



## LION ONE REPORTS ENGINEERING AND DEVELOPMENT PROGRESS AT THE TUVATU ALKALINE GOLD PROJECT IN FIJI

North Vancouver, B.C., February 8, 2022 - Lion One Metals Limited (TSX-V: LIO) (OTCQX: LOMLF) (ASX: LLO) ("Lion One" or the "Company") is pleased to provide the following progress report for the engineering and development of the Company's fully permitted high grade Tuvatu Alkaline Gold Project located on the island of Viti Levu in Fiji.

### Highlights

- Production permits are in place for underground gold mining operations
- Engineering and procurement of gold recovery plant is underway
- Development of second underground access portal is underway
- Mobile crushing unit has been ordered, built, and is now being shipped to mine site
- Majority of required mining equipment has been shipped and delivered to mine site
- Contracts for water, power, tailings, explosives, and communications secured or in progress
- ERP implementation underway for accounting, supply chain, cost control, and inventory

### Mill Design & Construction

Lion One has designed a scalable milling facility with installation anticipated by Q3 2023, for initial gold production by the end of Q4 2023. The mill has been designed with a scalable capacity to be expandable from the initial planned production rate of 300 tonnes per day (tpd) for approximately 24,000 ounces of gold per year, ramping up to potentially 1,200 tpd.

For more information read the **Metallurgical Overview** and **Process Description** below.

### Underground Development & Mining

Lion One has commenced development of the portal for underground access #2 and expects to commence underground development at a projected rate of 2m per day during the current quarterly period.

Several recent news releases have highlighted a number of high-grade intercepts (See **Recent Infill Drilling Results** below) that occur in very close proximity to planned underground infrastructure, indicating that a number of high-grade lodes are immediately accessible and can be included in the initial mine plan. Lion One anticipates to be driving through these lodes as early as Q2 2022.

### Dual-Track Advancement Strategy

Concomitant with the mine development plan being undertaken, Lion One continues to pursue aggressive exploration drilling of newly defined feeder targets in proximity to the Tuvatu resource, including the prolific 500 Zone, as well as regional targets within the ~6 km Navilawa caldera.

Lion One has an exceptional team to lead this effort led by Wally Berukoff, CEO, Patrick Hickey, COO and Sergio Cattalani, SVP Exploration.

Lion One’s Chief Operating Officer Patrick Hickey commented, “Lion One is committed to building a mine at Tuvatu and we are progressing with design of the processing facilities and development of Tuvatu decline #2, with the objective of initiating production by late 2023. At its current resource grade of over 8 g/t Au, Tuvatu has the potential to become one of highest grade gold mines in the world, while ongoing exploration demonstrates significant potential for identifying a large alkaline gold system within the Navilawa Caldera”.

### Metallurgical Overview

Lion One has conducted and reviewed extensive metallurgical test work at numerous accredited laboratories between 1997 and 2020, including mineralogy studies, comminution tests, gold recovery tests and cyanide detoxification tests. The results of this work have defined the optimum recovery process to achieve an average gold recovery of 87.5% as reported in the September 25, 2020, Preliminary Economic Assessment Update. Recent metallurgical test work conducted by Met-Solve Laboratories has indicated potential recoveries in excess of 90% are possible using the proposed process. The metallurgical test results indicate that the Tuvatu mineralization is amenable to a combined process of gravity concentration with intensive cyanidation and carbon in pulp (“CIP”) cyanidation. Further refinements to the plant will be made once the detail engineering and procurement commences.



Figure 1: conceptual process plant design and site layout

### Process Description

Run-of-Mine (“ROM”) material will be trucked from underground and onto the mill feed surge stockpiles or directly into the crushing plant feed pocket. The crushing plant will consist of two stages of crushing including an open circuit primary jaw crusher and a closed-circuit secondary cone crusher. The feed pocket will have a 350mm-by-350mm stationary grizzly to protect the jaw crusher from oversized feed. The cone crusher will be fed by one of two double deck screens. One screen will be dedicated to sizing



ore and the second screen will be used to produce aggregate. The double-deck screen undersize, with a particle size of 80% passing approximately 8 to 10mm, will be conveyed to the mill feed surge bin, which will provide a live capacity of 300t of the mill feed, or the equivalent of 24 hours of mill operation. Two vibrating feeders, together with the primary ball mill feed conveyor, will be installed underneath the surge bin. Each of the feeders can provide the full feed rate if one of the feeders requires unplanned maintenance. All the feeders will be equipped with variable frequency drive (“VFD”) control to adjust the reclaim rate. Normally only one feeding system will be in operation.

