g/t Au cut-off) looking towards grid south easterly showing JORC, 2012 Measured, Indicated and Inferred confidence categories.

## POTENTIAL TO INCREASE TOTAL MINERAL RESOURCES

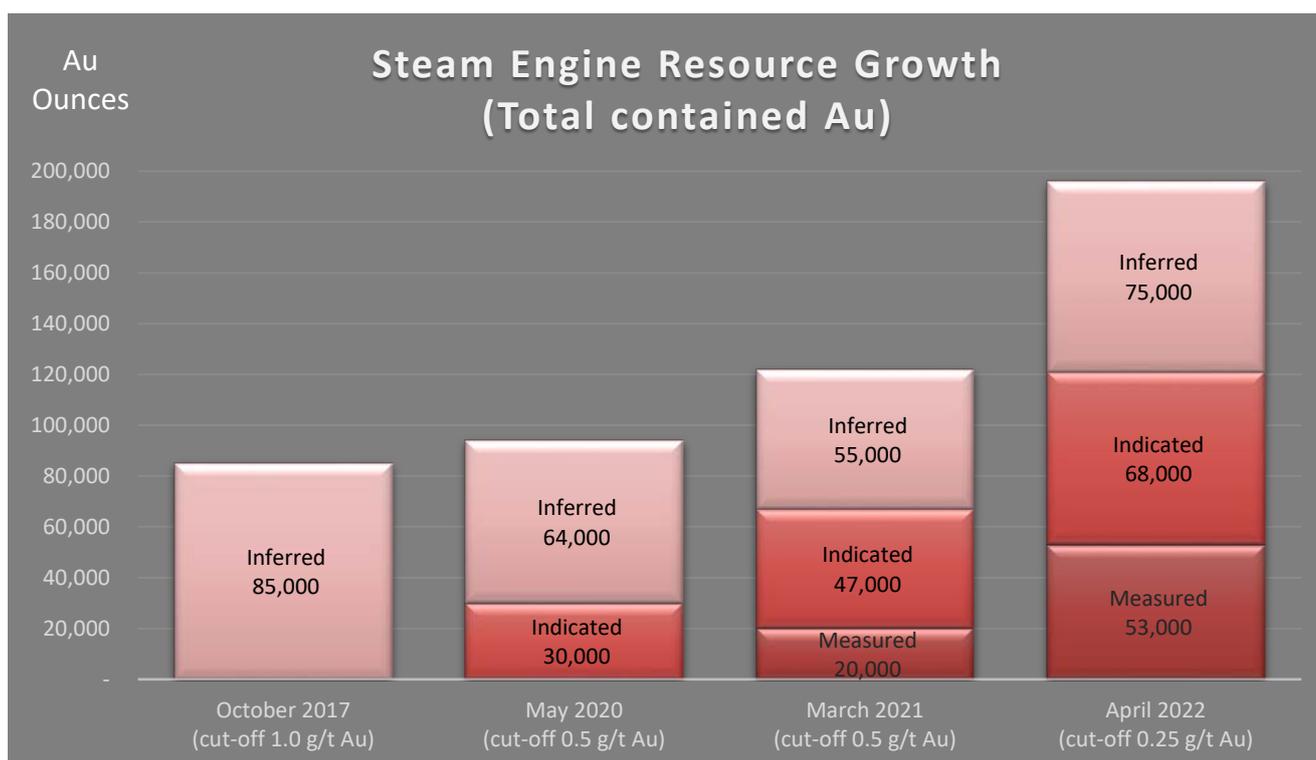
The Company considers that considerable potential exists at Steam Engine to rapidly increase the total gold Resource inventory from the Steam Engine and Eastern Ridge Lodes as well as the yet to be tested lode structures (Figs. 29 and 30).

The current Mineral Resource envelope is only developed to shallow depths (average vertical depth of less than 100 metres) and along 1.3 kms of total lode strike length. A total of at least 14 kms of additional lode potential along the known lode structures has been identified by recent studies<sup>6</sup>.



**Figure 29.** Geology plan showing outcropping gold lodes, Steam Engine and Eastern Ridge Resource envelopes (green polygons) and lode extension corridors as supported by soil geochemistry, historic workings or outcropping lodes.

<sup>6</sup> Refer ASX announcement dated 11 April 2022



**Figure 30.** Chart showing growth of total contained Au metal from a series of Resource Estimations modelled on the Steam Engine Gold Project.

## REFERENCES

John, D.A., Ayuso, R.A., Barton, M.D., Blakely, R.J., Bodnar, R.J., Dilles, J.H., Gray, Floyd, Graybeal, F.T., Mars, J.C., McPhee, D.K., Seal, R.R., Taylor, R.D., and Vikre, P.G., (2010). Porphyry copper deposit model, chap. B of Mineral deposit models for resource assessment: U.S. Geological Survey Scientific Investigations Report 2010–5070–B, 169 p.

## **CORPORATE AND COMMERCIAL**

### **Investments**

Superior maintains an exposure in relation to ASX listed entity, Deep Yellow Limited (ASX:DYL).  
As at 31 December 2023, the Company held 74,244 DYL shares with a closing value of \$80,925.96.

### **Related Party Matters**

Payments to Directors of the Company and related parties during the December 2023 Quarter totalled \$162,126.

### **ASX Listing Rule 5.3.3**

Appendix 1 sets out information that is required under ASX Listing Rule 5.3.3 (for exploration entities).

