



Sunstone Metals Limited (ASX: STM)

19 April 2023

Epithermal intersection of 176.7 m @ 1.05 g/t AuEq could be a game changer (Update)

Recommendation: Spec Buy

Our View

Sunstone Metals (“Sunstone” or “the Company”) has recently announced a high/intermediate sulphidation epithermal gold intersection in hole LMDD017 of 176.7 m @ 0.97 g/t Au, 10 g/t Ag and 0.2% Zn from the Limon prospect, one of the priority targets at the Bramaderos Porphyry Copper-Gold Project (“Bramaderos”) in Southern Ecuador.

This has been followed up by epithermal gold mineralisation being intersected at ~660 m downhole in hole LMDD020, indicating the potential for at least a +550 m vertical extent of epithermal mineralisation at Limon, with this possibly reflecting a telescoped system, with the epithermal mineralisation overprinting the pre-existing porphyry Cu-Au mineralisation that has been intersected throughout the prospect.

Drilling to follow up the LMDD017 intersection has recently commenced, which, if successful, could define a sizable gold resource that would provide a +1 g/t AuEq kick-starter to an overall project, that would then bring the recently defined resources into play (156 Mt @ 0.53 g/t AuEq, for 2.7 Moz of AuEq). Our view is that the Bramaderos porphyry/epithermal cluster has the potential to host over 10 Moz AuEq, with this reinforced by the additional 3.3 Moz to 8.6 Moz AuEq in the exploration target released in parallel with the MRE.

A sizable, near surface higher grade starter resource has the potential to quickly pay off capital and provide significant cash to pay for further development of a longer-term operation, that will include lower grade mineralisation down the track – this historically has been a typical scenario for porphyry deposits.

One example that comes to mind is Tujuh Bukit, with the current oxide gold leach operation producing ~900,000 oz of gold to date at an AISC of ~US\$650/oz, at an average of 150,000 oz per year, and peak of 223 kozpa for a 7 Mtpa operation. Although the hole LMDD017 mineralisation is not oxidised, it is hosted in a hydrothermal breccia, and the company’s view is that it may be amenable to heap leaching – metallurgical test work is currently under way.

Another example of a ~1 g/t AuEq (this time standalone) project is McPhillamy’s in NSW, which has recently received final approvals. This has the potential to produce ~200,000 ozpa of Au at a 7 Mtpa throughput through a conventional cyanidation circuit. The 2017 PFS indicated an AISC in the order of A\$1,000/oz and an initial capital cost of A\$215 million, however these will be updated in the current DFS.

El Palmar also continues to deliver, with the Company now drill testing the large T2 target, defined by a magneto-telluric (“MT”) conductivity anomaly, with previous drilling and surface features highlighting the prospectivity.

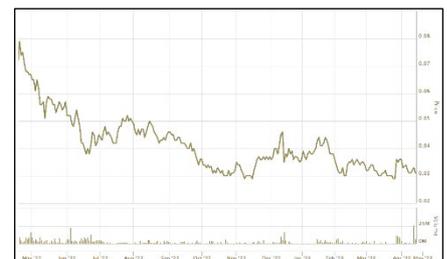
Key Points

- **Quality assets in a highly prospective region:** Ongoing work has demonstrated the potential to continue to deliver positive results, with the projects located within the highly productive cordillera of Western South America, the world’s largest copper producing region.
- **A solid base to build upon:** The MRE and exploration target at Bramaderos forms a solid base for the Company to build upon, with the MRE limited to just two of the many prospects at the Project.
- **Personnel with the right experience:** The key personnel in Sunstone have extensive successful and applicable experience, including being involved in the Tujuh Bukit (Indonesia) and Cascabel (Ecuador) porphyry discoveries – this experience is now being applied successfully to Sunstone’s projects.
- **Well served by infrastructure:** All projects are in areas of good transport and utility infrastructure and are located at relatively low RLs (up to 1,500 m) and manageable topography in the Cordillera Occidental of Ecuador – the tenements cover a mixture of farming and wooded land, with the Company having good relationships with locals.
- **Ongoing news flow:** Ongoing activities should produce steady and positive newsflow.