The integrated comminution circuits, including the two-stage grinding circuit, will grind the 8 to 10mm feed to a grind size of 80% passing ( $P_{80}$ ) 60 to 65 $\mu$ m. Both mills will discharge the ground ore into a common pump box and sent to a vibrating screen. The 2 mm plus oversized particles will report back to the secondary ball mill for further grinding. Undersized particles from the vibrating screen will be treated by a primary gravity concentrator. The gold concentrate from the primary gravity concentrator will be treated by an intensive cyanide leaching reactor. The pregnant gold solution from reactor will be pumped to the on-site absorption-desorption-recovery (“ADR”) plant with a dedicated electrowinning (“EW”) cell to produce a gold rich sludge to be fed into an electric furnace to produce gold doré.

The tailings from the primary gravity concentrator will be further separated by a hydrocyclone. The oversize from the hydrocyclone will report back to the secondary grinding mill. The overflow containing fines will be treated by a continuous gravity concentrator. The approximately 1.0 to 1.8t/h gravity concentrate from the continuous gravity concentrator will be pumped to the CIP cyanide leach tanks while the tailings will be thickened from 35% w/w solids to 45% w/w solids. The thickener underflow will be pumped to an aerated pre-treatment tank prior to entering the CIP circuit. This process utilizes gravity separation for 100% of the ore instead of the conventional 33%. Since the Tuvatu mineralization contains variable quantities of large and very small free gold, this process optimizes overall gold recovery.

The standard CIP cyanide circuit will operate at 45% w/w solids with the carbon being loaded countercurrent to the flow of the pulp. The gold loaded carbon will be transferred to the ADR plant for desorption and recovery. The leaching tanks, buffer tank and associated pumps will be located in a concrete tank farm. The reagent storage and mixing facilities will be located adjacent to the CIP circuit.

The Project will employ an alkaline, non-cyanide stripping and EW process. The pressurized elution vessel for the CIP circuit will operate at approximately 0.5MPa at 150°C and have dedicated EW cell located adjacent to the dedicated intensive leach EW cell. After the ADR system is shut down and the system pressure is reduced to atmospheric pressure, the gold rich sludge will be washed from the steel cathodes and collected. The gold sludge will be dried and mixed with gold flux prior to melting in an electric furnace at approximately 1,200 to 1,300°C to produce gold doré. The gold doré will be stored in a secure vault within a secure and supervised area.

The leach residue from the carbon safety screen in the CIP circuit will flow by gravity to a residual cyanide detoxification system where Weak Acid Dissociable (“WAD”) cyanide will be destroyed using the SO<sub>2</sub>/air process. The circuit will consist of two mechanically agitated tanks, each with a capacity to handle the full slurry flow for a retention time of approximately 75 minutes. The arrangement will provide sufficient detoxification capacity if one of the two tanks require unplanned maintenance. The reagents used will include hydrated lime, sodium metabisulphite, and copper sulphate. After detoxification, the tailings



slurry will be pumped to high-rate thickener. The residue will be thickened to approximately 50 to 55% w/w solids. Diluted flocculant solution will be added to the thickener to assist the thickening process. The thickener underflow will be pumped to two filter presses for dewatering to approximately 10 to 12% w/w solids. The filtered tailings cake will be loaded into lined dump trucks for transporting to the Tailings Storage Facilities (“TSF”) approximately 3.5km from the plant site. Engineering of the TSF has been completed for the first year of operation with subsequent TSF construction planned the following year after start-up.