**Peter Hwang**  
**Managing Director**

Contact:

Mr Peter Hwang  
Ph: (07) 3847 2887

Further Information:

[www.superiorresources.com.au](http://www.superiorresources.com.au)  
[manager@superiorresources.com.au](mailto:manager@superiorresources.com.au)

**Reporting of Results:** *The Exploration Results, Mineral Resource Estimations and exploration interpretations contained in this report reflect information that has been reported in ASX market announcements as noted within this report.*

*Information in this report that relates to the Bottletree Project were originally announced on the ASX Market Announcements Platform on 2 June 2022, 12 April 2023 and 28 April 2023.*

*Information in this report that relates to the Cockie Creek Copper Project were originally announced to the ASX Market Announcements Platform on 25 September 2023, 16 October 2023, 6 November 2023, 11 December 2023 and 29 January 2024.*

*Information in this report that relates to the Cockie Creek Copper Project Mineral Resource Estimate were originally announced to the ASX Market Announcements Platform on 27 March 2013.*

*Information in this report that relates to the Steam Engine Gold Project Mineral Resource Estimate were originally announced to the ASX Market Announcements Platform on 11 April 2022*

**Reliance on previously reported information:** *In respect of references contained in this report to previously reported Exploration Results, Mineral Resources or Exploration Targets, the Company confirms that it is not aware of any new information or data that materially affects the information, results or conclusions contained in the original reported document. In respect of previously reported Mineral Resource estimates, all originally reported material assumptions and technical parameters underpinning the estimates continue to apply and have not been materially changed or qualified. The form and context in which the relevant Competent Person's findings are presented have not been materially modified from the original document.*

**Forward looking statements:** *This document may contain forward looking statements. Forward looking statements are often, but not always, identified by the use of words such as "seek", "indicate", "target", "anticipate", "forecast", "believe", "plan", "estimate", "expect" and "intend" and statements that an event or result "may", "will", "should", "could" or "might" occur or be achieved and other similar expressions. Indications of, and interpretations on, future expected exploration results or technical outcomes, production, earnings, financial position and performance are also forward-looking statements. The forward-looking statements in this presentation are based on current interpretations, expectations, estimates, assumptions, forecasts and projections about Superior, Superior's projects and assets and the industry in which it operates as well as other factors that management believes to be relevant and reasonable in the circumstances at the date that such statements are made. The forward-looking statements are subject to technical, business, economic, competitive, political and social uncertainties and contingencies and may involve known and unknown risks and uncertainties. The forward-looking statements may prove to be incorrect. Many known and unknown factors could cause actual events or results to differ materially from the estimated or anticipated events or results expressed or implied by any forward-looking statements. All forward-looking statements made in this presentation are qualified by the foregoing cautionary statements.*

**Disclaimer:** *Superior and its related bodies corporate, directors, officers, employees, agents or contractors do not make any representation or warranty (either express or implied) as to the accuracy, correctness, completeness, adequacy, reliability or likelihood of fulfilment of any forward-looking statement, or any events or results expressed or implied in any forward-looking statement, except to the extent required by law. Superior and its related bodies corporate and each of their respective directors, officers, employees, agents and contractors disclaims, to the maximum extent permitted by law, all liability and responsibility for any direct or indirect loss or damage which may be suffered by any person (including because of fault or negligence or otherwise) through use or reliance on anything contained in or omitted from this presentation. Other than as required by law and the ASX Listing Rules, the Company disclaims any duty to update forward looking statements to reflect new developments.*

## Appendix 1

### DISCLOSURES REQUIRED UNDER ASX LISTING RULE 5.3.3

- Mining tenements held at the end of the quarter and their location

State	Tenement Name	Tenement ID	Location	Interest	Holder	Comments
QLD	Hedleys 2	EPM15670	Nicholson	100%	SPQ	Granted
QLD	Hedleys South	EPM18203	Nicholson	100%	SPQ	Granted
QLD	Tots Creek	EPM19097	Victor	100%	SPQ	Granted
QLD	Scrubby Creek	EPM19214	Victor	100%	SPQ	Granted
QLD	Cockie Creek	EPM18987	Greenvale	100%	SPQ	Granted
QLD	Cassidy Creek	EPM19247	Greenvale	100%	SPQ	Granted
QLD	Dinner Creek	EPM25659	Greenvale	100%	SPQ	Granted
QLD	Wyandotte	EPM25691	Greenvale	100%	SPQ	Granted
QLD	Cockie South	EPM26165	Greenvale	100%	SPQ	Granted
QLD	Victor Extended	EPM26720	Victor	100%	SPQ	Granted
QLD	Twelve Mile Creek	EPM26751	Greenvale	100%	SPQ	Granted
QLD	Dido	EPM27754	Greenvale	100%	SPQ	Granted
QLD	Arthur Range	EPM27755	Greenvale	100%	SPQ	Granted
QLD	Phantom Creek	EPM27932	Greenvale	100%	SPQ	Granted
QLD	Six Mile Creek	EPM28630	Greenvale	100%	SPQ	Application
QLD	Lyndhurst	EPM28632	Greenvale	100%	SPQ	Application
QLD	Middle Creek	EPM28633	Greenvale	100%	SPQ	Application

- Mining tenements acquired and disposed of during the end of the quarter and their location

State	Tenement Name	Tenement ID	Location	Interest	Holder	Comments

- Beneficial percentage interests held in farm-in or farm-out agreements at end of the quarter

State	Project Name	Agreement Type	Parties	Interest held at end of quarter by exploration entity or child entity	Comments

Abbreviations:

EPM Exploration Permit for Minerals, Queensland  
 SPQ Superior Resources Limited