Summary (AUD)

Structure and Cash	
Market capitalisation (undiluted)	\$82.5 m
Share price (18 April 2023)	\$0.0315
52 week low	\$0.027
52 week high	\$0.08
Cash and liquid assets (31/12/22)	\$10.0 m
Ordinary shares (undiluted)	2,620 m
Unlisted options	12.0 m
Performance rights	28.0 m
In-money options	0.0 m
Fully diluted	2,660 m

One year share price graph (AUD)



Directors & Management

Mr Graham Ascough	Non-Executive Chairman
Mr Malcolm Norris	CEO & Managing Director
Mr Stephen Stroud	Non-Executive Director
Dr Bruce Rohrlach	GM - Geology
Mr Ray Robinson	GM – Studies and Technical Services
Mr Gavin Leicht	CFO & Company Secretary

Significant Shareholders

HSBC Custody Nominees (Aust)	12.45%
Top 20	36.16%
Directors and Management	5.3%

Our conflicts of interest are disclosed on the last page of this report

Background

Sunstone Metals (on which we initiated in November 2021) is an Ecuadorean focused porphyry and epithermal Cu-Au-Ag explorer (with a Head Office in Brisbane, Queensland), with three properties in the Cretaceous to Tertiary arc rocks of the Cordillera Occidental. Ongoing work on two of the properties, El Palmar and Bramaderos (Figure 1) has confirmed the potential and vindicates the Company's 2017 decision to change focus from Scandinavia to Ecuador.

Figure 1: Project locations (Source Sunstone)



The sale of the European assets, and an A\$22.44 million capital raising in April 2022 has kept Sunstone well-funded (with around A\$11.6 million in cash and listed shares as of December 31, 2022) and in an ongoing position to give the assets the attention that porphyry targets require.

The original Ecuadorian acquisition was Bramaderos in 2017, followed by El Palmar in 2020. The Company has undertaken most work at Bramaderos. However, rather than just being a one trick pony, Sunstone took hold of the El Palmar opportunity, which has delivered on the relatively limited work to date. Most recently the Company has acquired the Verde Chico property immediately to the west of El Palmar – Verde Chico is considered prospective for epithermal Au-Ag and porphyry Cu-Au mineralisation.

Activities completed since our December 2022 Update Report include:

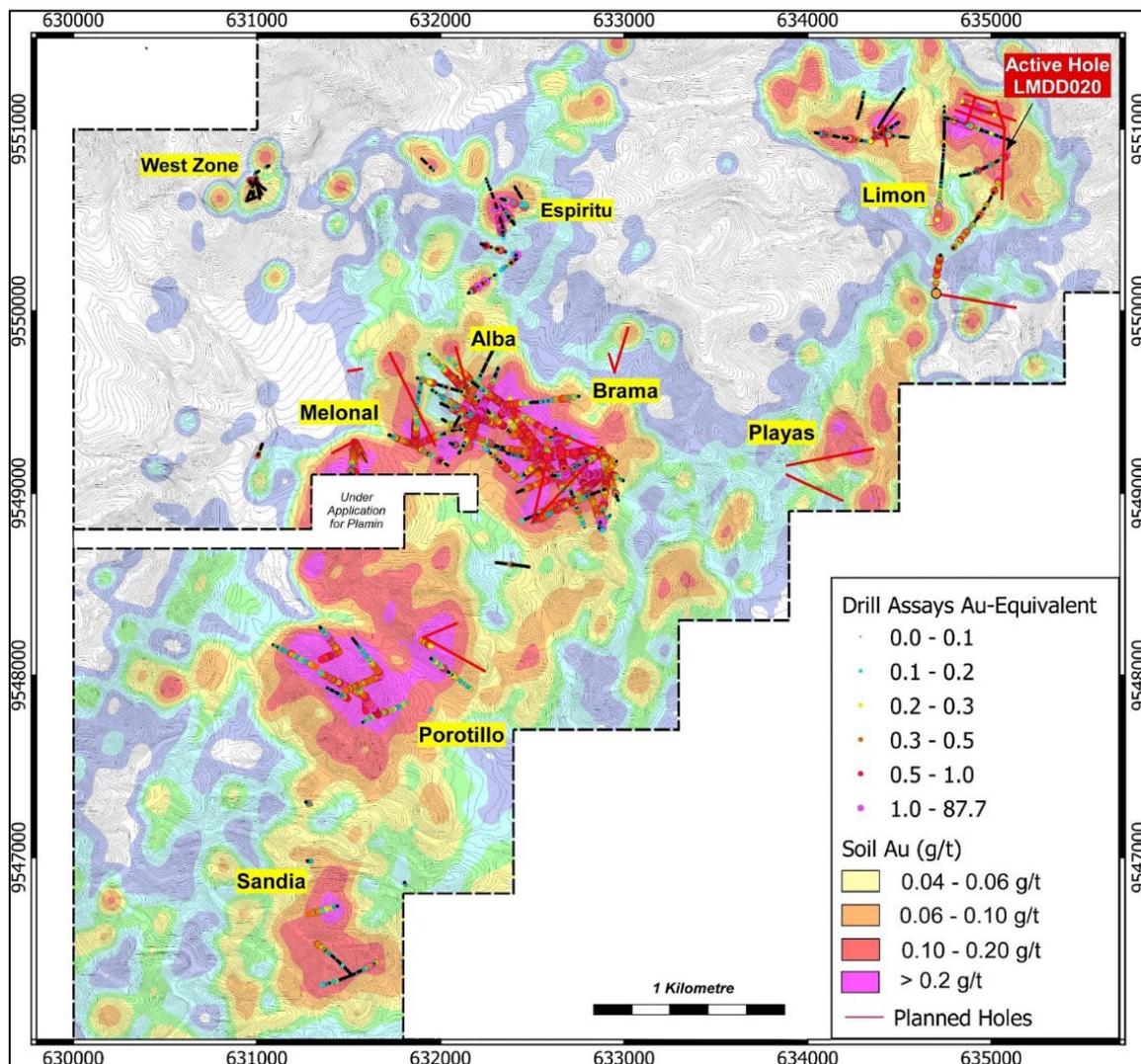
- Drilling at the Limon prospect at Bramaderos (eight holes for 3,200m),
- Drilling at the T2 and Tituana Targets at El Palmar (twelve holes for 3,200 m); and,
- Working up other targets at both projects, including geological mapping and geochemical sampling.

The ongoing drill programmes should result in steady newsflow. Furthermore, metallurgical test work on Bramaderos mineralisation, both porphyry and epithermal is ongoing. Work at the more recently acquired Verde Chico Project is concentrating on permitting and community relations.

Bramaderos Porphyry Copper-Gold Project – 87.5%, partner is loan carried to commercial production

Following the completion of the initial Brama-Alba MRE in late 2022, Sunstone has focused activities on other prospects, including Limon (Figure 2), which had previously returned intersections of porphyry and subordinate epithermal mineralisation, generally at relatively low grades, and which forms part of the late 2022 exploration target, along with Melonal and outlying parts of the Brama-Alba complex (Figure 2).