It is necessary for Lion One to provide all electrical power to the mine site. The proposed new main power plant is five 800kW diesel powered generators with 4 in operation and 1 on standby. The 2 existing 900kVA diesel generators for underground development will be relocated to the main power plant. The combined power output will be 4,660kW (with one 800kW standby) to run both the underground mining operation and the process plant. The Company is also investigating the installation of a hybrid power plant consisting of a combination of solar and diesel generation to maintain a constant and stable supply of 4,660kW at any time within 24 hours a day.



**Photo 1:** design for portal of underground access no. 2



**Photo 2:** blasting for development of underground access no.2



### **Recent Infill Drilling Results**

**Reported Jan. 25, 2022:** 359.8 g/t Au over 1.8m, including 1,616 g/t Au over 0.4m

**Reported Nov. 30, 2021:** 33.52 g/t Au over 2.4m from 173.4m inc. 185.6 g/t Au over 0.4m  
20.61 g/t Au over 7.5m from 126.6m inc. 89.03 g/t Au over 1.5m, and 227.3 g/t Au over 0.3m  
21.34 g/t Au over 2.5m from 120.85m inc. 38.25 g/t Au over 1.3m, and 52.27 g/t Au over 0.3m

**Reported Sept. 7, 2021:** 10.24 g/t Au over 8.48m inc. 33.26 g/t Au over 2.44m from 111.2m, and 13.49 g/t Au over 3.3m from 115.4m

The current mineral resource estimate for the Tuvatu project comprises 1,007,000 tonnes Indicated at 8.48 g/t Au (274,600 oz. Au) and 1,325,000 tonnes inferred at 9.0 g/t Au (384,000 oz. Au) at a cut-off grade of 3.0 g/t Au.

The Company advises that it has not based its current mine development plan on a feasibility study of mineral reserves, demonstrating economic and technical viability, and, as a result, there may be an increased uncertainty of achieving any particular level of recovery of minerals or the cost of such recovery, including increased risks associated with developing a commercially mineable deposit.

### **Qualified Person**

The scientific and technical content of this news release has been reviewed, prepared, and approved by Mr. Bill Witte, P. Eng, who is a Qualified Person pursuant to National Instrument 43-101 – Standards of Disclosure for Mineral Projects (“NI-43-101”).

### **About Tuvatu**

The Tuvatu gold deposit is located on the island of Viti Levu in the South Pacific island nation of Fiji. The mineral resource for Tuvatu as disclosed in the technical report “Tuvatu Gold Project PEA”, dated June 1, 2015, and prepared by Mining Associates Pty Ltd of Brisbane Qld, and subsequently updated in January 2018 as disclosed in the technical report and PEA by Tetra Tech “Technical Report and Preliminary Economic Assessment Update for the Tuvatu Gold Project, The Republic of Fiji” dated September 2020, comprises 1,007,000 tonnes Indicated at 8.48 g/t Au (274,600 oz. Au) and 1,325,000 tonnes inferred at 9.0 g/t Au (384,000 oz. Au) at a cut-off grade of 3.0 g/t Au. The technical report is available on the Lion One website at [www.liononemetals.com](http://www.liononemetals.com) and on the SEDAR website at [www.sedar.com](http://www.sedar.com).

### **About Lion One Metals Limited**

Lion One’s flagship asset is 100% owned, fully permitted high grade Tuvatu Alkaline Gold Project, located on the island of Viti Levu in Fiji. Lion One envisions a low-cost high-grade underground gold mining operation at Tuvatu coupled with exciting exploration upside inside its tenements covering the entire Navilawa caldera, an underexplored yet highly prospective 7km diameter volcanic edifice of alkaline affinity. Lion One’s CEO Walter Berukoff leads an experienced team of explorers and mine builders and has owned or operated over 20 mines in 7 countries. As the founder and former CEO of Miramar Mines, Northern Orion, and La Mancha Resources, Walter is credited with building over \$3 billion of value for shareholders.



**On behalf of the Board of Directors of  
Lion One Metals Limited**  
"Walter Berukoff"  
Chairman and CEO

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