Figure 2: Bramaderos tenement and prospects on soil Au geochemistry image (Source: Sunstone)

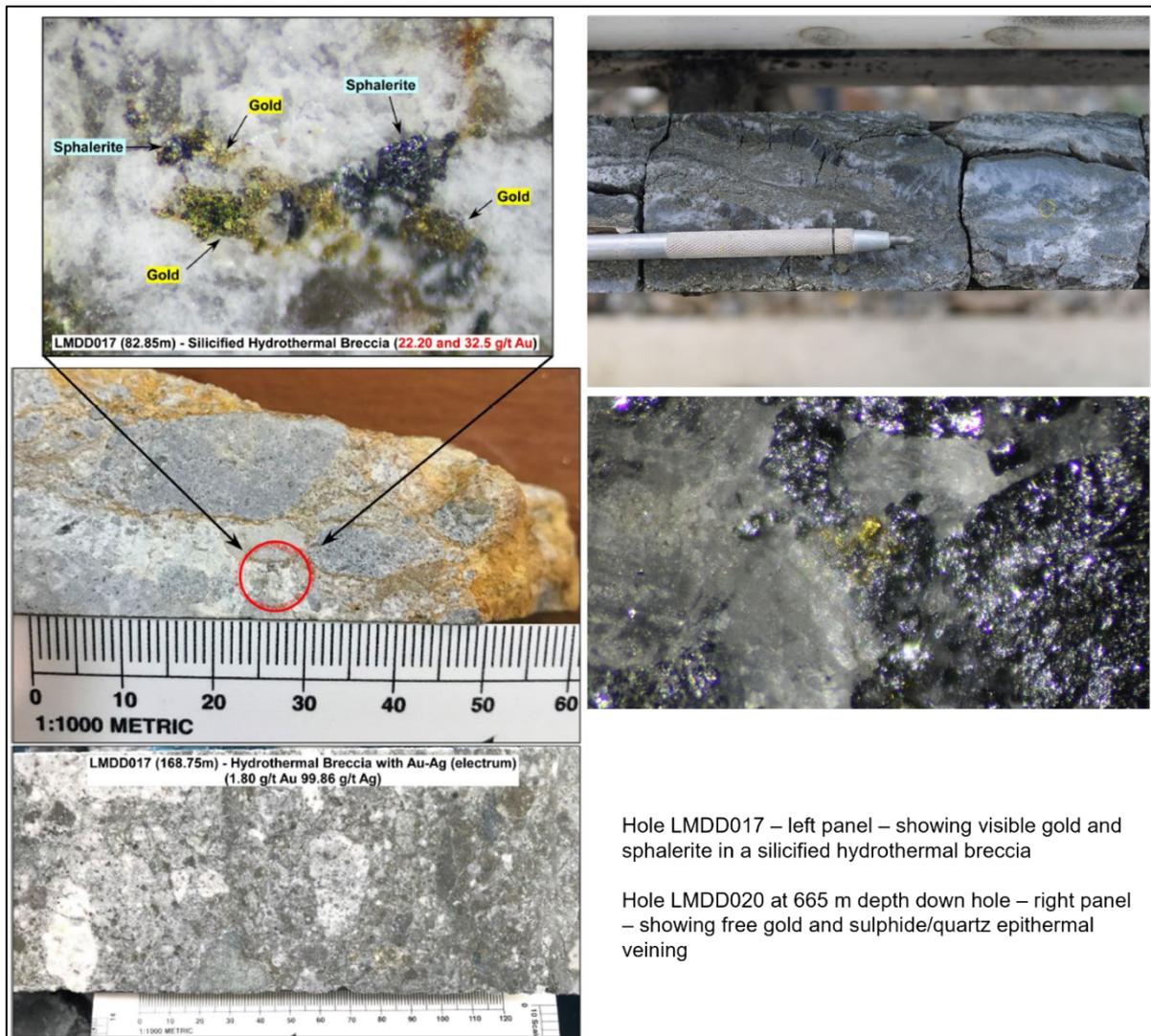


Limon presents a large target located 2.7 km NE of Brama and measuring 1.5 km x 1 km, based on surface alteration, geophysics and geochemical anomalism (Figures 2 and 4). Relevant features include a broad, NW structurally controlled zone of subdued magnetics, coincident zinc soil geochemical anomalism, and intense lithocap alteration, pointing towards the potential for epithermal mineralisation telescoped on pre-existing, but genetically related porphyry mineralisation (a common feature of such systems). This has been borne out in several holes to date (including earlier holes in the current programme), which have returned relatively shallow and variable width intervals of intermediate to high sulphidation epithermal mineralisation in addition to the porphyry style mineralisation – mineralisation is open to the north, east, west, and at depth.

The potential for significant porphyry mineralisation was confirmed in hole LMDD010 (the first of the current programme), which returned 79 m @ 0.9 g/t AuEq from 90 m, as reported to the market on January 18, 2023. Deep porphyry exploration holes are continuing (Figure 4).

However, the potential game changer came with hole LMDD017, with the epithermal intersection of 176.7 m @ 0.97 g/t Au, 10.1 g/t Ag and 0.2% Zn (1.1 g/t AuEq) from 6.8 m hosted in a silicified hydrothermal breccia (Figure 3), with hole LMDD020 then intersecting visible gold in a 1.2 m wide zone of intermediate sulphidation veining at ~665 m downhole (~600 m below surface, Figure 3), one of several zones of epithermal alteration and base metal anomalism (determined to date from hand held pXRF readings) scattered throughout the length of the hole. The veining is some 700 m away from hole LMDD017, highlighting the size potential of the epithermal mineralisation.

Figure 3: Core photos from holes LMDD017 and LMDD020 (Source: Sunstone)



Hole LMDD017 – left panel – showing visible gold and sphalerite in a silicified hydrothermal breccia

Hole LMDD020 at 665 m depth down hole – right panel – showing free gold and sulphide/quartz epithermal veining

Our View

In our view this is a potential game changer for the Bramaderos Project and the Company, with the results underlining the potential for Limon to host a large epithermal system, which could drive the economics of any future project, providing the early “kicker” commonly required for porphyry projects. This may then bring the mineralisation in the current MRE (and the exploration target) into play for a large scale (potentially >10 Moz AuEq) epithermal and porphyry project.

As discussed in our previous update, the published MRE and Exploration Target are both conservative, with the former being pit constrained and not including several intersections, and there is considerable scope to increase the inventory at the defined targets (including Limon), as well as at other as yet untested targets.

We see the potential for scale in the Limon epithermal mineralisation:

- Large area of alteration as evidenced by the magnetics, geology and geochemistry,
- Epithermal mineralisation being intersected in several holes,
- Potentially large vertical extent (>550 m), given the LMDD017 intersection and deep epithermal mineralisation in LMDD020; and,
- Breccia host/control for the LMDD017 intersection – in contrast to more structurally controlled epithermal systems, which commonly form linear and tabular zones of mineralisation, breccia hosted systems are commonly more massive, with significant size in all dimensions, and are hence more amenable to large scale (and relatively low unit cost) extraction.

Another feature of the breccia host is that the mineralisation may be amenable to heap leaching (which is generally relatively low cost), with gold, which is introduced post brecciation, forming in the breccia matrix and on clast boundaries – these are obvious breakage points during crushing, thus exposing the gold and gold bearing minerals to the leaching solution. As such the Company is undertaking preliminary leach test work on selected samples from hole LMDD017.

Open pitable, large throughput operations (and planned operations) at around 1 g/t AuEq are not uncommon, with examples including Regis Resources (ASX: RRS) planned McPhillamy’s project in NSW, with the 2017 PFS based on a production of ~200,000 ozpa from 7 mtpa at an AISC of ~A\$1,000/oz over a 9-year mine life. The most recent Reserve for McPhillamy’s (2019) is 60.8 Mt @ 1.04 g/t Au for 2.02 Moz, however with approvals now granted the project will proceed to a DFS, which will also update capex and opex numbers.

Another pertinent example is the Tujuh Bukit gold mine in Indonesia, with an open pit producing close to 1 Moz to date from up to a ~7 mtpa oxidized high sulphidation heap leach since 2017, at a LoM AISC to date of ~US\$650/oz, and an overall capex of less than US\$200 million. Cash from this operation is being used to pay for the development of the deeper porphyry block cave operation.

This presents a potential development case for Bramaderos (dependent of course on the delivery of a technically and viable project!) – a relatively low-cost starter operation with a grade in the order of 1.1 g/t AuEq has the potential to produce ~200,000 ozpa and provide the cash to pay off/provide capital, which then brings lower grade porphyry mineralisation into play for a longer term operation. Economics of any potential operation could be further strengthened should the breccia hosted mineralisation prove amenable to heap leaching.

There are also other positive factors when any future development scenario is considered:

- The mineralisation, including the defined porphyry Au-Cu is shallow (being from surface) and outcrops as a hill and given the morphology, would likely have a low strip ratio,
- Several drillholes have intersected higher grades near surface (including BMDD034, which intersected 202 m @ 0.86 g/t AuEq and BMDD008 which intersected 302 m @ 0.73 g/t Au), however the block modelling can tend to “smear” grades, and thus possibly understate actual grades in some areas; and,
- The Project is located close to infrastructure, including roads, hydro power, and water.

El Palmar Porphyry Copper-Gold Project – 70%, right to earn 100%

Recent work at El Palmar has included drilling at the T2 Target, which has returned positive results. The drilling has been focused on a large MT conductive anomaly, with a steeply dipping neck and a very large buried bulbous body – overall the morphology of the conductive zone is reminiscent of a golfing wood driver.

The subsurface potential is supported by surface anomalism, with characteristics including:

- A 70 m x 50 m area of outcropping stockwork mineralisation, with historical rock chip sampling averaging 0.40 g/t Au, with several over 1 g/t Au, considered high grade for a porphyry,
- 220 m strike length of quartz stockwork under the edge of the lithocap; and,
- Copper and molybdenum soil geochemical anomalism.

In a broader sense, the MT conductive zone is adjacent to the regional Toachi Fault Zone, a similar structural position to SolGold's 3 Bt Cascabel Project located some 80 km to the northeast – major structures can be key controls on the mineralising porphyries.

As shown in Figures 5 and 6, the initial drilling of the current programme has intersected variable width zones of low grade, but strongly anomalous porphyry mineralisation (tabulated in Figure 6), with this being coincident with the boundaries of the shaft of the driver.

Current and upcoming drilling is focused on the head, which, being more conductive, likely contains a higher sulphide content, and may represent the main mineralised part of a porphyry.

Figure 5: El Palmar cross section (Source: Sunstone)

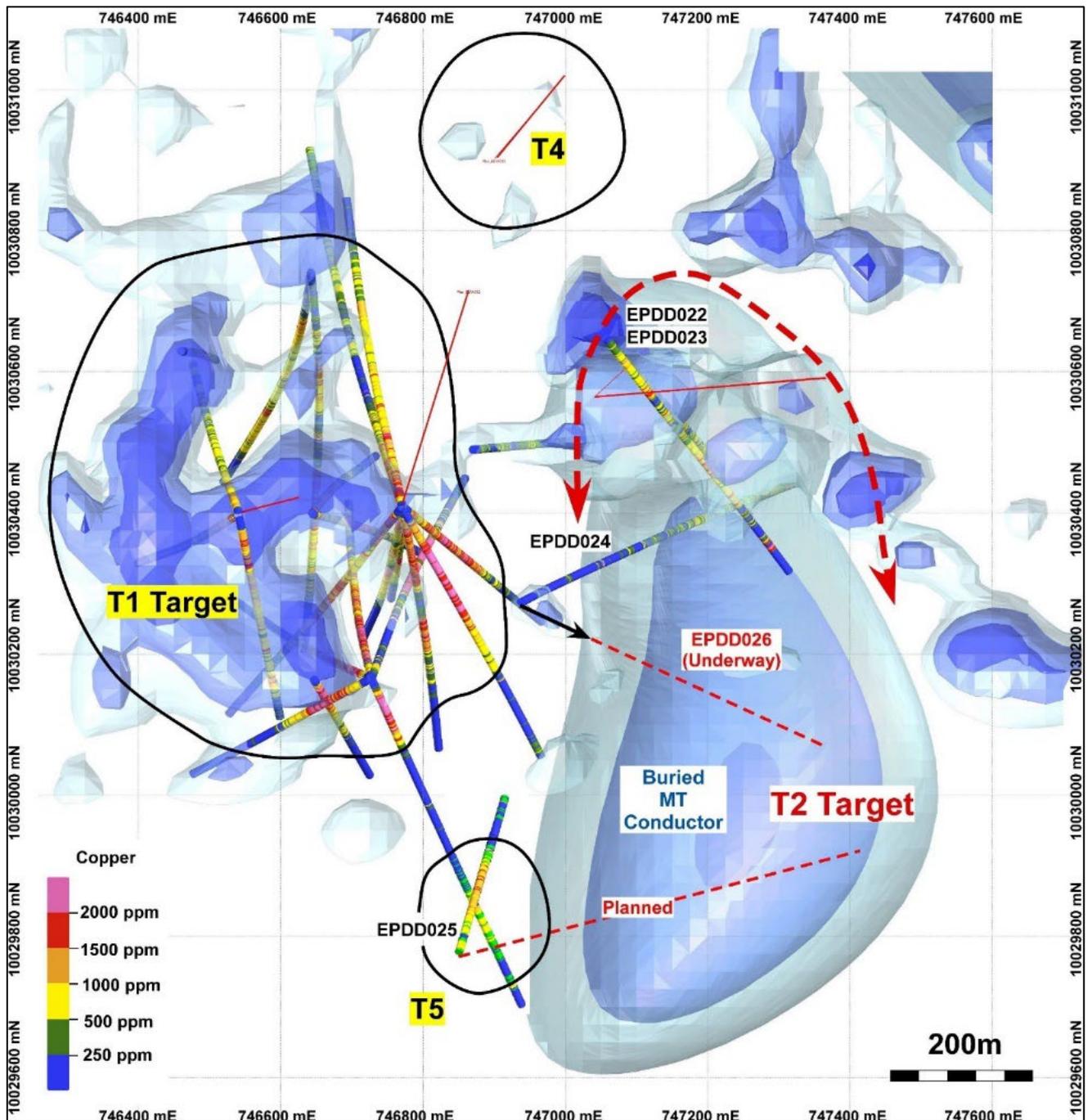
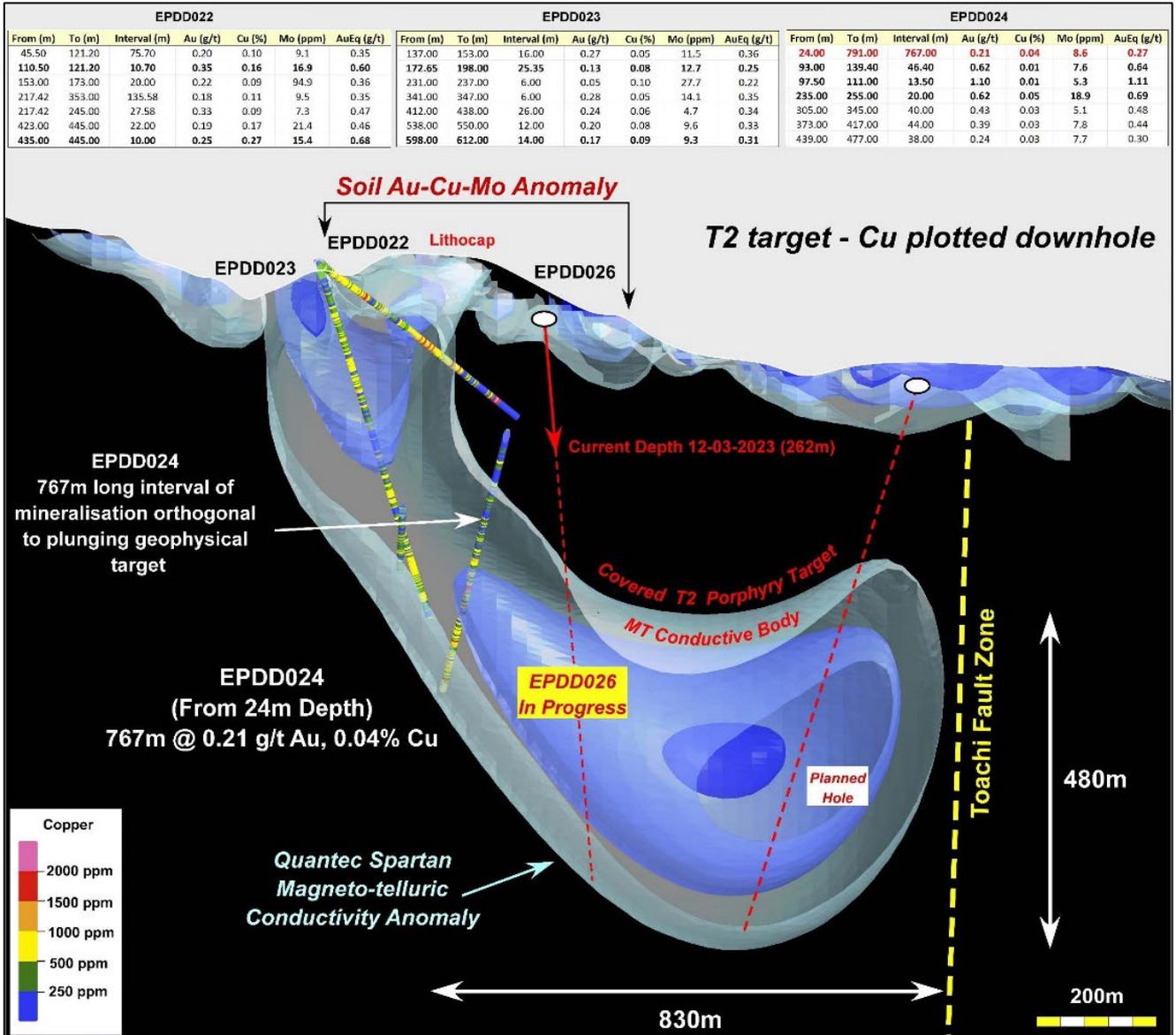


Figure 6: T2 target details (Source: Sunstone)



Upcoming Activities

Ongoing activities at Bramaderos will concentrate on drilling at Limon, with two rigs now operating testing the scale of the Limon epithermal system, with the initial planned holes shown in the bottom panel of Figure 4. Although a 2,200 m programme was planned initially, this will now be expanded in view of recent results.

In addition, as mentioned previously, preliminary metallurgical test work is being undertaken on samples from hole LMDD017, in parallel with ongoing testwork on porphyry samples from the Brama-Alba complex.

This should lead to steady news flow – assays from LMDD020 are due in early to mid-May.

Drilling at El Palmar is concentrated on completing and then assessing the current drilling at T2, and to plan and commence further drilling at T1, where the western portion remains undrilled. A single rig is currently operating at El Palmar.



Threats/Risks

- **Exploration, Evaluation and Resource Results:** This is the key risk, and one that faces any junior.
- **Equity Markets:** As we have recently seen equity markets can be fickle and can turn on a dime. This will affect investor sentiment, and hence the potential to effectively fund exploration and evaluation. We expect that Sunstone may need to go back to the market soon, and thus is currently pertinent.
- **Metals Prices:** These feed into the equity market sentiment – falling metals prices will negatively affect investor sentiment and vice versa. This will have less effect on robust projects.
- **Service shortages:** The exploration industry is currently beset by various service shortages and slow turnaround times in laboratories, as a hangover from COVID, and also as a result of historically high exploration activity. The main impact on Sunstone is slow turnaround times in assays, which, in the drilling programmes, flows through to interpretation and hole planning, and also can give rise to investor impatience.

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